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AN

ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

Architect, Engineer, Archaeologist, Constructor, & Art-Lover,

CONDUCTED BY

GEORGE GODWIN, F.R.S., F.S.A.

*Honorary Member of various Societies; Author of "History in Ruins," "Town Swamps and Social Bridges,"
"Another Blow for Life," &c.*

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THE BUTTERFLY

Social Progress in 1866.

AST-FLYING Time, while bringing its changes, leaves its memories also. As occasion first arises to replace by a new series of figures the familiar date which has lately headed our pages, we are led to glance with somewhat more than usual gravity both at the past and towards the future; to inquire what the outgoing year has left behind in the shape of solid acquirement and material progress, and what reason may be safely assigned for the hope and promise of its successor.

Especially does the season call on those public writers whose

object is not the mere perfunctory production of a certain number of columns of letter-press, but who have the higher aim of doing service to their contemporaries and to their country by their consistent advocacy of right principles and the faithful pursuit of truth, to review the field of their exertions, and to see what progress has been effected by their labours. Not that it is often given to any individual workman of this honourable guild to trace the results of his own toil, or to attribute the success of any great principle to the service of his own pen. At all times in human history new veins of thought, whether in theory or in practice, have been contemporaneously reached by independent workers. The priority of a few days may be disputed by the friends of Newton and of Leibnitz, of Le Verrier and of Adams, but the fact of the independent original discovery effected by the owners of these great names admits of no denial. Speke and Grant pushed their explorations in one portion of the great river system that feeds the Nile, while Baker, in another locality, made discoveries as to the cause of the annual flood that shed far more light on the solution of this great geographical problem than did even his heroic persistence till he bathed in the waters of

the larger of the two headwater lakes. There is honour enough for each patient investigator,—honour that is in no way diminished by being shared. Thus if we see that the principles of politics, viewed as a science, in contradistinction to the maxims of politics viewed as a trade, or politics followed as a hobby, are becoming more and more appreciated by the intelligence of the day, we are ready to congratulate our brother writers, and to congratulate our fellow-countrymen, without yielding to the weak selfishness that is always crying out, "You have stolen my thunder," or "You have taken the path which I was the first to point out."

In the practical comprehension of many of the principles that underlie a healthy social life, the very building principles of society, we think that a marked progress has been made in 1866. Distinct from the subjects of building as a craft, of architecture and of engineering as sciences, of pictorial and plastic art as methods of adornment and as means of education, are those questions in the treatment of which the engineer or the architect has to deal with politics, strictly so called, that is to say, with the cardinal points on which the welfare of the community hinges. Such is the true political spirit which distinguishes the founder of a city from the constructor of a row of houses,—the man who would build his fame from the man who seeks only to fill his pocket. The sanitary state of towns, involving the important questions of drainage, of water-supply, of ventilation, of consumption of smoke,—the provision of homes for the poor, and of hospitals for the sick,—the communications of town and of country, internal and external, including roads, footways, railways, telegraphs, docks and harbours, locomotive and water-going steam engines,—the supply of food, and the improvement of agriculture,—the supply of clothing, and the progress of manufactures,—the defence of the great centres of national life, involving questions of arms and of fortifications, of monster guns and of iron-clad steamers,—and the direction of the intelligence and the industry of the country in those channels which alone lead to a sound and permanent prosperity;—these are the main divisions of that practical political science which ranks among its disciples all men of earnest thought, from the statesman who moulds petty communities into great states, to the practical mechanic who discovers that chilled iron will advantageously replace the costlier material of steel.

In some of the subjects which we have thus cursorily indicated we think that the year 1866 has witnessed an appreciable progress; the public mind is far more fully awake than at any former time to the importance of sanitary questions. We will not refer to the numerous disabled pumps that disfigure the metropolis in support of this assertion, though even here both scientific labour and social courage have been

needed in dealing with a convenient and popular source of danger. But generally speaking, the vital importance of a pure water-supply has been constantly kept before the public. Acknowledgement has been attained on the subject which must, to some extent, influence all future legislation. Reports on the sanitary state of certain districts, reports on the purity of water, reference of the mortality of cholera to a great predisposing cause,—impure sources of service,—have not only filled the public journals and occupied the public mind, but we are beginning to see the benefit of the attention already given to the subject in the stately walls that bid fair to girdle the Thames, in the re-appearance of fish in its waters, and in the fact that the mortality from cholera during its presence in London in 1866 was at the rate of 8 in the 10,000 in place of the 120 in the 10,000 that fell before the visitation in the year 1849.

In the vital question of national defence, we have the satisfaction of feeling that, in the event of war, our troops will not be matched against an enemy possessing a weapon so confessedly superior to their own as to convert a fight into a *battue* at their expense, as was the case with the brave Danes at Düppel and with the imperial troops at Sadowa. But the satisfaction due to our tardy adoption of a breech-loading rifle is alloyed by the remembrance of the melancholy death of the inventor, whose plan we adopted, a death hastened, or altogether caused, not, we candidly believe, by human malice, but certainly by the malignity of red tape. We trust that among the millions whose sleep will be all the safer, if not all the sounder, for the eight years' toil of Mr. Snider, will be found some to inquire what tardy reparation may yet be offered to his representatives. For larger arms, as well as for the vessels that are to carry them afloat, we can only say that experiment and discussion have been actively, if not very systematically or successfully, pursued; and that if no one should attack us till we have made up our minds on the subject, and then carried out the result of our deliberations, we shall probably be in a very imposing position of defence when that time arrives. The greatest boon of the year in this respect is the application of the process of chilling to iron shot and shell, and the advantage thus secured to offensive operations. We have learned, too, at some cost, in the instance of the *Northumberland*, how not to lay the ways for launching an armoured vessel.

The absence from our Cabinet of that important officer, a Minister for Public Works, has led during the past two years to the application of the cumbersome and expensive expedient of a Royal Commission in three several instances. The Railway Commission and the Coal Commission have as yet given no utterance as to their labours; the River Commission, as our readers are aware, have added to their hurried

report,—hurried, as we have reason to believe, not by their own fault,—much valuable information, to which we have more than once taken occasion to refer. It is to be hoped that the instructions to the Railway Commission are such as to allow the commissioners to deal, so far as recommendation of legislative or administrative measures goes, with such gross cases of railway swindling as have shaken the public confidence, and impaired the national credit, within the past year. The press has shown no hesitation in publishing facts which need no comment, and which of themselves form an unqualified condemnation of their perpetrators, however high the names of these persons may have previously stood. But it is only very recently that there has appeared in any portion of the public press any active support of the opinion, which we felt it our duty in the first instance to express, that illegal acts for the purpose of raising money should not only be called by their right names, but should be visited with their appropriate penalty. The unexampled chronic panic which has reigned since the month of May seems not unlikely to continue, so long as financiers who execute on a large scale operations of a nature smaller attempts at which are visited by the treadmill, may be “unfortunate” with impunity. The wise and liberal legislation of which the tendency is to render debt a point of honour, and to refuse to allow the officers of the law to aid the reckless and improvident creditor, will fail in its object, or will do more harm than good, unless it be accompanied by increased stringency in all cases of actual fraud. If a bankrupt business is to be bought and sold for a premium of half a million sterling; if debentures are to be issued contrary to legal provision; if in any instance one of the harpies who make many poor in order to make one or two very rich is detected in passing the strictest limit of legality, the atonement due to wronged society should be exacted; nor should it be left to individual sufferers to set in motion the sharp machinery of the criminal law in a case of swindling any more than in a case of violence.

A suggestion has come before the public, rather as the convenient discovery of a political secret than as a positive proposal, to supplement the best managed of English institutions, the Post Office, by the committal of electro-telegraphy to the same able and successful management. English habit and English prejudice are, or rather were, very strongly opposed to the interference of Government in matters that have been of late years handed over altogether to private enterprise. But the conspicuous failures of private enterprise, the waste and loss incurred in the construction and management of railways, the disregard of public convenience which railway boards display, the want of provision for obvious need, or of mutual arrangement where both public and proprietary are the sufferers, as in the ill-considered tangle of conflicting railways that obstruct one another at London Bridge, the collapse of limited companies, stand in such strong contrast with the cheap, punctual, profitable working of the Post Office, that a change in public opinion is far from improbable. If a Government official do wrong, there is, at all events, some responsible person to attack, some one who cannot dive for shelter beneath the green cloth of a “board,” and in all cases where regularity of administration is the main requisite, we think it probable that the most regular and capable administrators will be those chosen by the Government of the country. To the report of the Railway Commission, we shall look for much valuable information on this head. The enforcement of a uniform, intelligible system of accounts, showing to the plain sense of men of moderate skill in calculation the two great facts of the worth and cost of their property, and of the gross and net amount of their income, with stringent and easily recoverable penalties against those who should withhold or “cook” such half-yearly accounts, is another point which recent great scandals and misfortunes should induce the public loudly to demand.

That peculiar feature of the national character which renders Englishmen in the mass so patiently submissive to unnecessary and avoidable inconvenience, provided that it arises from want of forethought, arrangement, or organization, still marks many of the habits of London. No provision has yet been made for the accommodation of the immense and overgrown street traffic, increasing at the rate of $\frac{3}{4}$ per cent. per annum, and driven into fresh eddies by the opening of each additional railway

station. The stream of passengers from east to west that converges at St. Paul's and at the Mansion House is yet forced through the narrow channel of Cheapside. The powers that rejoice in covering the carriageways at inconvenient seasons with 4-in. cubes of broken granite have successfully resisted the attempt to introduce the steam-roller, although the macadamisers of Hyde Park have amused themselves with the solemn promenade of a horse-roller, somewhat more efficient than a child's perambulator.

The scavenging of the streets in muddy weather is still committed to volunteers, who levy a black mail at every crossing, at a cost of time and of labour ample to effect the decent and efficient cleansing of the thoroughfares. Our main highways are still, as of old, obstructed from time to time by the sudden appearance of men armed with planks and barrows, who proceed to pull up the pavement, or to pull down the houses, or to sink mines and tunnels beneath the carriage-way, with as imperturbable serenity as if the thoroughfare of a crowded city was the natural scene of action for a “navy.” Still, as of old, gang succeeds gang; and no sooner is the road relaid over the sub-railway than it is taken up again for the water-works; no sooner is it replaced by the water-works than it is afresh invaded by the gas folk. Still do English architects persist in building houses without chimneys,—that is to say, without chimneys that will free the apartments from smoke; and the habitation of any new building is announced by the outbreak on the roof of those curious, varied, and unmechanical cowl-tubes, and wriggling spouts in which the smoke doctor and the chimney quack delight. Still do we persist in sending a large per-centage of our costly coal through these wonderful structures, to pollute the air we breathe, and in getting rid by the same means of the greater part of the heat produced by the consumption of the remainder. Last, we are submitting to the greatest injury that can be inflicted on the atmosphere of London by failing to preserve Hampstead Heath, which is now invaded by the builders, and thus about to poison, with the products of animal, vegetable, and mineral combustion, the one pure fresh wind that sweeps through the streets of London.

In addition to the large increase in our power of national defence which we owe to Mr. Snider and to Major Palliser, the chief features of our national advance in 1866 are the union of the Old and the New World by the Atlantic cable, and the opening of a sure and providentially arranged system of railway accommodation for a portion of the suburban traffic of the metropolis by the completion of the Victoria Bridge. The patient courage, the devotion of time, of science, and of capital that have achieved the great work of telegraphic union, and the yet more surprising feat of the recovery of the lost cable from the bed of the Atlantic, have been gracefully acknowledged by the Queen, and are receiving an ample and well-earned need of pecuniary recompense. The public have not, in this instance, been the sole gainers by the enterprise of the Company; and many who would never have contributed even a word of encouragement during the hard times of the undertaking may now grumble that the convenience of the submarine wires is not more appropriated to the amusement of the readers of daily newspapers than to the commercial service of the Company and their customers. In this, as in other cases, we hold that the true rule is the establishment of such rates of charge as will best remunerate the proprietors of the telegraph. We should think that rates considerably lower than those now charged would ultimately follow from the application of this rule, but that is a point on which the first half-yearly reports will furnish better materials for judgment. At all events, the Atlantic telegraph is not likely to fall into the condition of that which transmits from Bombay messages so utterly unintelligible that the persons who are expecting the information they ought to convey are unable to decipher their meaning. The very recent date at which the great Victoria Bridge has been opened enables us to do little more than chronicle the fact that the science and experience of one of the few remaining lieutenants of Robert Stephenson has been wisely appealed to by the directors of the three lines the enormous traffic of which converges on this important point, to an extent that will require the passage of nine hundred trains daily over the Thames. The care which has been given to attain the result on which we have so often insisted as indispensable, the

perfect independence of the routes for the several streams of traffic, so that the swift through trains shall not have their progress throttled by the risk of collision with the frequent short local service, has yet to be appreciated by the public; but it is clear that the servants of the company have in this instance,—and in this instance, with one exception, that of the Metropolitan Railway, alone—a fair chance of a punctual and satisfactory discharge of their duties. When the absolute block that followed the opening of the Cannon-street Station, a block which twelve months previously we predicted in these pages, and the present imperfect service from the Charing-Cross Station, which entirely prevents the company from carrying the enormous traffic, which the employment of due provision, such as that designed by Sir Charles Fox, would have secured, come to be contrasted with the service that is now practicable at the Victoria Station, the public will feel the force of the arguments we have urged, and will insist that time shall be no longer scandalously wasted, nor human life recklessly endangered, because railway companies run across their own lines in the way in which the Legislature has prohibited them from crossing the less important and less frequented routes of the country highways.

A feature not less important than hopeful marks the closing month of 1866. The voice of common sense, and of that wise charity that begins at home, has begun to make itself heard above the false rant. The working men of Staveley have heard the voice of the delegates of the strikemongers in the very words which we ventured to put into the mouths of these evil missionaries. The fact that the iron producers of Belgium are so well prepared to run a dead heat with those of England that the latter can no longer afford to carry the dead weight applied by bad regulations of trades unions or of political unions is becoming daily more clear to those most deeply interested in its existence. The strong mother-sense of the straightforward English workman has been appealed to, and the appeal has been answered by the workman himself, in all the nervous unlettered eloquence of Bunyan,—“I have a union of my own at home, a wife and six little ones, and that is the union I mean to stick to.” Let this spirit, and this intelligence, awake and spread; let the working men pause before they forsake the avail, the bench, the loom, for pot-house agitation. Let them determine that every man shall have perfect liberty of action; that no rules to keep all down to one dead level be permitted; that every man be enabled to do his best; and we may fearlessly raise our old cry of “England against all the world.” So England to herself do prove but true.”

THE FIRE AT THE CRYSTAL PALACE.

A RUDE practical commentary on a vulgar idea concerning the “ferro-vitreous” method of building, was made on Sunday afternoon last; when the northern end, called the Tropical Department, of the Crystal Palace, was almost entirely destroyed by fire; and invaluable specimens illustrative of some of the chief arts and sciences were buried under heaps of broken ironwork, or consumed and lost. Such a combination of delight for the eye, with educational agencies, there had never been before, at one spot, in or near London; and there is not now in any capital in Europe. Here, rather than in portions of the building appropriated often, as they are at this moment, or in great part, to the less instructive of the items of attraction, was realized something that approached to the original ideal of some of those individuals who were the founders of the Crystal Palace Company, or advisers of the first Board of Direction. The beauty of nature and of art; appliances for education and study; the nucleus of a collegiate institution; books and news; in short, the Academic Grove, the Museum, and the London Club, were there together; there, even in winter, within the walls of glass, was moderate warmth; and in summer was a balcony where the visitor to the reading-room might sit in the open air, with book or paper, or enjoying one of the finest prospects in England. London had no public reading-room so comfortable or so bountifully provided; and one of the recommendations of the room, as well as of its adjuncts, the lectures and classes, consisted in the fact that the advantages could be had by ladies. The temporary deprivation, and in many respects total loss, as regards the Tropical Department of the

Crystal Palace, is therefore of serious importance to families resident in the vast suburb that has grown about the Crystal Palace, and which extends now from London to Croydon. The destruction of the building would have had an important effect on the value of land and houses in the neighbourhood; and the entire destruction would certainly have taken place, had the wind, instead of being from the west or south-west, been in an opposite direction. Architects have to regret the partial destruction of the Alhambra Courts, to which Mr. Owen Jones gave so much assiduous care, after years of study of the original models,—and which if they became the most popular of the Fine Arts Courts, had been the most costly in their wall-decoration; and they will regret the greater havoc that the fire has made in the Byzantine Court (one of Mr. M. D. Wyatt's reproductions), and the total destruction of the Assyrian Court,—the embodiment of Mr. Ferguson's theories,—of the collections of models of building-contrivances, engineering works, and ships, and of the Indian and Chinese collections. The great seated figures copied from the temple at Aboo Simbel are greatly disfigured, or in part destroyed; and the avenue of lions *couchant* is gone, along with the greater portion of the marble-margined fish-canal. The northern one of the two bronze fountains by Monti is represented by a shapeless mass. One loggia of the cloistered walk, enclosing the Byzantine Court, copied from the Church of St. Mary at Cologne, indeed remains, or on the western side, with its ceiling unharmed, and the painted decoration even, of its exterior, scarcely injured; whilst in the centre itself of the court still stands the fountain of Derbyshire marble produced after that of Heisterbach on the Rhine. But the remaining sculpture in this northern end of the Palace, excepting the southern one of the bronze fountains, is either lost or greatly injured: the valuable copies of the *Ægina* marbles have wholly disappeared. The recumbent effigies of the Crusaders, in the Byzantine Court, are covered with rubbish; and some of the copies obtained at so much pains from Fontevault, of the tombs of the Plantagenets, may perhaps need to be again compared with the originals ere they can be restored satisfactorily. The casts of fonts and other works important to the history of British and Irish art lie broken to fragments, and mixed with indescribable rubbish out of which protrude leaves of the files of the *Times* or the *Monitor*. Even southward of the glass- and canvas-screen, in parts of the building which remained intact,—excepting as to glass-breakage, and as to flooring removed in order to cut off the southward extension of the conflagration,—sculpture was thrown down, in the haste about saving the body of the building, and property belonging to the numerous stall-keepers, and in removing the Christmas-tree which stood near the screen ready to add its fuel to the fire. In this way alone, much loss is to be regretted: albeit many of the casts in the Palace have long been undergoing such marked deterioration, added to what they received during the original construction of the building, as to suggest the desirableness of procuring fresh casts from the originals. The whole collection of living animals, excepting a very small number of the birds, is destroyed. It included a chimpanzee, and a young hippopotamus; the latter, alone of the specimens of different kinds destroyed, was valued at 1,000*l*.

Even the architect, or decorative artist, should regret the disappearance of the bulk of the plants; which were many of them from the celebrated collection of Messrs. Loddige, and perhaps cannot be replaced. In the library were about 6,000 volumes of books, including most of those which were consulted by Mr. Jones, Mr. Wyatt, and their associates, in the production of the Fine Arts Courts.

Of that portion of the building which was the scene of the fire, nothing remains but foundations, and the columns and coupled arch-ribs of the intersection of the nave and transept, or excepting here and there a column hardly noticeable in the general scene of ruin. But the nave, southwards from the transept, to the screen, is much of it perfect; although the ridge-and-furrow roofing over the courts on each side is gone, leaving such decoration as might be made to serve again, exposed to the destructive effects of the present weather. The Hall of the Abencerrages indeed retains its ceiling; and the East-room, southward of it, is almost unimpaired, even to the casts and the model of the original Alhambra: but the Hall of Justice, and the room of the divans, have their tiled flooring sunk down

amongst the ruins of the supporting construction, and their finishing coats of ornamental plastering peeled off to a large extent by the heat; the Court of the Lions is strewn with fragments of the red tiles of the corridor-roofing; and the colouring and gilding of the walls, where not peeled off, are much discoloured, as also is the marble of the fountain. But for the discolouration, much of the decoration here might be restored, at considerable deduction from the original cost of the whole. A portion of the Roman Court, within the screen, or next the Alhambra, is also injured; whilst, on the other hand, so much of the Mediæval Courts as are within the screen may be described as perfect. The great heat of the fire is made evident by the remains of three bells, of Eastern manufacture, which hung near the gallery-stairs that led up to the Indian and Chinese collections. The material of them is found fused into irregular shapes.

Besides the Tropical Department of the main building, generally known to the public, there was a considerable extension of the basement northwards in the direction of the tower; and from this extension there was another eastward, forming the wing corresponding in position with that which is entered from the station of the West End and Crystal Palace line of railway. The north-eastern wing was divided into two principal portions, of which the easternmost was at a lower level than the other, that is to say, at the foot of the terrace. This latter portion, forming the orangery, and which is the part of the structure that was blown down by a storm some few years since, remains perfect or nearly so: the remainder of the wing, and the connecting line to the main building, form part of the general ruin. One part of the connecting line was used for storage of articles that were some of them inflammable; and the adjoining portion of the wing was used as the carpenter's shop. The great flue from the boilers of the Tropical Department ran in the direction of the tower, to the staircase of which the chimney-shaft forms the newel. This flue, carried on arches, horizontally, through the distance leading up to the storage-space, and through that very space itself, is supposed to have had much to do with the disaster, whether otherwise arising from spontaneous combustion, or from generation and explosion of some kind of gas. The truth is, however, that so many conditions and circumstances were existent to produce the fire, and there is so much difficulty in making out what was the plan of the basement, from the ruins, that we are not able to say much more as to the cause of the fire, than that any one of the conditions and circumstances might have set the train going. This only we know from the drawings of the building as it was first erected, and from what those who have visited the Palace are, most of them, acquainted with: that immediately behind the basement which forms the ground-story on the garden side, is a long roadway of communication between the two ends of the building,—in which way is the flue before referred to, or two flues similar to one another, each communicating with the chimney of a water-tower,—and that behind this space, must be another (taking, in part, the slope of the hill,) in which are to be found the supports to the iron columns, and those to the boarded flooring, the service-piping generally of the building, the hot-water piping to heat the Tropical Department, and whatever stores may be kept accessible by the traps that are to be noticed by visitors. As important perhaps as anything else, there must be in this space a great collection of dust, and, with it, some refuse, to be set on fire easily, or by spontaneous combustion accelerated by heat,—this refuse resulting from use of that really ingenious adaptation from conservatory-flooring, made by Paxton in the 1851 building,—which flooring he expected could be kept clean by the sweeping machine,—and which he found required little more than was effected by the dresses of the ladies, even before the perfect adaptation of the garments, as recently, to street-sweeping purposes. The supports to the columns are, of course, brick; but those to the flooring, like the flooring itself, seem to be entirely of timber. This flooring was, if we remember rightly, laid down much of it after the mechanical system of building which came in with Crystal Palaces, or by mere extension of square feet of construction, without regard to possibility of modification according to size of what might have to be placed at some spot, or to weight that might have to be supported. Giving all praise to Paxton as the author of one of the finest pieces of effect that has been pro-

duced in building,—namely, the perspective of the interior of the Sydenham structure,—the fact remains, that there was no architect's work in the building, pervading it, as there should have been; and that the architects who were employed on the Fine Arts Courts were not the architects of the foundation on which they built. The tile-flooring of the chief portion of the Alhambra Courts was, from all present appearance, laid on the wooden boarding,—instead of as Mr. Owen Jones, we may be sure, would have laid it, on brick-arched or solid concrete. But above all, the hot-water piping seems to have been laid with wooden flooring in dangerous proximity to it, that is to say, in oblivion both of the increased susceptibility to fire, by desiccation,—of which the fact might have been obvious,—but of the fact, authenticated by experience, that heat will travel to a considerable distance along hot-water pipes, even those which are at low pressure.

When the news came to the London railway-stations, on Sunday afternoon, that the Crystal Palace was on fire, and (as the report said) half burnt down, we suspect that the first impression of three persons out of four, not architects, was one of wonder what there could be in the structure to cause a conflagration. Certainly, we have the best means of knowing what were actual words of some persons. It should be apparent now to all, not only that there was a considerable amount of inflammable material in the structure, and in the contents of the building; but that, further, there is something appertaining to parts of the construction that people usually feel convinced are "fireproof," which are not correctly so designated, and which even contain elements of destruction. That the flooring of the Tropical Department of the Crystal Palace was of wood, as is the flooring of the rest of the building, may have been known to all; and many persons must have noticed places where the heat, coming through the flooring, was, comparatively with the rest of the space, intense. Those, however, who had examined the construction of the building were well aware that wood entered, in a very important degree, into the formation of the roofs and external enclosure, and into the framework of the Fine Arts Courts, as it does into the large amount of the fittings and furniture. Of course, many of the exhibited articles are inflammable.

The Handel Orchestra, alone, seems calculated to produce, should it catch fire, almost as great a conflagration as that of a theatre: indeed now, whilst the Christmas festivities are going on, there is, or including the concert-room, an amount of material destructive and to be destroyed, such as should demand incessant watching, like what there is in places of public entertainment in Paris, and, in case of fire, instant action aided by far more accurate knowledge of the conditions of inflammability and fire-conductivity than prevails generally with the constructors and the guardians of whatever public or private buildings. As to the original Crystal Palace, the opinion of the best authority on the subject of fires and fire-prevention, the late Mr. Braidwood, was very plainly expressed; and it is much to be regretted that his several statements respecting "fire-proof" construction itself, are not universally known. They are exceedingly important as bearing upon the inquiry into causes of the calamity at Sydenham, and as supplying the explanation of the picture presented by the ground over which the conflagration raged; where the utter destruction is what could not have been equalled by the burning of a building constructed with brick-piers and the best kind of timber-flooring, pugged and under-ceiled. For absolute safety, indeed, neither the system of construction adopted in different portions of the British Museum, nor the modified Crystal Palace system of the South Kensington Museum, can be considered absolutely safe; and it is to be regretted that the exigencies of lighting debar us from what seems to be the only construction that is really fire-proof, that of brick-vaulting, and solid filling-in wherever there might have been hollow space in other methods of construction, as in the formation of roofs. We cannot have features which were those of the Roman baths; yet something might have been utilized of their lessons, even in the Sydenham building; and the utilization would have involved, to say the least, avoidance of the plank and timber-supported flooring in the Tropical Department of the building. To Mr. Braidwood's conclusions we shall return.

Our own observation of the fire did not com-

mence much before half-past five o'clock, when men of the A division of police, under Chief Superintendent Walker, arrived from London. The two figures from Abou Simbel were then burning and exposed to view; as that end of the transept, like the eastern end, and the whole of the portion of the Palace north of the transept, had fallen. Soon after seven o'clock, the writer was able to pick his way to where firemen of the London Brigade stood with the branch-pipe playing upon the wreck of the Alhambra and Assyrian Courts, and thence over broken columns and girders, past the end of the building, to the top of the wall of the place where the stores had been. Here the fire still blazed, as well as far beyond in the remains of the carpenter's shop. The fire was being revived by the rising wind; but the stream from a 1½-in. jet-pipe, or nozzle, was being directed with telling effect. It seems wonderful that no life was lost; but the danger of buildings of iron construction is well known, at least to the successor of Mr. Braidwood and his men. Still, even at the place of comparative safety at which we stood, a stumble over the hose would have pitched one headlong into the furnace that there was some 15 ft. below; and the man at our side seemed careful to direct the attention of any of his comrades, approaching, to the danger that was in their path. The balcony at the top of the tower was burning like a beacon-light; and large fragments were falling, or being thrown down. Some of the lower floors were reported to have been on fire; but the writer saw no evidence of this in the bottom-story, which he was able to enter at the hour mentioned in one of the newspapers as the time at which the whole was on fire. If as little reliance is to be placed on published reports of the commencement of the fire, as we have found it to be given to some of those referring to its termination, there should be no dependence upon the newspapers when attempting to give particulars of occurrences not witnessed by the reporter himself, with the time duly noted. The writer of the summary of news in the leading-article portion of one paper, stated that the fire extended to the Handel orchestra. The truth is: it never extended southward of the great screen, excepting as to some trifling breakage of glass; and, as we have seen, in the nave it did not get near to the screen.

The fire was discovered by the small number of persons within the building, somewhere before two o'clock, and, independently, about the same time, by many persons outside. The latter saw an unusual appearance in the smoke of the chimney; and it is affirmed that the effect was not that of an ordinary foul fire, as also that from the great draught through the flue, the flue could not have become foul. An explosion seems to have been heard by a person passing the building; but whether the gas came from the mains, or was generated in a banked-up fire that might have been practically a retort, is not clear, more than the way in which the mixture with atmospheric air took place. It seems that, on the discovery, the policeman and fireman inside, immediately set to work; and those outside endeavoured to gain admittance. Some time was lost before much of the large water-service of the Palace could be brought to bear on the fire. As usual in such cases, wrenches of plugs and cocks were not at hand at the moment when they were wanted; and canvas-hose proved too weak for the strain upon it. Nevertheless, some accounts say that the fire was practically got under before the first engine from a distance, one from Croydon, arrived, about four o'clock. Captain Shaw, with his men and engines, did not arrive before half-past four o'clock; or, according to one account, the time would be even later. The delay in this case is attributed to the present system of electric telegraphy: according to which, communication by the wire either is not permitted during hours when it might be especially wanted, or is made to consume more time than a despatch by train or horse conveyance. The north-east corner of the main building, or some place near thereto, is indicated by all observers as the spot where the fire broke out. Thus, as to the main building, the fire spread westward and southward, or against the wind; and the fact of the general westerly direction taken receives confirmation from the direction in which the fallen columns lie, that is with their heads towards the east. Coming to the great stem of the *Waltam new gignat*, the flames no doubt shot up the hollow, to the roof. The Queen's apartments, and the rooms for classes, in the north-eastern angle, must have

been soon destroyed. The great heat acting upon the screw-ends of bolts such as form the main strength of the Paxton gutters, allowed the ends to be drawn out of the nuts; and cast-iron cracked, from several causes, such as the diminution of strength which is one effect of heat, from subjection to cross-strain and torsion which the forms had not been designed to resist, or from the application of water. Webs and flanges of wrought-iron became bent like ribbons. Of these effects of the fire on iron, the ruins afford ample illustration. Even the columns still carrying arch-ribs, about the intersection of the nave and transept, seem out of the perpendicular: so that they should scarcely be used again, except after being taken apart, and separately examined by competent persons. The official statement of the evening of the fire, that the "iron framework of the tropical end is mostly standing, and apparently not severely injured" must have been written after a view from the screen only; for, certainly, the bulk of the columns are down, as well as the roofing that they carried. One of the measures attempted to stop the progress of the fire, was the cutting across the whole building, as by taking out boards of the ground-flooring, and of the flooring of the galleries. This cutting-out, of course, should have extended to the woodwork of the roofs and sashes, as perhaps to some extent it did. According to the appearance of things, however, at the building now, the operation described could have stayed; the fire only at some distance southward of the screen; whilst, actually, much of the nave northward has been saved.

Reverting to the inquiry into the origin of the fire, let us observe that this is one of the cases that might be well met by an inquest, such as the inquests that Mr. Payne, some years ago, held on fires in the City of London, and like the inquest on the fire of Covent Garden Theatre. At the latter inquiry, Mr. Braidwood gave very important evidence, tending to show the exceeding importance of spontaneous combustion as a cause of fires, and other evidence bearing upon the inflammability of desiccated woodwork. Some time ago, a valuable collection of Notes on Spontaneous Combustion, giving what were well-authenticated instances, and what were regarded as such by Mr. Braidwood himself, was published by Mr. Wyatt Papworth. The entire experience shows that whilst spontaneous ignition is generally accelerated by heat, it may take place in sawdust in contact with vegetable oil, in cotton, cotton-waste, hemp, and most other vegetable substances, and in dust-bins under particular conditions. Sometimes, heat makes the whole difference between an immunity for years, and a conflagration in the same number of hours. Paint-stores have caused many serious fires. Rags with which oil has been wiped up have proved very dangerous. Dust-bins have caused heavy losses, as in one instance where 30,000, to 40,000, were lost from hot ashes being thrown into a dust-bin. Mr. Braidwood said, "No collection of rubbish or lumber of any sort should be allowed to be made in any building of value."

Can it be said of the Crystal Palace that this condition of the maintenance of a "building of value" has been observed. As to flues, Mr. Braidwood said that none should be permitted to be used from furnaces or close fires, unless prepared for the purpose; otherwise the flue might be dangerous throughout its course. As to heating by hot air, steam, and hot water, he spoke of them as "objectionable"—one of the reasons being that the pipes are kept out of sight as much as possible. He said,—"By this means they are constantly liable to produce spontaneous ignition; for, there appears to be some chemical action between heated iron and timber, by which fire is generated at a much lower temperature than is necessary to ignite timber under ordinary circumstance." He quite recognized that fires may occur even from pipes that are left open; and he showed that the heat of water at the furnace may be more than 212°. Some fires from hot-water pipes have been known to occur after ten years of apparent safety. It is for those who are acquainted with what was the state of the furnaces, flues, stores, hot-water-piping, timber-flooring, and space below the floor of the Tropical Department, to say how

far any of the conditions here pointed to were existent in the Crystal Palace.

As to the sufficiency of iron-construction, useful information may be got out of a comparison of Mr. Braidwood's views with those of Mr. Fairbairn. The latter authority stated, in 1837, at the meeting of the British Association for the Advancement of Science, that cold-blast iron suffered a loss of strength amounting to 10 per cent., by an increase of temperature equal to 164°, and hot-blast a loss of 15 per cent., by an increase equalling 169°. Cases have occurred in which such an increase as the last-stated, or from 21° degrees to 190°, would have been sufficient to cause the ruin of a building. The iron beams of a floor have been known to give way from the mere heat of burning materials on tiles which the beams carried. And, a chancel at Islington being burned down in 1843, it was found that of thirteen cast-iron columns supporting the galleries, only two were perfect,—most of the others being broken into small pieces, and in some parts melted,—and that, although the pillars had been strong enough to support the galleries when filled with people, as the fire reached them they crumbled under the weight of the timber only, albeit lightened as the latter was by the fire. A knowledge of such facts will help to explain much of the appearance of the iron-work fractured, and lying amongst the general rubbish, that forms the sad spectacle which there is now on Sydenham-hill, and may serve to emphasize what would be our recommendation touching any proposed restoration of the Tropical Department, already sufficiently adverted to.

No more need be said unless in expressing hope that the directors will see their way to the restoration of as much as may be restored of the beautiful effects of nature and art-work, and the educational advantages that the Crystal Palace lately had, combined with such improvements as may lessen the chance of another disaster.

SEWERS IN PARIS.

The great general collecting sewer of the left bank of the Seine commences at the junction of the Quai Henry IV. and the Boulevard Dordouin. It follows the line of the quays, crosses the Place du Châtelet, and, opposite the Pont de la Concorde, turns at right angles towards the north, passes under the Rue Royale, continues under the lower portion of the Boulevard Malesherbes, leaving Monceau on the left, and debouches at Asnières below the bridge over which passes the departmental road of Argenteuil. Its development is about 5½ miles; the inclinations 1 in 2,500 from the Boulevard Dordouin to the Rue de la Pépinière, and 1 in 2,000 from that point to the Seine. In section, the height is 15 ft. 1 in. from the bottom of the invert of the canal to the crown of the arch, which is elliptic; the width is 18 ft. 5 in. at the springing. The canal at the level of the two *banquettes* on each side is 11 ft. 6 in. wide, and 4 ft. 5 in. deep. The masonry is of *maillères*, laid in hydraulic mortar, the whole being lined with Vassy cement. There is no dressed stone used in the construction.

This sewer receives, at the Boulevard Haussmann, what is termed the collecting sewer of the hill-side. Running parallel to the circular railway, this latter turning off from the route Impériale, No. 34, or Avenue de Vincennes, traverses the Rue du Faubourg St. Antoine, at the commencement of the Rue de Montreuil; after having touched upon the Boulevard du Prince Eugène, the Rue du Faubourg Poissonnière, at 400 metres from the boulevard, and the Place du Havre, it gains the débouché above mentioned in the neighbourhood of the Rue de la Pépinière. Thanks to the 2 metres difference of level between the Place du Châtelet and Asnières, the level of the invert of the new sewer can be made 2 metres lower than that of the ancient sewers, and the cellars can be drained in that part of Paris which lies beyond the so-called hill-side collector.

The Sebastopol sewer, which establishes a junction under the boulevard of that name, between the great collector of the right bank, and the contouring collector, allows the surplus and storm waters of a great portion of this side of the river to be poured into the Seine. Besides this there is the Rivoli sewer, another affluent of the great collector, which can divert the overflows to the Seine, when otherwise the streets would be flooded, at the Quai de la Con-

* Fire Prevention and Fire Extinction; by James Braidwood, First Superintendent of the London Fire Brigade. In which fire-proof structures, fire-proof safe, public fire-brigades, private means of suppressing fires, fire-engines, fire-ambulances, portable fire-escapes, water-supply. With illustrations. London: Bell & Daldy, 1866.

ference, and thus relieve that part of the great collector which lies below the Place de la Concorde.

In sewers through which a large body of water flows, cleansing them by manual labour and sweeping is out of the question; so recourse is had to a boat provided with a vertical board which exactly fits the section of the canal. This board is placed at the head of the boat, and is pierced with holes; it can be raised or lowered at pleasure. Carried by the current, this board or sluice forms an obstacle to the passage of the water, and there results an eddy which gives an impulsive force to the board, so that it pushes before it the solid matter deposited on the invert, but restored to a state of suspension by the fillets of water which pass through the holes.

The result is, as experience has proved, that this sluice-board amasses before it the sandy deposits, leaving a horizontal column in suspension, generally from 100 to 150 metres long. If a pole be immersed in the water above stream, it will touch the bottom, and the masonry will be found clean and free from all deposit. On the other hand, if the pole be placed at the other end of the boat, it will penetrate a heap of muddy deposit, and stand upright of itself; it will also remain upright, and drift along with the boat and the heap of deposit.

Thus the boat travels of itself, under the superintendence of two workmen. Its rate of moving is variable, and does not exceed in general two feet a minute. In winter these boats, which have relays at every two kilometres, work day and night, and it is not too much for the requirements of the cleansing.

In the canals of small section, as that of Sebastopol, the boat is replaced by a chariot, running on rails laid on the banquettes, and carrying also a flushing board. The deposits of the sewers are carried down as far as Asnières, where a sort of bar or delta is being formed, which must be removed by dredging, and can be utilised for agricultural purposes.

The quantity of water passing through the great sewer is, as may be supposed, extremely variable; it is generally 1 metre per second, giving 4 cubic metres or 140 cubic feet per second. This velocity, according to the usual hydraulic data, should roll stones the size of an egg, but the viscous nature of those sewage deposits—street-sweepings containing much organic matter—prevents the water from carrying off anything that is not mechanically stirred up into it.

These sewers are liable to inundations like rivers, by sudden torrents of rain, so that the vault is widened out at every 2 kilometres, and stairs or ladders are provided leading to safety-chambers.

The total length of all the sewers in Paris is, up to the present time, 294 miles.

Great exertions are made to terminate the great collecting sewer of the left (south) side of the Seine. It will absorb the Bièvre river, cross the Seine by two tubular siphons of enormous diameter at the Pont de l'Alma, follow the Avenue Josephine, pass under the Place de l'Étoile, and, traversing the district of Courcelles, will fall into the Seine at Asnières, a little above the point where the Chemin de Fer de l'Ouest crosses the river. Thus the Bièvre will join the Seine seven miles lower down the river than it does at present.

OFFERED PRIZES FOR DOING GOOD.

THE PARIS EXHIBITION.

Our readers know that a distinct order of reward has been instituted "in favour of persons, establishments, or localities, which, by a special organization or special institutions, have developed a spirit of harmony among all those co-operating in the same work, and have provided for the material, moral, and intellectual well-being of the workman;" and that these rewards consist of ten prizes, of the total value of 4,000*l.*, or 400*l.* each, and twenty honourable mentions. One grand prize of 4,000*l.* may, in addition, be awarded to the person, establishment, or locality, distinguished under this head, by a very exceptional superiority. At the first meeting of the International Jury, held in Paris, on the 1st of December last, certain principles were adopted, and we print them as serving further to define the object:—

"1st. The jury may doubtless take into account, among the facts presented for its consideration, the spirit of charity and beneficence; but it is not specially charged to reward acts of that character.

2nd. To constitute them the basis of a claim to reward, the facts adduced must have been the consequence of a free and spontaneous initiative, and not of legislative enactments.

3rd. It will not suffice that the work be praiseworthy in itself; it must at the same time be compatible with sustained and progressive prosperity.

4th. The circumstances of the position in which competitors may be found should be duly considered. To have maintained intact traditional circumstances of harmony and happiness, whilst progressing in agricultural or industrial pursuits, is a good ground of claim; but the introduction of improvements where antagonism and suffering previously existed is not less meritorious.

5th. The jury has not thought it right to exclude from the competition individuals or societies which, although not engaged in agricultural or manufacturing pursuits, have founded durable and prosperous institutions, contributing to the propagation of good feeling and happiness, of which it is desirable to seek the best examples.

We are anxious that these prizes should be widely known of, and well understood, so that claims may be made for as many organizations and individuals in Great Britain as fairly comply with the conditions. Blank forms are obtainable, we believe, at the South Kensington Museum, and the claim must be lodged there on or before the 20th inst.

THE MONUMENT FOR THE CANADIAN VOLUNTEERS KILLED BY THE FENIANS.

Tire citizens of Toronto having determined, at a public meeting, to erect a monument to the memory of the volunteers killed at Limeridge, on the 2nd of June last, in repelling the Fenian scoundrels, appointed a committee to carry out the arrangements. In answer to advertisement the committee received sixteen separate designs, from which they selected one by Mr. C. E. Zollikoffer, of Ottawa, as first in order of merit; and awarded to it the first premium, the second being given to Mr. J. Smith, of Toronto. The selected design, which is to be erected on a site in the Queen's Park, Toronto, is a square temple, formed by twelve Corinthian columns on pedestals (three at each angle 60°), which carry an entablature and pediment on each of the four faces. The tympana of the pediments are to be filled with the royal coat of arms, the arms of the province, and the arms of the citizens of Toronto and Hamilton respectively.

Within the inclosed area at the four angles formed by the columns will be life-sized statues illustrating the four branches of military service; and in the centre will be a sarcophagus, supporting a figure of Britannia reclining on a demi-lion couchant, mourning the loss of her subjects. The roofs of the four pediments carry at their intersection a pedestal, with a crowning figure of "Victory" 12 ft. in height.

The whole of the carving will be executed in freestone from Nova Scotia; the shafts of the columns and the sarcophagus will be of Arraprior marble, and the remainder in Halton freestone. The floor will be laid with encaustic tiles. The monument will be placed effectively on a wide spreading basement, consisting of a sloping embankment, with steps in the centre of each face, and on that a pyramidal flight of steps, which continue up between the pedestals (or rather the broken podium) on which the columns stand, so that the floor of the monument will be level with the bases of the columns.

While we give praise to this "planting" of the monument, and to the general proportions of the structure as a whole, we must raise a voice against the crowning figure and pedestal standing on the roof as they do. The apparent weakness of the arrangement will be excessively unsatisfactory and disagreeable. If carried out it will be a lasting offence to every tasteful eye in Toronto. We trust this observation will lead Mr. Zollikoffer to reconsider and alter this portion of his design.

ART NOTES FROM FLORENCE.

WHEN on the 15th of December the Italian Parliament was opened by the king, in the Great Hall of the Palazzo Vecchio, a brilliant sun and most mild temperature contributing to the happy aspires of the day, as well as to the beauty of the scene presented in the line of streets from the Pitti Palace to the Piazza della Signoria, all the ingenuity and taste of the Florentines in decoration, all possible devices, trophies, banners, and tri-colour hangings, had been profusely prepared for the occasion. In the centre of the great piazza stood a lofty mast, with the national standard, and around its

basement statues of Prudence, Justice, Temperance, and Fortitude, prepared in the usual style for such ephemeral art-works. In the loggia of Orsagna was a gorgeous display of all the Italian banners and embroidered epigraphs, that seemed to convert those majestic arcades into a festive pavilion. But in the midst of the ornamentation for the day, under the vaults of Orsagna's structure, stood a nobler object now attracting more attention than all the apparatus of fête, for on the morning previously had been uncovered the colossal group, by Fedi, of Pyrrhus sacrificing Polyxena, raised on its basement here so long since as the 2nd of October, but up to this time concealed by a high wooden shed, within which were finished the works for encrusting that basement with marble. It comprises four figures—the Pyrrhus carrying the hapless girl to the altar for sacrifice; the Hecuba prostrate, in vain intercession for her child; and a youthful son of Priam stretched in death, as just struck down at the conqueror's feet. It occupies the extremity of the loggia, near the Palazzo Vecchio, in position correspondent to that of Gian Bologna's "Centaur" at the other side; and it is only to be regretted, that in this otherwise most favourable location, a part of the group is concealed to the spectator standing in front of the archway, at whose centre it rises, as seen from the piazza, by the intervening figure of Cellini's "Perseus" above the parapet between the great pilasters. This admirable group having been, long since, purchased by subscription of the citizens to become a public ornament to Florence, and destined by the Municipality for its actual place, the voice of criticism has already been heard from various quarters, and little notice has been taken of it by the journals since its exposure, except simply to announce the fact. We happened to find ourselves on the piazza at the moment of the uncovering, about eight o'clock on a dull, wet morning, and were surprised to see so little attention excited, so complete an absence of *éclat*, in the whole proceeding. As to the merits of the work we have formerly expressed ourselves.

In tragic power, movement, and just equilibrium, in all the technical qualities, it strikes us as faultless; in the heroic beauty and action of the Pyrrhus, the sad loveliness of his victim, and the pathetic character of the mother's figure, the story is conveyed with dramatic truthfulness. But the subject is revolting, and, perhaps, incapable of being exalted by any merits of treatment; and as the most historic centre of the Italian capital, an episode in the siege of Troy, and one that illustrates the withering force of superstition alone, redeemed by nothing of patriotism or magnanimity, seems to the last degree unsuitable. As a classic motto for such a group, we can think of no line more appropriate than—

"Tantum religio potuit suadere moratus."

And, to criticise details, the fault generally found is one that all may perceive in the disproportionate slowness and diminitiveness of Polyxena compared with the warrior who raises her figure with the left arm while aiming a blow with his sword (an unnecessary atrocity) at the prostrate Hecuba; also, a heavy and clumsy appearance in the drapery that covers the lower part of the mother's figure; and a certain rhetoric action in the left arm and hand of this unfortunate young princess, as she vainly struggles in the grasp of her destroyer. But neither these, nor the more serious moral objections to be urged, can forfeit for Fedi's work the high place now assigned to it by public opinion, nor prevent us from awarding the tribute of praise due to the classic grandeur, the blending of power and grace, in the whole composition.

A detail now observable, and a novelty since we saw this group in the studio, is the tinting of the nude parts with a pale pinkish colour, approaching, though, indeed, but faintly, to that of flesh, and which adds a warmth without impairing the purity of effect. We may describe this more precisely by stating that, from a distance, it is but the natural hue of the marble, only, from nearer points of view, what is artificial strikes the eye.

The other monumental sculpture of recent origin in Florence, the colossal "Dante," on the piazza S. Croce, by Pazzi, was uncovered so far as to display the principal figure, though not the reliefs and accessories, a few days ago; and we understand that the artist will soon have divined the four bas-reliefs illustrative of the "Divina Commedia," for the basement, and the lions to

be placed at its angles. Public criticism has found fault with the mournful and severely indignant expression of the head as unsuited to the triumph of apotheosis, in which the poet is here before us; and the more youthful, the more serene type supplied in Giotto's fresco might have been preferable for the Dante of this movement; but it should be remembered in Pazzi's justification, that his statue was not begun or ordered for the appropriation by which it has been finally honoured,—an afterthought not to be foreseen in an undertaking guided by personal feeling. The Minister of Public Instruction has interceded for the careful preservation due to several frescoes by Poccetti and his school in the vaults of rooms lately abandoned, after being used for custom-house purposes, in the Casino Mediceo, a once grand-ducal palace on the piazza S. Marco; and the municipality has exerted itself for a like interest, ordering the transfer to the Mediceo Museum in the "Protorio" of a Crucifixion, in fresco, attributed to Andrea del Castagno, and of unquestionable merits, hitherto left in a niche under glass on a wall of a fortifying cincture soon to be taken down, near Porta San Gallo. The same minister lately ordered, and with laudable purpose, the drawing up of a map of excavations, to serve as guide, not only for all places where such labours have yet commenced, but for all to which it is judged that explorers should direct their attention, in hope of archaeological discovery; and antiquarians of repute—Conestabile, Fiorelli, Spano—have already pledged their assistance for this desirable object. In the range of such discoveries we hear of diggings carried out with valuable results by an enterprising arch-priest of Vado, near Savona, who, on his own risk and speculation, as it seems, began the works near his church for seeking the extant remains of Vado-Sabazia, a Roman city, soon brought to light in various interesting ruins and antique implements; an aqueduct with leaden conduits passing under a mountain to the extent of 1,400 metres; the pavement of streets, still with the ruts of carriage-wheels, and besides piles of formless ruin; some marble busts of different size, amphore, specimens of glass manufacture noticeable among those of antique produce, marble lamps, epigraphs, and coins in chronological series from Tiberius to Valentinian. Amidst other circumstances of public life, such a treasure-trove might have excited greater interest and been more fully reported on: as it is, we must satisfy ourselves with very scanty notices in journals respecting the hitherto labours and successes of the reverend padre, among those relics of Vado-Sabazia, which have followed the vicissitudes of one antique object, the Iron Crown of Italy, to which intrinsic importance is attached; and have now to mention its restitution with much official pomp and ceremony, received by capital clergy, the Prefect of Milan, and the local magistrates, to the basilica of Monza, 7th of December; also, the presentation to the King of a casket to contain his crown, wrought with much artistic skill by Montesari, of Perugia, from which town it was brought to Florence by a deputation of chief citizens. The idea of a preparatory exhibition at Florence, of works to be sent to Paris, is quite abandoned. An English artist, long resident here, Mr. Bunney, has been exhibiting a set of water-colour landscapes and peasant-life scenes, from subjects in and around this city, prior to their being sent to London, for the display in Piccadilly: altogether a pleasing series of records of Tuscany. Mr. Stark, another English artist long here, who is considered to have imitated the colouring of Titian with signal success in his numerous copies from that master, has lately finished an original picture, "Venus standing in a Shell," that evinces his best capacities, and has been much praised.

THE STAGE AND MUSIC.

The Haymarket.—A promising boy leaves the quiet home, goes to college, and is a "man" exposed to many temptations and left to himself for defence. He is led into extravagances, falls into debt, makes the acquaintance of money-lenders, loses his chance for "honours," and half ruins his father. This is the story (it has occurred in hundreds of instances, and will occur in hundreds more), told by Mr. Tom Taylor in his new comedy, "A Lesson for Life," now being acted at the Haymarket, Mr. Sothern playing the hero, *Harry Vivian*, Mr. Chippendale his father, and Miss Moore, with much delicacy,

a ministering angel in the shape of his cousin. Mr. Sothern shows himself in this piece an admirable actor. His ease and naturalness of manner in the lighter parts of it are perfect; but when he desires to become more impressive, he is more artificial, and must guard himself against seeming to "preach." Mr. Walter Gordon plays with great heartiness an undergraduate friend of *Vivian's*. The piece is well written, sound in structure, and very interesting. Mr. Compton, Mr. Howe, and Mr. Kendal, a promising young actor, help in it.

The Princess's.—Mr. Planche's capital extravaganza, "The Invisible Prince," has been revived here very successfully, Mrs. John Wood playing the principal character with great dash and cleverness, and Mr. G. Honey, the very bad *Prince Furibondo*, with much original humour. This piece was first played twenty years ago, and when we say that it has been reproduced without the alteration of a line, and goes admirably, the difference in the extravaganzas of those days and the burlesques of this is made evident. The piece has been produced by Mr. Vining, with rich appointment, and Mr. F. Lloyds has painted for it some capital scenes. We must note especially the last, the elegance and beauty of which are remarkable.

A Concert for Charity.—The proceeds of a concert, to be given by Mr. Henry Leslie this (Saturday) evening, the 5th, in St. James's Hall, are to be applied to charitable purposes. All the artists, including Madame Sainton-Doby, Madame Lemmens-Sherrington, Mr. Santley, and other eminent singers, will give their services gratuitously.

THE ACCIDENT ON THE METROPOLITAN RAILWAY.

The inquest on the three persons killed by the fall of a girder from the Smithfield market works on the metropolitan railway has resulted in a verdict of manslaughter against the foreman, Wilmot, and the ganger, Chaney. It appears that no arrangement whatever existed for staying proceedings while a train was passing below, although the steam of the engine prevented the workmen from even seeing what they were about at the moment. From the evidence it seems clear that the girder was pulled, by a donkey engine, too far across the other girders, till it lost its balance and canted over; and there was not even a check rope to regulate the speed or the progress of the girder. It was admittedly improper to use the donkey engine at the moment of the misadventure, and it pulled the girder several feet forward at a time when it ought not to have gone more than one foot.

ACCIDENTS.

Manchester.—A partition wall, in the rear of the warehouse of the Messrs. Berben, Brothers, Oxford-street, has fallen, killing one man almost instantaneously, and injuring six others seriously. The seven men were labourers in the employ of Mr. Davis, contractor, and they were engaged at the time in removing a quantity of debris that was lying about, preparatory to an extension of the premises that have their front in Bale-street. The partition wall, the only one which has been left standing, was about 40 ft. in length by 20 ft. in height; and this served as a front, two stories high, to some premises in the inner portion of the property.

Edinburgh.—The temporary service bridge at Abbeyhill, erected for the formation of the new branch of the North British Railway from Edinburgh to Leith and Granton, has fallen, burying in its ruins two men, a couple of horses, and two wagons filled with sand. The bridge was constructed of beams, about 15 in. square, covered with sleepers and rails, for the purpose of conveying earth and other material to form the embankment now in progress. Mr. Grainger, the contractor for the works, had given strict orders that not more than one wagon should pass across the bridge at a time, which order being neglected was the cause of the bridge giving way. On the men being taken out, it was found that both were only slightly injured; neither were the horses much injured.

Leeds.—During a late gale of wind and rain an iron church, in course of construction, on Hunslet-moor, for temporary use until the completion of the permanent stone church now being erected there, was blown to the ground.

The temporary edifice was being built of galvanised iron, for the accommodation of about 300 people, at a cost of about 300*l.*, and the skeleton of the structure had been fixed and the roof covered in, but the whole of this was demolished, and part of the woodwork permanently injured. The damage done is estimated at about 30*l.* or 40*l.*

Durham.—A labourer employed in building the Gaol wall was standing on a plank on the scaffold, when he got too near the end of the plank, which toppled up and precipitated him on to the ground, from a considerable height. He fell upon his head, which was much cut.

Ardingly, Sussex.—An inquest has been held into the circumstances attending the death of a bricklayer, who was killed by falling from a scaffold. Deceased was working on the scaffolding of some new huts, and was in front of a fireplace laying bricks. While stooping to take up mortar, he fell forward to the ground, face first. A surgeon deposed that he saw deceased, but could distinguish no bruise or fracture whatever. In his opinion deceased died from breaking his neck by the fall. The jury returned a verdict of "Accidental death."

THE THOMAS MEMORIAL, LLANDAFF CATHEDRAL.

A MONUMENT in memory of Mr. Henry Thomas, many years chairman of Quarter Sessions, Breconshire, has been erected in Llandaff Cathedral.

The design and general execution of the monument are the work of Mr. Prichard, architect. The reliefs were designed by Mr. Armistead, and executed by Mr. Clarke, of Llandaff. The monument occupies a deep recess in the wall of the north aisle, beneath the first window from the west end. The recess is fronted by two low-pointed arches, having a rich moulding of sculptured flowers, and springing from a central and two lateral columns of dark variegated marble. The capitals, bases, and other mouldings are of colic, as are two outer piers which flank the whole, and support a square hood, the central spandrel of which is occupied by an armorial shield within a sunk foliated circle, while on either side are seated figures of Justice and Mercy, carved in relief. Within the recess is vaulted in two bays, with ribs along the lines of groining, springing from foliated corbels. Upon the raised floor is laid a coffin-shaped slab of black marble, upon which is inlaid a red cross, adorned with a nimbus, and having at its foot a Paschal Lamb in Sienna marble. The tympana, formed by the two vaulting bays, are occupied by carvings in high relief; one representing the Delivery of the Law by Moses, and the other the Judgment of Solomon. Below, between these and the floor, is the inscription.

A large three-light window above the monument is filled with stained glass by O'Connor, in memory of Evan, Henry, and Llewellyn Thomas, representing the three last generations of the family.

GREAT NORTHERN BRICK COMPANY.

THIS company, formed some twelve months since for the purchase and development of works at Arlesley, near Hitchen, for the manufacture of patent perforated and solid whitebricks, have now nearly completed their buildings, which are on an extensive scale. The machinery will consist of two horizontal high-pressure steam engines, working up to 50-horse power each, and having boilers 30 ft. long and 7 ft. diameter, with brick-machines, crushing-rollers, and appliances, and capable, it is stated, of making from 20 to 25 millions of bricks in a year. The bricks are dried by steam power in inclosed sheds. The whole of the shares of this company are sold. The works have been carried out at a cost of some 20,000*l.* Mr. C. N. Foster, of Whitefriars, was the general contractor. The engines, mills, clay-rollers, and machinery were supplied by Messrs. Garforth, of Dukinfield, Ashton-under-Lyne; the iron roofs by Messrs. Hemmings. The buildings, drying-sheds, kilns, and all arrangements of machinery and construction have been carried out from the designs and under the supervision of Mr. John Ellis, architect.

NATURE THE STANDARD OF TRUTH IN ARCHITECTURE.*

It is not in my power, and I doubt if it be in the power of any one, correctly to define the limits where architectural truth ends and falsity begins. It is said "there is no disputing in matters of taste;" and art is so much a matter of feeling that it would be impossible to set down fixed rules which would be universally acceptable. The very life of art depends upon its freedom; like knowledge, it has no limits but those of necessity; and good taste is shown by the moderation and propriety with which that freedom is used. I propose, therefore, to submit to you some of the restraints which you should put upon the freedom allowed you (for the mind is as easily enfeebled by too much latitude as by constant restraint); and in what way you should look to nature as your pattern and guide; and the reason why I would have you to look there for guidance is, that it is there, and there only, where you can find works which are in themselves perfect.

If art, then, is to be judged by the standard of nature, it should be true; for there is nothing false in nature,—absolute truth is an attribute of the Great Architect.

A fine building must have certain qualities to render it interesting and worthy of being ranked amongst the efforts of genius; and these qualities will depend upon the bent of the designer's mind; whether or not he is earnest in his profession, and looks upon it as a noble one, demanding some sacrifice on his part, or whether it is to him merely a means by which he may earn his daily bread. To the last class of architects I have nothing to say; they are tradesmen, and not artists; they will never produce anything great, for their sordidness is certain to show itself in their works; the hand cannot execute anything higher than the mind can inspire. Do not for a moment suppose I wish you to work for fame only; such is not the custom in these our days; but as surely as you keep a high aim in view, and have the ability to reach within a moderate distance of it, so surely will your reward be the greater, even in a pecuniary point of view.

The first thing to be considered in designing a building is its situation and purpose: if it is to be a large one, breadth and simplicity should be aimed at; if small, richness and elegance. Such, you find, is the characteristic of the works of nature. The vast expanse of the ocean stretching away to the horizon, the mighty mountains "baring their naked shoulders to the sun," the ragged rock, and the knotted oak, all teach the lesson that breadth and mass are the elements of the sublime. A large structure formed of numerous minute parts can never be grand; in its detail should be subordinate to mass, so that when viewed as a whole no part should obtrude itself upon the eye.

The mountain side is studded with harebells and mosses, lichens and heath; but these are unseen when its bulk fills the sight: it is only when you ascend its slopes and peer into its crevices that these present themselves to your notice; and when you reach the summit the barren rocks and everlasting snow repose there in solemn grandeur. Hence, then, rich and minute ornaments on your grand structure where the eye can search them out and rest upon them without fatigue, and aim after broad lights and deep shadows.

And with what profusion does Nature deck her minutest creations: the spotted butterfly flitting from flower to flower on its fragile wings, the flowers on which it rests, touched with a delicacy the limner strives in vain to imitate, the spangled breasts and glittering wings of the feathered tribe, all point to the fact that small objects are those most richly decorated. Reverse this order of nature and you produce monstrosities; a butterfly the size of an eagle would be ridiculous—an eagle reduced to the size of a butterfly contemptible. Roslyn chapel increased to the dimensions of Durham cathedral, and the cathedral reduced to the dimensions of the chapel, would, in like manner, upset all ideas of fitness and propriety. And yet some of our modern designers do not perceive even this plain and palpable truth. In our cemeteries we see temples with columns the length of a walking-stick, and sarcophagi capable only of containing the dust of a sparrow. In close affinity to this is the practice of "using models of archi-

lecture to decorate architecture," which, says Mr. Ruskin, "is one of the chief follies of the Renaissance; and, in the present day, the practice may be classed as one which distinguishes the architects of whom there is no hope."

In nature you ever find that the means are the best adapted for the object in view. It is almost superfluous to illustrate this proposition. I need only refer you to your own bodies, "fearfully and wonderfully made." Can any of you suggest—dare any one of you think it possible he could improve upon that wonderful mechanism? Is not each part the most suitable for the functions it has to perform, each having a direct relation and proportion to the other, all being in harmony without and within? In how few instances do we find this to be the case in the buildings we see around us; the exterior often bears no relation to the interior, being often unsuited to the climate, and ill-fitted for the purposes for which it is intended. Look at that Doric temple, divided into numerous small rooms. It has an upper floor, though you would not think so till you found it out on entering the vestibule. See the vain attempt to hide the chimneys, features capable of great beauty, but not being classical ones, they must be ignored and, if possible, kept out of sight. It is a fine building, doubtless, displaying much classical refinement, but it is nevertheless a sham. Look we next at this other building; it is Gothic—Gothic with a vengeance! Every available angle has a little turret attached to it; the roof bristles with little domes of every variety of form; and you look in vain for any morsel of rich detail or carving on the face of the barren walls: these turrets are useless in themselves, worthless as a decoration, an excrescence better lopped off. Here, too, at the lodge you have them repeated on so reduced a scale that they had to be built solid. Is this art? Is there thought displayed here? any attempt to adapt means to an end? I leave you to form your own individual judgments on the subject.

The Middle Ages were characterized by a restless and vigorous spirit, and earnest and truthful love of the beautiful, which found vent not only in architecture, but in the chivalric devotion to the fair sex, the pomp of the tournament, and the romance of the Crusades. And when Greece was at the acme of her greatness, when philosophy and patriotism were more loved than luxury and self-aggrandizement, art flourished and she produced marvels of beauty, subjects worthy of the closest study, full of the spirit of harmony, replete with subtle refinement. Think you the refined Greek would have stuck ugly black tubes on the roofs of his temples, for the smoke to escape through, had such been necessary? Would he not rather have sought how to decorate what was a constructive necessity, and produced a "thing of beauty?" This is the spirit in which I would have architects act, not to copy Greek or Gothic, but to design what is required. If it is not in their power to do so, then it cannot be helped. The true artist will not content himself with merely copying details, but, having imbibed the spirit of the style, he will design for himself, producing new combinations, and securing variety and originality. In our ancient baronial mansions we find that the turrets were constructed for defensive purposes, and were accessible from within, and they now form snug retreats and convenient closets for their modern occupants; they were not excrescences, but useful features decorated.

It is not always possible to make a building outwardly express the purpose for which it is erected, but it is often made to appear what it is not. The facade of an Italian palazzo placed in front of a series of iron sheds roofed in with glass is made to do duty as a corn exchange, the one part having no relation to the other; here if anywhere an architect has a subject on which to exercise his originality, he has no precedent to trammel him, no tradition to follow, and he has all the produce of the field as suggestive detail; but imitation is easier than creation, and up goes the false front! It is not necessary to truthfulness to exhibit construction. Nature clothes with beauty all that is unseemly, however necessary it may be, but she never places the covering appertaining to one object upon another; the skin of the leopard is never seen on the tiger, nor the bark of the oak upon the birch.

A perpetual exhaustless vitality is one of the most prominent characteristics of Nature: she hates uniformity, and delights in variety; each hill and valley has a different outline; no two

trees are alike; every sheep in a flock, the shepherd tells us, he can distinguish by head-mark, and seldom indeed do we see two human beings so much resembling each other as to be scarcely distinguishable. It is not at all probable that a real "Comedy of Errors" will ever take place; two Dromios, each having an Amphipolus for master, are not likely ever to be found in the history of our globe.

The craving after uniformity I conceive to be a most unhealthy sign. What a dull prosaic place this beautiful world would become if some folks had their will! But with all their striving they cannot produce perfect uniformity: nature rebels against it. The very stones from the quarry, to their great disgust, assume a variety of tints by exposure to the air. They erect uniform rows of buildings, and one inhabitant, requiring more accommodation, adds a story to his quota, and another erects a porch in front of his, and the cherished uniformity disappears. If you will put rows of houses in uniform, do let some individuality appear on the face of each dwelling. The eyes of all the soldiers in a regiment are not of the same colour, their noses and mouths are not all of the same contour, let the War Office regulations be as strict as they may; nor, were they so, would the corps appear to greater advantage, or the men be better soldiers. Give us, then, some variety in the window-dressings and doorways of our terraces and squares,—make them uniform in style, if you will; but give us some little variety in detail. And what sacrifices you have to make in order to produce this uniformity! Windows are placed where they are not wanted, and they are absent where required. Let us ascend this common stair. Here we are at the landing. What means this? Half of a window at our feet and half of another above our heads, and a solid wall where the greatest amount of light can be admitted. What means this absurdity? "Oh," you reply, "it is in order that the windows may appear on a uniform line in the street elevation." And is the effect good, after all, on the street front? I think not. In my humble opinion, a little variety in the line of windows would give some life to what is dull and monotonous. I could point to a public building in this city where a mock chimney-stalk is built upon an iron girder, merely because a true chimney occupies a similar position upon another part of the facade; and this very building has been held up as a specimen of common-sense, unpretending architecture.

It appears to me that we derive an amount of pleasure in contemplating a building corresponding to that which the architect derived in designing it, and to the amount of thought he displays in so doing. Speaking for myself, I can say that some buildings abounding in faults afford me more gratification than others which are comparatively free of such. I would rather see a work amenable to severe criticism than one which is commonplace and devoid of interest. Such I conceive to be the reason so much interest is attached to the works of the Mediavalists, some of which, if repeated now, would be looked upon as rude and unworthy of notice. It is for the same reason that work cast from a mould and repeated is so lifeless as compared with the handiwork of the artificer; and the too general use of the compasses in drawing mouldings and details produces a similar result. The sketch has more life and spirit than the finished drawing. Music produced by machinery may be perfectly correct, but it cannot be expressive. On the other hand, there is often too much effort and too little thought shown in our modern work; a small church has the details of a cathedral crowded into its moderate limits, the parts elbowing each other in the most uncomfortable fashion. The effort to be picturesque is seldom successful; picturesqueness is generally the result of accident, the work of different minds, a combination of grouping and light and shade, which was unforeseen; where, however, a picturesque result has been secured by the effort of the designer he deserves a high rank as an artist. A picturesque result may be very easily spoiled by the introduction of a fresh object into the scene; and this leads me to remark that there is often too little consideration shown by an architect for the works of his competers: the aim seems to be how to overpower the existing work by the greater pretentiousness of the new; but, in most instances, the attempt recoils upon the delinquent, the result being altogether unsatisfactory. Strive rather to produce pleasing combinations; sacrifice some of your own prepossessions for the

* From a paper by Mr. W. G. Shiells, read at a meeting of the Edinburgh Architectural Association.

sake of others, and you will, in the long run, derive greater satisfaction than by following the opposite course.

The revival of ancient symbols in the decoration of our churches, is, I think, a species of untruthfulness. When these were in general use the laity were ignorant of the use of letters, the invention of printing had not opened the gates of learning to the masses, hence the necessity of teaching by means of symbolism. To the majority of the people of this century these symbols are a dead letter: to the antiquary and the archaeologist they form an interesting study, affording a pleasant field for investigation; reproduced in modern work, they are as much out of place as contorted figures introduced into new stained glass. There are some symbols, however, such as the lamb, the dove, and the cross, the meaning of which is obvious, and which are beautiful in form: to the introduction of such there can be no objection: I refer to those hieroglyphics which only the initiated can understand, which few take the trouble to decipher, and which are not good in form, or worthy of being used as simple decorative features. I make these remarks with diffidence, as it is much a matter of feeling, and some seem to derive pleasure, and it may be profit, from the practice.

Feeling is the source and fountain-head of all true beauty in art. The strictest adhesion to rule will not make a designer an artist: as well attempt to write a poem by rule as to design a beautiful structure by rule. Unless the poet's soul be in the man, his work will be prosaic. He must have experienced himself the sensations he wishes to create in others. A man may be deeply learned and a profound thinker; but, unless he is endowed with a peculiar organization, and has special qualities of mind, he will be deficient in taste, and remain blind to much that is beautiful in art, and which is keenly felt and easily discernible by a less gifted mind.

We are at the beginning of a great social era; social forms are rapidly changing, and wealth is increasing in the land to an unprecedented degree; the love of art is spreading, and the skill of the architect is more and more in request. It rests with yourselves what use you will make of your opportunities,—whether you will lead or be led by your clients, whether you quietly acquiesce in demands for what you know to be bad art, or whether you will strive to plant a little piety into the too general commonplace. Many of you whom I am addressing are at the outset of a noble profession. You will either leave behind you works which will be a source of pleasure to future generations, and which they will love and cherish, or things which will encumber the earth, and which they will be eager to clear off its surface as blemishes. Be earnest, be truthful; let everything you do be the best of its kind that you can do. Your productions should last for ages, and teach others as you have been taught. "The true secret of genius is to suffer no fiction to exist for us; to realise all that we know in the high refinement of modern life, in arts, in sciences, in books, in men; to exact good faith, reality, and a purpose; and first to lead, and without end, to honour every truth by use."

SCHOOLS OF ART.

The Slough School.—At the annual meeting of this school the prizes and certificates gained by the students were distributed by Mr. H. W. Foley, M.P., who presided. The report of the Council stated that the works executed by the students during the year, showed that satisfactory progress had been made. The number of students continued to increase, but it was a matter of regret that so few glass-makers entered the classes. The present system of Government examination of drawings had been as beneficial to the students as to the school. The result of the elementary examinations at Oldewinford, under Mr. Rainbach, had been highly satisfactory. The report further stated that Mr. Keen had been appointed assistant-master, in the place of the late Mr. Rose.

The Chester School.—The students of this school recently presented to Mr. E. A. Davidson, their head master, a token of their regard on his leaving Chester, after filling the situation of head master of the school for nearly fourteen years. The chair was occupied by Mr. Griffiths, assistant drawing-master. An address to Mr. Davidson was read by one of the senior pupils, asking him to accept, as a small token of their

regard, a handsome inkstand, in walnut wood. A small silver plate on the inkstand bore the inscription. A number of gentlemen, also, who have been connected with Mr. Davidson in his capacity of a professor of drawing, together with a number of the elder pupils of the Chester School, have presented Mr. Davidson with an English skeleton timepiece, embellished with a figure (in gold) of her Majesty the Queen, and 50*l.*, in recognition of that gentlemen's services as master of the School of Art. The Mayor presided.

The Manchester School.—The annual distribution of prizes awarded by the Department at South Kensington, to students in this school, took place in the lecture theatre of the Royal Institution; Mr. Thomas Bazley, M.P., president, in the chair. There was a numerous attendance of ladies and gentlemen. The Chairman said he could not omit noticing the works contributed by the female students: they were certainly running hard in the race, and he felt sure he should only be doing justice to the male students if he said that, in the spirit of gallantry, they would be glad to be eclipsed by their female competitors. To the teachers a great debt of obligation was due; and to Mr. Muckley, the head master, in particular, because he had not only been the instrument of teaching the young how best to pursue their studies, but had contributed beautiful works in the exhibition which now adorned the Royal Institution. He was glad to hear that at present the school numbered some 300 students, for every one of those students he regarded as a missionary of good and refining taste, as well as a missionary for the elevation of his fellow creatures. Mr. W. J. Muckley, the head master, then addressed the students on the subject of their studies. He said that patience must enter as an element into all their efforts. For the most part, success was measured in everything by the patient endurance one could bring into the composition of one's labours. It mattered not whether the student might be artificially engaged or otherwise, the ingredient of patience must be largely in the composition of all studies in order to ensure distinguished success. He spoke also of the essential necessity of progression, and passed on to notice the two classes of students—those whose tendencies were to become painters, and those who wished to apply their knowledge to purposes of decoration. Without wishing to dishearten any of the students under his care, he would ask them to consider to what their engagements in the institution were leading. He would have them recollect that the calling of an unsuccessful painter was one of much wretchedness. Europe was absolutely inundated with bad painters. The alternative was the taking up of that department of art (the humbler department, certainly), for which many of the students were capacitated—the art of applying the beautiful to the useful in the wide world of the decorative arts. The greatest geniuses in art had thought it worthy of their consideration to devote much of their time to the application of art to industry. The vast gatherings of merchandise in the various industrial exhibitions showed clearly enough how much might be done in this direction, notwithstanding the great growth of the ornamental arts during the last fourteen years. Many of the students of this institution had long made the decorative arts their exclusive study, and after a comparatively short career had, without difficulty, procured honourable appointments, and certainly much more remunerative than any engagement they could have obtained in connexion with other walks in art. Let them not forget that the Manchester School of Art possessed such machinery for the furtherance of the knowledge of ornament as no other school in the provinces had at command. Mr. Bazley distributed the prizes.

The Cork School.—The annual distribution of prizes and distinctions awarded for works executed by the students of this school, took place in the Rotundo of the Athenaeum. The premiated works and many others executed in the school during the year were exhibited, and attracted great attention from the large number of persons who visited the Rotundo. The master of the school (Mr. James Brennan) read the report for the past year, from which the following is taken:—

"The numbers attending the school for 1865, when contrasted with the present year, stand as follows:—102 for the summer period of 1865, against 125 this year for the same period; and 140 for the winter session, against 112 this year, so that there is an increase in the number of students attending the school this year. Amongst the successes which students of the school have obtained this

year, I may mention the following. Two of our lady students, Miss Anne Baker and Mrs. Henry Hill, forwarded original paintings to the Exhibition of the Society of Female Artists, London, where the former lady was fortunate enough to dispose of one of her paintings to an English gentleman the first week of the opening. A number of drawings from the various schools of art were sent in to the International Horticultural Exhibition, for competition, and to one of our students, Mrs. Henry Hill, the second prize was awarded for drawings of orchids, London taking the first prize, and Edinburgh the third. With regard to the prizes offered by the Department, the list has been increased and improved. They offer for next year a competition for gold medals, six of them (I presume, twenty silver medals, fifty bronze medals, and prizes of books in addition, perfect freedom being left to the student in the choice of subjects for competition in the various stages to which prizes attach."

IMPROVEMENT OF PRESTON HARBOUR.

PRESTON occupies a position of great business importance; but its river, the Ribble, like the Clyde of last century, is useless for vessels of any size worth speaking of. It appears, however, from a report to the Corporation, by Messrs. Bell & Miller, C.E.,* that for a sum of 110,000*l.* not only could the Ribble be effectively deepened so as to admit large vessels to the town, but from thirty to sixty acres of docks could be there secured in the vicinity of the present quays.

The report makes it quite clear that the improvement of the Ribble presents no difficulties compared with those which have already been overcome on the Clyde. Messrs. Bell & Miller point out, in the first instance, that in the Ribble (which is tidal, and seventeen miles in length from Preston to the sea) there are great facilities for forming and maintaining a comparatively straight and uniform channel of easy access. This they propose to do by deepening the river from Preston to Naze Point, and by removing a ridge or bar of marl and gravel at Bank Nook. The training walls of rubble which serve to contract the channel and guide the current terminate at present near Naze Point; but they propose that the south wall shall be carried some distance beyond Lytham Pier, where it may be said the sea channel begins. The river bed, we are assured, presents remarkable facilities for deepening, the levels are in every respect suitable, and the nature of the strata of the river bottom affords facilities for its removal, as it is composed of sand along nearly the whole of its course below Preston.

The cost of these improvements on the channel of the Ribble, the engineers estimate at 28,000*l.* If the lock of the proposed harbour be placed at Ashton quay, something like 36 acres of dock accommodation would be obtained, at a cost estimated at 74,000*l.*; but if the lock be placed at the point indicated lower down the river, a dock area of 60 acres would be obtained, at a cost of 80,000*l.*

The Ribble committee of the Corporation have had the report upon its improvement under consideration, but they have come to no resolution as yet on the subject.

Preston is an enterprising place. The inhabitants have spent large sums in the drainage and other improvements of their town, and it is only surprising that they have been so long in following such examples as those given by Glasgow and other important and thriving towns. The district of Lancashire in which Preston is situated is a very thriving and populous one, and the Ribble is quite as much fitted to be its outlet to the sea as the Clyde is of Glasgow. The advantages of such improvements as those contemplated would be immense, and it is to be hoped the people of Preston will not rest satisfied now till they be carried out.

NITRO-GLYCERINE.

AMONGST the latest batch of Acts passed during the last Session is one relating to the "Carriage and Deposit of Dangerous Goods," which is of some public importance. The frightful explosions of nitro-glycerine which have taken place abroad caused the late Government to bring in a Bill to regulate the transmission of this dangerous explosive. The Act is dated August 6th, and it provides that nitro-glycerine, or glonoline oil, shall be deemed "specially dangerous," and shall give power to her Majesty, by an order in council, to declare any other goods to be "specially dangerous," within the meaning of

* "Report to the Mayor and Corporation of Preston upon the Improvement of the River Ribble, and the Construction of Docks and other Works, at the Port of Preston." Bell & Bain, Glasgow. 1866.

the Act. No person is to deliver any specially dangerous goods to any warehouse owner or carrier, or deposit such goods on any quay or in any warehouse or ship, for transit, without distinctly indicating the nature of the contents on the outside of the package; and at the same time giving notice in writing to the owner of the warehouse or quay, or to the carrier, stating the exact nature of the goods, and also that they are specially dangerous. The infraction of the law is punishable by forfeiture of the goods and a fine of 500*l.*, or imprisonment, with or without hard labour, for any term not exceeding two years. Section 6 provides that no warehouse owner or carrier shall be bound to receive or carry any goods which are specially dangerous. With regard to the storage of nitro-glycerine, the 8th section provides that the "Act for the Safe Keeping of Petroleum" (25 and 26 Vic., c. 66) shall extend to nitro-glycerine, and shall have effect as if nitro-glycerine had been mentioned in addition to petroleum; with this difference, that the part of the Act which specifies the maximum quantity of petroleum to be kept without a licence shall not apply in the case of nitro-glycerine, "and any quantity whatever of nitro-glycerine shall be deemed to be subject to the provisions of the said Act." The same rule is also to apply to any other substances which shall hereafter be declared "specially dangerous" by an order in council. The Act will probably have the effect of entirely stopping the trade in nitro-glycerine in this country until its use has become a little more familiar.

A report on the dangerous nature of nitro-glycerine was presented to the underwriters by Captain Grant, one of the officers of Lloyd's Salvage Association, who placed himself in communication with Professor Abel, of the Royal Arsenal Laboratory, Woolwich. Appended to the report is a copy of a circular issued by the Prussian Government respecting the transport of nitro-glycerine. It is to be packed in bottles made either of tin or strong glass, which must be closed by a stopper of cork, not of glass, and they must be cased with cork, and have an inside lining of straw. As a further precaution, the bottles are to be packed with hay, straw, or the like, in tight wooden cases, and the packages are to be marked *Sprengöl* (blasting oil). Particular care is to be exercised in the transit of nitro-glycerine during cold weather, as it freezes into a solid mass at low temperatures, and is then, it is said, peculiarly liable to explode by concussion. As regards the warehousing of blasting oil, the same orders have to be complied with as those applying to gunpowder and other explosive articles. The penalty for an infraction of these rules is not to exceed ten dollars (about 30*s.*), so that it will most likely be found cheaper to disregard the regulations, and, if detected, pay the fine. In the United States, the laws affecting the transport of this substance are very stringent. It must not be conveyed in any vessel or carriage carrying passengers, under a penalty of 5,000 dollars. In case of death from a violation of the law, the parties are liable to be indicted for murder. Nitro-glycerine is not to be transported unless packed in a metallic vessel separate from all other substances, and labelled, "Nitro-glycerine—Dangerous." Violations of this clause are to be punished by a fine not exceeding 3,000 dollars.

Some interesting particulars have been communicated to the Academy of Sciences by M. Kopp, who stated that nitro-glycerine had been introduced into the sandstone quarries of Zorn, on the Lower Rhine, where it had been exclusively used for six weeks. M. Kopp is of opinion that the transport of nitro-glycerine should be entirely forbidden, and that it should be prepared on the spot; and he gives the details of the method of preparation which he thinks the best. The properties of nitro-glycerine, as given by different experimenters, appear to vary very much, scarcely any two observers agreeing on the subject. M. Kopp is a very eminent chemist and a well-known careful experimenter, and is moreover unconnected with the trade, so that his results have more value than any of which we have previously been possessed. He finds that when nitro-glycerine is exposed to the prolonged action of a moderate degree of cold, it crystallises in long needles, in which state it will explode by a sudden blow. It may now be handled easily and without much danger. When spread on the ground, it takes fire with difficulty by contact with a burning body, and only burns partially; a flask containing nitro-glycerine may be broken upon stones without explosion taking place; it may be volatilised without decom-

position by a regulated heat, but if it boils, detonation becomes imminent. If a drop be let fall on a metal plate moderately heated it evaporates quietly, but if the plate be red hot, the nitro-glycerine takes fire immediately and burns like gunpowder, but noiselessly. If, however, the plate without being red hot, is hot enough to make the drop boil immediately, it decomposes suddenly with a violent explosion. M. Kopp accounts for the recent disastrous explosions by stating that nitro-glycerine, especially when impure and acid, is liable to spontaneous decomposition, accompanied by an escape of gas and the production of oxalic and glyceric acid. When the substance is enclosed in well-corked bottles, the gases cannot escape. They exercise an enormous pressure on the nitro-glycerine, and in this state the least shock and the slightest movement will cause an explosion. M. Kopp's paper is translated entire in the *Chemical News* from the original in the *Comptes Rendus* of the French Academy for the 23rd of July.

Several methods of preventing the accidental explosion of nitro-glycerine have been proposed. The inventor has suggested to dilute it with wood naphtha, which may be removed when desired by the addition of water. The naphtha mixes with the water, and the pure nitro-glycerine sinks to the bottom. There are several objections to this. It is expensive, and probably there would be some chemical action between the two liquids. Naphtha vapour, moreover, forms an explosive mixture with air. It has also been proposed to store nitro-glycerine mixed with sand, which is to act somewhat in the same way as the silicious matter used by Mr. Gale for "protecting" gunpowder. It is not very clear how the sand is to be removed when the nitro-glycerine is required for use. The most sensible proposal seems to be that put forward by Professor Seely, of New York, who appears to have given the subject a good deal of attention. It consists in exercising more care in the original preparation of the compound, and in keeping suspended in the oil a small quantity of neutralising substance, so as to destroy the acid as it is formed, and thus check the tendency to spontaneous decomposition.

The nitro-glycerine sent out from Messrs. Nobel's manufactory at Hamburg is contained in wrought-iron bottles, about four-fifths full, and packed in iron-bound boxes, each bottle being separated from its fellow by a layer of marl, so as to avoid any chance of explosion by the accidental striking of one against the other during transit. It is stated that boxes packed in this manner have been flung about and subjected to all kinds of rough usage, with the view of testing the safety of this mode of transport. The latest novelty introduced by Messrs. Nobel is a signal-rocket, which is capable of ascending to the height of 800 to 1,000 ft., although the body is not more than 1½ in. diameter, and 2½ in. long.

TOMB OF NOVEL DESIGN.

CONSIDERABLE difficulty has been found lately in designing the tombs of the departed. The old Pagan emblems of blazing urns and extinguished torches, and even the broken column, do not point out the hopes the Christian has for the future. On the other hand, the Mediæval styles may be incongruous with the habits and the customs of the present day. What can be more ridiculous than to see, as the memorial of a late liberal member for a metropolitan borough, a portraiture in incised brass let into the pavement armed in all points like a knight of Edward III.'s reign? One is tempted to say, in the words of George Canning, "No waiter! but a Knight Templar."

The tomb of which the enclosed woodcut is a perspective view has just been erected in the Brompton Cemetery, to the memory of a gentleman many years member for an important borough in the West of England. It has been designed by Mr. Ashpitel, in the style of those of the early Christians, as found in the catacombs at Rome. The body is of Portland stone; the frieze and plinth are of green Forest of Dean, and the pilasters of polished Peterhead granite. The most novel features of all are the statues of the four Evangelists, in bronze, by Messrs. Potts, of the Art Works, at Handsworth, near Birmingham, which are cast by their new process, and are undercut and chased up by hand in a very satisfactory manner. They were modelled by Signor Bruciani. On the top is a plain cross; on one side, the monogram of Constantine; and,

on the other, an interlaced Alpha and Omega. It seems curious that so little attention has been paid to the works of the early Christians. It is allowed on all hands, by all sects and parties, that the Christian religion was then in its purity; and, besides this, it was an age of great refinement. Of course we are no advocates for mere dry copyism, but we think some good aspirations might rise from the study of a style that clearly cannot be called Pagan.

ANCIENT SYNAGOGUES IN CENTRAL EUROPE.

ON first thoughts it may seem strange that the Jews have left us so very few Mediæval antiquities, but on further consideration one ceases to be astonished, as the persecutions which that ancient people endured from time to time, and their almost nomadic condition, allowed them little opportunity to pursue the fine arts, particularly architecture. The only remains of any importance in central Europe that can safely be ascribed to them are the synagogues at Worms, Prague, and Frankfort. All these buildings are small, and none of them can be quoted as first-rate specimens of the architecture of the date at which they were erected.

The earliest is the synagogue at Worms. This building consists of a nave about 50 ft. long by about 35 ft. wide, divided down the centre by two cylindrical columns, and a kind of transept or aisle built at right angles, opening into the nave by two sharp-pointed arches. The capitals of the columns of the nave are very remarkable, and show considerable elegance of design and skilful execution. Each cap is carved out of one solid block of stone; the shafts are also monolithic. These columns support a simple Roman vault, of very solid construction, but entirely devoid of ornament; and the contrast between the richly-sculptured capitals and the plain vaulting gives rather an Eastern appearance to the interior of this singular building.

The windows are mostly semicircular-headed; two of them, however, are pointed; but the splay of the head is made to take a semicircular form internally. Above some of the windows are simple round openings. The "ark," or tabernacle for keeping the sacred books, is a work of the latter part of the sixteenth century, and is in rather a barbarous Italian style; but very peculiar. In the centre of the building is what we should call the choir in a Christian church, with a stone desk; this portion of the building is raised one step above the rest of the nave, and surrounded by a low iron railing. From the roof some very fine chandeliers, of seventeenth-century work are suspended: several of them are adorned with scroll-work, and have the imperial eagle over them.

The exterior of this building is nearly as singular as the interior; one is first admitted into a court, three sides of which are occupied by buildings, and the fourth side is open to a kind of cemetery. The first side of this court consists of a sort of gatehouse, of no very early date; the next side is formed by the before-mentioned transept, which, by the way, is devoted to the use of the female portion of the congregation; a stone bench runs along this building, protected by a kind of penthouse roof. The third side is formed by a portion of the nave of the building and a small late addition called the "Raschi Chapel." The earlier portions of this synagogue are probably as early as the twelfth century. The people at Worms claim for it a much earlier date, but the peculiar style of the caps fixes the date almost beyond a doubt. It is singular that one of these caps bears a strong resemblance to one in the Church of the Nativity, at Bethlehem.

This synagogue is now being restored, and the whitewash which it was disfigured is being scraped off. In the view, made specially for our pages, the benches are omitted, as they are quite modern, and very ugly.

The synagogue at Frankfort * is of the same general plan as that at Worms, with the exception that there is no transept or aisle. The vaulting is curious; it is arranged in an oblique form, so that a pendentive comes opposite to each arch. The date of the building may be half a century later than that of Worms.

The synagogue at Prague is exactly similar in plan to that at Frankfort; it is a building of the thirteenth century, and very pure and good

* We fear this building has been destroyed during the alterations of the last few years.

in all its details. The columns are octagonal, with capitals that form a star on plan: each ray of this supports one of the vaulting ribs, which are well moulded. The windows are simple lancets, except at the east end, which is lighted by two plate tracery quatrefoil openings, inclosed in circles. The "Ark" is very singular, and looks like a piece of Italian Gothic of the fourteenth century. It is composed of a kind of grey limestone, and has twisted columns, and a pediment adorned with regular Italian Gothic

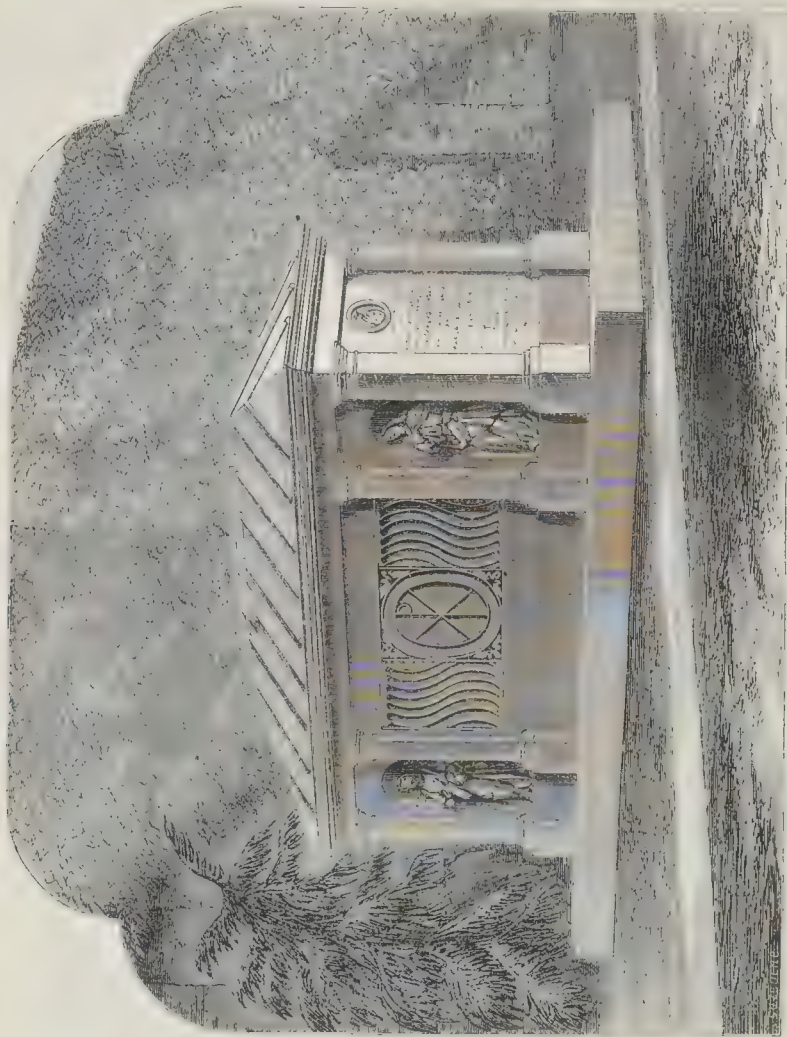
crockets. The women's gallery looks into the synagogue only by three small segmental windows.

Near this last is a very small synagogue, probably of fifteenth century work. It is simply an oblong room, with a prettily vaulted ceiling. All the windows have been modernised, and the interior was refitted during the last century. There is a large old cemetery belonging to the Jews in Prague; but although it has been used for over ten centuries we do not think that any monu-

ment at present in existence is of an earlier date than the sixteenth century. The monuments greatly resemble those in English churchyards of the last century: simply a large head-stone, with a good deal of bad "Rococo" carving over the upper part of it.

The synagogue at Ratisbon is a fifteenth century building; but we were unable to find out whether it had always been used for its present purpose.

We are not aware of the existence of any



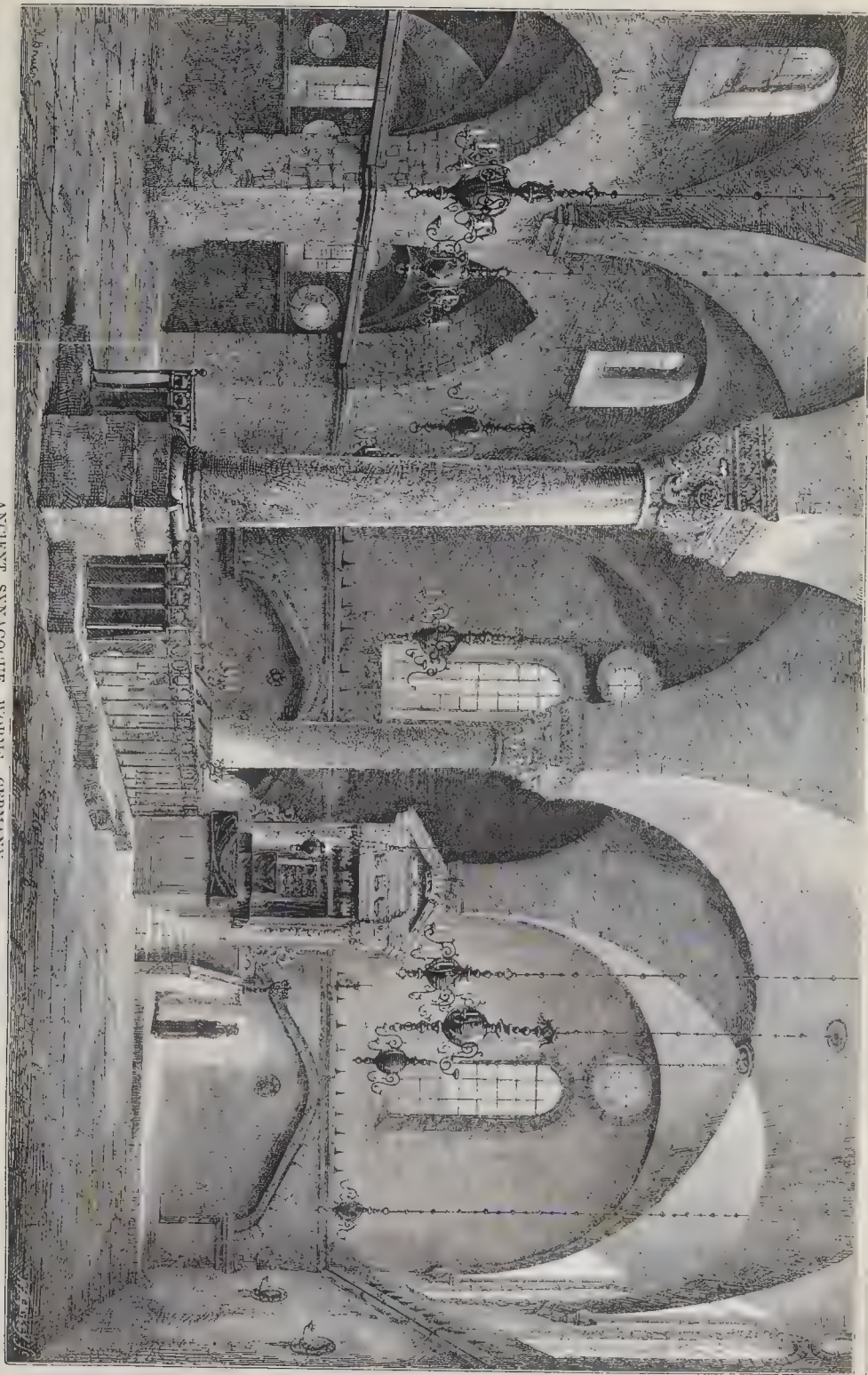
A TOMB IN BROMPTON CEMETERY.—MR. ASHUTEL, ARCHITECT.

other old synagogues in Germany; nor do we know of any in France.

Spain is said to possess one or two, but we have been unable to gain any information respecting them. In England the only building of the kind is the old borough gaol at Bury St. Edmunds, which is known originally to have been a synagogue. It is a very small Early Norman building, 36 ft. long by 27 ft. wide. At one end are two well-moulded semicircular headed windows. The interior of the building has been so much mutilated that it is quite im-

possible to realize its original condition. Until a recent period this building went by the name of "Moses's Hall." The fact which most strikes an observer in all these synagogues is their great similarity to Christian buildings of the same date. And one is led to wonder how it was that a people so isolated from those who surrounded them as the Jews were, should have condescended to have adopted the style of those amongst whom they lived, particularly in their religious buildings, where it might be expected that anything like "Christian architecture"

would have been most scrupulously excluded; and this leads us to the conclusion that the synagogues we have described, although built for the Jews, must have been erected by Christian workmen. On the other hand, however, the similarity of plan to be observed in these buildings would seem to point to some traditional arrangement which the builders were unwilling to depart from for many centuries; and this would appear to indicate that these synagogues were, even if erected by Christian workmen, planned by the Jews themselves.



ANCIENT SYNAGOGUE, WORMS, GERMANY.

PHOTOGRAPHY.

M. NEPCE DE SAINT-VICTOR states that the obtaining of the black tints in heliochrome is certainly more extraordinary than obtaining colours. There are four processes by which these results can be produced. The first offers most interest, because it allows pure black tints to be obtained either in the camera or by contact. These results are accomplished by the reaction of a highly alkaline liquid upon chloride of silver.

M. Silvy has sent to the Photographic Society of France some photographs obtained by the aid of the magnesium light, of the vaults of the Chapel Royal of Dreux. These vaults, without being subterranean, are excessively dark, and only receive the daylight through painted windows placed at a considerable height, and very intense in colour; so that, without artificial illumination, it was impossible to take photographs of them. The lamp he used is so arranged as to burn at the same time four ribbons of magnesium passing through two parallel tubes, and the light produced by it is exceedingly beautiful. A great portion, however, of it is lost, or rather intercepted by the part of the ribbon which, having been burned, does not detach itself fast enough, and so obstructs the brilliancy of the flame, exactly as a candle which wants snuffing. It would be very easy, however, to obviate this inconvenience if, while waiting for some better contrivance, these primitive lamps were a little improved. As, in this actual case, a great surface, that of an entire tomb, had to be lighted up, the lamp was obliged to be placed at a certain distance, and moved nearer to or farther off, according to the effect to be produced, and the time of exposure was rather long; it was never less than six or eight minutes with plates prepared with wet collodion. The lamp used was furnished by Mr. Solomon, of Red Lion-square, London. The six tombs reproduced are those of the Duchess dowager of Orleans, the Duke of Orleans, Princess Marie Duchess of Wurttemberg, the Duke of Penthièvre, Mademoiselle de Montpensier, and the Angel of Grief.

NEW CHURCHES AND RESTORATIONS
ABOUT WORCESTER.

Owing to the large increase of the population in Worcester and its neighbourhood during the last few years several new churches have sprung up, and the enlarging and restoring of others is being rapidly proceeded with. The local *Chronicle* gives an account of these, from which we quote. A new edifice has been erected near the Shrub-hill Railway Station for the parish of St. Martin, which has become too populous for a single church, and another at Barbourne. Only a few months back the new Presbyterian Church, in Castle-street, was opened; and now efforts are being made to build another church in connexion with the English establishment in this, the Tything district. The site selected for this church is nearly opposite St. Oswald's-walk, in the Tything. It is intended to re-pew St. George's Church.

St. Nicholas's, Worcester, is being generally repaired and re-seated. The roof, which was in a lamentable state, has been for the most part renewed. The old pews have been removed and open sittings substituted, by which means additional accommodation will be obtained. The high gallery front has been removed and replaced by an open one, in which wrought-iron work, executed by Skidmore & Co., of Coventry, has been introduced. The building will be warmed by means of Haden's hot-water apparatus. It will be lighted and ventilated by a central sun-light gas-burner. This edifice was always considered a dark and gloomy one, and it was rendered still more so by the erection of the new City and County Bank, but it will, owing to these alterations, be rendered much lighter, especially when the side windows have been re-glazed.

The rebuilding of Hallow Church is also being rapidly proceeded with by the contractors, Messrs. Inwood & Osborne, of Malvern, from plans provided by Mr. W. J. Hopkins, the diocesan architect. The site is central. The edifice will consist of a nave and chancel, north and south aisles, vestry, south chapel for the children, south porch, and a western tower. The tower is not included in the present estimate. The nave will be 42 ft. high from the floor to the collar-pieces of the roof, 60 ft. in length, and 20 ft. in breadth. It will be divided into four

bays, the arches to which will be supported by circular columns, having corresponding responds. Over each of the columns and responds, and spanning the whole width of the nave, will be stone arches supporting the roof-timbers, answering the purpose of ordinary wooden principals or trusses. The thrust of these arches, and those of the corresponding ones over the aisles, will be counteracted by means of external flying buttresses. The body of the church will be lighted by means of a large five-light western tower window, having rose tracery; circular clerestory windows, having alternating patterns of tracery; and the several tracery two-light windows in the north and south aisles. The chancel will be 32 ft. in length by 18 ft. in width, having a lofty open-timbered roof. It is lighted by an east window of three lights, and north and south windows of two lights. The children's chapel is placed at the east end of the south aisle, and the south window of the chapel is rendered distinctive by being gabled. The vestry and organ-chamber are placed in a corresponding position at the end of the north aisle. The tower and broach spire will be 143 ft. high, if built. The church is of the Early Decorated style. It will be built entirely of stone, given by the Earl of Dudley, and chosen by the architect from one of the best quarries on the estate. It will be fitted up with plain open deal seats, and the pavements will be laid with red and black encaustic tiles, from the manufactory of Mr. Godwin, near Hereford. A slight polychromatic effect will be produced by the introduction of grey stone with the neighbouring red stone, in the columns, arches, and other portions of the building. Earl Beauchamp intends giving a reredos.

At St. George's, Kidderminster, an improvement has been made, by the erection of a reredos, extending the whole width of the sanctuary, and formed into three compartments, by means of three horizontal bands. In the centre, over the altar-table, is a canopied recess, surmounted by an alabaster cross, enclosing a large sculptured group, the subject of which is the Ascension, by Mr. Wm. Forsyth, of this city. The floor of the sanctuary has been raised, and laid with encaustic tiles. Several other improvements have been made in the arrangement of the east end of the church, and the walls are being decorated so as to harmonise with the new reredos.

The old Chantry Chapel at Kidderminster has been restored, by Mr. Hopkins, at the expense of the Earl of Dudley. A new open-timbered roof has been substituted for the flat modern plastered ceiling. A new floor has been laid, and the whole of the building renovated. The builder was Mr. Haigh, of Kidderminster.

CIVIL ENGINEERS AND PUPILS.

CONSIDERABLE discussion has from time to time taken place at the Mersey Dock Board relative to the restrictions placed upon the engineer of the Board (Mr. Lyster) as to taking articulated pupils. Last week a proposition was made to abolish these restrictions, and letters were read from the engineer-in-chief of the London and North Western Company and other eminent engineers, stating that it was one of their privileges to take articulated pupils. It was pointed out that the Mersey Dock Board Estate offered a field unequalled in the world for young aspirants to engineering skill and fame. Ultimately the proposition was adopted, the arrangement being that the engineer should be allowed to take three pupils, which it was estimated would add about 300*l.* a year to Mr. Lyster's income, which is at present 3,500*l.*

PADDINGTON.

AMONG other improvements going on in this important parish is the erection of a bridge over the canal at Westbourne-green, commonly called the Lock Bridge. The Board of Works guaranteed to subscribe the sum of 1,500*l.* The work was at once commenced. A temporary bridge, built for the traffic during the construction of the new one, was opened in September last. The work, according to the contract, was to be completed in four months; but, owing to the great obstacles that had to be contended against, and the temporary bridge being found to stand well, a further grant of time is allowed to the contractors, who are Messrs. Dixey, of Abchurch-lane, City. The cost will be 5,040*l.*, which will

principally be borne by the parish, the Board of Works paying the 1,500*l.* as above named. The bridge will be constructed chiefly of iron. It is being manufactured at Birmingham, and is on its way to the works. The sides will be 6 ft. high on each side, to prevent the nuisance that was so great on the old bridge to foot-passengers, through so many idlers standing about. The new bridge will be about 30 ft. wider than the old one. The work is being carried out under the superintendence of Mr. E. H. Thomson, resident engineer, on behalf of Mr. W. Kinipple, C.E., and the Vestry of Paddington; Mr. Cook being the principal on behalf of the contractor, Mr. Dixey. Messrs. Vigers have erected large wharfs on the right of the bridge; and a new road is formed, called Ambley-road, likewise a terrace, opposite the hospital; and in the coming summer there will be upwards of 400 houses commenced on the fields across to Kilburn.

INDUSTRIAL TENEMENTS, DUBLIN.

THE first stone of the new model dwellings about to be erected in Meath-street by the "Industrial Tenements Company" was laid on the 20th instant by the Lord Mayor of Dublin.

The plan of the buildings represents a series of double dwelling-houses four stories in height, each floor affording two complete family tenements, comprising living-room, scullery, and bed-recess, with two extra bed-rooms, each communicating directly with landing, or inclosed at pleasure, with external door at entrance, the staircase being in the centre, upon each lobby of which an open gallery has been provided, having cinder-shaft on one side, and water supply with sink leading to drain on the other. The ground-floor fronting Meath-street has been appropriated for shops, the entrance and stairs to dwellings over them being in the centre, and the basement being intended for storage. The ground-floors are intended to be paved with tiles on concrete, the upper stories having boarded floors. The laundry and drying-rooms, with "closets," will be provided in the airing-ground at rear of all the buildings. It has been considered desirable to give the buildings more the appearance of a number of commodious dwelling-houses than that of a public institution, as being more suited to the tastes and habits of those for whom they are intended, affording also greater safety from contagion, fire, or other casualties. The entire buildings will afford 120 rooms, with two extensive shops and stores on basement for letting. The contract has been taken by Messrs. W. & J. Beckett for 4,365*l.*, and will be carried out with all speed under the direction of Mr. Charles Geoghegan, architect to the company.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of members was held at the House, in Conduit-street, on Friday evening (the 21st ult.), Mr. E. J. Tarrow in the chair.

The following gentlemen were elected members of the Association:—Messrs. Lovejoy, Drury, Colchart, Woodcock, Winks, Capes, E. Skeritt, &c.

Mr. L. W. Ridge called attention to a class which had, he said, been established to fill the place of the Voluntary Examination Class, and the object of which was to promote the knowledge of practical subjects. The mode of study would be by question and answer; and he hoped that as many members of the Association as could spare time would attend it.

Mr. G. H. Birch then read a paper "On the Conventual and Parochial Churches of the City of London and its ancient Wards." In reviewing the history and describing the more salient points of many of these buildings, he expressed his regret that there was no conservative spirit abroad to save such historic monuments from desecration and destruction. Of the 114 churches in the City of London and the wards belonging thereto, which were in existence before the Fire of London, eighty-nine were destroyed by that great disaster. The East Minster, so called to distinguish it from West Minster, and founded by Matilda, the wife of King Stephen, was removed in order to make room for St. Katharine's Docks, which might just as well have been placed a little lower down the river. Having referred to several other churches,

of which no vestige now remains. Mr. Birch concluded by entering a protest against the proposed destruction or removal of City churches. Such relics of Old London ought, he thought, to be dear not only to the antiquary and archaeologist, but also to the architect; and he hoped that no utilitarian considerations would be allowed to disturb them.

Mr. Ridge called attention to the gigantic railway station lately erected by the South-Eastern Company, in Canon-street, which, he said, completely shut out the view that used to be obtained from London Bridge of St. Paul's Cathedral, Bow Church, Christ's Church, and other buildings, and which used to form so pleasing an architectural combination. He regretted that no measures had been taken in time to prevent this, as he saw no reason why the roof should have been carried to such a height.

The Chairman suggested that it would be very desirable that the members of the Association should visit the old City churches still left.

WASTE LANDS AND WASTED RESOURCES OF IRELAND.

Or all the great questions that agitate the public mind, and which are daily growing in intensity, those relating to Ireland are the most momentous at the present crisis. It was proposed in 1852 by the party now in power, just before the ministry collapsed, to enact a law for the establishment of tenant right; in subsequent sessions various other measures of improvement were debated, such as the modification of the Church of England, and a more equitable appropriation of its revenues in that country; but no definite and pronounced plan has ever been mooted for the attainment of objects which would, beyond all others, promote the prosperity, happiness, and content of the people; and these are, first, the reclamation of waste lands; and, secondly, an extended system of education.

Seeing that one of the most fertile regions of earth, in the temperate zone, in close affinity with Great Britain, should at this epoch, with a redundant and energetic population, be cultivated in only one-fourth part of its extent; that the people, to the amount of one-third of their number, are wholly untaught and steeped in ignorance; under these circumstances, coupled with the fact that five-sixths of them differ from the established and endowed religion of the country, it can excite no surprise that disaffection should widely prevail amongst them, and that they should seek upon a remote Continent fields for cultivation and homesteads which were denied them at home.

Representing over a fourth part of the United Kingdom, the condition of Ireland is a standing reproach to the ruling authorities. Since the first invasion and subjugation of the island by Strongbow, a continued series of feudal strifes, revolts, and massacres, kept the country in a constant ferment, until Cromwell, under his lieutenantcy, in 1647, established a firmer, if not a better, order of things; and from that period when, under the Act of Settlement, the greater part of lands were forfeited, a large infusion of English soldiers and settlers took possession of almost the whole extent of three out of the four provinces, locating the extruded population in the province of Connaught, vast numbers of Scottish families having previously settled in Ulster, under the reign of James I.

In the year 1672, the first recorded census returns the population as 1,320,000 souls; in 1754 it was 2,372,631; in 1792 it was 4,088,226, from which period, and subsequent to the union with Great Britain, in the year 1811 it had increased to 8,196,597. In consequence of the famine of the year 1817, caused by the disease of the potato, and the failure of that crop, a rapid decrease had set in, until the year 1861, when the census returns gave the number as 5,798,967, being a reduction, in twenty years, of 2,397,630.

Owing to the default of manufacturing enterprise and the dearth of employment in other than agricultural labour, famine effected fearful ravages; but the decrease of population was chiefly owing to emigration, which carried off to America a million and a half between the years 1851 and 1863.

The insufficiency of cultivated superficies in Ireland for a population thus redundant, and the conditions of land tenure, coupled with latent disaffection in the multitude, unable to obtain patches of ground to grow their only subsistence—the potato—lured them across the Atlantic,

where, on a less fertile soil, and in a less genial climate, they at last found scope for that industry which, when encouraged by the actuality of freehold possession and an open market for labour, soon realized so much independence as enabled them to remit to Ireland in ten years as many millions sterling, and thus they attracted their relatives to share the land of their adoption.

The whole area of Ireland, very little improved by reclamation or drainage, represented originally, as it now does, in round numbers, 21,000,000 acres.

Of this superficies, according to authoritative returns of 1864, the quantity actually under tillage was 5,705,636 acres. Of this extent the quantities are as follow:—Cereal crops, 2,257,461 acres; potatoes, 1,039,282; turnips and other green crops, 436,253; flax, 301,860; meadow and clover, 1,608,124; and fallow, 32,656. Thus it appears that of the five millions and a half acres, over one million consisted of potatoes, which was the staple food for a nomadic population.

As to the social condition of the multitude, a very fair inference may be drawn from the educational returns of the decade between 1851 and 1861. In the former year the total number of persons who could read and write were 1,938,685; of those who could read only, 1,203,046; and of those who could neither read nor write, 2,766,283; whereas, in 1861, the numbers ran, of those who could read and write, 2,105,958; of those who could read only, 1,022,787; and of the utterly ignorant, 1,973,382.

From these authoritative returns we perceive an apparent advance in the year 1861 over 1851, which might argue a great improvement in mental culture of the people; but, unhappily, the census returns also furnish an estimate of the number of ignorant persons who emigrated within the decade, and sets down the probable number as 458,901, who transferred at least their physical forces to a foreign allegiance.

Owing to the influx of English and Scottish farmers since the year 1820, and perhaps to an improved system of agriculture, the profitable lands of Ireland were let out in more extensive tenures; to effect which small farms were discontinued to a great extent; and proprietors generally became averse to granting small tenures or cottage-holdings; whilst hordes of families were evicted in favour of the new system: thus the extended population, unable to find work or wage, added to the miseries of the time, and to the discontent or disaffection of the masses.

In the present condition of the country there is not room and location for its population, although reduced by something over two millions? What, then, is to be done for the unsettled portion? There is a remedy; for, independent of the unprofitable wastes, there yet remain five millions of acres capable of reclamation, and of conversion into the richest pastures.

These lands or wastes are possessed in fee by great proprietors, and, if purchased by valuation, an average, perhaps, of 11s. sterling per acre would be an ample compensation; or if taken in perpetuity at a chief rent, then 2s. per acre, or 10 per cent. on the improved value or rental, would fully compensate the owners in fee, giving them a fixed income out of sterility.

These works of arterial drainage and reclamation would be, however, too extensive and too costly for private enterprise; therefore by the interposition of Government alone could such works be carried out.

Of the whole area of wastes, peat or turf bog covers 2,850,000 acres; being nearly half as much as the portion in cultivation, and one-seventh of the whole island! This desolation, consists of 1,576,000 acres of level or flat bog, superimposed upon limestone plains; and of 1,254,000 acres of mountain bog, detached amongst the various mountain and hill ranges.

That such a condition of the island must increase the humidity of its climate is but too palpable; and it is equally clear that, by drainage of these immense morasses, a more genial temperature might be secured, whilst the health of the population would be improved, and the climate rendered more equable and attractive for perennial residence. Many parts of Lincolnshire and Yorkshire fens thus treated are wholly changed in character, and from having been aguish and unhealthy, have become agreeable and populous. If this, then, be so upon a small scale, how much the greater must be the efficacy when extended throughout the entire surface of a land not now considered un-

healthy—the worst characteristic whereof is its constant rainfall and humidity.

As this drainage and reclamation would desiccate and improve the climate, so it would also yield ample returns for the outlay; producing live stock for the English markets, and bestowing greater aptitude for cereal crops upon the now existing tillages, which, owing to the humidity of the atmosphere, grow but a very small proportion of wheat.

By a maximum outlay of 5s. per acre, including the purchase of proprietary rights, the most fertile pastures might be formed upon an extensive scale, the annual rental whereof may be estimated on an average of 10s. per acre; for at such a rental small holders would regard such leases as independent possessions.

Such a system could be undertaken by Government authority only; for no company, and therefore no individual landowner, could do it.

So long back as 1675, Sir Wm. Petty, a great authority in his day, who was Surveyor-General under the Commonwealth, Charles II. and James II., and by whom the celebrated Down Survey was completed, drew out a treatise, with this unpretending title,—"The Elements of Ireland, and of its Religion and Policy, by Sir William Petty, Fellow of y^e Royal Society, 1687."

The drift and chief object of it was to convert the whole extent of Ireland into a stock farm; to withdraw a million of the inhabitants to England, leaving only 300,000—one half herdsmen, and the other 150,000, dairy-women!

The dedication to the king, being terse, is given as written, viz. :—

"To the King's most excellent Majesty.
When I find out puzzling and perplexed matters that may be brought to terms; number, weight, and measure, and consequently may be made demonstrable; and when I find things of vast and general concernment, which may be discussed in a few words, I willingly engage upon such undertakings, especially when they tend to your Majesty's glory and greatness, and the happiness of your people, being one of them myself, and
Your Majesty's most humble,
Faithful, and obedient servant,
WM. PETTY."

After this dedication, follows a brief metrical Latin heading, selected discursively from Virgil, and not inaptly strung together.

From these short introductory specimens of the MS. essay, no one could imagine what the author was about to reveal, although he admits that he delighted "in political pastimes and paradoxes;" but the secret is fully communicated to his readers, in the following language:—

"Some have imagined, there being about 1,300,000 people in Ireland, that to bring 1,000,000 of them into England, and to leave the other 300,000 for heriemen and dairy-women behind, and to quit all other trades in Ireland but that of cattle only, would effect the settlement, improvement, and union above propounded; but against this method there lies this gross and obvious objection, viz. that the transporting of a million of people will cost a million of pounds; that the housing and other expenses in Ireland which will be lost thereby are worth two millions more; nor is it safe to estimate other damages and expenses consequent on this undertaking at less than one million more, in all at 1,600,000l. of exorbitant language."

To which objection there is a gross answer, which is, that by bringing 1,000,000 people into England, where are already the King's Revenue of Customs, Excise, and Hearth, will rise from 7 to 8, that is, to two hundred thousand pounds per annum, which increase at 20 years' purchase, is above 4,000,000l. and more than the loss above mentioned. Now, when the King's Revenue shall naturally and spontaneously increase, it is rationally to be supposed that the people's wealth may increase 20 times as much, the Public Revenue being, almost by a law of nature, $\frac{1}{10}$ part of the people's expense.

Wherefore, supposing any further answer to the said gross objection, as proposed by me, that the transportation, and new cattle trade above propounded, will produce the effects hereafter mentioned.

Without quoting *in extenso* from the MS., these effects, as predicted by the theorist, may be summed up in the complete tranquillization of the country, the reclamation of its wastes, and their utilization for the sustenance of the whole kingdom.

How much more would such a national undertaking, as I have outlined, benefit the State under existing circumstances: it would give employment and wages to the whole industrial people; but, further, it would give them locations, homes, pastures and gardens, and stop the exodus before the land is depopulated, turning their disaffection to quietude, if not loyalty.

The temper of the time is manifestly to make just concessions to the demand, and necessities of the Irish people; the educational question, equalization of the churches, land tenure or tenant right, and others, of these would fall like manna upon the land, if the great reclamation scheme were at once set on foot; but without that, the bestowal of civil and religious privileges is utopian. A man must be located and

housed, and thus personated, before he can be identified as a free subject: education will then follow. The sons and daughters of the soil leave Ireland, not because they love America the more, but because they have no employment, no home, and, consequently, no protection in their native land.

It cannot be denied that there has been, within twenty years last past, an obvious improvement in the condition of the people; but still the range of pasture land is increased, whilst the area for tillage and cereal crops is being progressively reduced, and at the same time land tenures under five acres are merging fast into larger farms: thus the food of the people becomes more stinted, and their cottages and homes are razed, driving them of necessity to seek new homes and occupations; for if in Ireland, there is no manufacture or industrial labour, they are forced to seek it abroad.

There are good landlords who deplore this, and who, being resident on their estates, address themselves to the physical and moral improvement of the country; but for the wide tracts held by absentee proprietors there can be little hope, unless a new field be opened under Government auspices. In other countries, and notably in France, national funds are applied for national improvement; the waste lands of Ireland offer an inviting field, and a sure return for such an expenditure.

T. H. HARDINGE.

ARCHITECTS' AND ENGINEERS' ASSISTANTS' BENEVOLENT SOCIETY.

SIR,—In your paper of the 15th ult., one who signs himself "Assistant" wants to know why we should not have a Benevolent Institution. If this is the desire of more gentlemen than this one let them come forward and say so.

After the revelations which there were in the same week's paper concerning references, I think it is most necessary that there should be some institution where our referenceless fellows can get relief; but I do not believe that architects' assistants should depend upon the references of an employer, but that they should all enter their profession in a right and honest manner. They should go as students of the Royal Academy, or of the Institute, and try for some (travelling studentship, and make honours, which will show they are real architects, there is a scholarship offered by the Royal Academy, for which I understand there has been no competition for the last two or three years; and I think that this is shameful, and that it looks our way, and does call himself an architect. This greatest of all professions is in great danger; it is going together and trying to save it. We must join together and try to save it. I think we ought to be able to start such a society even without the aid of our friends the architects and engineers; but I am sure they would give us the aid in their power. And finally that, if you will be so kind as to receive names, those gentlemen interested and willing to work can send theirs to you; and, perhaps, an assistant who has some spare time may be inclined to take the leadership in this matter.

J. W. A.

PROPER BUILDING FOR ARCHITECTS.

SIR,—Are there no Pugins left? Has his "green enthusiasm" died quite out? Is there not one architect who will raise his voice against this money-mad mania of architects? Not one true, real enthusiastic artist in our ranks?

If such were the case, we should be most miserable; but, I believe,—though much depravity has crept into the ranks of the profession, and many of our brethren who are working hard because they love art, and wish to elevate their fellows. Should we give up all love for art, and turn our whole attention to money-grubbing, and the chase of the day of the most miserable days on record for us and all England. Oh! may the rising generation of architects keep alive their "green enthusiasm" and may the chill winds and damp fogs of "winter" pass over it without taking the freshness of life! Amen, say we.]

Let us remember that, though we can do but little towards the elevation of the present generation of architects, the formation of the rising generation lies in our power, and that upon the way in which we each perform our part depends the honour or disgrace of English architecture. Foreign countries have been allowed to get sufficiently ahead of us. Let us each determine that we will do all we can to prevent their further ascendancy.

Can nothing be done to persuade the Museum authorities to build an iron building now, as was done at South Kensington; and wait until subscription can be got in for a company formed, to build an Architectural House? I hope we are not so infected by the current love of money that the latter part of "Scraps's" letter is what we instinctively believe.

We have seen enough disaster and disgrace caused by taking haste to get rich; if there are any artists who have time in this rush, let them now turn their backs on their late folly, and begin a new year with an effort to show the world that they love art more than money, and, therefore, will have a proper building for architects.

ADAMPH.

DESIGNS FOR THE NATIONAL GALLERY.

The competition designs have been sent in, and are about to be hung in the Royal Gallery at the Houses of Parliament. They will be open to the public on Wednesday, the 9th.

The following letter bears on this subject:—

"As my name has usually appeared in the list of those invited to compete for the New National Gallery, I think it right to state that I have found myself obliged to retire from the competition, owing to the claims upon my time of the concurrent competition for the New Law Courts."

GEORGE GILBERT SCOTT."

GETTING DAYLIGHT INTO ROOMS.

It was by no means intended to suggest as a substitute for Sir David Brewster's arrangement, or for the "Patent Daylight Reflectors," a hood projecting with only a slight fall or slope. This would doubtless be open to most of his seven objections, or even to all of them if the ground side were upward. It was only mentioned to enable a reader to follow better the reasoning that leads to what I ultimately suggested as most practicable in London, a hood falling at a steep inclination, in no case less than 60°. This would not project sufficiently to affect the windows of a lower story more than cornices or eaves usually do already, nor nearly so much as our shallowest balconies or railed window-sills, or as the Patent Reflectors must, if ever used elsewhere than on the ground floor. I assumed that no practical builder would ever turn the ground side of the glass outward. If he did, the fourth objection would apply just as much to the vertical window as to my plan; and the turning it inward—as we always must, from the rain and dirt—actually involves, in the vertical window, a very slight sacrifice of light—not, indeed, worth considering; while in my plan it is optically quite indifferent which way it is turned. The outside being smooth and inclined at least more than 60°, would be no more liable to the third or fifth objections than a vertical window (to which snow will stick at times, and from the upper sheltered parts of which the rain cannot remove the dust). The sixth and seventh advantages are simply and very properly forbidden us in our chief cities by Building Acts, which require all our wood to be kept back behind a clear 4½ in. of brickwork.

Otherwise, or where no such regulations are in force, the easiest way of applying this principle would be, I think, in common domestic sash windows, to omit the bars of the upper or outer sash, and carry out its sides and top in the manner of a box, so as to receive ground glass retained by a thin metal rim quite flush with the outer wall. This glass need not extend so low as to the meeting bar, for the bottom of our box is best made to slope inward at an angle of more than 45°; and if this and the sides and top be then all lined with reflecting material,—say tinfoil protected by varnish,—as well as the fixed soffite and linings, we have the upper half of the window completely assimilated to the philosopher's ideal; and the lower is comparatively of no importance.

E. L. GARBETT.

HOMES FOR THE MIDDLE CLASSES.

SIR,—Much is now done for the benefit of the working classes. Has any one thought of the great need existing among the middle classes of small means, yet compelled by their vocations to live in London, and of the difficulty, nay, impossibility of finding moderately-rented houses in respectable situations? The only alternative for families thus situated is to brave the miseries of unfurnished apartments, fully to appreciate which, they must, perhaps, have been experienced. The many discomforts need not here be enumerated; many of your readers will, doubtless, endorse my statement. Why does not some enterprising capitalist come forward, and construct buildings, to be let out, something on the plan of the Edinburgh "flats," but with the modern improvements of the "model lodging-house," or "Familière" of M. Godin-Lemaire, at Guise? Rents of from 30l. or 40l. to 50l. or 60l., according to the number of rooms, &c., might adapt the "flats" to various pockets, and at the same time offer a good investment to the builder. These "flats" being entirely shut in, would offer the comforts of home, which can exist only in name in an ordinary house inhabited by more than one family; and where each one is sub-

jected to more or less interference, to espionage, and to causes of irritation more than enough to destroy the realisation of that popular fallacy of every Englishman's house being his castle. If my suggestion were adopted, families of small means would also be spared another source of constant torment,—I mean by the mistress being obviously more independent of "servant-galism." To combine economy and comfort, it would be an additional recommendation were a restaurant, baths, and even a laundry included in the building. In my own small circle many are ardently wishing for a movement in this direction; and practical people are of opinion that as in the case of the "model lodging-house," hundreds would rush to secure a chance of homes such as I have endeavoured to describe.

W. A.

ARCHITECTURAL MEMS.

1. EVERY country develops by degrees its own literature, art, and architecture.
2. Architecture in its earliest stages is constructive; decorative character follows in later ages; perfection, therefore, is not in one age.
3. Architecture in early ages, though constructive, is often barbarous and crude in its decorative forms. Savages construct well, but decorate rudely.
4. When a country has developed its characteristics there is no further necessity for the introduction of foreign traits. English architecture was the result of climate, material, and race—a combination of Celtic, Norman, and Saxon elements—Aryan; but we have necessity now of new Aryan traits from hot climates like India or South of France.
5. The development of English architecture has been continuous: every successive age has given us something new,—fourteenth century, exquisite tracery forms; fifteenth century, magnificent east windows; Elizabethan and Jacobean, admirable mansions, excellent farm-houses, half-timbered, weather-tiled, mullioned according to country and material; Queen Anne, town brick houses, with the most practical of all forms of window, viz., the segmental arch and white sash frame; Elizabethan and Jacobean ornament, most lovely from the certain classic element in it.
6. Old English gardens, with terraces, straight walks, clipped hedges, and fishponds, had designs, which the modern imitation of nature called landscape gardening has not.
7. All old work from 1000 to 1800 was good, and should be kept, historical; if a building is of various dates, keep each part in order accordingly.
8. Art education should lead to an appreciation of northern picturesque, high roofs, &c., as well as to the refined proportions of southern classic façades—each in its climate.

W. S.

ROYAL ACADEMY STUDENTS.

SIR,—May I ask you to give publicity to the following, as I think it is of some public importance—certainly to art students and those who now do the work of our art capitalists and employers of art labour.

President Sir Francis Grant the other evening, at the distribution of the Academy medals, expressed himself so unlike a regular and orthodox President, and so kindly as regards the Academy students, that I have felt encouraged to ask him to bring before the Council of the Royal Academy a very long standing grievance; one, indeed, dating from the very foundation of the Royal Academy. You know that any artist fortunate enough to obtain an entrance into the Academy as a student, is, or rather was, admitted for a term only of ten years; it has since been reduced to seven. After that term has expired studentship ceases, and all the helps and aids which the Academy can so well and easily give are withheld; and the student is no longer such, and the Academy doors are finally closed to him. Why this should be so it would be difficult to understand, as no art student can possibly finish his art education in so short a time as seven years, or even in twice that number of years. I must ask you to bear in mind, too, that the ranks of the Academicians and associates are mainly, nearly wholly, made up from the ranks of the student class, i.e., the Royal Academy would cease to exist were the student class to become extinct. Suppose,

therefore, at fifteen, a student enters the Academy; at twenty-two he ceases to exist in the Academy sense, but it may be at thirty or forty he may be thought worthy of the Associateship; so that through the most valuable years of his art-labor life, he is deprived of all help and aid from that institution which was expressly formed for his instruction and help. The library is closed when he most needs it; the antique is shut up from his view; the life-school is dead to him; and the lectures he can never listen to, though the lecture-room hold empty benches in abundance. Why is all this, and who is benefited by it? I have many times been in the library all day *solus*. Of what use is an institution, if those who need it, and might use it, are excluded from it?

The Academy is to be reformed, we are told, and an unlimited number of associates are to be added to its ranks. I hope they will be compelled to furnish specimens of their personal art-power—not clerks and students' work, but their own. If then the associates are thus thought of, why not the students, who need it more? I have, therefore, respectfully asked the President of the Royal Academy to take into his kindly consideration the following:—

First, that a student once fully admitted into the Royal Academy, should be a student for life, unless he becomes an associate, that he may at least have the privilege of further study within the Academy walls.

Secondly, that his name as a student should be printed, and appear in the list of the members of the Academy, of which he may form in the future,—and must, in some cases,—a distinguished member.

I will add but one word more. At the Academy dinner, which would you rather boast of, as president, the fact of there being 1,000 students of a great Academy, the select art-energy of the time and country, or only fifty? C. B. A.

LECTURE ON FORCE.

An able lecture was recently delivered by Dr. Monckton, in connexion with the Literary and Mechanics' Institute at Maidstone, on "The various Forms of Force; or, Niagara the Coal Mine of the Future." The lecture was illustrated by some brilliant experiments. In commenting, Dr. Monckton said that it had long been considered by philosophers that matter, out of which natural objects are evolved, is one single thing, indivisible and unchangeable. That it was quite understood to consist of but one elementary form—a molecule or minute atom—out of which every ponderable body was manufactured, from the light gas to the ponderous metal. This foreshadowed the fact that various forms of force had something to do with each other. The lecturer then entered *seriatim* into a detailed and experimental illustration of this thesis. It was the convertibility of one force into another, and the fact that if you possessed a sufficient command of one form, others could be extracted from it, that was present to his mind, he remarked, when he spoke of the Falls of Niagara being the coal-mine of the future. It would be perfectly possible to heat and light Buckingham Palace by the agency of that great cataract; it being only necessary to convert the force of the fall into motion by wheels or turbines; that into electricity by friction; conduct this current to England by the present Atlantic cable or other wires; reproduce heat in a coil, and distribute the same by hot-water pipes or other apparatus throughout the building. Of course he was expressing no opinion as to the exhaustibility of coal, and feeling no desire to suggest, that these substitutions were at present practicable in daily life; but the principle was sound now, and the application possible hereafter. The fountain whence our supply of all these forces [attractive as well as repulsive?] was derived existed in the sun. [?] This great luminary was incessantly flooding space with waves of force-motion, that is, in the shape of ethereal undulations. It was not strictly correct to say that the sun gave off light and heat; for half-way between us and him no light and heat existed, all was pitchy darkness and eternal frost; he gave off motion, which traversed space inoperative, and only became developed into light, heat, and chemical tension, when it was received into, and transmitted by, material bodies; just as the motion of the clapper of a bell under an exhausted receiver is not converted into sound so long as the bell swings *in vacuo*. But if we

received this motion energy from the sun, whence does he himself derive it? In all probability, from motion too. The meteoric theory affords the most plausible explanation of the continuous renovation of the sun's expended energy. A few weeks since the air was alive with meteors; the earth had been traversing, in its orbit, the long end of the oval plane of small planetary masses which constituted the Zodiacal light: there was every reason to believe that space was filled with planetary matter sufficient, by its constant impingement with great and violent velocity on the sun's body, to extricate an amount of heat, or *converted motion*, fully equivalent to his yearly emission. At the close of his lecture, Dr. Monckton said he would venture to suggest, and as he believed for the first time, that the ignition of meteors was partly due to the arrest of their motion, brought about by the attraction of the earth's mass. It was certain that if a meteoric body travelling forty miles per second in free space was reduced suddenly to a rate of twenty miles by the earth's attraction, violent heat would be evolved, unless the reciprocal gravitation of the meteor should itself replace the motion lost, as an equivalent form of force: and on that point, without further reflection, he would not decide.

TRADE BOOKS.

A NEW edition, issued by Messrs. Maw & Co., of their Pattern Book, deserves a few words of commendation. They have evidently endeavoured to make it as comprehensive as possible, giving a fair selection of examples of the various branches of their manufactures, and have spared no expense in the fine-art part of the work, or its engraving. The Messrs. Leighton, too, have done justice to the designs by Messrs. Digby Wynt, Street, Seddon, Barges, Garling, Goldie, and Owen Jones. The designs and engraving have cost, we are told, over 1,400*l.*, independently of the cost of the printing. The price book accompanying it (a very important adjunct), is arranged with special regard to easy reference. Every pattern is consecutively numbered, and a price is given in the list of every individual tile or design, saving the necessity of classification of the different descriptions of manufacture, which very few people understand: they have also kept to a single series of figures throughout the list, the paramount advantage of which few book-makers and catalogue compilers sufficiently appreciate. We take the opportunity to remark that tile-makers generally would do well to make better arrangements for London customers than at present exist. Without special reference to Messrs. A. or Messrs. B., we must comply (on the part of many) of the great difficulty with which anything at all out of the common way can be obtained, and the time that is required even when the thing needed is not out of the common way. We could tell some funny stories on the subject, but this hint may perhaps suffice.—Messrs. Peard & Jackson's new book, "Examples of Metal-work," contains a large number of good (Medieval) designs for brattishing, vanes, lamps, grilles, gas-standards, desks, and so on, with accompanying price-list to each page. The whole of the examples were drawn,—and very well drawn, too,—by Mr. W. G. Smith.—"How to Make and Fix Paper Texts or Emblems, to Decorate Churches or Rooms" (Beal, St. Paul's-churchyard), will be found useful to the considerable number of ladies and others who now take interest in such matters.

THE INSTITUTION OF CIVIL ENGINEERS.

The report read on the 18th ult., Mr. C. H. Gregory, V.P., in the chair, referred to a memorial recently received from a number of engineering pupils and assistant engineers, soliciting the sanction and patronage of the Institution in favour of a Junior Engineering Society, proposed to be established with the avowed purpose of mutual self-improvement in professional knowledge, and more particularly in that scientific knowledge of theory, which was becoming more and more essential to the success of the young engineer. The council informed a deputation of the memorialists, that they would endeavour to devise a plan for the consideration of the members of the Institution generally, which should

substantially meet the wishes of the memorialists; but that they could not support the proposal for a subsidiary and self-governed society. The members were reminded that, under the will of the late Mr. Joseph Miller, C.E., a sum of 3,000*l.* had been left in trust, to be applied in awarding premiums or prizes to the students of the Institution.

In order to show the progress of the Institution during the latter half of its existence, extending over a period of twenty-four years and a half, or from June 30, 1842, to November 30, 1866, two tables had been compiled, from which it appeared, that at the former date the total number of members of all classes was 625, as against 1,339 at the 30th November last, showing an actual increase of 514, or 82·2 per cent. The annual increase per cent., during the past six years had been 1·61, 1·84, 1·60, 1·29, 1·66, and 1·13 respectively. During the same period, the honorary members have been relatively diminished from 68 to 1·5 per cent., and the graduates from 12·9 to 0·5 per cent.; while the number of members had been increased from 39·5 to 40·4 per cent., and of associates from 45·9 to 57·6 per cent. Of, in other words, taking the honorary members and the graduates together, they had, at the first date referred to, amounted to nearly one-fifth of the whole number of members, whereas at the present time they only constituted the one-fiftieth part of that number. Nearly one-half of the members and associates were resident in London and its vicinity, one-third in other parts of the United Kingdom, and the remainder in British possessions abroad and in foreign countries.

An analysis of the statement of receipts and expenditure for the year ending the 31st of November, 1866, showed that there had been received, including in each case dividends on investments, 4,345*l.* on the general account, 394*l.* in respect of the building fund, and 390*l.* on trust funds, making together 6,259*l.* The expenditure had been 4,153*l.* on the general account, and 131*l.* for premiums under trust, while 2,971*l.* had been invested, on different accounts, in Stocks, and in debenture stocks of the Great Northern, the North-Eastern, and the London and North-Western Railway Companies. This showed an excess of disbursements over receipts of 398*l.*, by which amount the available balance at the bankers had been reduced. The nominal value of the different funds now belonging to the corporation together, amounted to 267,714*l.* as against 24,583*l.* 1*s.* 6*d.* at the date of the last report.

CHURCH-BUILDING NEWS.

Ashby Parva (Lutterworth).—We are requested to state that Messrs. Law & Son were the builders employed in restoring the church here, and Mr. Jas. P. St. Aubyn the architect.

Ipswich.—St. Stephen's Church, Ipswich, has been re-opened for divine service, having been for some months in the builder's hands. Alterations have been effected, which give the interior a lighter appearance, and increase the number of sittings. The old pews in the nave and south aisle have been replaced with open benches of white pine, stained and polished. The gallery at the west end has been taken down, giving a clear view internally from west to east. A new window has been inserted in the tower. The chancel roof has been renovated. The columns of the arches have been cleaned, and prove to be Purbeck marble, and, like those in the Temple Church, have never been polished. The number of sittings is somewhat more than before, notwithstanding the removal of the west gallery. The church is heated by hot water pipes, arranged by Messrs. Turner. The gas-fittings were supplied by Messrs. Archer & Gross; and the organ was put into the hands of Messrs. Goddall. The contract has been carried out by Mr. Godbolt, of Harleston, from the plans of Mr. F. Barnes, architect, the cost being about 450*l.*

Gloucester.—Two new designs for the church for St. Catherine having been obtained, Mr. Gambier Parry was requested to select one, which he did, and which turned out to be that sent in by Messrs. Medland & Maberly, who were requested to prepare the necessary working plans and specifications, that tenders might be advertised for and a faculty applied for should the cost not exceed the estimate of the architects. The internal width of the church will be 28 ft., depth of the nave to the chancel arch, 68 ft., depth of the chancel, 24 ft., width, 22 ft., and transepts, 13 ft. The pulpit will be on the north side, against the chancel arch, and the reading-desk on the south side. At the north-west corner there will be a porch, 8 ft. by 9 ft. Ornamental bands of red and white bricks will be carried along the walls within and without. There will also be a bull-turret 20 ft. high.

Claydon.—The church here has been reopened. The old church of St. Andrew, Claydon, consisted of a nave, chancel, and a low tower, and was, previous to its restoration, in an exceedingly dilapidated condition; indeed it was found literally impossible to restore the nave. The church was built in the Decorated style of architecture, and this style has been adhered to in the re-building of the nave, the shape being a simple parallelogram, which has been preserved in the restoration. There are

three windows on the south side and two on the north, and there is also a Decorated porch on the south side. The chancel has been re-erected, a new vestry having been added on the north side, whilst a new Decorated window has been inserted at the east end, the glass being simple cathedral glass, with a greenish tint. The old church seats, some of which were quaint in character, have been refixed, and several deal seats have been added at the west end. The lighting for the chancel is not yet down, but the design is being executed by Messrs. Maw & Co., of Broseley. The walls of the chancel before the restoration inclined outwards considerably, but now they are kept in position by two buttresses on the south side, and the vestry on the north. The old roof of the chancel has been restored. The roof of the nave is quite open, and has six pairs of principals, with carved moulded ribs supported on stone moulded corbels. They have embattled cornices, and are all stained and varnished. Almost all the stone used in the restoration was that which formed the old church. The architects of the restoration were Messrs. E. F. Law & Sons, of Northampton, and the contractor Mr. John Gee, of Coventry.

Altrincham.—St. John's church has been consecrated. The site of the new church is the plot of land between the east end of St. Margaret's schools and Ashley-road, not far from Mowdon station. It is close to the large and rapidly-increasing population of New Town. The architect is Mr. J. Medland Taylor, of Manchester; and the contractor Mr. Joseph Thompson, of the same city. Accommodation is provided for about 950 persons, all of whom, except a few in a small gallery over the western porch, will be seated on the ground-floor. The plan consists of a broad nave of five bays, with north and south aisles, and north and south transepts. There is a large western porch; and adjoining it, on the north side, is the baptistry, which is marked off from the north aisle by a small triple arcade. On the south of the porch is the steeple. The chancel is of large dimensions and terminates apsidally to the east. The chancel aisles open by arches into the chancel and transepts, and these arches are filled to the height of about 7 ft. with arched wooden screens. The style is Early Decorated. The material is stone, of three or four kinds for the outside, and for the pillars and other similar features inside. The steeple rises to a height of upwards of 40 ft. The three apse windows are filled with coloured glass in grisaille pattern, by Lavers & Barrand. The vestry and baptistry windows are filled with similar glass, and have also, as part of the pattern, Scriptural inscriptions suitable for the respective places. The heating apparatus is Haden's. The builder's contract was 5,300l.

Sydenham.—Holy Trinity Church, Sydenham Park, has been consecrated by Bishop Anderson, recently of Rupert's Land, North America. The church is situated in Sydenham Park, near the road leading from the railway on the side of the high ascent, to which it stands at right angles. The ground on which it is built was given by Mr. Robert Harild, of Round-hill, who subscribed liberally in addition. The exterior presents no particular pretension to any architectural display, and a tower is wanting. The principal entrance is at the west end. The roof is a lofty, and the ceiling of stained wood with woodworkings. There are no galleries. On either side of the middle aisle are stone columns, fluted and capped. The seats are all open, and the apse, we understand, will contain a congregation of 1,200 persons. Pendant from the roof are gas chandeliers, of a temporary character. The floor is composed of encaustic bricks, and the reading-desk and pulpit are east and west of the chancel. There is no reredos, and at present the communion-rails are not constructed. Between the pulpit and the vestry is the organ chamber, which contains an instrument erected by Messrs. Hill & Son. There is but one stained window at present in the church, which is placed in the west side of the chancel.

Shepperton.—St. John's mission chapel, which has just been erected here, has been opened for divine service, by licence from the Bishop of London. The chapel is a plain brick building, 50 ft. long by 20 ft. broad. It has an apsidal termination at the east end, with a small bell turret at the west. The door is on the north, and a small vestry on the south side. The site has been given by Mr. John Walter Lea, of the Grange, Shepperton-green, the rector's son-in-law. The architect, Mr. R. P. Pullan, of London, had intended that there should be an entrance

porch, but owing to want of funds this has not been erected. The builder was Mr. E. G. Hopley, of Shepperton-green. The contracted price for the building itself was 355l., which has been raised by subscription, with the exception of 50l., which was granted by the committee of the Church Association for the United Deaneries of Hampton and Staines.

Gloucester.—The plans of Messrs. Medland & Maberly have been accepted for the church to be built on the site of the old church of St. Catherine. The building will consist of nave, two transepts, and apsidal chancel. The internal width will be 28 ft., the length of nave 65 ft. The material used will be brick, of which there will be ornamental bands.

Bristol.—Emmanuel Church, which is being erected in College-road, is designed for the use of the district severed from Christ Church, Clifton; but the completion of the main building, as well as the addition of a tower, being at present delayed for want of funds, the consecration has been postponed, and the body of the building has been opened for divine service.

Birkenhead.—The foundation-stone of a new church in Cathcart-street, Park-road, has been laid by Lord Grosvenor. The new church is intended to supply the wants of a section of the large parish of Holy Trinity, which has a population of 22,000, and has hitherto had only one church; and is to provide accommodation for 700, and to cost 2,400l. The site will cost 875l., and it is also proposed to raise an endowment and repairs fund of 1,450l. The patronage will be vested in the Bishop of Chester. All the seats in the church will be free.

DISSENTING CHURCH-BUILDING NEWS.

Exmouth (Devon).—The chief corner stone of a new Congregational Chapel has been laid here. The chapel (which stands on the site of an old building erected by Lady Glenorchy in 1777) is at the corner of the Exeter-road and Meeting-street, and consists of nave, side aisle, with tower and spire at the south-west angle, under which is the principal entrance. There are vestries arranged to be thrown into one by means of a moveable partition. The style adopted is Early Decorated, and the materials local (Borleyhead) stone, in black mortar, with Bath stone dressings. The roof will be open, carried out in fir, and stained and varnished: an arcade will be formed between the nave and aisle with wood columns and diagonal struts, the spandrels being filled in with quatrefoil piercings and other devices. There will be 450 sittings, which will be open benches stained and varnished. A minister's, or chapel-keeper's house will adjoin the chapel on the south side. The contract for the chapel and house is taken by Mr. George Gibbs, of Ilfracombe, for 1,200l. Messrs. Hubershon & Pite, of Bloomsbury-square, are the architects; and Mr. J. R. Manning is clerk of the works.

Rickmansworth.—The Wesleyan Chapel in this town, which was destroyed by fire a little more than a year ago, has been replaced by a new building, which has been opened for divine service. The chief subscriber to the building fund was Mr. McMurray, of Loadwater, a member of the Scottish Presbyterian Church. The new chapel is situated partly on the site of the old one, but covers a larger space. It is in the Early English style, and its chief external features are an octagonal tower and spire, rising to a height of 75 ft. The material of the building is brick, with Bath stone dressings. The tower is at the north-west angle, and contains a clock (with three faces), by Benson, and three bells, two of which strike the quarters, and one the hour. The clock and bells cost about 200l., and are the gift of Mr. McMurray. The spire is covered with tiles relieved by green bands, and is surmounted by a weathercock. A school-room adjoins the chapel, under the same roof. Internally, the chapel measures 60 ft. long, and 30 ft. wide. The available sittings number altogether about 350. Above the communion table is a stained glass window, which is the chief feature of the interior. The window is the gift of Mr. McMurray, and was executed by Messrs. Heston, Butler, & Bayne. It is divided into three principal compartments, and represents the crucifixion of our Lord. The cost of the window is about 70l. The total cost of the erection has been about 2,500l. Mr. Thos. Pearson, of Batoworth House, was the architect; and Messrs. C. & J. Waterman, of Watford, were the contractors. The stone work was

done by Mr. Coney, of Watford; and the gas fittings were supplied by Messrs. Hart & Son of London.

Lury.—The Independent Chapel, Whiting-street, has been re-opened for Divine service, after undergoing alterations and renovation, the principal feature of which is the erection of a new Gothic front, in white brick, with Bath stone dressings, in the centre of which, above the doorway, is a traceried window of four lights, with two smaller ones on either side. The old rectangular pewing in the body of the chapel has been replaced by benches of stained deal. The windows at the side are new, and new three-light gas-burners and other fittings have been put up. The alterations have been effected under the direction of Messrs. Bacon & Bell, architects, whose designs have been carried out by Mr. Tooley, builder, and Mr. Farrow, stonemason. The open palisading in front of the chapel was wrought by Mr. Andrews, ironmonger, from the architects' design. The entire cost of the alterations is about 600l.

Liverpool.—A new Wesleyan Chapel, at Rock Ferry, has been opened. The edifice is dedicated to the Trinity, and situated in New Chester-road. It is in the Italian style. The front and aisles are faced with red bricks, with dressings of Stourton stone. The main feature of the building consists of two square towers, surmounted by a mansard roof, and 65 ft. high from the level of the New Chester-road. In each tower there is a staircase leading to the galleries, and the space between them is connected by a colonnade, covering all the entrances to the chapel. The colonnade is approached from the road by a flight of York stone steps, as the level of the chapel floor is raised considerably above that of the road, in order to secure plenty of light and ventilation to a spacious school-room and two class-rooms underneath. The entrance to the schoolroom, which, like the chapel, is 63 ft. by 50 ft., is from the back, and two staircases leading from it communicate with the body and galleries of the chapel. The chapel has class-rooms and a minister's vestry behind the body. The body will seat 500 persons, and the gallery, which is circular, has accommodation for 350. The work has been carried out by Mr. John Hogarth, builder, of Rock Ferry, under the superintendence of Mr. Joseph Brattan, of Birkenhead, architect. The entire cost, including the price of the land, is estimated at 5,500l.

STAINED GLASS.

Gloucester Cathedral.—The public memorial of the Rev. H. Burrow has now been placed in the east walk of the cloisters of this cathedral, by Messrs. Hardman, of Birmingham. The subjects of the windows in the cloisters, as remarked by the local *Chronicle*, in giving an account of this memorial, are after a design which was settled some years ago by Bishop Jenne. The present window is the first of the series, and represents our first parents in the garden—Eve offering Adam the fruit, and the Angel driving both from Paradise. It consists of four main lights. The tracery lights and the lower lights are filled with decorated glass and designs, one of which is that of the Crown and the Palm.

All Saints, Cambridge.—Upon the death of Lady Affleck, the wife of the late Master of Trinity, her friends in the University seemed desirous to keep alive the memory of one loved by many and esteemed by all. The vicar of All Saints' made a proposal to them to fill the east window of her parish church, of which she laid the foundation-stone, with stained glass, as an appropriate and lasting memorial. A large sum of money was at once promised for the purpose. A window, according to a design generally approved, was ordered from Messrs. Morris & Co., London, and is now placed in the church. It is a five-light window. In the centre light, at the top, is represented Christ in Majesty, surrounded by angels. The rest of the window is filled up by four rows of figures. The highest contains the patriarchs Adam, Noah, and Abraham,—with Eve; the next, kings,—David in the centre, with Edward the Confessor and St. Louis, as historical kings, on either side, and Melchisedek and Judas Maccabeus at the two extremities. In the third row are Apostles and Prophets,—St. Peter in the centre, St. James and St. Stephen on either side, Elijah and John the Baptist at the two extremities. The last row represents female saints,—St. Rhadegund in the centre, as queen and abbess, patroness of Jesus

College; with four martyrs.—St. Barbara, St. Agnes, St. Dorothy, and St. Catherine. The figures are on a ground of grisaille, where flowered quarries alternate with bands on which the names are written. The cost of the window, with certain attendant expenses, was about 360*l*.
Episcopal Church, North Berwick.—A stained-glass window has been erected here by Colonel Denny, in memory of the officers, non-commissioned officers, and soldiers of the 71st Royal Highland Light Infantry who died in their country's service in Canada, the West Indies, the Crimea, and India, and who served with him from 1842 to 1857. The subject is Christ raising the widow's son, "Young Man, arise." The colours and badge of the regiment are introduced in the base panels. Messrs. Ballantine & Son, Edinburgh, were the artists.

Old West Church, Greenock.—Two additional memorial windows have been placed in this church. One in memory of John Hunter, shipmaster. The subject illustrated is Christ walking on the sea, "It is I, be not afraid." The other window is in memory of Mrs. Denniston, erected by her son. Subject, the Presentation in the Temple. The artists were Messrs. Ballantine & Son.

St. Mary's, Diss.—This church possesses some good specimens of stained glass, and the south side has been recently beautified by the addition of two memorial windows, by Mr. Hughes, of London. One is in memory of members of the rector's family.—Thomas Manning, Edward Bosworth Manning, Susan, wife of John Shearman, and Frances and Anne Manning, and represents "Joseph's Dream," "The Cup found in Benjamin's Sack," and "The meeting of Jacob and Joseph." The other is in memory of the late Samuel and Harriet Farrow, and contains "The Good Samaritan," "The Parable of the Talents," and "The Wise and Foolish Virgins."

Pewick Church.—The chancel of this church has just been further adorned by the erection of another stained-glass window. In this case the donor is Mrs. Moore, in memory of her deceased husband, the late Mr. W. Moore, of Elm Bank. The window was designed and executed by Mr. George Rogers. The subjects selected are the Bearing of the Cross and the Resurrection of our Saviour, in panels. Beneath are the symbols of the Pelican and the Cross, with the sacred monogram I.N.R.I. The quatrefoil at the top contains the Dove; a rich groundwork of the vine upon a ruby forms the background, and is surrounded with borderings of roses and foliage.

PROVINCIAL NEWS.

Ware.—The foundation-stone of the proposed corn exchange, at Ware, has been laid.

Ashbourn.—The manufactory which Messrs. M. Bond & Co. are erecting at Hanging Bridge, about a mile and a half from Ashbourn, has been completed, so far as putting on the roof. The building stands on the site of the New Mills, destroyed by fire a few years ago. The new building is three stories high, the material being pressed bricks, with alternate string courses of blue brick and freestone, and brick pilasters. The dimensions inside are:—Length, 137½ ft.; width, 54 ft.; height of rooms, 12½ ft. There are about 170 windows, the majority of which are 7 ft. 6 in. high by 4 ft. wide. The top room has 45 such windows, besides 14 skylights. The staircase is built of Maclesfield stone. In the turrets are two iron tanks, supplied by Messrs. Wright, Brothers, of Gosport Ironworks, Walsall, capable of containing 4,400 gallons of water, to be available, besides their use in the daily operations carried on, in case of fire. The building is surmounted by two angle turrets, with ornamental finials, and a clock-tower with two faces; and at one end of the main building is a counting-house, with ornamental ridge and finials. Besides the main building described, there are in course of erection—gas-house, boiler-house, and drying-room, stabling, coach-house, &c., and a dining-room for the hands. Attention has been bestowed on the ventilation of each division and room of the new mill. The building was designed by Mr. Sugden, architect, Leek; and the execution of the work by Mr. John Mathews, builder, also of Leek, who died somewhat suddenly on the 23rd ult.

Liverpool.—At a special meeting of the Mersey Docks and Harbour Board, a long discussion took place recently in reference to the new Bill

which will be presented to Parliament during the forthcoming session. The proceedings included a motion to the effect that the sum of 258,000*l*, intended for the completion of the docks at the north end of the town, be excluded from the Bill, which embraces additional borrowing powers. After a long debate the proposition relating to the exclusion of the 258,000*l* was rejected by a majority of seven, and the Bill as originally drawn out, which carries its borrowing powers to the extent of 1,100,000*l*, was adopted. This Bill will enable the Dock Board to complete the new docks, basins, and carriers' sheds now in course of erection at the Butte end of the dock estate.—The present Southern Hospital at Liverpool being too small for the demand upon it, a movement was commenced for erecting a new building on another site. A sum of 40,000*l*, is required, and at a meeting held at the townhall, subscriptions to the extent of 24,000*l*, have been announced.

—The New Exchange Company have entered into a contract with Messrs. Parker & Son, for the stonework of the two remaining wings of the new exchange buildings. The amount of the contract is 72,450*l*.

PATENTS CONNECTED WITH BUILDING.

MACHINE FOR PRESSING BRICKS.—H. A. Dufrene. A communication. Dated January 13, 1866.—This invention consists in an improved construction of pressing machine for the manufacture of bricks and other like articles made of brick earth or clay, by which more uniformity is obtained in the thickness of the articles than by the ordinary apparatus. This press is constructed of two parts, an upper and a lower part, acting on the middle of a frame of the form and dimensions suited to those of the articles to be pressed. The press receives a continuous motion from an eccentric worked by steam or hand power, and which, in its rotation, is made to move apart and bring together the said two parts of the press, between which the brick earth is placed and is compressed. The upper part is fixed to two rods, united by a striker or buffer fixed by four rods to a sliding-piece or block united to the collar of the eccentric, which sets it in motion. The lower part is free, and is raised by the striker or buffer during its ascent, and falls back of itself during the descent of the striker or buffer. The quantity of clay or brick earth exceeding that required is thrown back by the press itself by means of a hole, which may vary in its dimensions, made in one of the sides of the part of the press on which the pressure is exerted.

MACHINERY FOR MAKING BRICKS, TILES, &c.—C. G. Johnson. Dated January 13th, 1866.—This invention relates to that class of machinery for making bricks, tiles, and similar articles, in which a stream of clay is expressed from a pug-mill through a moulding die or dies, and afterwards cut into lengths. In constructing machinery of this description according to this invention, the patentee places the knives or blades of the pug-mill on the same axis as that which carries the screw that is employed for forcing forward the stream of clay through the moulding die or dies. The portion of the outer casing of the pug-mill in which the screw works is by preference made of smaller diameter than the part of the casing in which the blades or knives of the pug-mill work. The exit end of this contracted portion of the casing of the mill is enlarged into a bell or enlarged mouth, and the end of this bell or enlarged mouth is closed by a fixed plate, which carries a bearing to receive the end of the shaft of the pug-mill. On one side of the bearings of this shaft is placed the moulding-orifice or die through which the clay is to be expressed. By forming the exit end of the pug-mill in this manner, the stream of clay is not diverted by the bearing of the pug-mill shaft as it is when the moulding-orifice is placed opposite to the centre of the shaft, as is now the case. Above the top of the mill, where the clay is arranged into the machine, the patentee places a pair of rollers, between which the clay has to pass before entering the pug-mill; these rollers crush any stones there may be in the clay. The rollers are driven from a wheel on the pug-mill shaft.

IMPROVEMENTS APPLICABLE TO WATER-CLOSETS AND COMMODE-PANS.—H. E. Newton. A communication. Dated 15th January, 1866.—The inventor of the present improvements looks upon the closing of the direct orifices

of the pans as a secondary consideration and effects the intended object by surrounding the seat or portion occupied by the person when sitting down with a continuous hermetic joint at the upper part of its circumference, thus enclosing the pan (and the part contiguous thereto) in the limits within which the matters, whether solid or liquid, can be projected. By this means, not only are the faeces matters arrested, but also any others which might adhere to the interior of the space above mentioned. In order to do away as much as possible with any obstacle which might stop the descent of the solid matters, the sides of the pan are made vertical instead of inclined as usual. With regard to the urine, it is arrested by the front projections set in such a manner that it prevents splashing, and forces the liquid to flow down inclines into the receptacle below.

Books Received.

The Theory of Strains in Girders and similar structures, with Observations on the Application of Theory to Practice, and Tables of the Strength and other Properties of Materials. By BINDON B. STONEY, B.A., Memb. Inst. Civ. Eng. &c. &c. London: Longmans, Green, & Co. 1866.

To every earnest student in the engineering profession Mr. Bindon Stoney's book on the theory of strains will be a welcome friend. One of the principal reasons why many English engineering students never pass beyond the grade of moderately good draughtsmen is, the difficulty of acquiring from books a proper understanding of the subject of their profession.

This is not the case with engineering students abroad. In the Polytechnical schools of Germany, the pupils are well grounded in the theory of engineering, and come over to England and beat the young English student on his own ground.

Most of the English authors of authority on engineering write in too high a style for the comprehension of young beginners; and as, in an engineering office, an individual instruction to all the pupils is altogether out of the question, a pupil, except in instances of rare perseverance and ability, after having duly served his period of apprenticeship, finds himself a draughtsman and not an engineer.

There are no gradations by which he may rise. He must encounter at the first step such an array of formulae and equations that he cannot successfully cope with them alone, and so is obliged to settle down to the drudgery of the profession.

The results following from this state of things are becoming serious enough to invite special attention. It is questionable, indeed, whether the prodigious arithmetic sometimes brought into force be necessary at all to the elucidation of numerous matters to which, by the force of habit, it is applied; and as has been lately noticed by some writers, the entire science of modern geometry is becoming so overlaid with symbols and figures that the subject of inquiry is often buried beneath them.

The portion of Mr. Stoney's work treating of transverse strain and deflection, is, we fear, still not what is required for learners; but nothing could be more admirable than the chapters on bracing, and various other portions of the book. Perhaps Bow's treatise on bracing does not include so many examples, and so ample a definition of the various kinds of bracing in use, as we find given in the first volume of Mr. Stoney's theory of strains.

The style in which the book is put together must also be commended, affording simple and unusual facilities for reference, which in no way interfere with its being read through continuously.

VARIOREM.

The *Art-Journal* gives some particulars of the Albert Memorial in Hyde Park, especially of the metalwork. Wrought-iron is employed for the whole of the framework, and cast-iron for the structural parts that are to be built upon this framework. All the more distinguished visible portions of the work, the bases and capitals of columns, the cornices, crestsings, finials, and other similar details, and with them the cross that is to crown the entire edifice, are to be of a fine bronze. Mr. Skidmore has covered with lead the whole of the ironwork that otherwise

would be visible, and consequently would be exposed to atmospheric action. "Lead and bronze are the only visible, and therefore the only available, metals. This same lead-work is wrought into an elaborate series of exquisite surface-designs, of which the leading motive is to form settings for innumerable pieces of polished agate, onyx, jasper, cornelian, crystal, marble, granite, and other richly-coloured hard substances, together with inlays of enamels of various hues. The cross that forms the final of the memorial is a work of great dignity, executed in bronze, with inlays of stones and rich gilding. It is a Latin cross, severe in outline, and yet at its head and other extremities, and also at the intersection of its limbs, a strict simplicity of form is not maintained. It stands upon a highly enriched globe, which, in its turn, rests upon the foliated capital of a single cylindrical shaft, wreathed towards its head with spiral enrichment: and, lower down, wrought into an octagonal section, having four of its faces studded with gem-work, while a statue is placed in front of each of its other four faces. Sixteen bronze statues, of various heights, the four principal ones being 8 ft. high, are grouped about the several stages of the spire, and add greatly to the dignified beauty of the whole composition."—Hardwicke's "Science Gossip" goes on, and improves as it goes. It has evidently found a public.—A paper "On Water-Filters" by Dr. Divers, in the *Popular Science Review*, deserves attention.—The *British Workman* and *Band of Hope Review* (the yearly part of each is just out) are specially noticeable for the excellent woodcuts, of large size, with which they are filled. One of these, in the *British Workman*, is drawn from the notice against swearing affixed by Sir Christopher Wren to the walls of the Cathedral. A capital sheet almanac, for a penny, is issued with each of these serials.—The "Financial Reform Almanac," at the same price, exhibits at a glance a large amount of financial information.—The *January Fraser* is a very entertaining number. It includes Lord Stanhope's lecture "On the Influence of Arabic Philosophy in Medieval Europe."—Among South-Western Cathedrals "is too slight to satisfy architects."—*The Gardener* (W. Blackwood & Sons) promises to be an agreeable and useful cheap monthly. The editor wants specially to make it useful, he says, to that large and increasing class of the community who, previously to the development of the railway system, lived in cities, but who now live in the country.

Miscellaneous.

THE LOCAL GOVERNMENT OF THE METROPOLIS.—The Right Hon. S. H. Walpole, the Secretary of State for the Home Department, has appointed Tuesday next, the 8th inst., at two o'clock, to receive the deputation agreed to at the recent public meeting at St. James's Hall, called by the Metropolitan Municipal Association for Promoting the Better Local Government of the Metropolis.

ATLANTIC CABLE DIVIDEND.—The Anglo-American Telegraph Company have announced that the net profits of the company have exceeded the rate of 25 per cent per annum from the date of opening the cable for public traffic on the 28th of July last, it has been resolved to distribute to the shareholders, early in February, a dividend, on account, equal to 10 per cent. on their shares, leaving the remaining 15 per cent. to be disposed of at the annual meeting to be held in July or August next.

SUPPLY OF GAS TO THE METROPOLIS.—At a meeting of the Strand District Board of Works, held on the 19th ult., resolutions were passed condemnatory of the monopoly afforded to the gas companies as highly injurious to the consumers, and directing a petition to the Board of Trade that steps may be taken during the next session of Parliament to repeal the present Gas Acts, and provide for a good supply of pure gas for the public. The subject was very fully discussed, and the resolutions passed unanimously; the general feeling throughout the discussion appeared to be that the improvement of the quality of the gas was of paramount importance, and that this would only be accomplished by the Metropolitan Board or some other municipal authorities having the whole management of the gas vested in them, as is the case in many of the municipal towns in the provinces.

DRAINAGE OF HORNCASTLE.—The recently-formed Local Board of Horncastle have resolved to proceed, at once, with drainage works for the town, and have instructed Mr. Lawson to prepare the necessary plans.

NEW UNIVERSITY COLLEGE, GLASGOW.—By direction of the Building Committee of the New University College, of which Mr. G. G. Scott, K.A., is the architect, plans were submitted by several engineers for the ventilation and warming of the building. Ultimately those of Mr. W. W. Phipson, C.E., London, were accepted. The cost of the building will be about 200,000l. Mr. Thompson, of Peterborough, is the contractor.

WORKMEN'S LODGINGS IN SPAIN.—A Madrid letter in the *Courrier de Bayonne* has the following:—"The question of workmen's lodgings has been discussed during the last few days by the *Epoca* of this city, and by the *Provincias*, a journal of Valencia. The inquiry into subjects intended to insure or increase the comfort of the necessitous classes seems to me more important than any others, and for that reason I insist more particularly on them. The Society of Friends of the country of Valencia has, on its side, been examining the most economical means of procuring lodgings for the poor."

IMPROVED VENTILATION OF MINES.—A plan for the ventilation of coal mines has been invented and patented by Mr. Joseph Lang, overlooker at Mr. Outram's Castle-street Mill, Moorlane, Preston. The ingress of fresh air by the descending shaft, and the expulsion of foul air by that ascending, are secured by mechanical agency. At the mouth of the ascending shaft a fan is connected with the cupola. Upon the fan being set in motion, ascending pipes act as "suckers," and remove the gases received below in junction boxes. As the bad air is thus expelled, fresh air enters the pit by the descending shaft, and thus a continuous current of fresh air is secured, proportionate to the foul air expelled, while the former forces the latter to the junction boxes, giving it no opportunity for accumulating in the several workings. The quantity of air to be admitted and expelled can be simultaneously regulated at the will of the operator; so that a hurricane of wind might be improvised, on the one hand, while on the other a gentle breeze can be had with equal facility.

SMOKE CONSUMPTION.—A new appliance for the consumption of smoke has been in operation at the works of Messrs. J. Wade & Sons and Messrs. Rouse & Co., of Bradford. The design has been for some time patented by Mr. Charles Gall, an engine tender, of Bridgenorth, Shropshire, and has, it is said, been already applied with success at various establishments in Bridgenorth, Wolverhampton, and Blackburn. The bridge is fitted with an air-valve below the level of the fire-bars, the valve being slung in the same manner as an ordinary throttle-valve. A short distance behind the main bridge is formed another of considerable height, this second bridge being fitted with a "striking plate," which deflects upwards, the air entering the air-valve. When the air-valve is opened, the air entering through it is directed upwards, and mixed with the heated gases escaping from the fire, thus supplying the oxygen necessary for their complete combustion. The simple self-regulating arrangement which forms the principal feature of the plan, is to admit the quantity of air required according to the state of the fire. This consists of a pair of vessels capable of containing water, the pair being connected by a bar which turns in a centre fixed to the boiler. The bottoms of the vessels are also connected by a small pipe furnished with a stop-cock, and another pipe of large diameter leads from the bottom of one vessel to the top of the other. The bar connecting the two vessels is furnished with a couple of tappets, these being acted upon by the pin of a small crank fixed at the upper end of the hinge-pin of the fire-door, this pin being prolonged upwards for the purpose of carrying it. To the underside of the one vessel there is attached a link, the lower end of which is coupled to a lever fixed in a slight shaft which extends along the asphalt to the bridge, this shaft carrying near its inner end another bent lever. This bent lever acts upon another lever, which is connected to the upper part of the air-valve by a short link and staple, and thus by depressing the lever the air-valve will be closed, the manner in which the valve is hung tending to make it fall open.

SANITARY RESPONSIBILITY OF CORPORATIONS. Mr. Brumback, of Louisville (U.S.), who lost his wife and daughter by cholera, has sued his city corporation for damages in the sum of 25,000 dollars, alleging that if the streets in his vicinity had been properly graded, no deaths would have occurred.

THE LIGHTING OF DURHAM CATHEDRAL.—The system of gas-lighting adopted some time since in the cathedral having recently been found in an unsatisfactory state, the dean and chapter have lighted a portion of the nave in the manner adopted in the choir of York Minster and round the dome of St. Paul's. The mode of lighting is by pipes laid on the string-course immediately over the nave arches, each pipe having about ninety small jets projecting from it, and giving the effect of rows of brilliant beads of light. These pipes are supplied by large mains carried along in the triforium, and have each separate taps, so that the different portions can be lighted either singly or all together. The general wish seems to be in favour of its extension to the choir. The work has been carried out by Mr. G. Newby, under the direction of Mr. C. Hodgson Fowler, architect.

THAXTED NEW GAS WORKS.—These works are now complete. The contractors for the buildings were Messrs. Cole, Brothers, of Thaxted. The rector-house, coal-shed, and other erections are of white brick with red piers. These are in the low part of the town. The chimney-shaft is tubular, and about 40 ft. high. The roofs are covered with Taylor's patent red tiles. There are two double pipe condensers in front outside, and three retorts, two of which will be worked in summer and all in winter; two purifiers with patent centre valve, and the gas-holder is self-acting, 31 ft. in diameter, 8 ft. deep, and calculated to hold 12,000 ft. of gas, with five extra strong columns. The grounds are inclosed with white brick walls and red brick copings. Many private lights have already been burnt; and it is expected that 180 will be commenced with, at 6s. 8d. per 1,000 cubic feet. The public lamps are twenty-four, provided for by a district rate on the inhabitants of the town at 6d. in the pound.

MISS HOSMER'S MONUMENT TO ABRAHAM LINCOLN.—A model of "The Freedmen's Monument to Abraham Lincoln" has been set up for exhibition in the Art Gallery of the Boston Athenaeum. It recently arrived from Italy, and is the last work and the masterpiece of Miss Harriet Hosmer. It will be 60 ft. in height, and the base 60 ft. square. The architectural work will be of New England granite; the figures, the ornaments, and the bas-reliefs of bronze. It will cost a quarter of a million of dollars. The idea originated with a negro woman, who volunteered a 5-dollar bill to begin with, at the time of the president's assassination. The freed people have already contributed 23,000 dollars. The salient features of the monument comprise a temple, with thirty-six female figures, hand-in-hand round the base, representing the states; the emancipation of the slave, represented by four bas-reliefs; and the preservation of the Union, by representations of four events of the war, one of these being the assassination. The temple contains a statue of Abraham Lincoln, on a sarcophagus, with four Victories mourning his death.

THE STREETS OF ROME.—The correspondent of the *Telegraph* writes,—"The filthiest streets of Rome are in the Borgo, and the Borgo is composed of the streets immediately surrounding St. Peter's. 'Tu es Petrus,' runs the great inscription in mosaic round the drum of the dome, in letters every one of them as tall as a life-guardsmen,—"Tu es Petrus, et super hanc petram edificabo ecclesiam meam;" but underneath the rock of the Church priestcraft has built up a dunghill. One loose patience altogether with the splendour of the Roman churches when we contrast that splendour with the squalor by which it is environed. At least, among us heretics, consigned by the Romanists to eternal torment, the church goes hand-in-hand with the trim school-house, full of clean and rosy children, with the hospital, the asylum, and the reformatory. But here there is but one step from Raffaele's pictures and Bernini's statues to Beggar's Bush and the Cadger's Arms. Bramante and Fontana's great façades only screen the nest of hovels behind; and all the loathsome losels of the Roman Alsatia wash their rags in fountains adorned with saints and angels."

SURVEYOR OF POLICE BUILDINGS.—The surveyorship of police buildings in the metropolitan district, and of county courts, held by the late Mr. Reeves, has been given to Mr. T. C. Sorby, architect.

DUNDALK.—A Louth correspondent of the *Freeman's Journal* states that the engine-drivers employed on the Belfast Junction Railway have given notice of their intention to resign their places in consequence of the frequency of attempts to upset trains on that line.

THE STATUE OF THE QUEEN FOR LIVERPOOL.—Mr. Thornycroft, with the assent of the Queen, has been selected as the sculptor for the equestrian statue of her Majesty to be erected opposite St. George's Hall, Liverpool, in a line with that of the Prince Consort. The statue is to cost 5,000l.

THE STREET GAS EXPLOSION, NEAR LEATHER-LAND.—The coroner's inquest on the three persons killed by this accident has not yet been concluded. From the evidence already led it appears that the men employed in the street by the Chartered Gas Company left work on the Saturday of the accident without sufficiently securing the gas in the main, where they were at work; and some hours afterwards, the explosion took place, knocking down two houses, and killing three persons, at Nos. 4 and 5, Summer-court, Eyre-street-hill, between Little Bath-street and Back-hill.

ARCHAEOLOGICAL INVESTIGATION IN WESTMORLAND.—Investigations have lately been made in five sepulchral tumuli, situated in the mountainous country about Appleby, Brough, and Kirby Stephen. The excavations have yielded remains of ancient Britons, both burnt and unburnt, and in two cases showed the practice of Anglo-Saxon adoption of older barrows for burials in a barrow slightly to the south of Kirby Stephen, a British burial having there been disturbed by Anglo-Saxons to insert the rough box coffin and body of an Anglo-Saxon, as shown by the funeral accompaniments.

RE-OPENING OF SPITALFIELDS CHURCH.—This church has been re-opened for Divine worship, after having been kept closed for a period of six months, during which it has undergone extensive renovations. It was originally built by Hawkmore. The windows have been enlarged, the columns have been freed from the encumbrances by which they were defaced, and the ceiling has been thoroughly cleansed, and its decorations have been brought into relief. The architect under whose superintendence these changes have been effected is Mr. Christian. The total cost of the renovation is estimated at 6,680l.

ARCHITECTURAL PRIZES, PARIS.—At the recent public meeting of the French Academy of Fine Arts, the Deschaumes prize of 1,500 francs, founded to aid young architects without fortune, who have relatives dependent on them, was divided between M. Marcel Bousvert and M. Miquet. The latter artist was, at the age of twenty-six, a workman in a factory, when his arm was broken by machinery; the limb was incompletely cured, and he was compelled to seek a new occupation. He studied architecture, while getting his living by writing, and afterwards obtained employment as conductor in the department of the Ponts-et-Chaussées, and supported his mother and sister. The *prix Léclerc* was awarded to M. Duret, architect, for a design for a monument commemorative of the visit of the Emperor to Algeria. The subject proposed for the same prize next year is "a monumental bridge, situated in the midst of a great city, at the point of an island, magnificently decorated, and presenting an edifice consecrated as a souvenir of a universal exhibition of industry." These terms accord exactly with the position of the Pont Neuf, which touches the point of the island of the old city of Paris, where stands the equestrian statue of Henri IV., and the rebuilding of this bridge, and of the quaint old triangular Place Dauphine, once a court quarter of the town, has long been under consideration. The subject for the Bordin prize for 1868 is the analogies and differences which appear between Greek and Roman architecture; the authors being instructed to point out, either on the evidence of facts, or by deduction, what artists and artisans contributed to the construction and decoration of the public and private edifices either of Greece or Italy, and what was the civil and social condition of such artists and artisans.

RE-OPENING OF THE ROYAL CHAPEL AT WINDSOR.—The Royal Chapel near Cumberland Lodge, in Windsor Great Park, has been reopened for divine service. The new edifice, the chance of which was consecrated some time back, has been erected in the Early English style of architecture by the Commissioners of Woods and Forests, from designs by Mr. Salvin and Mr. Teulon, the works having been superintended by Mr. Morris. The plan includes a nave, an aisle, chancel, and transept, while the open-pointed oak roof is carried partly by the north wall and some carved stone pillars separating the nave from the south aisle. In the chancel is a memorial window to the memory of the late Duchess of Kent. Separated from the chancel by an oaken hand-rail, and on its south side, is the royal closet, which has a stone screen dividing it from the end of the aisle.

POWER OF BURIAL BOARDS OVER INSCRIPTIONS. In the case of the Dean of Carlisle and the Carlisle Burial Board as to the right of Burial Boards to interfere with monumental inscriptions, Chancellor Barton, in the Consistory Court of the Diocese of Carlisle, has given judgment. After reviewing the Acts of Parliament relating to the subject, the Chancellor said the law directed the ground to be consecrated; and it was to be noted that every deed of consecration of burial grounds, whether under the anciently accustomed regulations, or the principle of cemeteries, saved all episcopal rights and jurisdiction. That was an invariable condition. The 33rd section of the 15th and 16th of Victoria gave Burial Boards the right of "erecting or placing any monument, gravestone, tablet, or monumental inscription" in their ground, but he considered that the Act only had the incumbent in its eye; the bishop's authority may still permit the inscription or may still refuse it, or may order its removal. He held, therefore, that while the Board may object to any particular inscription, as ministers and churchwardens have heretofore objected; on the other hand, any person hindered by the Board may appeal to the Court.

THE MANAGEMENT OF FENCES.—The subjoined is an extract from a paper read by Mr. H. W. Keary, at the quarterly meeting of the Wenlock Farmers' Club:—"Although I deprecate most strongly an unnecessary number of fences, I am convinced that true economy points to the maintenance of good, strong fences, and such as will really answer the purpose for which fences are made. And this will not be found to be a work of any difficulty, if only a little attention and method are shown in their management. If possible, only one, or at most, two men should be employed to cut the hedges on a farm, and great care should be taken to furnish them with proper tools. A few lessons, and a little firmness at first, will be quite enough to teach a handy labourer how to do his work, and I believe that the very fact of his having a particular branch of labour entrusted to him operates as a stimulus to do the work well. On every light sand I have sometimes observed old trimmed fences become a little cankered on their lower stems. This, however, has been entirely remedied, and at a small cost, by throwing up the soil to the roots on each side; and, indeed, it is not a bad plan to treat one or two fences in this way every year. The soil is naturally washed away after a lapse of time, and I know nothing that renovates a weakly fence more. The system of pleaching fences is so generally adopted in this district that it appears necessary to say a few words respecting it. The skill of the workman is quite as important in this branch of hedge-cutting as is the one I have just considered. Great care should be taken to cut down all the large and thick pieces, and to lay or plough all those that are likely to live under the operation. The pleachers should not be too long, and plenty of stakes should be used. On pastures I think it desirable to use binders on the top, otherwise the cattle are apt to disturb the pleachers with their horns, and materially injure the fence in its early growth after cutting. At the time of pleaching, the ditch, if any, should be well cleared out, and all weeds well cleaned away from the roots of the thorns; fresh soil should then be thrown up and worked well into the face of the bank; the bank should also be reduced to its proper size, and left with a sufficient slope. Many old banks are much too large, and may be reduced with great advantage; but care and judgment are required even here, for if a bank is cut down too steep and too close, the roots of the fence are exposed, and will gradually die away."

SOUTH KENSINGTON MUSEUM.—The number of visitors during the Christmas week was 24,108.

THE RESTORATION OF GLOUCESTER CATHEDRAL. The youthful Earl of Eidon, who owns considerable property on the Cotswolds, and whose coming of age was celebrated a few weeks ago, has forwarded to the Dean of Gloucester 500l., to be applied to the restoration of the cathedral.

BUST OF THE LATE LORD MACAULAY.—A bust of Lord Macaulay has, with the permission of the Dean and Chapter, been placed in Westminster Abbey by his sister, Lady Trevelyan. It stands upon a bracket, designed by Mr. Scott, and is placed in the immediate neighbourhood of the grave and of Addison's statue, in Poet's Corner.

CARPENTERS' APPRENTICES.—In a case just tried it has been decided that a master is not justifiable in employing an apprentice in domestic or other use unconnected with the business he is learning,—such as in beating carpets, or even in stacking boards. The judge gave a verdict against the master, with 15l. damages, the claim, however, being 50l.

COST OF LAND, LONDON.—Mr. Mechi writes: "The great city of London is comprised in an area of only 632 acres and a few poles; in fact, the size of a farm which in the country could be had for a rent of 600l. to 1,000l. per annum. My country friends will be astonished when I tell them that the last cheap thing I heard of as purchased land in Lombard-street was over two millions sterling per acre, or nearly 70l. per square foot of area."

GLASS TRADE, AMERICA.—The making of window and bottle glass at Pittsburg (U.S.) gives employment to 1,800 men and boys, whose annual wages amount to 1,395,516 dol. The amount of silica consumed is 242,000 tons, and it is chiefly brought from Missouri. The annual value of the manufactured glass is estimated at 2,160,000 dol. These reports are of the window and bottle glass work alone, and do not include the nineteen flint-glass factories, which are valued at 1,298,100 dol., pay weekly wages amounting to 19,000 dol., and annually consume 2,095,806 bushels of coal, employ 2,304 hands, and make 2,000,000 dol. worth of glassware.

PROPOSED INFIRMARY FOR WIGAN COLLIERY DISTRICT.—It has been resolved at an influential meeting of the inhabitants of Wigan and its neighbourhood that an effort be made to raise 30,000l. for the erection of a suitable building, and as a part of the endowment fund, for an infirmary, which should contain some fifty or sixty beds, and the working expenses of which would be about 3,000l. annually. A committee has been appointed, and a donation list opened. The employers of labour are advised to confer with the operatives in order to secure a donation of 1d. per week from each person. The subscriptions promised in the rate amounted to 14,500l.

MEMORIAL OF THE LATE ARCHDEACON COXE.—The memorial of the late Venerable R. C. Cox, Archdeacon of Lindisfarne and Vicar of Eglingham, has taken the shape of a porch to Eglingham Church, according to plans approved by the late archdeacon, and which were found in his library. The committee are about to record the dedication of the porch to the memory of Archdeacon Cox by placing a brass plate therein with the following inscription:—"Unto the memory of Richard Charles Cox, M.A., Archdeacon of Lindisfarne, Canon of Durham, and during 12 years Vicar of Eglingham, this Porch was erected by his Neighbours and Friends; whereby was followed out a plan which had been designed under his own eye to provide a worthy vestibule to the Church. He died, venerated by the clergy and beloved by his people, August 25th, 1865, in the 68th year of his age." Mr. F. R. Wilson was the architect. The total cost has been 104l. 18s. 8d.

TENDERS

For a row of four labourers' cottages at Hadlow, for Mr. Wm. Grundwell, Mr. Henry Stapley, architect:—
Hammond..... £38 10 0

For a detached villa residence, to be built in the Ridgeway-road, Epsford, for Mr. H. W. Draper, Mr. T. J. Hill, architect. Quantities supplied by Mr. R. L. Curtis:—
Morsland & Burton..... £2,150 0 0
Field & Sons..... 2,100 0 0
Fairhead..... 1,976 0 0
Cushing..... 1,975 0 0
Anley..... 1,860 0 0
Pattison Brothers..... 1,849 0 0
Webb & Sons..... 1,787 0 0

The Builder.

VOL. XXV.—No. 1249.

The New York National Academy
of Design.



NEW YORK came forward nobly for the erection of a building for the Academy of Design, and that, too, at a moment when engaged in civil war. In the early part of the autumn of 1825, there was formed in the City of New York, a "Drawing Association," for art study and social intercourse, which embraced, among its members the greater portion of the artists then in the City. This Association prospered in such a degree, that it soon became necessary to extend its field of operations, and the result was the foundation, on the 19th day of January, 1826, of the present National Academy of Design.

The first Annual Exhibition of the Academy was held in the year 1826, on the second story of a building at the south-west corner of Broadway and Reade-street. One room only was occupied, and that a small one, being but 50 ft. long and 25 ft. wide. It was lighted in the evening by six ordinary gas-burners, and this is said to have been the first occasion on which gas was used for an exhibition of pictures. In 1850, the Institution purchased property, and a suite of six galleries was erected on it; and was so ably managed, that, after years of patient labour, it produced the first means of any amount ever in the possession of the Academy. After five years of occupancy, this property was sold for about one hundred and twenty thousand dollars, giving the Institution a clear return of sixty-nine thousand dollars, and leaving, after the payment of all outstanding debts, a balance of nearly sixty thousand dollars.

After wandering for some time, the Academy, in 1860, purchased a site, at the cost of 50,000 dollars, and invited designs from the leading architects of the city. The design submitted by Mr. P. W. Wight was selected, and steps were taken to appeal to the sympathy of lovers of art outside to raise the funds that would be required. With this end in view a new class of members was established, with certain stipulated privileges, on the payment of 100 dollars for a life-interest, or of 500 dollars for the same interest in perpetuity, with power in the latter case to transfer or to transmit it. The citizens of means and taste responded with such liberality, that after only a few weeks the council felt fully assured of being able to realize their plans in the amplest manner. Many men, indeed, with a munificence quite unexpected, con-

tributed not merely the sums required by the terms of the fund, but in large excess of it; so as to leave no doubt of the successful completion of the new edifice and the endowment of the Academy in such a manner as to enable it to worthily achieve its important ends.

On the 21st of October, 1863, the first stone was laid, when several excellent addresses were made. One of the speakers, alluding to the mighty struggle in which they were engaged, as a tempestuous spring-time to which would follow a glorious summer of intellectual growths, said,—"May we not hope that out of the throes and convulsions of our darkened and strenuous present may be born a future of grandeur and radiance? Nay, may we not discern on the very smoke-wreaths of battle the same glorious bow of promise which the Divine Benignity paints on the storm-clouds when the tempest is overpast?"

"But, to attain that lofty consummation," the speaker continued, "our artists and our public must learn to estimate art in its true dignity and character, not as a frivolous pastime, like the antics of Harlequin; not as a minister to ostentation, like a fashionable upholsterer; not even as a better sort of schoolmaster, teaching a finer selfishness; but as, indeed, it truly is, the purest and best effort of the purest and best minds in their purest and best hours. Art amuses us, it is true, like many meaner things, but it elevates while it amuses; it delights us, but it enables us through that delight; it instructs us, but it informs us, or forms us inwardly, while it instructs. The genuine products of a mysterious fusion, which blends the sense that sees all beauty with the wisdom that perceives all truth and the love that sympathizes with all life, it has no other function and no other sphere than to speak to the whole of man's higher nature,—to his most exquisite sensibility, his shaping imagination, his penetrative reason, and his vivifying soul."

In 1865 the building was ready for occupation, and the 17th of April was named for opening it. On the 15th of that month the world was startled and saddened by the murder of President Lincoln, and the members of the Academy immediately passed resolutions expressive of their regard for the memory of their late chief magistrate, and postponed the inauguration till the 27th of the same month. On that day it took place, when the president delivered an address, and the venerable William Cullen Bryant, the poet, followed him with eloquence. He did not overlook the fact that the new building had an old one for a type; but saw in this "an historical congruity to the purpose it will serve, since it was for the adornment of buildings not dissimilar in style that the art of modern painting put forth its early efforts, and advanced to that stage of perfection which gave us the great colourists of the Venetian school." "I am confident in the expectation," he said, afterwards, "that a day of great glory for art in this country is at hand—a day of which we now behold the morning, coincident with the signal overthrow of a mighty and fearful conspiracy against our national existence, and with the near prospect of returning peace. The temperament of our people and the influence of our climate are, I think, highly favourable to the cultivation of the fine arts. Some quality in the air of our part of the world, which I do not pretend otherwise to define, promotes, unless I am greatly mistaken, the activity of those faculties which conspire to make the great painter and sculptor."^{*}

The new building, of which we give an engraving,† stands at the north-west corner of Fourth-avenue and Twenty-third-street. It has a front of 80 ft. on Twenty-third-street, and a front of 98 ft. 9 in. on Fourth-avenue. The principal entrance is in the middle of the narrower front, facing southward. It is on the level of the floor of, what is called there, the second story (with us it would be the "first-floor"), and is reached by a double flight of steps.

On this story, as shown on the plan, is a wide

* A Report of the proceedings on this occasion, and of those at the laying of the corner stone, has been published by Mr. G. H. Mathews, of New York, only a small number being printed. It is excellently got up, and a credit to all concerned.

† See p. 23.

hall, extending from the principal entrance nearly the whole length of the building, with stairs leading to the top story. To the right of this hall, entering the building, is a range of four large rooms, lighted by the eight windows which are shown in the engraving, and by the three windows of like design which open in the shorter facade. The first is a reception-room; the next two are used for the library of the Academy of Design; and the fourth is a meeting-room for the council or governing body of the institution. There are three similar windows to the westward of the main entrance. The first of these gives light to a treasurer's office, the others light a ladies' parlour. Behind these small rooms, is a lecture-room, intended to accommodate 300 persons; and with a private stairway, leading to the story below.

The stairs which lead to the upper story are in the centre of the building, occupying the whole width of the hall, and are an important feature of the interior. The top story is wholly occupied by exhibition galleries, conveniently arranged around the central staircase, and all communicating so as to admit of passage all round. These are lighted from the roof, and need no side windows, except in one gallery, which, being intended for sculpture, has a large north window. The circular openings, filled with tracery, shown in the engraving, are ventilators communicating with the picture-galleries.

The lowest story (called the first, on the plan) is principally devoted to the School of Design, but some rooms in it are intended for the residence of the janitor. The entrance to the School of Design is at the side. The three large double windows near it give light to three studios, which, with a large hall opening into them, are the rooms of the Antique School. Adjoining is the hall of the Life School, which is used only in the evening. This room, the lecture-room above it, and the sculpture-gallery, on the top floor, have windows opening upon a small court-yard, taken from the regular parallelogram which the plan of the building would otherwise occupy.

The interior of the building is well and expensively fitted up. The greater part of the woodwork is of oak, walnut, ash, and other hard woods, oiled and polished, so as to show the natural colour and grain. Each of the four large rooms on Fourth Avenue has an open fireplace, with a hearth of ornamental encaustic tiles, and a mantel-shelf of oak. The windows of the Library and other rooms are fitted with plate-glass in sliding sashes, and inside shutter-blinds. The rooms are connected by large arched openings, two of which are fitted with folding-doors, glazed with plate-glass. The vestibule at the main entrance is floored with an ornamental pavement of inlaid marbles of different colours; and the floor of the main hall is of walnut and maple, in ornamental patterns.

The Academy is the only Gothic building of any importance, other than a church, yet erected within the city limits, and is more richly decorated with sculpture than the exterior of any building in America. The double flight of steps leading to the main entrance—rendered necessary by the small size of the plot on which the building stands, a sufficient staircase within being an impossibility—is an ornament to the building. It is very richly carved with floral ornament, and is built almost entirely of white marble. It affords, also, a good place for the drinking fountain, which occupies a triple arcade under the platform of the stairs.

The walls of the lower story are of gray marble, from Westchester County, New York. The darker bands are of North River blue-stone, selected and smoothed pieces of the same stone as that of which the flags are made which cover our side-walks. The arches of the small windows of the janitor's rooms, in the Twenty-third-street front, are of white marble, the dark band of blue-stone passing over them. The little circles

in the white marble archivolt, just seen in the engraving, are filled with a flower each—the flowers being all different. The coupled arches over the door and windows of this story, in the Fourth-avenue front, are constructed of alternate voussoirs of blue-stone and gray marble. The clustered columns that support these are of gray marble, but the carved capitals and bases are of white marble.

The sculptured capitals throughout are of a very ornamental character, reminding us of some of the best works of the kind in this country. The three illustrations given are selected, in Fig. 1 from the Fourth-avenue side of the building, and in Figs. 2 and 3 from the entrance in Twenty-three-street. In Fig. 1, as well as in the right-hand capital of Fig. 3, is carved the well-known Virginian creeper—*Ampelopsis hederacea*; the former apparently mingled with some species of pitcher plant, and the latter with the Iris-like "day lily." In the left-hand capital of Fig. 3 is the exotic garden-rose and the *rhododendron*; whilst in Fig. 3, it is easy to detect, on the left, the noble garden-lily, *Lilium candidum*, and a small *narcissus*; and in the right-hand capital the *azalea*, with another plant probably belonging to the same natural order.

The carving in the spandrels, and on the capitals of the drinking-fountain, is particularly good and appropriate, though too small to be seen in our view. In the spandrels are reeds, lilies, and *arums* or *calladiums*, the large green leaves of which so beautifully spotted with brilliant red, so many will long remember as displayed at the Horticultural Congress in May last. In the capitals are ferns and other plants appropriate to the situation, and (as throughout the rest of the building) mostly of American origin.

The wall of the next story is of white Westchester county marble, with bands and alternate voussoirs of blue-stone. The shafts in the angles of the windows are of the same gray marble as that of which the walls of the lower story are built. The capitals of these columns are of white marble, carved with designs composed of leaves of forest trees. The tympana of these windows are of white marble, pierced with foliated openings, after the fashion of plate tracery. In the spandrels of the arches of these windows, on the Fourth-avenue side, are open circles which show the brickwork of the wall. It is intended to fill these, as some future time, with medallion portraits of white marble. The irregular spaces about these circles and the spandrels of the arches on the Twenty-third-street front are to be filled with mosaic of coloured marble or tile. There are spaces to be decorated in the same manner in the great gable over the main door. But the principal needs of the building, as it stands, are, at other points, also near the main doorway. The two great buttresses which flank the entrance and the gable are, for the present, finished with caps; but they are designed for statues whenever such may be presented, or can be bought. The tympanum under the arch of the great door is to be filled with a mosaic, if possible, representing some subject or scene in the history of art.

Of the walls of the upper story, it is only necessary to say that the materials are white and grey marble. The cornice is wholly of white marble, but under each little arch is a square of coloured tiles. The cost of the building was about 150,000 dollars.

We may add that the National Academy of Design, when it was instituted, January 18th, 1826, consisted of the following members: Samuel F. B. Morse, Henry Inman,* Thomas Cole,* Rembrandt Peale,* William Dunlap,* A. B. Durand, Charles C. Ingham,* Thomas S. Cummings, Frederick S. Agate,* John Evers, Edward C. Potter,* Hugh Reniegle,* John L. Morton, James Coyle,* D. W. Wilson,* John W. Paradies,* Nathaniel Rogers,* J. Parisien,* John Frazee,* Mosley J. Danforth, Chas. C. Wright,* William Mosey,* Peter Maverick,* Martin E. Thompson, and Ethel Town.* It was chartered April the 5th, 1828. The number of works of art exhibited in the first year, 1826, was 170; the number in 1855, 647. The Academicians appear now to be 78 in number, and there are 78 associates.

One of the local chroniclers of the inauguration meeting says at the close of his notice,—“Our hope took shape. Beauty, art, culture, shall yet be ours, shall yet love America.” We earnestly echo the aspiration, and fully coincide in the belief.

* Deceased.

“NO THOROUGHFARE.”

The Geysers of Iceland have long ranked among the wonders of the world. It is not alone as perennial fountains of hot water that they have excited the attention of the traveller. We have hot springs in this country; and the baths and gold-fish pools of Matlock are fed from an incessant and bubbling spring, which, when an Icelandic atmosphere surrounds it, gives us a proof of its high temperature in clouds of vapour. But the peculiarity in the Geysers which strikes the imagination even more than the contrast between the boiling spring and the surrounding winter, is the intermittent nature of the flow. A jet of hot water, springing boldly from the surface of its own little crater-like pool, becomes by degrees feebler and feebler, and at last altogether ceases to rise. The orifice appears to be closed, and the communication with the hidden fires is for the time entirely cut off. After an interval, however, of longer or shorter duration, the explosive force of the subterranean steam has accumulated to a pressure that overcomes the temporary obstacle, the escape-pipe is cleared with a burst, and the full column of the Geyser again springs high into the air.

Not a few of our public affairs in England seem to be conducted on the principle of the Geyser. All the conservative elements in the national character, and we have plenty of these elements, respectable and disreputable, tend to form a deposit that chokes the channels of activity, and throttles the efforts made for improvement. Men who labour without pay in the service of their fellows lose heart by degrees in face of the constant dead weight of obstruction with which they have to contend. Old habits become more inveterate, and more intolerant, by virtue of their very age. Official routine gradually becomes stereotyped, and red tape is triumphant. At last the block becomes so palpable and so unendurable, that the impatience of the country is raised to an overpowering tension, public indignation explodes, and the obstructive nuisance, or the obstructives who have carefully built it up, are blown suddenly away. In the Geysers, the process is one of constant repetition,—we hope that the parallel may not be absolutely true.

Not a year, we might say not a month, passes without affording an illustration of this method of conducting public affairs. We have just had an instance on a scale of imposing magnitude. On the second day of 1867, the inhabitants of London awoke in a new world. Those who are fortunate enough not to have their rising on dark mornings absolutely regulated by the clock, were surprised to find how late it was when they awoke, and how unusually disinclined they felt to get out of bed. Those who rose early soon had reason to consider whether it was not the part of wisdom, as well as of comfort, to return to their warm beds. It did not seem as if they would do much good elsewhere. That which so often occurs in individual streets, with a frequency that seems to mark it for an especial amusement of the authorities, had taken place all over London,—a gigantic “No thoroughfare” had been everywhere exhibited, by no less a power than that of our old friend, Jack Frost. The impasse was complete. Railway-trains came slowly to a standstill in some deep cutting, and steam refused to move the driving-wheels. From New-cross to London became a distance of three hours’ journey. Omnibuses simply had disappeared. Cabs were not to be found, until, later in the day, they were to be discovered in the new form of taxicabs. The architecture of the streets assumed a novel and imposing aspect, from the massive shade given to the string-courses by heavy coverings of snow. The clocks denoted contradictory hours, or were altogether veiled in white. The statues which so remarkably adorn London had assumed robes more majestic than their usual attire, and King George III. wore the same flowing full-bottomed wig with which, Mr. Jesse tells us, his Majesty so much horrified his beholders on a great official solemnity. Sir John Franklin alone, among these ghostly denizens of the metropolis, looked in his natural element. London seemed in the course of forty-eight hours to have been shifted to the latitude of St. Petersburg.

This was all very well for a time; but the snow-fall ceased, and the obstruction to our traffic continued. Men sought to go about their business, and there were no paths by which they could do so. Business had to remain undone.

The daily papers became full of the complaints of correspondents, loud in their denunciations of those who let matters take their course, or rather made no effort to prevent the evil of there being no course to take. Day succeeded day, and nothing was done; or, in some cases, worse than nothing. And as public inconvenience gave rise to public indignation, and the vestries, who are supposed to have control over the communications of the various districts into which London is inconveniently and absurdly divided, became the objects of uncompromising remark. An officer and champion of one of these governing bodies came forward to assure the public that nothing would, or could, or should be done when it happened to snow. Unfortunately for the value of his opinion, this gentleman committed himself to figures. He told us that it would require 1,500 carts and 3,000 horses to remove 3,000 loads of snow from Regent-street. We can only say that if such be the estimate formed by a surveyor of the capabilities of the plant and stock of a contractor, the work of the latter under his orders must be most exorbitantly lucrative.

We confess that we regard this great stoppage, unprecedented as it is in its magnitude, as a hopeful symptom. It cannot be called the straw that has broken the camel’s back, for it has been a load ample to overpower many caravans. Its completeness, its persistency, and the manner in which it has brought into relief not only the helplessness of the local Boards, but the unblushing complacency with which they regard their helplessness, and even seek to justify it, is enough, we would fain hope, to raise the public indignation to a pitch that shall blow away the vestries (with not the vestrymen) to keep company with last year’s snow. No event could have occurred better calculated to strengthen the hands of Lord Ebury, and those of his fellow-labourers, who are anxious to provide a better local government for the metropolis. Men who are unfit to deal with an emergency that is rather in accordance with, than an exception to, the ordinary laws of climatology, should not be allowed to muddle away the time, the convenience, and the money of their fellow-citizens. Worse alarms at times occur than those caused by a snow-storm, and where should we be then? We have been content to regard the Great Fire of 1666 as the last great fire possible in London. Is it so? Although our roofs are no longer thatched, how much is there of combustible matter stored in the materials and furniture of our houses? If, as we have but too unfortunately seen, our principal waterworks are allowed to catch fire; if the reservoirs of the great fountains of the Crystal Palace were allowed to be unavailable on the only occasion on which there has been a real necessity for their use, who shall sleep secure in a city which for a week has been left impervious to the engines of the fire brigade? What would be our condition if an earthquake, such as has just devastated Algeria, and of the possible visitation of which we have not been without significant hints, should suddenly shake St. Paul’s. It is the part of wise citizens to read the lesson set us by the blockade of the 2nd of January as one of timely and salutary warning; and, if we fail to do so, we may be sure that worse will come of it.

It ought to be a rule with all great public, and even great private, establishments, to have an alarm given at periods of sufficiently frequent recurrence, to ensure sufficient action in the hour of real need. How such an obvious precaution could have been neglected at the Crystal Palace is matter of wonder—or rather would be matter of wonder if precaution were not with us the exception rather than the rule. By the employment of this slight touch of the quarter-deck, plants and animals, sparkling Alhambra Court, noble tree-ferns, gorgeous parrots, and all the rich tribute of nature and of art, which have been accumulating for more than ten years at Sydenham, would now have been unharmed. We beg to urge most emphatically on the authorities at our great museums the necessity of this rule. There are buckets visible enough at South Kensington. Is there any water to fill them?—any one who knows the way to the supply?—any one to give orders?—any practical, efficient, organized system to be adopted, and that on the instant, in case of an alarm of fire being given at that storehouse of such rich treasures? We hope to hear that an alarm of fire is given there within a week. It is the only way to be secure against what often gives no alarm, till too late,—the actual outbreak of fire.

What, too, are the precautions adopted at the National Gallery?

The subject is one for the attention of the insurance companies. It ought to be insisted on in the policies of all heavy insurances. It is universal for the owners of valuable and combustible property to insure for its amount, and then to leave all but the very simplest precautions at the risk of the under-writers. No office ought to insure such a building as the Kensington Museum or the Crystal Palace, either wholly or in part, without providing for the instant applicability of the resources of the establishment in case of the outbreak of fire.

Twice within the week have we had a warning. What shall we deserve if we pay no heed? The waste of available power, the absence of the right thing at the right time, the helpless blaze of the Crystal Palace, around the very bases of the great water-towers, might have been warning enough. But there are men too busy to read the newspapers—men whose golden minutes are too profitably occupied, or whose precious eyesight is too severely taxed, to allow of the relaxation,—men whose daily thoughts are limited by the walls of their place of business. So the hint has come to them, so loud that they could not fail to hear, so unpleasant that they can not readily forget. There is not a single inhabitant of London to whom the first week of 1867 has not brought positive proof that things are not so ordered as they should be in the great city in which he dwells. If, after such a warning, we fail to set our houses in order, it is in accordance with all that we know of human history to expect that we shall have cause bitterly to rue our neglect.*

THE DESIGNS FOR THE NEW NATIONAL GALLERY.

For thirty years nearly, or ever since its completion in 1838, the building that has occupied what we have become tired of hearing described, in Sir Robert Peel's words, as "the finest site in Europe," has been the best abused building in Europe. Getting somehow, at once, and even more from causes now undeterminable, than from those which are obvious, a *bad name*,—that "worst of woes that wait" on the reputation of a building as on that of a man,—it soon became the favourite example for quotation by the art-critics of the newspapers; who are never so happy as when they are demonstrating the utter inferiority of architectural work that is accomplished, to the standard which the reader is to suppose them acquainted with. Generally, we think, in no subject handled by what is called the public press is such inferiority of treatment shown as in the subject of architecture, and the worst part of the matter is that neither is the ignorance confessed, nor are the pains taken which might speedily produce qualifications for effecting some amount of good: on the contrary, condemnation is taken as the tone, because of the unlearned or unthinking writers' incapacity for such pleasurable appreciation as it has been lately said, and not ill said, is the proper office of criticism. Simple blame is more easy of expression than judicious estimation of the right and the relative wrong; and the former has this advantage to the ordinary self-constituted judge, that it gains him with the public to whom he addresses himself, the reputation of superior knowledge. Observations similar to these which we have just made, may have been made before; but we offer them here because they are immediately suggested by the recollection of what has appeared in connexion with the subject of the building in Trafalgar-square, and by what is at present appearing with reference to the designs for the new or modified building.

These designs, sent in competition by ten architects, are now on view, or on the last four days of each week, in the Royal Gallery of the Palace at Westminster, and have already been noticed in the daily papers, and, we might say, adjudicated upon, with a facility and a condescension which we are unable to emulate. It is essential to recollect what the problem set before the competitors really is, or was. The solution of such problem is not necessarily started in the production of even the most carefully-executed set of drawings; and the particular problem includes not alone the doing justice to the "finest site," &c., but also the

provision of suitable quarters for the national pictures. It is a problem, too, that is by no means free from difficulty as to the site; and is one that, as presented to the competitors, was not exactly definite: since there are two, or even three, problems, rather than one, of which the collateral solution was asked by the late Government.

We could not be satisfied to give this week much more than a general notice of the competition and drawings. We must defer particulars of the majority of the designs; although the rapidity with which non-professional judges, and even professional, get through their work, may make us in arrears.

The architects who have sent designs are Messrs. Owen Jones, C. Brodick, G. E. Street, F. P. Cockerell, J. Murray, E. M. Barry, F. C. Penrose, G. S. Clarke, M. D. Wyatt, and Banks & Barry. Of these ten, each one has sent in two designs as required by the instructions; and the greater number of the ten have sent, in addition, one or more variations of their main design. Consequently there may be about thirty designs, in fact, for the consideration of the judges. The drawings altogether not being numerous, it has been possible to arrange them in the Royal Gallery much better than competition-drawings are arranged usually. Besides the walls at the sides of the Gallery, for a portion of the length, and similar space at one end, there is a screen down the middle of the Gallery: thus there has been no necessity to place drawings so much above the eye as to preclude examination of them,—excepting with the help of steps or ladders,—conveniences such as were required on the last occasion, but were not made use of. The Royal Gallery is however an unsuitable place, at this time of the year, for exhibition of any number of architectural drawings. At two o'clock in the afternoon, this week, the light has been quite inadequate. Amongst the sets of drawings, remarkable for number of the drawings, as well the execution of them, are those contributed by Messrs. Cockerell, Murray, Clarke, and Wyatt. Mr. Murray's drawings are on twenty-seven straining-frames: Mr. Wyatt's are on twenty-four; Mr. Cockerell's on twenty-two; and Mr. Clarke's on twenty-one. Mr. Cockerell's drawings are perhaps the most skilfully executed; though several others, as Mr. Wyatt's, are almost equally good, whilst very different in general appearance. Our non-professional readers are requested to bear in mind that good drawing may or may not be associated with good design. Architects should not require to be reminded of the distinction that there is: though, we are obliged to say, they are more impressionable by good drawing, even than the public. As regards the uses of the building, nearly all the designs seem to be the result of careful study of the requirements; albeit the gallery of the Sheepshanks Collection, at South Kensington, having been mentioned to the competitors in a letter from the Office of the Works, when a description of it was furnished, the usual consequences of such references in instructions may have accored, in many of the designs, in the omission of a certain exercise of judgment.

The original "Circular to Competing Architects," with the "Instructions to Architects," was sent from the Office of Works on the 15th of February, 1866. It will be recollected that, before this, the question of site had been for many years under discussion. Different quarters of the metropolis, including one or other of the parks, and Kensington Gardens, and most recently the Burlington House site, had been named. Also under discussion had been the South Kensington estate, or part of it, that is to say, the locality in which the pictures of the Sheepshanks collection were; and where the whole of the modern pictures, including what were in Trafalgar-square, are at present, as well as the cartoons removed from Hampton Court. Somewhere about 1851, there was a proposal to appropriate Buckingham Palace to the purposes of the National Gallery. In that case, the present building in Trafalgar-square would have been given up to the Royal Academy; and a Royal Palace would have been placed in Kensington Gardens. The project in connexion with the Burlington House site was at one time so far advanced, that a design had been made by Messrs. Banks & Barry. In this design, the limitation of the galleries, or exhibition-space, in fact the building generally, to one story, combined with appropriation of the whole ground, or without courts, was the characteristic. It was considered that taking into account both light and wall-

surface, more was obtainable by the arrangement here referred to than by that of galleries in two stories. We may mention that Messrs. Banks & Barry's present design, or for the Trafalgar-square site, much resembles the previous one for the different site. Our allusion to the question of multiplication of stories *versus* appropriation of the ground that would have been given to courts, may help the public to the reasons of differences between the ground-plans of designs, as to space left for lighting; which differences, certainly, are at first very remarkable.

The decision in favour of the Trafalgar-square site, with additions, being considered final, it only remained that the boundaries of the ground to be taken, should be settled, along with the question as to the existing building, of which the eastern portion is to be vacated by the Royal Academy. The new ground, since acquired or about to be, is bounded on the east by St. Martin's-place, on the north by Hemming's-row, and on the west by Castle-street, or rather by the wall of the barrack-yard. This area is now occupied by the workhouse, by different premises at the east (which include one house occupied by several literary and scientific societies, a savings-bank, a house let as offices, and a shop), and by Archbishop Tenison's Library at the west. The present passage along the back of the National Gallery, or Royal Academy, would be absorbed. Besides the immediate appropriation of the area described, the competitors were to be at liberty to contemplate the western extension of the buildings in the rear, as a measure for the future, that is utilising in some way ground now belonging to the barracks. The "Instructions" say: buildings "hereafter erected over the barrack-yard." Nearly all the competitors have understood this as involving, or allowing of, the entire removal of the barracks; and some of them show a street from Pall Mall East, in which there would be a western frontage to the building as they propose that it should be eventually. Much was said at one time about building a portion of the addition to the Gallery on iron columns over the barrack-yard; but whatever may have been intended by those who framed the "Instructions," the competitors are right as to the thing desirable: any arrangement of a building on columns would be most objectionable; whilst the new street at the west is much wanted. The new ground is by no means rectangular; and the eastern end of the entire site is very irregular. Hemming's-row, with its prolongation, and the line of frontage of the present building, are not parallel: the line of the new street, of some of the competitors, at the west, would be considerably longer than the distance is of the east end of Hemming's-row from Trafalgar-square. As regards the eastern boundary, it will be recollected that the houses in St. Martin's-place, up to Hemming's-row, are considerably in advance of the end of the present building of the National Gallery. None of the competitors have thought fit to sacrifice the eastward projecting piece, or to give it up to the street: though for the latter course there might have been arguments. Most of the competitors place here an apsidal projection from the main block.

The "Instructions" required designs under two alternatives, preparatory to a decision on the best mode of laying out the new site, and on the question of "retaining the existing building," or "reconstructing or remodelling it." By the first alternative, buildings would be erected on the site already described; and these would communicate with the existing building; wherein no costly alterations would be made. By the second alternative, the work would include the demolition and construction, or the remodelling, of the existing building. The Trafalgar-square front was "to be arranged so as not to obscure the view of the portico of St. Martin's Church from Pall-mall East, or from any part of Trafalgar-square." This stipulation, as worded, seems to have occasioned difficulty to some of the competitors. It will be recollected that the similar injunction laid upon Wilkins, was the cause of that setting-back of the ends of the building, which has been attended by a reduction of the accommodation, whilst it has contributed to architectural effect,—as it certainly has even in the National Gallery building itself. But Wilkins made the portico projecting considerably: on the other hand, he sacrificed one of the finest features of a portico, steps in front,—so well displayed in his other work, the London University College. The entrance to the building the "Instructions" said, was to be as at present.

* The destruction of Croydon Church, consumed while the fire-engines were delayed by the snow, forms an emphatic comment on our warning.

but there were to be exits into St. Martin's-place and Hemming's-row. There was to be a residence for the keeper, and one for the porter. The largest possible extent of wall-space for hanging pictures was to be obtained, so far as "consistent with grand architectural effects." Top-lighting was preferred; but side-lighting was made admissible for cabinet-pictures and original drawings. A width of 50 ft. was prescribed for the largest galleries, because, as the "Instructions" said, ample floor-space was needed for the accommodation of the multitude thronging the galleries. Thorough and easy ventilation, warming by hot-water pipes, "fireproof construction," and tanks of water on the roof were also mentioned. Each architect was to be paid 200l. for his drawings and statements; which were to become the property of the Commissioners of Works. The First Commissioner did not engage to adopt any of the designs; but if one of the designs were adopted, the author of it would be employed to carry it into effect, being paid "the usual commission of 5 per cent. on the outlay," inclusive of all expenses of measuring.

Several of the competitors had gone to work when, on the 29th June, the competitors received a copy of a reply by Mr. Wornum to a letter addressed to him from the Office of Works, requiring information as to the accommodation that should be provided for receiving, storing, and cleaning pictures. The reply gives, under twenty-seven heads, the designations of rooms and particulars of accommodation that would be required in connexion with the business of the establishment. The plain judicious course would have been to apply to Mr. Wornum before the issue of the original instructions.

In the letter of the 29th June, it is stated that "the committee of judges" to "be appointed to decide upon the plans" would "include within its members not less than two professional architects." The time originally named for sending in the plans was three months from the 15th February, 1866; but the 31st October was afterwards named, and afterwards the 1st January of this year.

There are merits in the present building of the National Gallery; although there has been general agreement amongst the public as to certain defects. The lowness, the central dome, and the terminations stigmatized as "pepper-boxes," have had no defenders; and they should not have. Features of the building also defective, but less frequently mentioned, are the blank-looking podium-wall carrying the columns, the somewhat too low pitch of the pediment, and the side-porticoes without semblance of utility. In addition to these features of the building itself, those of Trafalgar-square, as designed and carried into effect by Sir Charles Barry, have often been objected to. In nearly all the designs retaining the present form, each of the features of the building itself, which have been named, is got rid of; and in several of them the retaining-wall and balustrade of the terrace-road is omitted, or greatly modified. The Square was indeed not one of Barry's best works. A flight of steps in the centre has sometimes been referred to as what should have been provided. Some of the competitors have introduced this feature; and at least one design, Mr. Brodrick's, does away with the wall and balustrade entirely, and substitutes a flight of steps occupying the whole width between the pedestal of the statue of George IV., and the corresponding pedestal. The dome and "pepper-boxes" of the building are got rid of in the designs generally; and a larger dome, or other more commanding feature than the present one, in the centre, is substituted: the building is heightened, as by the addition of an attic; the podium-wall is rusticated, or otherwise decorated; or the portico is entirely altered, so as to admit of steps; and the wings are improved, as by the connexion of the side-porticoes, by columns, with the central portico. The staircase-hall, adapted in size to a larger building than the present one, is made to revert to the arrangement that it had as left by Wilkins, with the opposite flights of stairs, but with inserted columns in the ground-story.

In the plan of the upper floor, the present rooms of the western half of the building, and the exhibition-rooms of the Academy, considered by Mr. Wornum to be very good rooms for their purpose, are generally retained: this is the case even in designs that modify the building considerably. Where new galleries are designed for the larger pictures, the prescribed width, 50 ft., has been adhered to: but this width is greater than necessary; and such is the view taken by many of the competitors, and by Mr. Wornum

also. Wall-space is the first consideration. The galleries for cabinet-pictures, generally side-lighted, are of course narrower than 50 ft.; and some designs provide two stories of these galleries in the height of one story of the principal galleries. One disadvantage of great width is that it requires corresponding, that is unnecessary, height. It used to be objected to the present rooms of the National Gallery, that pictures of the largest dimensions, like some of those of the Venetian School, could not be hung in them; but the truth is that such pictures would so seldom be obtainable, that it could not be desirable to arrange every room as in preparation for them: one room would be quite sufficient. Mr. Street's design is remarkable for a peculiarity of the arrangement for top-lighting the ground-story, as also remarkable for both elaboration and novelty in the decorative design, including details. But we will at present express no judgment on comparative merits of the designs, and suitability for selection. Previously to judgment, facts of designs must have been got at from the drawings; and some of these data we have yet to collect. But, next week, we will give further particulars of the designs.

The judges appointed to adjudicate on the designs are,—Viscount Hardinge; Lord Elcho, M.P.; Mr. A. J. B. Beresford-Hope, M.P., president of the Royal Institute of British Architects; Mr. W. Tite, M.P.; Mr. W. Russell, trustee of the National Gallery; Mr. W. Boxall, R.A., director of the National Gallery; Mr. David Brandon, architect; Mr. T. Gambier Parry; and Mr. E. Redgrave, R.A., inspector-general, Science and Art Department.

THE COST OF LONDON MUD.

THE city of Turin deservedly attracts the admiration of the tourist. We rejoice that the steady progress of the great Mont Cenis Tunnel bids fair to remove, within a reasonable time, the chief obstacle to visiting the sub-Alpine capital. Our architects and engineers, and all those interested in the improvement and in the comfort of London, might draw from the example of a city which might, for its size, be lost in one of the great outlying districts of the English metropolis, unseen and unknown to many who pass three hundred days out of the year in the City precincts, a lesson to which we now take leave to refer.

We are not about to describe the broad streets and steady boulevards of the gallant little city, or to dwell on the noble panoramic view that rewards the ascent of the hill which commands the full current of the Po. With the exception of a very small portion, the most ancient part of a town, the perfect symmetry and regularity of the plan gives a high idea of the organizing habits of the builders. The palace of the Dukes of Savoy, now a royal Italian residence, looks straight through the main street of the city down a vista closed by the rival structure of the railway station, as if the genius of the past and of the present, the ghosts of *Tite de Fer* and of Robert Stephenson, the embodied expressions of feudalism and of steam power, were resting on their arms in presence of each other. We are not about to dwell on the efficient and unpretending military defences of the place, on the revetted moat that protects the City from a *coup de main*, and on the manner in which the communications of the place are so contrived as to be free, open, and convenient, and yet capable of immediate closing in case of need. But the point to which we now wish to call attention is this. People can walk about in Turin all the year round without ruining their boots or their skirts. Violent thunder-storms from the Alps burst at times over the city with a force that converts every street, for a few minutes, into a stream, and covers the pavement with an inch or two of water. But half an hour after the rainfall has ceased its traces have disappeared, and patent leather boots or satin shoes can trip from the Station to the Palace, and from the Palace to the bridge over the Po, with less damage than would attend the passage of a single crossing in Regent-street, or of ten yards' distance from any of our metropolitan termini on half the days in the year.

It is obvious that it is more easy to clear the

ways of a city that includes a population intermediate between that of Bristol and that of Leeds than of one sixteen times its size. But the very reference to the names of those smaller English cities that occur as illustrative of the size of Turin will convince us that the question is not one of size alone. The three quarters of a million passengers who daily enter the City of London constitute a traffic marked by peculiar features, and neither chemistry nor chance has produced elsewhere a substance that could be mistaken for London mud when the streets are what is appropriately called "greasy." But the neglect and the filth of the London streets are not wholly due to the magnitude of the traffic. Picnic is as dirty as the Strand; Baywater is little or no better than Newgate-street. Without disrespect to Bristol or to Leeds, without even asserting a bad pre-eminence over those towns, we may well call London signally and abominably dirty, neglected, and uncared for, as regards the comfort of the pedestrian.

Who and how many are the pedestrians who tread the streets of London we have recently seen. What a wet day costs them (and we have 157 wet days per annum in London), it is not so easy to reckon. If we say that three millions sterling are spent every year in shoeing the London population, we shall probably be far within the mark. If we estimate that to plunge daily through muddy streets, especially for those pedestrians who have not a sufficient number of pairs of walking-shoes to allow the wet ones to be slowly and thoroughly dried, will shorten the duration of two-thirds of these articles by 25 per cent., we shall, no doubt, have the ascent of unfortunate experience. That would give us a waste in shoe-leather alone of half a million sterling a year, in consequence of muddy streets. The tailors of London amount to only two-thirds of the number of the shoemakers. The outlay incurred in clothing men's legs in trousers, will be only a fourth or a fifth of our tailors' bills. But then comes the question, of skirts. A hundred and twenty thousand women enter the City daily, of whom ninety thousand walk. That is for the City alone. Over the whole metropolis we cannot reckon that less than three-fourths of a million of skirts daily perform, inefficiently, it is true, but still at a ruinous expense, the duties of the scavenger. With the exception of the comparatively few ladies who drive in their own carriages—and even they can hardly be at all times altogether exempt—the whole female population of London is subjected to a tax of which we will not venture to estimate the amount, by the neglect of the streets. Who would contract to make good the unnecessary destruction of garments of all kinds by the mud of London for a million sterling per annum? If we add the cost of additional washing, of the hire of vehicles, of the wear and tear of vehicles and of horses, and of medical services rendered necessary in consequence of colds and worse disorders caught from wet feet, we shall find that a very large annual sum, not easily calculated, but amounting, at all events, to seven places of figures, is annually wasted by the residents of London in consequence of the neglected state of the streets.

If such be the cost of our London mud, the question naturally suggests itself, why should not the mud be removed or prevented? Would the cost of an efficient system of street-cleaning approach that incurred by street-neglect, to say nothing of the contributions exacted by the volunteer corps of crossing-sweepers?

Why should English people, who are wont to pride themselves on their personal cleanliness, suffer their streets to remain in a state that would be found intolerable in continental cities? Why should London, and Bristol, and Leeds be worse for the pedestrian than Paris, or Turin, or l'azzaronne-haunted Naples?

The question is not one to be answered by a simple recommendation to sweep the streets more frequently. We must consider the difference in the arrangements for the sewage, as well as for the scavenging, of English and of Continental towns; and we must inquire how our roads are made and maintained, before we can reply to the inquiry how they are to be cleaned.

The first difference to be considered is that which relates to sewage. In London, the main object of the large cost incurred in the construction of the sewers is the self-acting purification of the dwellings. The cesspools common in Paris are, very properly, not permitted in London. The rainfall, it is true, makes the best of its way into the subterranean channels; but it is

considered important to prevent it from sweeping the mud of the streets in its course, as it does in Continental cities, and the attention that is given to secure the health and comfort of private dwellings forms an obstacle to the most natural mode of cleansing the streets.

On the other hand, we must bear in mind that the streets of most Continental cities afford to the inhabitants an accommodation rigidly denied to the Londoners, that, namely, of a dust-heap and dunghill;—that great part of the refuse of the houses is systematically thrown into the streets, and, after passing under the inspection of the members of the vagrant profession of *chiffoniers*, who live upon this humble prey, is carted away by scavengers paid for the purpose. If, then, more facility exists for removing purely liquid mud in Paris than in London, it must be borne in mind that in the latter city we have only to deal with the mud created by the wheels of vehicles and the feet of horses, and with the natural consequences of a large vehicular traffic.

Prevention is better than cure. Before we inquire how best to get rid of our mud, it is well to ask whether we cannot avoid making so much. For it is a costly product. The water that goes to form it, indeed, we get for nothing; but the solid mineral constituent has been brought to our roads at a considerable expense, broken by hand labour, and comminuted by a more costly machinery than we have yet constructed for crushing Californian quartz. Before our mud is removed from our streets it has cost us pretty nearly as much per ton as the coal which we burn in our grates.

The selection of the material for pitching as well as for metalling the streets of London appears to have been made on mechanical grounds alone, without reference to the no less important question of chemical constitution. The granite which floors so much of the carriage-way has a structure that resists attrition in a considerable degree, and that is also capable of being worked by the pick into regular form. For curb-stones to keep the foot-paving in place, and to ward off the occasional inroad of a carriage-wheel, granite is well adapted. But when the constant friction of heavy traffic grinds the surface into powder, whether in pitched or in macadamised roads, the felspar which forms a main constituent of the rock, is decomposed, and the mineral which, geologically speaking, is the mother of clay, gives forth an aluminous mud. Our roads may almost as well be coated with London clay itself as with powdered granite, and this, mingled with horse-dung and with soot, forms our peculiar mud. The flinty pebbles used in the formation of some of our quieter streets, may be more readily powdered than the granite or limestone; but the difference in cleanliness and in facility of drying between a felspathic or a calcareous and a flint road may be any day observed by passing from the inner to the outer circle of the Regent's Park, or from the Portisdown-road to the Edgeware-road. The mere substitution of a siliceous stone for that at present used in the macadamised streets, would be a most important gain to the cleanliness of London.

Two thousand years ago cities were founded; now they spring up unawares. In old times they were designed, now they seem to agglomerate by chance. The *Cloaca Maxima* of Rome dates from the 150th year of the city; the main drainage system of London was constructed eight centuries after the Norman Conqueror gave a charter to the capital of his new dominions. From Rome to her great Neapolitan port, the *Via Appia*, yet to be traced, was solidly constructed of blocks of lava 18 inches square. From London to Westminster, to Kensington, to Highgate, no record exists to show that any road was ever constructed at all. Bit by bit the original cattle-paths and foot-tracks have been gruelled, widened, occasionally straightened, partially paved, inconveniently macadamised, and so on; but at no time in our history has the question of metropolitan road-making been thoroughly investigated and resolutely grappled with. It was the chance observation of a country magistrate that led to the adoption, within the memory of man, of that great improvement of our former country-roads that is known by the name of Macadam. Without more ado, the macadamised turnpike-road has been adopted for the greater part of the street-communication of our cities, and inconveniences that are tolerable for long lines of rural highway, where traffic is sparse and where it is a question of the cost per yard of maintenance whether you can have any road at all, have been accepted as un-

avoidable under the very opposite conditions of our city streets. A shilling per yard, 88l. per mile, from London to Holyhead, was a matter of great importance. As referring to the paving of Oxford-street, such an item has only an infinitesimal value. Can we do no better than transplant a fair make-shift country-road into the heart of our great cities? It is strange that the question should need putting at this time.

Not, absolutely, for the first time, for private enterprise has brought forward several attempts at patented improvements, without a larger success, however, than might have been predicted for the effort. We have been fated to slip and slide over wood, and to grind over iron, always coming back to our mud. One point we must for the present take as settled, and that is that setts, or small solid blocks of stone, when laid on a carefully-prepared bed, afford the most convenient support to the enormous traffic of these main highways with which we are as yet acquainted. A pavement of this kind has many defects: it is noisy and liable to displacement, but it forms less mud than other roads, and it can readily be repaired and kept clean. It affords foothold to horses, and it supports heavy weights. The extension of solid paving along more of the main lines of traffic is highly to be desired.

For streets of the second order, streets which, while forming no part of the main through-system of east and west or north and south communication, yet accommodate a large traffic, we should most strongly advise the adoption, at least experimentally, of one of two systems common in Italy. Large square blocks, like those of the *Via Appia*, and those with which Naples is paved, might be adopted with equal advantage in London; or long, broad paving blocks for the wheels, with the intermediate spaces pitched with setts, would not be less available in London than in Turin. The successful application of either of these methods to streets of a secondary traffic would be an immense improvement.

For streets of the third class, where the traffic is light and rare, a solid stone pavement is not absolutely requisite. But none the less carefully should such streets be guarded from becoming fountains of mud. The duty of pulverising and rolling the road metal should no longer be performed by the most expensive and the least efficient instruments, namely, the wheels of carriages built on springs. The roadway should be carefully laid with properly-broken stone of a purely siliceous nature, the interstices filled in with a sharp grit, cemented by the use of hydraulic lime, and consolidated by a steam roller, before any vehicles are allowed to pass. Thus constructed the durability and cleanliness of the quieter streets would be great, and the entire metropolitan system of roads would be in a condition to form the minimum quantity of mud, and thus to present the most favourable area for the operations of the scavenger.

We may add, that the best roads in England are some in the neighbourhood of Bromsgrove, which are formed from the primitive siliceous rocks of the Lickey Hill. Whether this rock is capable of being quarried in blocks fit for paving we are uninformed; if so, no stone could equal it for the purpose. For the concrete or macadamised surface of unpaved roads we have never seen any material, in any part of the world, to compare with that laid on the roads round the Lickey, and the employment of this stone for our London streets, if once tried, would never be abandoned.

We cannot now join to examine the question of cleansing. We can only add, that in the effort that is being made to secure a rational system of municipal government for the home of a sixth part of the population of England, we see a hope and a promise that it will not be always a pure waste of time to offer such observations as the above, but that we may hereafter meet with a set of men who will not only take an enlightened interest in the physical welfare of their fellow citizens, but be able to give effect to that interest;—a governing body who first will be anxious to ascertain what is best to be done, apart from fear and from favour, and who, having arrived at the conclusion, will then go AND DO IT.

THE SHROPSHIRE COUNTY SURVEYORSHIP.—At the general quarter sessions of Shropshire, Mr. Thomas Groves, jun., has been appointed to the office of surveyor for the county, in the room of Mr. Edward Haycock, resigned.

CROYDON CHURCH.

LAST week's calamitous and always-to-be-regretted fire at the fine old, almost archiepiscopal, parish church of Croydon, in Surrey, will give satisfaction alone to one person—the lucky architect who is likely to get the task, not of restoring, but of replacing it. Two facts connected with English art deserve special note: one is not mentioned by those who have written about the church in this century, and the other has been overlooked in the Life of one of the very ablest of our Anglo-American artists.

The Croydon half-recumbent effigy-tomb of the famous Archbishop Sheldon, to whom Oxford, and all who speak the English language, owe Sir Christopher Wren's Sheldonian Theatre (still a wonder in a wood-roof ceiling), has been destroyed. It was of Italian marble, not of the purest, but good of its kind, and was the work of Latham, the City architect (temp. Charles II.) and Bonne, as Walpole tells us in his "Anecdotes of Art." What we have to add is very far indeed from being generally known.

The capital engraving of this statue to be found in the first volume of the Messrs. Lysons's "Engravers of London" (see "Croydon"), was made, they tell us (vol. i., p. 183, ed. 4to, 1795), from "a beautiful drawing by Mr. Lawrence." This "Mr. Lawrence," we have to point out, was the future Sir Thomas, president of the Royal Academy of Arts in London, and something more. The drawing must have been exquisitely just and delicate.

John Singleton Copley, R.A., is the capital painter of two fine English historical pictures,—*"The Death of the Great Lord Chatham,"* and *"The Death of Major Pelisson,"* bought (1864) at his son Lord Chancellor Lyndhurst's sale, for the nation, price 1,600l. Sir Charles Eastlake was the purchaser.

This unhappy fire at Croydon Church has told us where Copley lies buried. The fire revealed his grave,—an inscribed stone, and nothing more. This fact is not to be found even in that useful work, Britton & Brayley's "Surrey."

Many who visit the Church of St. John the Baptist, Croydon, will take special care to stand by the charred gravestone of a great historical painter, and the father—as well—of Lord Chancellor Lyndhurst.

Fire! thou hast been too much a master: witness the Houses of Parliament—the Tower of London—Doncaster Church—the Austin Friars' Church—the Savoy Church—the Crystal Palace—and, now—Archiepiscopal Croydon Church. Which of our national treasures will fall next?

PRESERVATION OF WOOD IN DAMP AND WET SITUATIONS.*

No introductory apology for the theme of this paper is judged necessary. A few plain statements will show that the subject is one of vast though unheeded importance.

The annual drain which is exhausting our forests is startling when we remember the large areas of our country utterly destitute of timber—when we learn, for instance, that "upon the 55,000 square miles of Illinois, there grows not a single pine large enough from which to fashion a board."† Statistics show that, in 1865, above 5,000,000,000 feet of lumber, 2,000,000,000 of shingles, and 900,000,000 pieces of lath were sold in Chicago alone.‡ Michigan and Wisconsin almost entirely supply that market. 6,000 feet of pine lumber per acre is an average yield.§ No formal calculation is necessary to show us that, with the present demand, a single generation will exhaust the supply which those states can afford.

But the consumption increases in a rapid ratio. It has already raised the prices. Clear lumber sold for 18 dols. per thousand in 1855, for 24 dols. per thousand in 1860, and for 45 dols.

* The following paper, written by Mr. H. W. Lewis, University of Michigan, for the *Journal of the Franklin Institute*, gives useful references to information on an important subject scattered over the pages of the *Builder* and other journals.—ED.

† *Hunt's Merchant's Mag.*, Feb., 1866, page 108.

‡ Lumber, 5,080,033,033 ft.; shingles, 3,560,038,212; lath pieces, 838,297,743.—*Hunt's Merchant's Mag.*

§ "An average estimate of the product of lumber of all the pine lands in the State is 6,000 ft. to the acre. Some sections will overrun, some fall short, of this amount." * * * "seven years will exhaust all the pine lumber within five miles of any of the navigable rivers."—*The Pine Lands and Lumber Trade of Michigan*, page 4.

per thousand in 1865.* And following close on Chicago, in this trade, are Albany and Pittsburgh.†

Improvidence will soon, we fear, make us as dependent on foreign supplies of timber as is England, who has already granted numerous patents for processes promoting the durability of the lumber every enlightened nation must have.

Shall we employ those processes whose utility experience has demonstrated? Self-interest returns but one answer. But in American railway management, self-interest seems to be disregarded. While the average life of English railway sleepers is fifteen years, that of American sleepers is only seven years.‡ Allowing 2,112 sleepers per mile, at 50 cents each, § 1,056 dols. per mile of American railroad decays every seven years. Thoroughly impregnate those sleepers with sulphate of copper, at a cost of 5 cents each, and they would last twice as long. Thus would be effected a saving of 880 dols. per mile in the seven years, on sleepers alone. In the United States are 33,908.6 miles of railroad.¶ The whole saving on these lines would be 29,839,568 dols., or upwards of 4,262,795 dols. per annum.

Again, English engineers deride American wooden railway bridges. Eight years is their average duration.** Crescote them and they are good for double or treble that time.†† For ordinary railroad purposes they cost 40 dols. per linear foot.‡‡ The use of Bethell's process would effect a great saving on such a line as the Grand Trunk Railway, whose wooden bridges measure 9,355 feet upon the Montreal and Portland division alone.§§ Further illustrations of the importance of preserving timber from decay seem unnecessary. Let us proceed to the discussion of this desirable object.

In situations so free from moisture that we may practically call them dry, the durability of timber is almost unlimited. The roof of Westminster Hall is more than 450 years old. In Stirling Castle are carvings in oak, well preserved, over 300 years of age. Scotch fir has been found in good condition after a known use of 300 years.¶¶ and the trusses of the roof of the basilica of St. Paul, Rome, were sound and good after 1,000 years of service.¶¶ After these well-attested examples of preservation, the further consideration of wood in this state seems unnecessary.

Wood constantly wet in fresh water is quite as durable. Piles were dug from the foundations of old Savoy Palace, in perfectly sound state, after having been down 650 years. The piles of old London Bridge were found sound and perfect 600 years after they were driven.***

While the acidity of bog-water retards decay, it seems to us that part of the preservative property attributed to the stagnant liquid††† should be ascribed to the salts of metals or alkaline earths held in solution, and deposited among the woody fibres.

In the above situations, the action of natural agents cannot be improved; but in certain other conditions, man must resort to preservative processes to secure permanence of structure. For convenience of discussion we have introduced the following classification:—

1. When wood is damp we have to guard against dry-rot.

2. When wood is alternately wet and dry we have to guard against wet-rot.

3. When wood is constantly wet in sea-water we have to guard against *Teredo navalis* and *Limnoria terebrans*.

4. Wood in Damp Situations.—When unseasoned wood is surrounded by dead air, it very rapidly decays, fine fungous growths extending

through every part. After the rot has begun, the mere contact of decayed and sound wood seems sufficient to ensure, by a catalytic action, its spread through the latter. This has probably led some observers to their conclusions, that the accompanying parasitic plants, *Merulius lachrymans* (or *L. vastator*) and *Polyporus hydridus*, cause the decay. But the highest authorities now regard these growths as accessory, and beginning only after a suitable habitat has been prepared for them.† Thus the fungus acts the part of a scavenger and converts corrupt matter into new forms of life. The presence in the timber of the fungi spores is easily explained. The researches of Pasteur show that atmospheric dust is filled with minute germs of various species of animals and plants, ready to develop as soon as they fall into a congenial locality. He concludes that all fermentation is caused by the germination of such infinitesimal spores.† That they elude observation does not seem strange, when we consider that some infusoria are only $\frac{1}{1000}$ of an inch in length.‡ Admitting that they are only ten times the linear dimensions of their germs, the latter will be $\frac{1}{10000}$ of an inch long. But with the best microscopes we cannot perceive objects measuring less than $\frac{1}{10000}$ of an inch. These germs might find their way into the growing plant through both roots and leaves. The whole tree is thus filled with the seeds of decay, awaiting suitable conditions to spring into growing organisms. The prolonged vitality of spores, made necessary by this theory, cannot be a serious objection, when we remember the vigour of the "mummy wheat," and the unknown plants which start from the earth raised from deep excavations. Indeed, time, even when measured by centuries, seems hardly to affect the vitality of vegetable germs.

But what prepares timber for the germination of the fungi spores? Probably fermentation of the juices and semi-solids of the moist wood. For fermentation, five conditions are necessary, § viz.—1. Presence of water. 2. Temperature from 40° to 110° Fahr. 3. Presence of a ferment. 4. Presence of a fermentable body. 5. Exposure to the atmosphere.

Three of these conditions almost always prevail. Very rarely, if ever, can we maintain the temperature of any timber construction below 40° Fahr., or above 110° Fahr. Probably countless numbers of ferment spores are annually absorbed into the fluids of the smallest sapling. Completely excluding any construction above earth and water, from the atmosphere, is practically impossible. The two remaining conditions we can generally prevent.

1. We can remove the water by thorough seasoning, and in damp situations we can practically prevent its return by ventilation or resinous coatings.

Examples of remarkable durability of wood have been cited. With equal care in selecting and preparing the lumber, modern constructions might last as long. But while the wood of those old edifices was drying through years of preparation, the timber of modern constructions is translated from the primitive forest into a painted and varnished city dwelling in less than a single year's time. No wonder that in a very few decades, the whole structure is unsafe, and that an odour of decay makes the mouldering rooms untenable.

Thorough ventilation is indispensable to the preservation of even well-seasoned naked wood in damp localities. The rapid decomposition of

sills, sleepers, and lower floors is not surprising where neither wall-gratings nor ventilating flues carry off the moisture rising from the earth, or foul gases evolved in the decay of the surface-mould. In the close air of cellars, and beneath buildings, the experiments of Pasteur detected the largest per-centage of fungi spores. Remove the earth to the foot of the foundation, and fill the cavity with dry sand, plaster-rubbish, &c., or lay down a thick stratum of cement to exclude the water, and provide for a complete circulation of air, and lower floors will last nearly as long as upper ones.*

Various expedients have been resorted to in order to hasten the seasoning process. Mr. P. W. Barlow's patent† provided for exhausting the air from one end of the log while one or more atmospheres press upon the other end. This artificial aerial circulation through the wood is prolonged at pleasure. However excellent in theory, this process is not practicable. By another method, the smoke and hot gases of a coal fire are conveyed among the lumber, placed in a strong draft. Some writers recommend the removal of the bark one season before felling the tree. All good authorities agree that the cutting should take place in the winter season.‡

An impervious covering upon undried timber is very detrimental, for by it all the elements of decay are retained and compelled to do their destroying work. The folly of oiling, painting, or charring the surface of unseasoned wood is therefore evident. Owing to this blunder alone, it is no unusual thing to find the painted wood-work of older buildings completely rotted away, while the contiguous naked parts are perfectly sound. In concluding this part of the subject we may say, thoroughly season your lumber, afterwards cover it with varnish, paint, or pitch, or maintain around it a constant and thorough circulation of air.

2. We can remove the fermentable body, or chemically change its nature.

Woody fibre consists chiefly of cellulose and lignine. The former is very durable, and the latter moulders away but slowly, when exposed to air and moisture. But permeating through these, and increasing from the heart to the albumen, are nitrogenous substances of the sap and immature wood, mostly vegetable albumen. These are the fermentable bodies we desire to remove or change. A patented process has been proposed to wash out the albumen by water flowing in at one end of the log while a vacuum was produced at the other. Theoretically satisfactory, this method does not seem to have been adopted. Boiling and steaming partly remove the ferment spores, but may not destroy the vitality of those remaining. For, according to Milne-Edwards, he has seen tardigrades resist the prolonged action of a temperature of 248° Fahr., and has known them to survive a temperature of 284° Fahr.§ That low forms of vegetation are fully as tenacious of life cannot be doubted.

Boiling and steaming also coagulate the albumen at 140° Fahr. Although coagulated albumen is insoluble in water, the water of solution is, by this heating process, sealed up in the wood, and the cohesion of the latter is said to be diminished.

Albumen is also coagulated by sulphate of copper, pyrolignite of iron, chloride of mercury, chloride of zinc, &c. Some of the compounds thus formed are albuminates of the metallic oxides. Probably this is the reason why some of those salts are such excellent preservatives. But the researches of Koenig|| show that, when basic vitriol is employed, a certain portion of basic sulphate of copper remains combined in the pores of the wood so that water will not wash it out. The most resinous woods retain the most of the basic salt. Impregnated woods also contained, he found, less nitrogen than

* Hunt's Merchant's Mag., February, 1866, pages 106 and 107.

† Ibid., p. 105.

‡ New American Cyclopædia, vol. xiii., page 734.

§ Scientific American, February 17, 1868. Also Col.

Bernard's (Chief C.E. of M. C. K. R.) estimate of their cost for the past two years on the "Michigan Central Railroad."

¶ Five cents, at 7 per cent. compound interest, amounts, in seven years, to 8 cents 20 cents—8 cents 42 cents saved on each sleeper at the end of seven years. 0.42 dols. x 2,112 = 887.04 dols. saved per mile in seven years.

** De Bow's Review, February 1866, page 297.

†† Civil Engineer's Journal, vol. xvii., page 282.

‡‡ "A properly constructed railway bridge of suitable materials may be fully relied on for twenty years."—

Journal Franklin Institute, vol. xxvi., page 1.

§§ Civil Engineer's Journal, vol. xvi., page 282.

¶¶ Journal Franklin Institute.

¶¶ The Builder, vol. ii., page 638.

*** Ibid., p. 616.

††† Ibid., p. 616.

††† Civil Engineer's Journal, vol. xxi.

* There is no reason to believe that fungi can make use of organic compounds in any other than a state of decomposition."—Carpenter's Comp. Physiology, page 165. (See also Encyclopædia Britannica on this subject.)

† "Powders suspended in the air are the exclusive origin, the first and necessary condition of life in infusions, in putrescent bodies, and in liquids capable of undergoing fermentation."—See translation of Pasteur's experiments in vol. xxiii., page 9, of American Journal of Science.

‡ "Some infusoria are not more than $\frac{1}{10000}$ of an inch in diameter, and if we suppose the spores to be only $\frac{1}{10}$ of the parent's linear dimensions, there must be an incalculable amount of germs no larger than $\frac{1}{100000}$ of an inch in diameter. Since, according to Sullivan and Wormley, with the most powerful microscopes, is limited to objects of $\frac{1}{10000}$ of an inch, we need not be surprised that we do not always see the floating germs of animals and plants."—Note by the translator of Pasteur's researches, American Journal of Science, vol. xxiii., page 8.

§ Notes on Prof. A. B. Prescott's "Lectures on Organic Chemistry" in the University.

¶ For an account of the rapid destruction of the floors and joists of the Church of the Holy Trinity, Cork, Ireland, by dry rot, see Civil Engineer's Journal, vol. xi., page 293.

¶¶ For an account of the decay of floors, studs, &c., in a dwelling, see the Builder, vol. ii., page 34.

¶¶ "In some of the mines in France the props seldom last more than fifteen months."—Annales des Mines.

* The Builder, vol. xi., page 46.

† Civ. Eng. Jour., vol. xix., p. 422.

‡ Experiments detailed in the *Cannes* show conclusively that winter-cut pine is stronger and more durable than that cut at any other season of the year.—*Ann. Se. Discovery* for 1861, page 346.

¶ "Oak trees felled in the winter make the best timber."—The Builder, 1859, page 138.

§ "Although, in ordinary cases, the death of animals takes place when the temperature is sufficiently high to coagulate the hydrated albumen in their tissues, we know that this is not always so in the case of those previously dried. I have seen tardigrades resist the very prolonged action of a stove whose temperature stood at 120° C., and in the researches of Mr. Doyère, the heat was carried to 140° C. (284° F.) without death ensuing from the heat."—Mr. Edwards on "Spontaneous Generation."—*Am. Jour. Science*, vol. xxvii., page 405.

|| *Am. Jour. Science*, 2nd series, vol. xxiii., page 574.

natural. It is even possible, he states, to remove all the azotized compounds by long immersion in the sulphate solution. The albuminous substances first precipitated by the solution, are re-dissolved by excess, as in case of concentrated sulphuric and muriatic acids.* The operation of such solutions should, therefore, be one of lixivation. König hopes, similarly, to explain the action of the chlorides. A recent experiment on animal albumen by Professor Prescott shows that its precipitate by the chloride of mercury, is also soluble in excess of the chloride solution. From this we may conclude that the antiseptic qualities of the chlorides depend, at least partly, on their dissolving out the albumen.

But could all the nitrogenous substances be removed, thereby preventing fermentation, the cellulose and lignine of unprotected wood would slowly decompose. Hence the salt used should act on those substances also. According to good authority, sulphate of copper has this action. M. Welz maintains that, after a time, the sulphuric acid leaves the base, and acting upon the timber, carbonizes it. He has seen the props in a mine, opened 1800 years ago, charred by the free acid thus eliminated, and in a perfect state of preservation, while their surfaces were covered with metallic copper in regulus.†

The use of corrosive sublimate was patented by Mr. Kyan in 1832; that of chloride of zinc by Burnett in 1838. M. Boucherie has used solutions of blue vitriol and pyrolignite of iron. Easy impregnation of the wood is the great merit of his method.

Each process has in turn excited the most extravagant hopes, and neither has justified a title of the expectations formed. While "kyanizing," "burnetizing," or the use of any salt whatever, has not prevented the ravages of *Teredo navalis* or *Limnoria teredrans*, each of the processes named improves the durability of wood exposed to dampness. Each is, therefore, worthy of explanation here.

Kyan's specified solution ‡ was one pound of chloride of mercury to four gallons of water. Long immersion in the liquid in open vats, or great pressure upon both solution and wood, in large wrought-iron tanks, is necessary for the complete injection of the liquid. The durability of well-kyanized timber has been proved, but the expensiveness of the operation will long forbid its extensive adoption.

For "burnetizing," § a solution of chloride of zinc, one pound of salt to ten gallons of water, is forced into the wood under a pressure of 150 lb. per square inch.

Boucherie employs a solution || of sulphate of copper one pound to water twelve gallons and a half, or pyrolignite of iron one gallon to water six gallons. He encloses one end of the green stick in a close-fitting collar, to which is attached an impervious bag communicating through a flexible tube with an elevated reservoir containing the salt liquid. Hydrostatic pressure soon expels the sap at the opposite end of the log. When the solution makes its appearance also, the process is completed.

He finds the fluid will pass along the grain—a distance of 12 ft.—under a lower pressure than is required to force it across the grain, three-fourths of an inch. The operation ¶ is performed upon green timber with the greatest facility.**

THE REMAINS OF THE ROMANS IN CARLISLE.

At the last meeting of the Cumberland and Westmoreland Antiquarian Society, Mr. J. A. Cory read a paper on Carlisle Cathedral. Subsequently, Dr. Bruce gave an account of the Roman remains recently found in Carlisle. As Englishmen, Dr. Bruce said, we must be interested in the past history of our country. Unhappily a large part of the earliest history of Britain is mainly dependent upon the researches of the antiquary: it must be dug out of the ground by the spade and the pickaxe. Even in cases where the historian does come to our aid, the researches of the antiquary are often necessary, in order to correct his chronology and

rectify many of his statements. For example, the statements of Gildas, the first British historian, as he is called, can only receive full credence when they have been sifted and rectified by the Roman inscriptions and the hoards of coins which are turned up from time to time. Even in cases where we have to deal with historians of undoubted credit, the researches of the antiquary lend additional interest to the pictures of the analyst. Tacitus, for example, tells us that Agricola commenced the battle of the Grampians by ordering forward some Tungrian and Batavian cohorts. How interesting it is to find buried in some of the wildest parts of the North of England, where they must have lain undisturbed since the days of Roman occupation, slabs and altars carved by Roman hands, which mention both Batavian and Tungrian cohorts. The stone given vitality to the lettered page. In Cumberland a vast field opens itself to the labours of an archaeological society. The ancient roads of this part of the country are yet to be accurately traced. In Northumberland much has been done in this matter, and that almost entirely through the agency of one honoured individual—the late Duke of Northumberland. At his request Mr. Lauchlan not only surveyed the Roman Wall, but the Watling-street from the Scottish border to the Tees, the Devil's Causeway, and the various branch roads communicating with these. He also surveyed the ancient British and the Saxon and Danish encampments in large districts of that county. He is now laying down the combined results of all his investigations in a map of ancient Northumberland. It is, perhaps, not too late to undertake a similar work for Cumberland. It may be that some large-hearted nobleman with ample means will resolve that it shall be done. But if it be thought too great a task for individual enterprise, the combined efforts of a society like this might accomplish much. The facilities for doing it are greater now than they ever were.

The sheet plans of the ordnance survey form an excellent groundwork for such a map. No doubt, where the ancient roads are still to be seen, they will be laid down by the ordnance surveyors; but, in the majority of instances, these roads have been ploughed up, and their former existence can only be ascertained from the testimony of old men and the records of the local historians of the last century. There is no time to be lost: each winter makes sad havoc amongst those who were plough-boys in 1801. I am the more anxious upon this subject, for I feel sure that important results would appear. It seems to me that the Romans took a firmer grasp of Cumberland than of any other part of the north of England. Besides, the stations on the wall, including Burdonswold and Bowness, and all between, a chain of forts, the chief of which was Maryport, has extended all along the coast. These have evidently been intended to prevent the enemy, whether from Scotland or Ireland, landing within the wall. A road has connected these coast defences. Besides all this, several stations some miles removed from the wall and the seacoast, have been planted in the interior, with the view of sustaining the garrisons that would have to bear the first brunt of hostile aggression. Such were Old Carlisle, Plumpton, Papcastle, and others. A network of roads has evidently connected all these camps together. How desirable it is that all these stations, and fortlets, and roads should be clearly set down in a map of ancient Cumberland. And besides, every ancient British barrow and camp, every Danish camp, every Border tower and Peel house, ought to be carefully marked. There is another matter connected with Roman antiquities that some members of this society might undertake. I refer to the formation of accurate catalogues of Roman coins that have been found in any particular locality. Such catalogues would be of historic importance. Coins give us an approximate idea of the time during which any station has been occupied by Roman troops. [Having given some examples in illustration of this, Dr. Bruce proceeded:—] On examining a list of coins you can form some idea of the degree of activity which has prevailed at different times in the station in which they were found. I had the advantage of examining last week the coins at Nether Hall, which had been found in the neighbouring station of Maryport. They have been carefully arranged by the Mr. Senhouse of the last generation. I am disposed to think that the station was first occupied by Hadrian, the personal friend of his father, Marcus Menius Agrippa, whose name occurs on some of the altars found. There was

possibly an engineer employed in its construction. At the time Hadrian visited England, A.D. 120, the coins of his predecessors Trajan would constitute the larger part of the currency of the empire. It would be mingled also with some of the coins of previous reigns and a few pieces of the republican era. After the time of Antoninus the coins diminish in number. It is remarkable that the only coins of the time of Severus are one of his wife and one of his youngest son. From evidence akin to this I am disposed to think that Severus chiefly expended his energies in the central part of the line—the path that he chose in his advance into Scotland, and by which he probably retreated. At all events, a carefully constructed catalogue of all the coins found in the various localities occupied by the Romans in Northumberland and Cumberland would throw light upon this subject. To revert once more to the collection of coins at Netherhall, I notice that the number increases during the reigns of what are called the "thirty tyrants," several of them being supposed to have assumed the purple in Britain and Gaul. The number belonging to Constantine the Great is considerable, 13. The usurpation of Carausius and Allectus had been put down, and Britain, in common with the rest of the world, enjoyed peace. The intercourse with Rome must have been considerable. The station must have been in a state of poverty towards the close of the series. Of Valentinian I., who died in 375, there is only one coin; of Theodorus, who died in 395, there is only one; and the same is the case with the last reign of which there is an example, that of Honorius. The date of this last coin I take to be A.D. 417. In a year or two after that time the station was probably abandoned. Objections will, I know, be brought against any conclusions derived from a single collection of coins. Accidental circumstances may influence it. That is true, but if we have a numerous body of catalogues to reason upon, we may build our conclusions with safety, for in this case the law of averages comes to our aid. Amongst the coins at Netherhall are several newer denarii. As they were dug out of the camp there is no doubt that they are ancient forgeries. As early as the period of Claudius false coins were imported into Britain. I have been speaking of Roman coins. A collection of English coins has a corresponding value. If all the coins of the fourteenth century that have been found in Cumberland had been carefully catalogued, we should have been able to trace with greater accuracy the marches of the three first Edwards to and from Scotland. One thing I wish much that this society would undertake, and that is the preparation of an accurate history of Roman Carlisle. I am persuaded that Carlisle has been a place of great importance in the Roman period. It was the seat of comfort and luxury, and hence, also, probably of commerce. The ornaments and vessels found in it are much superior to those found in the stations of the Wall. If all that are still in existence could be collected in one place it would be found to what an extent the elegances and luxuries of life were enjoyed in it. A map might surely be prepared marking the course of the wall which probably surrounded it,—its gates, its principal streets, the spots where the most important remains have been found, its walls, its burying-ground, and other details. A memoir of Roman Carlisle, after the model of Mr. C. Roach Smith's Roman London, would be an effort worthy of this society. Another point of great importance which may be accomplished by this society is the preservation of the sculptured and inscribed stones in which this neighbourhood abounds. In the south of England there is an almost total absence of these memorials of an era long past. We are rich in them. On us devolves the responsibility of taking care of them and rendering them easily accessible to all who wish to study them. An individual digs up an altar, he is pleased with it at first, but when the novelty is worn off he ceases to care about it and gives it away. It is soon lost sight of, and then is destroyed. And then again great labour and expense is imposed upon those who study Roman antiquities by the wide diffusion of the remains of even a single station. In the course of my own investigation of the antiquities of the Wall, I have often had to undertake a whole day to travel to see a single altar; and to save myself a journey and voyage to the Isle of Man I had to have sent me the cast of an altar which had been taken from Maryport to Castleton. It is important that the antiquities found in this neighbourhood should as much as possible be

* Brande and Taylor's Chemistry, page 634.

† Annual Be. Dioc., 1866, page 61.

‡ Civil Engineer's Journal, vol. v., page 202.

§ Ibid., vol. xiv., page 471.

¶ Ibid., vol. xx., p. 406.

** At a modification of this method he also cut a channel in the wood throughout the circumference of the tree, fitted a reservoir thereunto, and poured in the liquid. The vital forces speedily dissipated the solution throughout the tree.

** To be continued.

THE AMERICAN NATIONAL ACADEMY OF DESIGN.



FIG. 1.

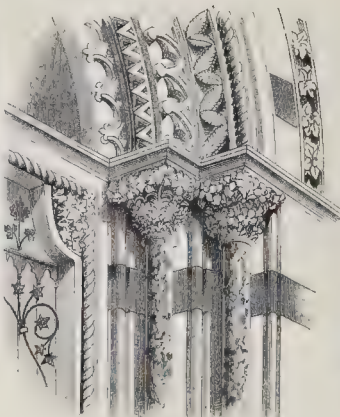
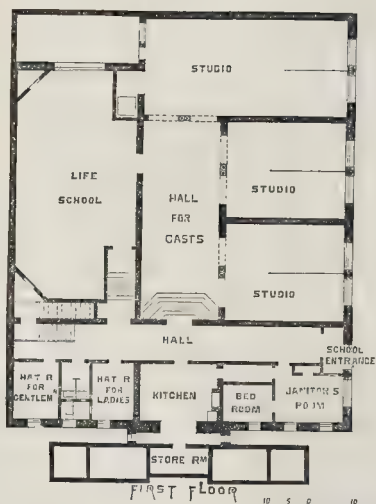


FIG. 2.

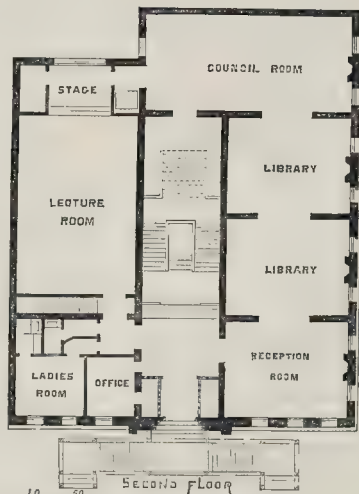


FIG. 3.

Carved Capitals.



FIRST FLOOR



SECOND FLOOR

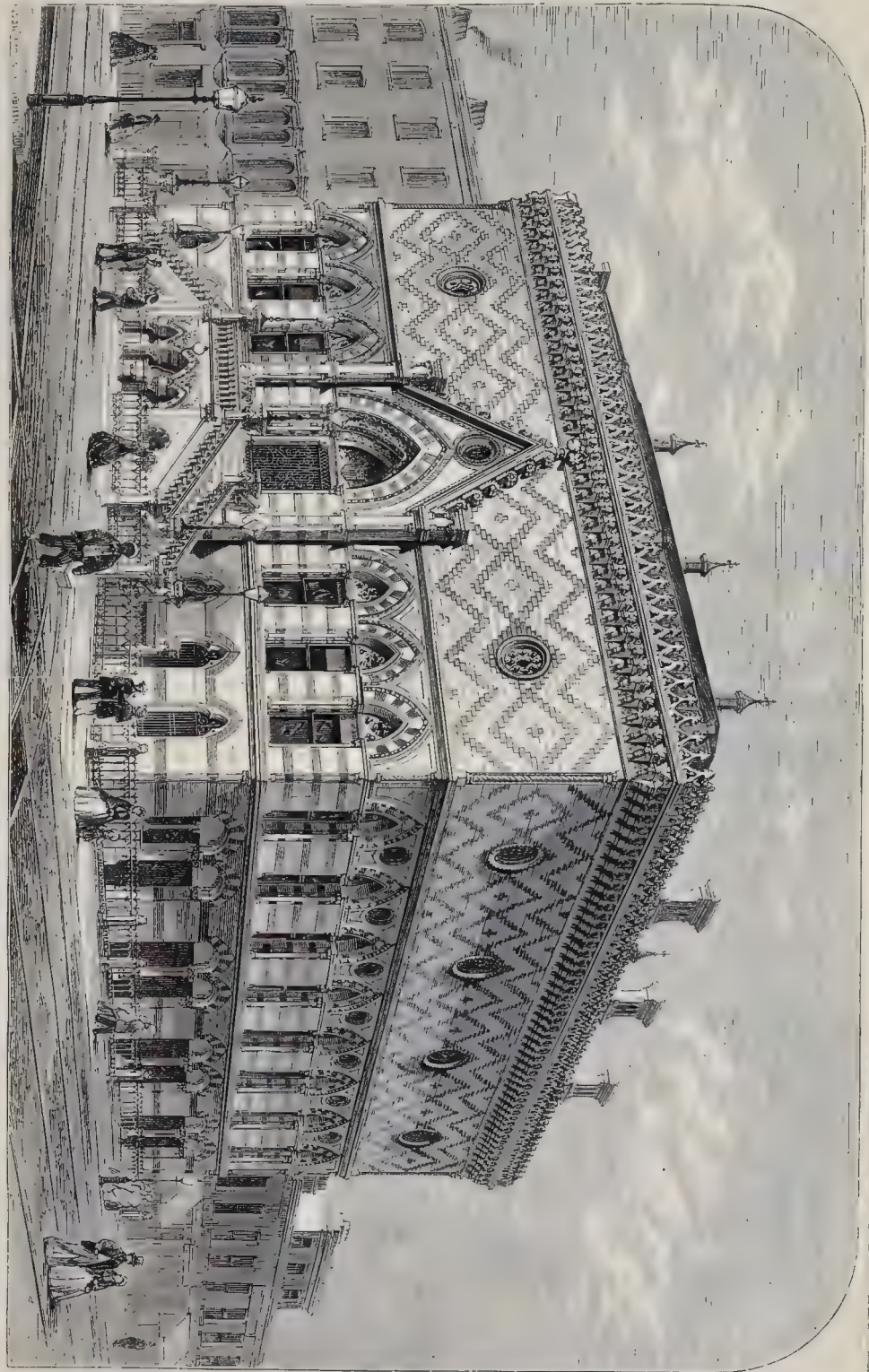
10 5 0 10 20 30 40 50
SCALE OF FEET

concentrated together. If a museum could be formed in Carlisle upon a permanent basis much good might result—if it cannot be formed I would recommend that the inscriptions that are at present scattered about should be sent to museums that are already established, and of whose permanence there can be no doubt. I have to apologize for my boldness in making these suggestions. I pray you give them only so much attention as they are found worth. My interest in the subject and my desire for your prosperity have influenced me in saying thus much. Having read so far, Dr. Bruce said that circumstances had prevented him writing more, and he proceeded to describe *ex tempore* a number of Roman altars recently discovered in Cumberland, illustrations of which were placed in the hands of the visitors. When he was recently examining some antiquities at Netherby an intelligent farmer had expressed his surprise that "the Romans had copied so famously our English letters." Children at school were little

aware from what source they derived the very first elements of knowledge—the Romans were their first schoolmasters. Among the altars which Dr. Bruce proceeded to describe were some found during the excavations in Carlisle for the sewerage works, and for the offices of the *Carlisle Journal*, one found at Maryport (now in the possession of Lord Lonsdale) and one discovered the other day at Silloth. With respect to the altar found at Silloth, Dr. Bruce said it was about 10 in. high. At Skinburness there had been an ancient harbour or creek before the year 1301, and there was a thriving borough or port; but a great eruption of the sea carried away the harbour and greatly damaged the town. The making of a harbour at Silloth recently had changed the sweep of the sea, which had exposed a quantity of boulder stones upon the shore, and this altar had been found. The conclusion he drew from it was that the Romans had had a little fortress at Skinburness. The altar bore the inscription "Matribus Parcis." Dr. Bruce

also described a Roman coin of which there was an illustration upon the sheet in the hands of the members. Those Roman coins, he remarked, were wonderful productions, and it was important to have contemporary portraits of the rulers of the earth in those days. They could be perfectly certain as to their accurateness. Unlike the portraits of the Queen upon our coins—which were always the same—we frequently found their growth from youth to age. Nero he had found on many of the coins as a chubby-cheeked innocent-looking youth, and at last as a bloated sensualist. Commenting upon the names found upon some of the altars, Dr. Bruce said they showed that Spaniards, people from Languedoc or elsewhere, had been among us, and they proved how vigorous were the efforts made by the Romans to subdue England and to keep it in their possession. He had no doubt that the discipline the people of this country underwent in those times had been of the greatest service in forming the English character.

THE NATIONAL ACADEMY OF DESIGN, NEW YORK, U.S.—MR. F. B. WORTH, ARCHITECT.



[See p. 21, ante.]

THE SANITARY ACT OF 1866.

The regulations under this Act relating to lodging-houses, and for which we long fought, are now coming into operation. Rules approved by the Home Secretary have been issued by several of the districts in the metropolis. Those issued by the Board of Works for the Poplar district we have already spoken of. The rules for the St. Giles's district are also very stringent. Among the most important it is specified that no person shall let any house, or part of a house, in lodgings, or to be occupied in lodgings, by members of more than one family, and in which more than two persons shall sleep in one room, until such house, and the person proposing to let the same, are registered in the office of the Board of Works. In no case will an accommodation of less than 400 cubic feet of space be allowed to each person. Persons letting such house, or part of a house, must have the walls and ceilings of every room, &c., thoroughly cleansed and limewashed at least four times every year. Cellars are to be cleaned out once a week, and limewashed as often as needed. The rooms are to be ventilated, &c., to the satisfaction of the medical health officer. Proper accommodation must also be provided for washing, and such a supply of water for the use of lodgers, with proper covered cisterns, as shall be satisfactory to the health officer. The cistern must afford at least fifteen gallons a day to each inmate. The dustbin must be emptied once a week, and for every twenty persons a separate water-closet is to be provided. Every house is to be properly drained. Every owner not resident in or near the registered house must appoint, as agent, some person who is resident in or near to the house to see that the regulations are carried out. Every house and room shall be open to the medical health officer for inspection between the hours of eight o'clock a.m. and ten o'clock p.m. Any persons violating the regulations will be liable to a penalty not exceeding 40s. for any one offence, with an additional penalty, not exceeding 20s., for every day during which a default in obeying such regulations shall continue.

As we have already said, great discretion will be requisite in the carrying out of the powers of the new Act. There is otherwise a risk not only of inflicting much suffering as well as inconvenience on the struggling poor, especially those with large families, but of rendering the Act utterly inoperative, useless, and impracticable, from attempting too much at the outset.

One of the most annoying results of sanitary pioneering has been the ridiculous lengths to which the desired change of public opinion is apt to go, and the false teaching of quasi-reformers under such circumstances. Take the metropolitan omnibuses as an example. They used to be close and stuffy, and utterly devoid of ventilation, as indeed a portion of them still are. Since the public, however, have been better taught as to the importance of ventilation, the wisecracks who construct many of our omnibuses have them (on the principle apparently that there cannot be too much of a good thing), stuck all over with "ventilators," and especially in front, *behind the horses and drivers*; so that, while the omnibus is thus turned into a complete funnel with draughts, the passengers, at the same time, have the benefit of breathing the cast-off steam and gases from the horses and the sitters on the front outside; and it is a fact that not unfrequently the most noxious smells enter through these funnel-holes, which for the better "ventilashin" of the bus, are actually now made for winter no less than summer use on the open and fixed venetian-blind principle appropriate to stables and cow-sheds!

We are sure that our strictures and warnings will not be misunderstood when it is remembered that the conductor of the *Builder* himself was the first public suggester and advocate of the new sanitary powers with reference to lodging-houses, which have recently been adopted by the Legislature. All that is requisite is to bring these powers to bear upon the present state of things by degrees and gently, even in cases where there is glaring need for amendment. Let *Festina lente* be the motto of the authorities, and all will be well.

There is one point on which we may say a word for taste and art in a humble sphere before we conclude. Hundreds of the lodging-houses with which the new Act is empowered to deal have their walls papered with cheap but cheerful and pretty paperhangings, in which, often, both lodger and landlord take a pride. Are all the

walls of such lodging-houses to be henceforth stripped entirely of their ornamental coverings, in order that they may be "limewashed at least four times a year?" We are quite aware that there are evils connected with old and bad papering of room walls, but surely these might be regulated and remedied without so harsh an interference with the tastes and comforts of the poor. The papers usually put on (often by the lodgers or landlords themselves) are extremely cheap,—from 5d. for twelve yards:—could it not be ordered that such papers shall be removed, say once a year, and the walls scraped and cleansed before new paper is put on?

SANITARY.

Proceedings of the Chelsea Sanitary Committee.—When cholera threatened the parish, a committee of nine members was appointed by the vestry to watch its progress, and to take all proper preventive and other measures for its diminution. The committee appointed five medical visitors, with salaries of 10 guineas a week, and ten assistants with salaries of 34 guineas, and other active measures were adopted, all of which are now detailed in a full Report of the Proceedings of the Committee, printed by authority for private circulation among the members of the vestry. These proceedings, no doubt, greatly checked the progress of the epidemic, and facilitated its final removal from the parish.

St. Marylebone Parish.—The medical officer of health for this parish has just issued his report for the year 1865. The annual rate of mortality for the entire parish was 24.95 per 1,000 population, being nearly 1 per 1,000 below that of the previous year. The mortality was highest in Christchurch sub-district, small-pox, fever, measles, being most prevalent and fatal. The annual death-rate in that sub-district was 28 per 1,000 living. In Cavendish-square sub-district the proportional number was only 18 per 1,000. Some striking instances have occurred of the apparent efficacy of sanitary measures in arresting the progress of cholera, and it is suggested whether these measures might not be adopted with similar success during the prevalence of smallpox, which has broken out with frightful activity in the vicinity of Lisson Grove. It is mentioned that the progress of sanitary works has been satisfactory: 1,240 ft. of new sewers were constructed, 7,688 ft. of new pipe-drain laid down, 83 cesspools have been abolished, and water laid on to 326 closets. The water is supplied to the parish by the West Middlesex Company, whose source of supply is the river Thames at Hampton, Middlesex.

SCHOOLS OF ART.

The Keighley School.—The annual meeting of this School has been held in the hall of the Mechanics' Institute, at Keighley. There was only a small gathering. Mr. T. H. Ingham, of Marton Hall, occupied the chair; and, in course of his address, said, in reference to general education, that after all there were schools sufficient, and the difficulty was to overcome the inertia of parents in getting them to send their children to schools; and he believed they would never overcome the difficulty until they adopted a system which had an ugly name, and that was, compulsory education. National interests—for the wealth of the nation depended on its manufactures—were involved in Schools of Art. As an institution, they were quite new in the country. They only began, as it were, after the Exhibition of 1851, when our deficiency in artistic manufacture was very manifest; but when the Exhibition of 1862 was held it was shown what advantage had been derived from the Schools of Art; for, instead of being outstripped in design, we were outstripping our neighbours. National interests, therefore, were involved; and the question was one for all classes; and the working men had shown what they could do if they only received encouragement. They would remember the story of Benjamin West, the painter. When a boy, he was left at home by his mother to rock the cradle, and while alone he made a drawing for which he received a kiss when his mother returned. That kiss, he said, made him a painter; and, said the speaker, what that kiss was to West, let their smiles and encouragement be to the Keighley School of Art. The report

stated that during the past year 71 students had attended the male classes, with an average attendance of forty for each term. The ladies' class, which had been formed this year, had been attended by seven young ladies, and the work they had executed was considered very creditable. The classes are still under the superintendence of Mr. Walter Smith, head master of the Leeds School of Art, and are regularly taught by Mr. Andrew Stevenson, assisted by Mr. W. H. Jackson, late a successful student in the school. The prizes were ultimately distributed.

THE MODELS IN THE CRYSTAL PALACE.

THE KIEFF BRIDGE.

AMONG the many works of art consumed by the late fire at the Crystal Palace, were the extensive and valuable collections of naval and engineering models, placed in the galleries of the Tropical Department. Conspicuous among these was the model of the great suspension-bridge, half a mile in length, over the river Dnieper, at Kieff, in Russia, erected about fifteen years ago, by Mr. Vignoles, F.R.S., for the then emperor, at a cost of nearly half a million sterling.

This model was first shown in London at the Exhibition of 1851, and was subsequently placed, on loan, in the Crystal Palace, where it had remained many years. It was considered a remarkable work of mechanical skill, and was constructed at an expense of several thousand pounds. The loss to Mr. Vignoles is irreparable, though a duplicate model remains in the Engineering Gallery at St. Petersburg, placed there by the Emperor Nicholas I., to whom it had been presented, with the Imperial permission. A few notes of the bridge will not be out of place with reference to the beautiful and singular work, destroyed, with so many other most interesting objects of nature and of science, exhibited in the Crystal Palace.

The architecture of the river piers is rather novel, and of a striking character, harmonising with that used in the extensive range of first-class fortresses which crown the heights of Kieff. The portals through the piers have a clear breadth of 28 ft., and a height of 35 ft. to the soffit of the semi-circular arches. The platform has nearly 53 ft. of extreme breadth, of which nearly 35 ft. is for carriage-way. The platform is suspended from four chains, all on the same horizontal plane, two on each side of the road; the footpaths project beyond the chains, and are carried by cantilevers round the piers exteriorly; so that the foot-passengers are completely separated from the horsemen and carriages.

The chains are composed of links, 12 ft. long, each link weighing about 4½ cwt. Eight links form the breadth of each chain; the total length measured along their curves being nearly two English miles.

For the swivel bridge the iron employed therein is almost exclusively malleable. The bridge is moved horizontally (on the same principle that locomotive engines are sent round on the large turn-tables at a railway station), and by the efforts of a few men only, acting on a very simple apparatus. The construction of the platform of the bridge presents several novel combinations of wood and iron, and is of most remarkable stiffness, to resist the violent action of the eddies of air in violent winds, which have so often injured and even destroyed the ordinary platforms of suspension-bridges in other places.

The total weight of iron used in the construction of the bridge was about 3,500 tons, including the machinery used in the various stages of its construction.

A whole village of warehouses, offices, shops, sheds, dwelling-houses for the superintendents, and comfortable cottages for the numerous workmen, was erected on the left bank of the river, on ground expressly raised for the purpose above the flood-level; a regular commissariat was attached to the establishment; and the whole organization of service made very complete.

Not the least remarkable part of the establishment was that for the manufacture of the hydraulic cement required for the foundations and masonry. It is, in fact, an "artificial puzzolana," made from a peculiar clay found in the Kieff hills, and prepared on the principles laid down by the celebrated French engineer, Vicat, in his recent publication on puzzolanas. The buildings for this purpose were very extensive, being gigantic laboratories, where the operations

were carried on day and night. Eight large roasting ovens, besides numerous grinding mills, in constant action, manufactured upwards of 300 bushels (or about 500 cubic feet) in every twenty-four hours.

This bridge is, perhaps, the largest in Europe, the length being nearly half an English mile, and covering an area of 140,000 square feet,—considerably more than 3 acres.

The bridge was opened with great ceremony on the 10th of October, 1853, by the Grand Duke Nicholas of Russia, the third son of the Emperor Nicholas, attended by all the ecclesiastical, military, and civil authorities, and almost the whole population of Kieff. It has since been constantly travelled over, particularly by artillery, cavalry, and troops entering and leaving the fortress, which is the great central military depot and arsenal of the South of Russia. The total cost was about 432,000*l.* sterling.

THE LOCAL GOVERNMENT OF THE METROPOLIS.

On Tuesday last, a numerous and influential deputation from the Metropolitan Municipal Association for Promoting the better Local Government of the Metropolis, waited upon the Secretary of State for the Home Department, in accordance with the terms of a resolution passed at a recent public meeting at St. James's Hall, with the view of inducing the Government to initiate immediate legislation on the subject. The deputation was introduced by Lord Ebury, the president of the association. Mr. Buckmaster, hon. sec., Mr. J. Beal, Mr. C. Buxton, M.P., Mr. T. Hughes, M.P., Mr. Reardon, M.P., Mr. J. M. Ludlow, Mr. Godwin, the Hon. F. Byng, Mr. Begg, Mr. Dresser Rogers, Mr. Peter Graham, and others having addressed the Home Secretary.

Mr. Walpole said, it would be premature for me to give any opinion at present as to the details of the measure to be submitted to Parliament, but I may say that I hold the opinion that the government of the metropolis might be greatly improved, and that one of these improvements would be the establishment of larger areas with smaller authority; but having said that I hope you will excuse me from expressing any further opinion. I will only say in addition, that I will give the subject my best attention, and will take care to communicate to her Majesty's ministers what has passed, but I hope you will not ask me to give any further pledge.

We shall return to the object the Association has in view.

A HINT TO PATENTEES.

THE Commissioners of Patents have just issued a new order which is of importance to all intending patentees. The order runs as follows:—

"After the 31st day of December, 1866, every applicant for Letters Patent shall deliver at the Office of the Commissioners, with his provisional specification, or (when a complete specification is filed with the petition and declaration) with his complete specification, an abridgment, in duplicate, of such provisional or complete specification. The abridgment must describe, in as short a manner as possible, the features of novelty which constitute the invention. The abridgment and the copy thereof must be written upon sheets of foolscap paper, and upon one side only of each page, leaving a margin of one inch and a half on the left-hand side of the page.

Dated the 17th day of December, 1866

(Signed) CHREMSFORD, C.
ROMILLY, M.R.
JOHN ROLT,
JOHN B. KARSLAKE."

We do not quite understand the object in view, but it is apparently intended to make use of this document as "copy" for the series of abridgments published by the commissioners, and thus to save the money now paid to the gentlemen who are engaged on the work. We have already expressed our opinion of the value of these abridgments,* but we do not think that this is the way to increase their usefulness, and inventors will not thank the commissioners for adding to their burdens. The inventor has already to deposit duplicate copies of his provisional and final specifications, which are used as printers' copy. An extra copy of the drawings has also to be deposited, which is only of use during the few days that the original is in the hands of the lithographers. In some cases, these extra copies are very costly, and now the inventor will be put to a further expense in preparing this

abridgment. There is also another question of some importance, viz., the exact legal value of the new document. Supposing a discrepancy to exist between the specification and the inventor's "abridgment," will it be possible to make this want of agreement a foundation for setting aside the patent in a court of law, as is now done, in case the provisional and final specifications do not agree? The commissioners, we believe, will have no power to refuse an inspection of these documents; and will also, if we understand 16 & 17 Vict. c. 115, sec. 4, be bound to grant office copies, which could hardly be denied as evidence by a judge. In case these abbreviated descriptions are printed intact, the abridgments will have an official character which they do not possess at the present time, inasmuch as they will contain the inventor's own description of his invention. But we do not consider this to be of any advantage, inasmuch as the commissioners' abridgments were never intended to "supersede the necessity for consulting the specifications," to use the words of the notice prefixed to each volume. No two patentees, moreover, will form exactly the same idea of the commissioners' requirements as regards the nature and length of the abstract required, and as a natural consequence, there will be a want of uniformity—some will be too long, others too short. Supposing, however, that these documents be found to require examination by a skilled person to see if they really do give a concise and intelligible account of the essence of the invention, then we are at a loss to understand what advantage will be gained. The person who is able to judge whether the abstract comes up to the standard, would also be capable of abridging the specification; and the time occupied in the two processes would, in most cases, be about the same, so that there would be no saving of expense under this head. We shall be curious to see how the system works, and to know the legal value of the new document. In the mean time, we would advise inventors to be very careful in drawing up their "abridgments," and suggest that they should, where possible, use the exact words of their "provisional," or of their claim in the "final" specification.

FROM IRELAND.

Leighmenny.—St. Mary's Church here has been consecrated. The edifice is built from a design furnished by Mr. William Atkins, of Cork, architect. It stands close by the bank of the Innoshannon river, near the fine, old, umbrageous woods of Shippool, having in its front the castellated and ivy-clad ruin of that name. In form it consists of nave and chancel, with semi-circular termination; tower, spire, porch, and robing-room. The spire is supported by eight marble shafts resting on the upper part of the tower. The porch also rests on marble pillars. The masonry is enriched with bands of red brick and voussiors in the arches. Internally the walls are lined with red, yellow, and black brick and tiles, arranged in patterns. The steep-pitched roofs are of stained deal, the principals carried by stone corbels. The passages of the church and chancel are paved with different coloured tiles. The sittings, which can accommodate about 80 persons, are all open, and of deal stained like the internal roofing. The site of the church was granted free of rent by Mr. T. B. Herrick, of Shippool.

THE ANCIENT LOUVRE, PARIS.

THE excavations in the court of the Louvre to discover the site and boundaries of the Philip-Augustus tower are nearly all filled in and levelled. Some openings are to be left leading to the underground story, for the purpose of gaining access to it if necessary. The vaults which were filled with earth have been completely cleared.

The great tower of the chateau of Philip Augustus and of Charles V., which has been laid bare by the excavations in the court-yard of the Louvre, and known by the names of Tour Neuve, Philippine, and Ferrand, stood fronting the entrance opposite to the Pont des Arts. The foundations are of considerable depth, and commenced at the ancient level of the bank of the river. This building was 96 ft. high, with walls 12 ft. thick, and was surrounded by a deep

ditch. The precise date of its foundation is unknown; but it is known that in 1204 this tower had been but recently built, since in that year Philip Augustus declared that he owed 30 sols to the prior and brethren of St. Denis-de-la-Châtre on account of the tower of the Louvre, which he had built on their land. At this period, the edge of the river which bathed the Louvre was called the Rivage de St. Denis. The new tower being, moreover, in the seigneurie of the bishop and chapter of Notre Dame de Paris, they were entitled to compensation, and the king charged the provost of Paris to make the Parisians pay the indemnity. Celebrated in the feudal annals, the terror of vassals, and a *séjour de détenton*, the tower of the Louvre was also employed as a place of deposit of the royal treasures. Access was gained to the upper portions by a winding staircase. The entrance was defended by an iron door with numerous locks and bolts.

This donjon was also the centre of royal authority, and the great functionaries of state came there humbly to take the oaths of allegiance and homage. After about three centuries and a half of existence, the tower and buildings forming the *ensemble* of the parallelogram of the castle were demolished, and Francis I. laid the foundation of a new palace, after the designs of Pierre Lescot. Among the materials brought to light by the excavations in the court of the Louvre some evidently belong to a period anterior to the epoch of Philip Augustus. There exists a diploma, reported in the history of the University, which affirms that in the seventh century a royal mansion was built on this site, in the reign of Dagobert; and that in the twelfth century a chateau was built. The fortress of Philip Augustus succeeded this last construction.

REPORT OF METROPOLITAN BOARD OF WORKS.

The Metropolitan Board's report for 1865-6 has been published.

Amongst the various important subjects treated of are the claims in respect of the Thames Northern Embankment, which were,—for freeholds, leaseholds, &c., 311,257*l.* 11*s.* 1*d.*, which were settled for 211,374*l.* 10*s.* The claims for the new street to the Mansion House were—freeholds, leaseholds, &c., and yearly tenancies, 1,184,723*l.* 7*s.* 5*d.*, which were settled for 1,059,234*l.* 6*s.* The claims in respect of the Thames Embankment (South) were—freeholds, leaseholds, &c., 142,742*l.* 14*s.* 5*d.*, which were settled for 109,975*l.* The whole of the building plots in Garrick-street (which was opened to the public in March, 1861) have been let on leases for eighty years, with one exception, where the term is fifty years. The aggregate rental required for these plots is 2,494*l.* per annum. The Board would have proceeded to sell these ground-rents, but they deemed it inexpedient, owing to the state of the money market, to do so as yet. The cost of the properties required for the formation of this street was 102,831*l.* 8*s.* 8*d.*, which, with other expenses, including professional and law charges, gave a total of 121,553*l.* 13*s.* 11*d.* In Southwark-street, which has been open for nearly three years, out of 206 plots, into which the surplus land in the line of the street had been divided, 177 have been let on lease, and the income derived from the ground-rents, including the rent of some warehouses purchased by the Board, but not pulled down, is 6,904*l.* per annum. The cost of the properties and interests purchased by the Board was 476,222*l.* 11*s.* 2*d.*, and the professional and other charges swelled the total to 582,630*l.* 11*s.* 4*d.* The cost of the removal of Middle-row, Holborn, is estimated at 61,152*l.* The compensation claims for freeholds and leaseholds amount to 17,566*l.* 10*s.*, and the settlements thereof to 15,950*l.* The net cost of the Whitechapel improvement is estimated at 115,364*l.*, and the Board have been engaged in purchasing the properties required up to March 31. The Board agreed to settle claims for three freeholds and four copyholds, &c. The sum claimed was 47,708*l.*, settled for, 42,818*l.* The quantity of land purchased for Finsbury Park was 120 acres, which cost 56,550*l.*, or about 472*l.* per acre.

The report states that the experience of last year fulfils the anticipations of the benefit to be derived from the increased purification of the river. These benefits are evidenced by the fact of the return of fish in large numbers to those

* *Builder*, vol. xxiv., p. 663.

parts of the river which had before been in a polluted state; and further improvements are anticipated as arrangements for purifying the upper waters become matured, and a more efficient system of water-supply is organized.

On the subject of the Metropolitan Gas Acts, the report expresses the belief of the Board that these Acts "have been evaded by meter-makers, gas companies, and others."

A considerable portion of the report is devoted to the embankment and drainage works, with the progress of both of which we have already occasionally made our readers acquainted. It also contains an important communication by Mr. Bazalgette on the Ventilation of Sewers.

THE THAMES EMBANKMENT AND THE SEWERAGE.

Mr. BAZALGETTE presented, at last meeting of the Metropolitan Board of Works, a report, the substance of which is as follows:—

On the Northern Embankment (contract No. 1, between Westminster and Waterloo Bridges), about 3,730 ft. in length of iron caisson and timber coffer-dams have been constructed or are in various stages of progress: 2,637 ft. of the Low Level Sewer, 2,123 ft. of the subway, 2,925 ft. of the 4 ft. by 2 ft. 8 in. sewer hitherto discharging on the foreshore of the river, and 284 ft. of the flushing-sewer have been completed. About 3½ ft. above Trinity high-water mark of the Westminster steam-boat pier for a length of 320 ft. have been completed; 45 ft. in length of the Charing-Cross steam-boat pier, and 306 ft. of the river-wall have been brought to heights varying 1 ft. to 4½ ft. below Trinity mark. The Adelphi landing-stairs are progressing favourably; filling to the extent of from 400,000 to 500,000 cubic yards has been carried out behind the walls and works of the Embankment. The works that are dependent upon the operations of the Waterloo and Whitehall Railway are still in the same condition as at the date of the engineer's last report. The upper parts of this point are waiting generally for stone to complete them. 8,269l. worth of work has been done during the last month. Between Waterloo Bridge and Temple Gardens (contract No. 2) about 60 ft. of river-wall, sewer, and subway are completed to within 4 ft. of Trinity high-water mark. Beyond this the only remaining portions of the work to be executed to complete the contract are the parapet and the upper part of the Temple steamboat pier, the stone for which is arriving on the ground. The approximate value of the work done, and of the materials and plant upon the ground, is 206,616l. Of the total amount, the proportionate sum of 195,319l. is for works, 8,297l. for materials, and 3,000l. for plant. But little progress has been made during the last month with the Isle of Dogs branch of the Low-level Sewer, in consequence of the contemplated alterations in the line of sewer near the East and West India Dock entrances. The value of the work completed is 59,558l., of which sum 3,213l. represent the progress of the past month. Fair progress has been made at the Abbey-mills Pumping-station. The value of the work completed is 93,230l., 5,230l. being for the progress during the last month. On the Southern Embankment a length of 2,370 ft. of dam and staging has been driven to a depth averaging 15½ ft. Within the dam about 1,600 ft. in length of the river-wall have been brought up to levels varying from 17 ft. 4 in. to 6 in. below Trinity high-water mark, and about 300 ft. of the wall have been brought to a level of 3 ft. 9 in. above that mark.

THE TRADES MOVEMENT.

Manchester.—With a view to offer the more effectual resistance to the combinations of employers, and the action of locks-out, a movement originated in Sheffield, last July, for the formation of a national alliance of associations of the employed. The scheme has proceeded so far that the first conference of the alliance has been opened in Manchester, with fifty-six delegates accredited from fifty-four different trades in various parts of the country, including Scotland, and representing, it is said, an aggregate of 50,830 members of workmen's associations!

Nottingham.—The masons employed by Mr. Joseph C. Rees, contractor for the Wesleyan chapel, have

struck work "in consequence of a disagreement with the clerk of the works, whom they consider not a practical man." Other masons employed by the same contractor threaten to strike unless Mr. Rees gives those already on strike other work not connected with the chapel; and every mason resuming work at the chapel while the clerk is employed on it will be held liable to a fine of 2l. until the strike be settled.

Sunderland.—Nearly 100 carpenters employed by Messrs. Taylor & Scouler, Sunderland, have struck work, in consequence of their employers not complying with their request to give them beer at three o'clock in the afternoon. It appears that in order to make the most use of the short days, Messrs. Taylor & Scouler caused their men to cease work 20 minutes to half an hour before time, and then gave them the beer. Their own men did not complain, but the union interfered, and the men are ordered to cease work until their employers agree to their request.

Hertford.—A convivial meeting took place at the Dickier Oil Mill, at Hertford, on Monday in last week. The men in the employ of Messrs. Inskip & Manser are in the habit of entertaining their employers to supper on Christmas Eve; and on this occasion the annual gathering was made the occasion of giving permanent expression to the feeling of confidence and good will between the firm and their working men.

EVICTED TENANTS' AID ASSOCIATION.

A NUMEROUS deputation from the Evicted Tenants' Aid Association waited upon the Earl of Derby, on Wednesday last, for the purpose of bringing under the notice of the Government the evils and miseries entailed upon the poor of the metropolis by over-crowding in their dwellings. The deputation urged that Parliament should be asked to pass measures compelling railway companies to provide dwellings for the poor evicted by their works; and, further, that Mr. Torrens's Bill of last session, for the rebuilding of dilapidated houses, and for otherwise providing houses for the poor, should be passed. Lord Derby replied,—"I can only say there is not one of you feels a greater interest in this question than I do. It is a most difficult and painful subject to deal with; and I may say, on the part of my colleagues, it is one that has commanded our very anxious attention. If we can see the moment for introducing a measure at all satisfactory, we shall be most happy to carry it through, and to receive the co-operation and assistance of those who have studied the subject, and can render us valuable and efficient co-operation and assistance. It is not a question of party in any sense. It is a question of humanity, and it is also a question with respect to which we must bear in mind the maxims of economy. We cannot, on the part of the Government, make it a question of mere charity and philanthropy. If any mode can be shown by which we can mitigate the evils which are most excessive and painful, nothing will give us greater pleasure than to carry a measure which shall effect that through Parliament."

RAFFAELLE AND HIS WORKS.

UNDER this title Mr. Beavington Atkinson gave an interesting lecture at the Royal Institution, Bristol, on the 7th inst. After elucidating the first and second styles of Raffaele by alluding to the Madonnas and holy families, of which he painted no less than fifty—the best known were especially commended for the simplicity and purity of their Christian sentiments—Mr. Atkinson remarked with reverence that Christian art, if true and positive and of any worth, must follow in the footsteps of Him who was at once human and divine. He then proceeded to discuss the questions of genius, and inspiration, and beauty in art, remarking that the Christian art into which Raffaele threw himself was the embodiment of Christian truth and beauty. Raffaele joined physical and spiritual beauty, and so made that enduring and ideal humanity which reconciled as it represented two natures. Thus laying aside all pretension to inspiration (the lecturer remarked) in any sense, he had endeavoured to show how from merely natural powers and materials Raffaele matured Christian art. The genius he had ascribed to him infused into the manner of the period vigour, beauty,—in short, nature. Of the painter's third, or Roman period, it was remarked that it

brought with it a vast development; and to it belonged the greatest pictures the world contained. When at the age of twenty-six Raffaele travelled to Rome, he did not get rid of his Florentine manner; the two periods overlapped each other; there was no break in continuity, no sudden revolution, but merely progress through development. Directing attention to the Roman school generally, of which Raffaele was the founder and chief ornament, the lecturer, the better to illustrate his observations, glanced at the intellectual and religious condition of Rome at the time, and then went on to show what compensations and advantages came to the Roman school of paintings under the changes he had just traced. He denied the charge that Raffaele owed the greatness of his Roman style to Michelangelo, partly because, with the exception of one or two figures, such as Isaiah, there was nothing in common between the works of the two contemporaries, and also because there were other causes amply sufficient to effect the change from the Florentine to the Roman manner. Raffaele had in style and mind grown into the man, and in Rome he entered a great and busy world which called forth his power. The support of patrons and the rivalry of the greatest artists of the age stimulated to utmost effort. He was also accustomed to take counsel of the learned men and leading intellects of the time, and thus they could in some measure understand how Raffaele was called to the highest arguments, and as a painter representative of the times. Raffaele, so far as he was not self-made, was fashioned by his age; in part he founded the Roman school, but that school had never been known had the city of Rome not existed. That city demanded a school; and it was not from Michelangelo, but from sculptors of a prior age that the school found patronage, whose works were then exhumed from the *débris* of the Roman empire. Indeed, no artist was removed from this world-wide influence. In the Roman style of Raffaele this painting of many generations obtained its consummation. Raffaele made the old art live and move; he saw nature through the classical, and from the classical he drew that which was eternally true. He made no dead transcripts from the Greek, but worked as the Greek artists would had they received from Julius and Leo commissions. They recognised in his lines the same grace, in his forms the same beauty, in his compositions the balance and the symmetry, in his humanity the ideal and transcendent types which brought Greek art so near perfection. This was the Roman school of which Raffaele was the founder, or rather the reviver. The stern grandeur of the Greek was in his hands softened; it was in this blending of two schools, the Christian and spiritual of Florence with the grandeur and simple nature of the Greek, that the perfection of Raffaele's Roman manner was reached.

PROVINCIAL NEWS.

Walsall.—The completion of the Town- or Guild-hall has been celebrated by a banquet given by the Mayor. The new building covers the same area as its predecessor, but is made to afford a greater amount of accommodation. The style is Italian. The chief façade towards High-street is a composition based upon a story of the Doric and Ionic orders of architecture. The inferior order which forms the lower part of the façade is Doric, upon a rusticated and vermiculated plinth, and presents a centre recessed with two corresponding wings. The centre is flanked with three-quarter columns, and the wings with tripled pilasters of the same order, supporting an entablature. The peculiarity of the site enabled the architects to introduce a Mezzanine story, which, although it to a certain extent destroys the harmony of the façade, has been artistically treated. The three windows, the magistrates' private entrance, and the three windows of the court room, form the centre, and are deeply recessed—each window having detached columns raised on pedestals, and carrying a denticulated entablature forming an impost, the walling throughout being rusticated. The keystone to the principal entrance, and also the keystones to the court windows, are enriched with carved heads, representing the four seasons, or rather four stages in life from childhood to old age. The superior order is Ionic, forming an arcade in connexion with the wings of five arches, the walling being executed in red brick-work, the main columns and pilasters having

enriched capitals with swags of fruit and flowers from the volutes and columns supporting the arcades. In the apertures between the columns are the windows of the council-chamber and ante-rooms on the same floor. Part of the façade is slightly broken up by the introduction of a niche, in which is placed the statue of Justice, from the entrance of the old guildhall. Three of the compartments, forming one arcade of the Goodall-street front, are in character with those composing the High-street front. The other part of the Goodall-street façade corresponds with the Free Library, which at some future day will no doubt be connected with it.

The ground-floor comprises the court-room, the magistrates' private room, witness-room, and the Inland Revenue Office. From the day-room to the prison, which is underneath the court, a stair communicates with the dock, so that the prisoner passes direct from one to the other. On the Mezzanine floor is the grand jury room. The upper floor comprises the council chamber, mayor's private room, and the town clerk's room. The ventilation is effected by the introduction from the exterior of the building of cold fresh air, which is warmed, and passed through a series of fines to its destination. Fifty cubic feet of pure air per minute can be poured into the cells. The foul and vitiated air is drawn by means of a series of fines and channels into an extracting shaft, and so carried away. The building has been erected by Mr. Charles Burcott, of Wolverhampton, the amount of whose contract price was 5,083*l.*; and the warming and ventilating part of the work has been carried out by Messrs. Haden, of Trowbridge. The erection has been superintended by the architect, Mr. G. B. Nichols, of West Bromwich and London. Mr. Burton acted as clerk of the works.

COMPETITIONS.

Sheffield.—A new chapel is to be erected in Sutherland-road for the Primitive Methodists. The trustees invited designs for a chapel to seat 1,200, vestries, and schools, &c., from four gentlemen in a limited competition; and, after meeting several times, adopted the design submitted by Messrs. C. J. Innocent & Co. of Sheffield, and appointed them the architects.

JERUSALEM.

SIR MOSES MONTFLORE, Bart., has determined, since his return last spring from the Holy Land, to erect another hospice at Jerusalem for the residence of several poor Israelitish families. This building will be on a large scale, and built near to that which was erected in the year 1859, under the superintendence of Mr. William Edward Smith, architect, of Upper Bedford-place. The contemplated new building is entrusted to the same architect.

THE "OVER-HEATED FLUE" MISERY.

SIR.—How soon, I am bold to ask, are likely to cease irreparable destruction of fine old churches, or injuries to grand modern erections, (vide Croydon Church and the Crystal Palace), through the actually sickening recurrence, for some time, of "overheated flues?" And, pray, where might not be the next effect of the ill-omened flue?—St. Paul's, Westminster Abbey, or St. George's Chapel, Windsor?

The supposition is irresistible, that there must be often some great unskillfulness or inattention in those who manage them. But if they do not know their business, others should be employed who do. One can easily guess now, instantly, the cause of fire in public buildings. Really, sooner than this, we had better revert to the old "open-air registered stoves" (I think that is the title), with ascending pipes.

Reasonable comfort to persons in church is one thing; danger to the buildings from somewhat "Sybaritic" luxury in exotic heating (which, if "cleanliness" be, is hardly also "next to godliness") is another. I dare say good St. James would not have discouraged the moderate warming of churches; but I am sure, if present in a London winter, he would have bid us remember the densely cold dwellings of the poor before luxurious seats in the temple.

Of the monuments sacrificed, Oxford should mourn Sheldon's, who so liberally ornamented it.

The organ, I remember to have read, was pronounced by Avery his best and favourite work. He was, I believe, the first "great man" in pedal pipes, and put in those at Trinity College, Cambridge (the previous builders being Schmidt & Green), the finest organ in that university. On the whole, and such catastrophes—a "murder on your pestilential flues"—is the rough thought of

JONATHAN OLDBUCK.

INJURY BY NEIGHBOUR.

SIR.—Will some of your readers kindly inform me if I have any redress, and what, for a very serious grievance, viz., I am the landlord of a house let to a highly respectable widow with invalid daughters, and the next-door neighbour has just raised his house two additional stories; in consequence of which all the chimneys in my house smoke; that extent of the windows are obliged to be set open day and evening while the fires are alight. I have received notice from my tenant, who pays eighty guineas per annum, that she is going to leave in consequence of this annoyance.

Both houses are detached though only about 5 ft. apart. Z. Z.

CEILINGS IN IRON HOUSES.

SIR.—I have a two-storied building at the Cape of Good Hope, with an iron roof, the upper story of which is unbearable in the summer months, on account of the heat. Can any of your subscribers inform me of the best and cheapest material of which to form a ceiling that will act as a non-conductor to the intense heat?

I may state, that the building is 70 ft. long by 24 ft. wide. Planking or matchboard lined with felt is generally recommended, but the land carriage (being 300 miles from the sea) makes plank expensive.

I have a notion that some sort of coarse flannel or blanket, lined on the upperside with brown paper and just stretched from wall to wall, would answer every purpose; but not being a practical builder, I hesitate to incur the expense without first asking for the experience of those well versed in such matters.

I may add, that should any inexpensive and effective ceiling be offered, a very large demand would immediately spring up.

G. P.

THE GREAT BELL OF YORK.

SIR.—It is seriously urged that the great bell of York Minster should be re-cast, "reducing the size to harmonise with the other bells, and attaching it to the clock, so that in future the quarters would be struck upon four bells, instead of two as at present; and the account upon a clear, distinct, yet ponderous bell, heard without difficulty in every part of the city." Now, I would remark upon this plan, that to re-cast the great bell would spoil one of the finest and largest bells in Europe. The late Mr. Aspinall, of the Minster Gate, York, got up the subscription for this bell; and he had a list of subscribers' names, at the head of which was the Archbishop of York, who procured the machinery for the striking of the hammer to mark the hours on the bell, which subscription unfortunately was not carried out owing to his death. I heard the great bell of York Minster rung shortly after it was rung, the old foreman of Mears, of Whitechapel, London, where the bell was cast, refusing to leave York till it was rung, which was done by having sixty strands of rope attached to the main rope, and sixty men pulled it. Now, the machinery was estimated to have cost 30*l.* For striking the hours, which Mr. Aspinall was getting the subscription for. Let such a sum be raised for that purpose, and a further sum, the interest of which may pay the men for ringing on the great festivals of Christmas Day and Good Friday, and the old tower of York Minster will be used for what it was intended by our ancestors.

The late Dr. Canage, of York, took great pains to have the great bell of York Minster cast to the tone of the great bell of Notre Dame, at Paris, which is the finest toned bell in the world. I may mention that the great bell would be heard twenty-three miles round York if the hammer struck it with the machinery as a propelling power proposed by the late Mr. Aspinall.

When I heard it rung it was the most magnificent tone I ever heard of the kind; it sounded not like a bell, but the roar of old ocean.

YORKIST.

HOT-WATER PIPES AND THE BUILDING ACT.

THE Superintending Architect of the Metropolitan Board of Works writes to us as follows:—

"I enclose copy of a correspondence between Mr. Berry and myself respecting the heating apparatus lately put up by him for this Board under my superintendence, which was referred to by Mr. Berry in an inquiry before Mr. Trail, when a case was heard with respect to another apparatus supplied by Mr. Berry, all of which was reported in your paper, and several others." I am sure you will say the correspondence is very curious, and in justice to myself I must ask you to insert as much of it as you may deem necessary in the *Builder*, in order to place me right as a public officer before the public.

GEORGE WILLIAMS."

It is, indeed, quite conclusive. After a bungling attempt to evade the real question, Mr. Z. D. Berry (Fimlico), writes:—

"In no part of your building are the pipes within the distance, and the coils in your case stand upon bricks, 9 in. by 4 in. by 8 in."

Mr. Trail was led, therefore, to give an illegal decision by an altogether incorrect statement.

* See vol. xxiv., p. 961.

ILLUMINATED MSS. BY ENGLISHMEN OF THE TIME OF KING CHARLES I.

In the last number (the *New Year's number*) of a small quarto weekly (nay, healthy) favourite with all scholars, "*Notes and Queries*," there is a notelet, full from the beginning to the "postscript" (that essential appendage to a "last letter") of new matter about the last—to my thinking—of illuminating heralds attached to the venerable and valuable office of the Earl Marshal of England—rich in its names with "the blood of all the Howards." The writer of the article is Mr. John Bruce, a ripe scholar in English history and biography. How he can, in his humorous, roguish way, and with his rich mines of reading and remembering, puzzle by "*Queries*," they cannot answer and he can!—but I am not in your columns for "panegyric praise," only to relate something new and about the last of our Herald's College, Herald's encouraged by the Earl Marshal of England and the nobility of England.

Mr. John Bruce asks from "You and Yours," "Pray what was a chain organ?" The answer to that "query" I leave to our friends Mr. William Chappell and Dr. Rimbauld, long well-skilled correspondents. What I have to tell is who Edward Norgate was.

When a clerk under the Commissioners of Audit in Somerset House, many a Saturday afternoon hour (attendance closed) I have spent in the Archbishop of Canterbury's Official Will Office in Heraldic and Prerogative Doctors' Commons. There were hard-pressed separate shilling Calendar searchings in those days, and my dinner was often reduced in quantity by this longing for learning. There was no access such as now (Sir Herbert Jenner Fust then reigned), and I have—without bragging—often reduced two chops to one, for this, to me, pleasant and unprinted information.

Well, I found this information out touching Edward Norgate, and it is what in part Mr. Bruce asks to receive. There is an additional pleasure in being able to oblige a friend and a scholar—who rarely needs information but he knows where to find it for himself.

Edward Norgate, Clerk of the Signet to King Charles I., and Windsor Herald, made his last will and testament in 1649. It was proved in 1651. Our skilled illuminator and herald desires to be buried in the churchyard of St. Benet's, Paul's Wharf, in London, or in the churchyard of the Cathedral Church of St. Paul. He appoints his wife, Ursula Norgate (what was her maiden name?) his executrix; and attributes his leaving so little to the many disorders of the times. His unfinished picture drawings, engravings, and books, he bequeaths to that son who had caused him "the greatest trouble." Why? There are odd, unaccountable legacies to strangers, or omissions of the names of sons and daughters in thousands of wills, commencing "In the name of God. Amen."

PETER CUNNINGHAM.

CHURCH-BUILDING NEWS.

Treston.—The chancel of Treston Church has been restored, according to the *Sheffield Independent*, and the edifice re-opened. In the restorations the original design of the chancel has been so preserved that no old stone has been removed from the building. The interior was previously plastered and whitewashed, presenting a very unsightly aspect. Both plaster and whitewash have been removed, and the old stonework has been cleaned and pointed afresh. The chancel is of the twelfth and thirteenth century style of architecture. The restoration to its ancient form has been superintended by Messrs. Hadfield & Son, of Sheffield. Mr. Joseph Rodley, of Sheffield, has executed all the stonework, and Mr. Arthur Hayball, of Sheffield, all the woodwork. The four paintings of evangelistic symbols in the reredos were done by Mr. Westlake. Outside the church the mullions and tracery of the window at the east, and the other three windows, have been restored to their original form. Two pinnacles at the east end and a cross have had to be replaced. Ere long the church will be further beautified by a stained-glass window, a gentleman having promised to provide one for the chancel.

Kiddminster.—The alterations to St. George's Church have been brought to a conclusion, the whole of the east end having been re-modelled, altered, and improved, since the removal of the

it and reading-desk from their former position. The first alteration comprised removing screens, and throwing the additional space obtained within the communion-rails. One of the pulpits was also lowered. On the wall of east end a carved reredos of Caen stone has been erected, the centre portion containing a grouped carving of the Ascension. The decoration of the wall above the reredos has been done by Mr. Preedy, of London. Within the communion-rails encaustic tiling in a warm tone has been laid, supplied by Mr. Godwin, of Weymouth. Around the front of the communion is a metal railing, with suitable standards of ashed brass, has been fitted by Mr. Skidmore, of Coventry.

Widened.—The district church of St. Simon has been opened for divine service. The cost has been 4,000l. The church has been erected in the designs of Mr. Thos. Hellyer, of Ryde, architect, by Mr. Lawrence, of Southampton. It is chiefly with white bricks, relieved with red bands, with moulded bricks in the interior, the nave arcade and chancel arches, Bath Portland stone being used for the windows, pinnacles, caps, and bases. The style is Early Decorated, and the whole treatment is based on brick architecture of the Continent. The peculiarity of the church is its wide and low nave, its width being 44 ft. from centre to centre of the columns supporting the nave arcade and clerestory, whilst the ridge reaches heights of 70 ft., with a length of 92 ft. in the nave. There are north and south aisles, each 18 ft., by 14 ft.; chancel, with apsidal end, 33 ft. 18 in.; chancel aisles, 21 ft. by 9 ft.; also a vestry of future tower at the south-east, and the vestry at the north-east angle of the building, making a total length from west to east of 136 ft., including west porch, and a total width of 82 ft. from north to south. In addition to the west porch there are four other entrances, north-west, south-west, and south-east ches, and entrance through vestry. There is a west gallery, in which at present is placed an organ, by Messrs. Gray & Davidson. The church will accommodate 1,000 on the ground-floor, and eighty more in the west gallery. The pews are open and stained throughout, that of the chancel being groined in wood, with moulded glass. The nave is lighted by a clerestory, containing twenty-four two-light windows, with pierced heads, and three large west windows, each, with the five apse windows, are all glazed with tinted rolled cathedral glass; the apse in addition contains five large quatrefoils, filled in with stained glass, by Mr. Wallis, of Newcastle. *The Hampshire Independent* gives the following somewhat curious account of the progress, if any may so call it, of the works:—

It was originally intended to build only the nave and aisle with its aisles, and to add the other portions as funds were obtained. With this view the work was commenced in the autumn of 1864. The architect laid the foundation stone in September of that year, and the work proceeded as funds were collected until the 22nd of November, 1865, when the roof being partly on, a heavy equal force of men, excepting the force now upon the roof, were employed to support the roof, which turned completely over, describing a semicircle of 70 ft. diameter, in which position they remained stationary, thereby saving the clerestory walls and nave arcade, which as that time did without any support from the aisles subsequently added; the timbers destroying in their fall the chancel arch, and damaging a triforium in the chancel walls. The work was commenced again immediately, and boarded in the 11th of February of the present year, when the triforium gale of that day noted the whole of the roof 6 in. from south to north, thrusting the north wall of the perpendicular to that extent, and dragging in south wall to the same amount; the Portland stone of the nave arcades were by this means thrown out of their vertical position, and two of them split from top to bottom. Means were immediately taken by the builder to secure the building by fixing chains to the feet of the perpendiculars on the north side, and securing them to balks running on the outside of the foundations of the south aisle, and after various other alterations by the building committee, it was decided to build the north and south aisles, the contractor undertaking, in consideration the sum of 200l. being paid him towards the expenses, to get the roof back to its normal position, to pull down and rebuild the clerestory walls, also the west wall to the extent of 60 ft., and to further strengthen it by additional buttresses, and also to cut out the broken columns and replace them with new. All this with the additional work now been accomplished successfully, the mode resorted being the erection of a strong timber stage 30 ft. from the ground, loading it with 30 tons of materials, and setting it sufficiently firm to obtain a fulcrum for twelve jacks, by which the roof was thrust back in its place, and is now firmly kept there by additional braces and walls secured to the roofs of the aisles.

Wesley.—The chief stone of a church, to be dedicated to St. Andrew, has been laid at Wesley, near Blackburn. The building will be on designs by Mr. E. G. Paley, of Lancaster and Merton, and after the type of ecclesiastical structures erected in England during the twelfth century. The ground plan is in the form of a

cross, having an apsidal termination at the east end, and consists of a nave 85 ft. in length, transepts (north and south), 25 ft. 6 in. in width, and 64 ft. across. The seats will be open benches, having moulded ends and division framing. The north transept is devoted to children's benches. The church will be built of Darwen pier points, with quoins at the angles, the spire being built of ashlar.

Books Received.

Papers on Subjects connected with the Duties of the Corps of Royal Engineers, contributed by Officers of the Royal Engineers. New Series. Vol. xv. Printed by Jackson & Son, Woolwich. 1866.

This volume of professional papers contains, amongst others of a more strictly or exclusively military character, a useful paper on Representation of Ground, &c., in Sketching, by Captain Webber, R.E., and another on "Foundations on Treacherous Soil," by Captain Mitchell, R.E., the inventor of the screw pile. Of course, on the principle of "nothing like leather," Capt. Mitchell, ignoring concrete, recommends screw piles in such cases. The use of concrete in other circumstances is treated of by Lieut. Ardagh, R.E., in a "Report upon Concrete Retentions built at Newhaven Fort." There are other papers of some value on proposed substitutes for gunpowder, by Professor Abel, F.R.S., V.P.C.S.; on demolition with gun-cotton charges, by Major Miller, R.A., V.C.; and on the Fire-Alarm Telegraph at Montreal (with map), by Lieutenant Grover, R.E. The first paper consists of "Brief Notes on the Career of the late Captain Fowke, R.E." by Mr. Henry Cole, C.B.

Miscellaneous.

WORKSHOPS FOR THE BLIND.—In August last the Association for the Establishment of Workshops and Class-rooms for the Blind opened their first workshops in a three-storied warehouse in Commercial-street, Spitalfields, near Spitalfields Church; and last week the members of the committee invited the workmen and their friends to a substantial dinner in one of the rooms, which was decorated for the occasion. The committee has at its head the Archbishop of Canterbury, and includes such names as the Earl of Shaftesbury, the Bishop of London, Lord Ebury, Mr. G. Moore, Mr. Samuel Morley, Mr. R. C. Hanbury, M.P., and many others, who were moved to undertake this work from the knowledge that there are 3,000 blind persons in London, and that the greater part are in destitute circumstances.

THE DRY-EARTH CLOSET SYSTEM PROPOSED FOR NORWICH.—A communication has been addressed to the Sanitary Committee of the Norwich Board of Health, by an inhabitant of the city, recommending the dry-earth closet system for Norwich, instead of the proposed system of sewerage, which is to cost 60,000l. It is to be hoped the local authorities will not listen for a moment to the adoption of a system which, however well it may look in theory, is certainly impracticable with the mass of our town populations. Were they all sanitary reformers, or all blessed with intelligent discretion, such a system might be tried; but the case is notoriously otherwise, and the system in question would in reality become no system at all, but an abominable and general nuisance.

PRIVATE BILLS IN PARLIAMENT.—SESSION 1867.—According to the "General List" published by the Private Bill-office of the House of Commons, there are 317 bills in Parliament this year, 152 of which are railway ones; but of the 152 very few are for new railways. The others are for gasworks, waterworks, enclosures, improvements, and other miscellaneous works. The most important, and, no doubt, the greatest fighting Bill of the session will be the Metropolitan Gas Bill, by which it is proposed to put all the gas companies within the metropolitan area (of which there are twenty-two), under the control of the Metropolitan Board of Works, and to supply to the public gas of pure quality at uniform rates in all the districts, the rate proposed being 3s. 6d. per 1,000 cubic feet. The Metropolitan Gas Bill will, no doubt, receive great support from the public, and unanimous opposition from the various gas companies.

YORKSHIRE ARCHITECTURAL SOCIETY.—The annual meeting of this society has been held in the School of Art, Manster-yard, York. The attendance was but small. The twenty-fifth annual report was read and adopted. It stated that the society maintained its ground, and was steadily advancing in position and working power. The Rev. Canon Raine read a paper, titled "A Survey of the Abbatial House of Howden," with several extracts from the original survey; and the Rev. J. R. Lunn, of Martoncum-Grafton, read a paper on "The Ecclesiology of the Rural Deanery of Aldborough, Ripon."

KITCHEN BOILER EXPLOSION IN HULL.—The liability to explosion of kitchen boilers in the North of England is a remarkable circumstance, of which we have before taken note. An explosion has just occurred in Hull, from frost, it is believed, having arrested the flow of water into the boiler till it became red hot. One person was killed and another injured, while two windows were blown out by the explosion. Whether it be that many more boilers are fitted up with pipes in the north than in the south of England, or that there is some defect in the arrangement, is a question worth inquiring into. In the present instance, the pipes communicated with a cistern which was more exposed to the action of frost than it ought to have been.

ST. GEORGE'S, KIDDERMINSTER.—The east end and part of the side walls of this church have been beautified by the addition of a reredos, from the design of Mr. Jeffery Hopkins, of Worcester. It is of alabaster and inlaid marbles, with the Ascension, carved by Mr. Forsyth, of Worcester. An altar-rail and encaustic tile pavement have also been added. The upper part of the wall and first bay of the roof have been painted, from the designs and under the supervision of Mr. F. Preedy. The large surface of the wall is covered with a delicate diaper, on a parchment-coloured ground, and rich borders. There are eight medallions containing angels, on blue grounds, the larger and lower being the four archangels, Uriel, Michael, Gabriel, and Raphael; the other angels have instruments of praise. The roof is blue, with an ornamental centre, and powdered with stars, the bosses being gilt.

THE WINCHESTER DRAINAGE PLANS.—At a meeting of the town council acting as the local Board of Health, the committee reported that, in answer to advertisements offering premiums of 150l., 100l., and 50l. respectively for the best, second, and third plans for the main drainage of the city and suburbs, including schemes for disposal of the sewage, twelve plans had been sent in and three other engineers had applied for an extension of time, which could not be granted. In answer to an inquiry from the committee, Mr. H. Newman, the surveyor to the Board, admitted that he was the author of one of the plans sent in, but he said he would withdraw it as a plan competing for a premium; but there it was for the use of the Board hereafter, if they chose to make use of it in any way. The report was adopted, on the understanding that the plans would be open to the members, but not to the public.

TRAFFIC RECEIPTS.—It appears from a Parliamentary return just issued that the total receipts on railways in the United Kingdom for the year 1865 amounted, on 13,289 miles, to 35,890,113l.; and for the year 1864, to 12,789 miles, to 34,015,564l.; showing an increase in the mileage of 500 miles, and in the receipts of 1,874,549l. The total receipts for passengers, mails, &c., in the year 1865, amounted to 16,572,051l., against 15,684,040l. in 1864; showing an increase of 888,011l. The total working expenses amounted, for the year 1865, to 187,149,073l., or 48 per cent. of the receipts, against 16,000,304l., or 47 per cent. in 1864; showing an increase of 1,148,758l. The total number of passengers (exclusive of holders of season and periodical tickets) conveyed in the year 1865 on railways in the United Kingdom was 251,862,715, against 229,272,165 in the year 1864, showing an increase of 22,590,550. Of the 251,862,715 passengers 151,416,269 were third-class and Parliamentary, 70,783,241 second-class, and 29,663,205 first-class; against 136,301,581, 65,269,169, and 27,701,415, respectively, in the year 1864; showing an increase of 15,114,688 third-class, 15,514,072 second-class, and 1,961,790 first-class.

THE DUDLEY SURVEYORSHIP.—The Borough Surveyor (Mr. Bateman) has resigned his office, stating that he finds it impossible to conduct his private business and that of the Council without the interests clashing. There is said to be a strong feeling in the town with reference to the surveyor devoting the whole of his time to the duties of his office. The matter has been referred to the Public Works Committee.

CONGREGATIONAL MEMORIAL HALL.—The Congregational denomination of Dissenters are about to erect a memorial hall in London with the two-fold object of commemorating the ejection of the 2,000 Nonconformist ministers from the Church of England in 1662, and of providing suitable offices for the various societies in connexion with the Congregational or Independent Union of England and Wales, and also a large hall for public meetings. An eligible freehold has been purchased in the neighbourhood of the Mansion House. The works will be immediately commenced, and the estimated cost is about 70,000l. Towards this sum 50,000l. have been already raised. Mr. Titus Salt has just added his name to the subscription for 5,000l.

CO-OPERATIVE SOCIETIES IN SWITZERLAND.—A communication from Berne, in the *Monitor*, publishes information as to the Swiss co-operative societies. Those for consumption, of which the mechanism is the most simple, have alone taken a large development as yet in Switzerland. That of Lausanne confines itself to procuring for its members articles of food of primary necessity at as low a rate as possible. The financial statement for 1864 shows a sale of butcher's meat to the amount of 143,566 fr.; bread, 23,510 fr.; and sundries, 8,939 fr.; with a total profit of 8,572 fr. In 1865 the amounts declined,—for meat, to 140,948 fr.; and for bread, to 21,657 fr.; with a profit of 6,718 fr. One which supplies every one, and acts as a kind of savings-bank for its members, producing results much more considerable, is that of Zurich, the amount of its transactions being 1,078,644 fr., with a net profit of 26,884 fr. After that come those of Vevey, Nanchatel, &c. A considerable number are now in existence in Switzerland, and fresh ones are being daily established.

THE LIVERPOOL SANITARY ASSOCIATION.—At a meeting of the members, held at the Common Hall, Hickins-hey, a report of the proceedings of the executive "with regard to the signature and presentation of the memorial to the mayor and corporation on the water-supply of the town," was received and adopted. The memorial set forth that the comfort of the inhabitants necessitated a very large and constant supply of pure water, and that the sanitary changes which it was proposed to introduce would render such a provision absolutely indispensable. The memorialists, therefore, respectfully requested that the authorities would, with all convenient speed, determine upon such a large and comprehensive scheme as would effectually meet this difficulty for a long series of years. Mr. Samuelson said the fact had been elicited that whilst it only cost the town 2l. per million gallons for water from Rivington, it cost 3l. per million gallons from the wells. Manufacturers were charged 9d. per 1,000 gallons, which was something like 36l. per million gallons. He was of opinion that a report should be prepared showing how far salt water could be utilised.

ST. MARY MAGDALENE'S, WALKERHINGHAM.—A scheme for placing a stained-glass window in St. Mary Magdalene's church at Walkerhingham, near Gainsborough (diocese of Lincoln), was set on foot three years since. This Advent has witnessed the consummation of the efforts made by the vicar's wife and her "Mary" friends. The stonework having been restored from the designs of Mr. Drury, of Lincoln, at a cost of 25l., the stained glass has been added at an outlay of 76l. more. There remain, however, about 10l. to be made up by Mary (or in devout memory of Mary) not yet enrolled. The subjects, designed and executed by Mr. Freedy, of London, are the Epiphany, Purification, Flight into Egypt, Doctors in the Temple, Marriage at Cana, Entombment, and exorcism of the patron Saint (introducing the Mary of Scripture, and illustrating the rites of churching, catechizing, wedding, burial, and absolution), with legend. "The west window was restored A.D. mdcclxvi, the stained glass thereof being given to this church of St. Mary Magdalene by more than 700 namesakes of the Blessed Virgin and the Penitent Saint who loved much."✠

ANOTHER VICTIM TO A BAD DRAIN.—We are informed by one who ought to know that last autumn a medical man of station drew the passing close by the house at Wardie of Mr. Alexander Smith, the poet, and assured them that cholera, diphtheria, or typhoid fever would prevail if it were not cleaned. It was, we believe, by one of these discreditable disorders that Mr. Alexander Smith has been carried off.

MR. SPURGEON'S ALMSHOUSES AND ORPHANAGE.—The Rev. C. H. Spurgeon has just concluded the purchase of 2½ acres of land, adjacent to Clapham Common, upon which the buildings for the purposes of a new orphanage, under his auspices, will be erected. It is, however, not intended to commence the whole structure at once. In the centre of the site, the schools, chapel, and other necessary buildings, will be first proceeded with; after which small houses will be reared, in which the children can live, to the number of ten or twenty to each. It is true, as stated some time since, that a benevolent lady has placed a sum of 20,000l. at his command for the purposes of the orphanage, but it is accompanied by a condition that only 8,000l. out of it shall be spent, the remaining 12,000l. to go to capital account for the permanent benefit of the institution. The first batch of orphans will number fifty. The almshouses and day schools, which will stand next to the Metropolitan Tabernacle, at Walworth, are now sufficiently advanced to admit of the laying of the foundation stone.

SAW TEETH.—A patent has been recently allowed in the United States to Mr. W. P. Miller, of San Francisco, for saw-teeth constructed upon an improved plan, which are claimed by the inventor to possess the following advantages over all others, as reported in the *American Gaslight Journal*.—"The teeth being nearly encompassed in the plate, are rendered immeasurably stronger than even solid teeth formed on the plate. For the reason of their great stiffness laterally, these saws may be fully one-fourth less in thickness than solid teeth, and one third less than other insertable teeth-saws. The teeth are self-attaching and adjustable in their sockets, thereby differing from any other saw-teeth. Should the point of one or more of them become broken, by simply turning them forward in their sockets they will attain the necessary projection; then file them, and the damage is repaired. These saws remain exactly the same size, and never can get out of round nor out of balance. They cannot by any means be thrown out of their sockets, and hence the operatives are secure from injury. The teeth remaining in order need not be reduced to accommodate those that may be dull or broken. They are alike applicable to circular saws of every size and for all purposes, and are peculiarly adapted for cutting-off saws, as well as for splitting."

TENANT'S RIGHTS IN MINERALS.—A case of some public interest, as affecting the right of tenants for life under settlements to work minerals, was decided by Vice-Chancellor Wood on the 19th ult. Tenants for life may work mines already opened; but if not empowered to commit waste, may not open new mines for their own benefit, and the question has been often raised,—what amount of previous working renders a mine open, so that tenants for life may work it for themselves? The plaintiffs in this case were Colonel Stepany and his two sons, who are the present owners of the Stepany estate, in South Wales; and the defendant was Mr. William Chambers, who is the executor of a late tenant for life of the estate, who was not by the terms of the will of the settlor authorised to commit waste. On coming into possession of the estate, however, he granted a lease of all the coal under certain farms forming part of the estate, and the suit in question was instituted for the purpose of recovering the amount of the royalties received under this lease. The defendant contended that the mines were open ones at the date of the settlement, and that it was consequently not waste in a tenant for life to work them; and in support of his view he proved the existence on the farms of an old trial pit, and a considerable amount of superficial working at the outcrop of the various seams of coal on the side of the mountain. The Vice-Chancellor, however, held that workings of this description did not amount to an opening of the mine, and gave the plaintiffs a decree with costs.

ENGLISH ENTERPRISE IN RUSSIA.—A telegram informs us that on Tuesday evening last, the works of the Moscow Gas Company were opened, that the city was lighted, and the whole a great success. Mr. Frederick Leslie is the company's engineer. Allowing for the difference of time between the places, the news came from Moscow to Piccadilly in five hours.

THE SUPPLY OF WATER.—Her Majesty's Commissioners for the purpose of ascertaining what supply of unpolluted and wholesome water can be obtained by collecting and storing water in the high grounds of England and Wales, either by the aid of natural lakes or by artificial reservoirs, at a sufficient elevation for the supply of the large towns (the Duke of Richmond; Sir John Thwaites; Colonel Harness, R.E.; Sir B. S. Phillips, one of the aldermen of the City of London; Mr. T. Elliot Harrison; and Mr. Joseph Prestwich), are to report—1. Which of such sources are best suited for the supply of the metropolis and its suburbs; and, 2. How the supply from the remaining sources may be most beneficially distributed among the principal towns.

TENDERS

For alterations, &c., to Dock House Tavern, East India-road. Mr. W. Barrett, architect.—

Langmead & Way	£1,098 0 0
Shedfield	1,068 0 0
Phillips	760 0 0

For two houses, with shops, in Rotherfield-street, Islington, for Messrs. Tubbs, Lewis, & Co. Mr. William Smith, architect. Quantities not supplied.

Taylor	£3,079 0 0
Magdin	1,700 0 0
Johnson	1,485 0 0
King	1,478 0 0
Saby	1,398 0 0
Crabb	1,388 0 0
Hunt	1,362 0 0
Grover	1,346 0 0
Cubitt	1,161 0 0

For alterations, No. 164, Fenchurch-street, City. Messrs. John Young & Son, architects:—

Estimates.	No. 1.	No. 2.	Total.
Cheesom	2,669 0 0	£528 0 0	£1,395 0 0
Asby & Horner	823 0 0	518 0 0	1,350 0 0
Heathcote	786 0 0	477 0 0	1,263 0 0
Webb & Sons	798 0 0	547 0 0	1,345 0 0

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TO CORRESPONDENTS.

B. A. (shall appear). T. W. (shall appear). C. G. W. (ditto). Onwards, (ditto). J. B. (shall appear). O. J. A. (beginner). B. A. (shall appear). J. M. J. P. J. B. D. A. M. T. B. B. J. D. P. We are compelled to decline pointing out books and giving addresses.
All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.
NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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TO SUBSCRIBERS.

We give with our present Number, as a supplement, an INDEX to last Volume and Title-page. A COLOURED TITLE-PAGE can be had, Gratis, on personal application.

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The Builder.

VOL. XXV.—No. 1250.

Government and the Evicted Poor.



NE of the fathers of natural history, when a student at a northern university, was accustomed to enliven his lonely rambles on the seashore by collecting specimens of the *algæ* thrown up by the tide. When the collection had attained some respectable magnitude, and the strange and graceful forms of the then unclassified marine plants had attracted the admiration of the fellow students of the self-taught naturalist, he was encouraged to submit it to the notice of the professor who was the official teacher of natural history. The great man glanced superciliously at the carefully-gathered specimens, and pushed them contemptuously away

with the remark, "Pooh, sir, a lot of weeds!" The name of the

professor would now only be remembered by virtue of the light reflected from that of the student whom he snubbed, while the "lot of weeds," scientifically arranged, are the subject of many elaborate botanic works, and are favorite objects for the herbarium of the amateur or the tyro botanist.

An anecdote of this nature is of value, not only as enabling us to bring clearly before the imagination the giant strides which the science of natural history has made since the time, and in consequence of the initiative, of Linnæus, but also as serving to show the very different manner in which we are becoming accustomed to regard facts, when compared to the habits of thought common in previous centuries. Inductive knowledge is especially grateful to the practical English mind, and it is a hopeful and striking feature of the present times that we are endeavouring, confusedly perhaps and feebly, but still with a definite purpose, to render the same sort of service which Linnæus performed for the organic, and Cavendish and Dalton for the inorganic, kingdoms to that more recondite and more important branch of science which Aristotle calls politics, and which Comte termed sociology. The proper object of all labour, whether of the brain or of the arm, is to increase the welfare of the human race. The highest, therefore, of all sciences, is necessarily that which unfolds the working of the laws which regulate social life. As all other sciences are subordinate to this master-knowledge, so is this, of necessity the last that we can hope to perfect; but it by no means follows that its foundations cannot be laid broad and deep long before we have a clear perception of the symmetry of the future structure. It is, therefore, a sign of progress when we find the great questions that lie at the root of the national welfare to be removed from the arena of party contest, when we have to record the fact, and to admire the tone of such a discussion as took place the other day between representatives of the Legislature, the philanthropists, and the first minister of the Queen.

Imperfect scientific knowledge is for the most part dogmatic and intolerant in proportion to the narrowness of its range. In science, as in religion, a man must not only have learned much, but must have acquired the habit of regarding a subject from different points of view, before he attains the large and wise tolerance of a truly Catholic spirit. It is therefore in accordance with the whole history of human thought, that when a clear and vigorous thinker attacked that master-science which had made little or no progress since the great Alexandrine era of intelligence, set himself to collect the facts that contemporary knowledge offered, and to reason on the laws that affect the Wealth of Nations, theories that are incontrovertible while confined to their proper object should be stretched by less original minds to an undue extent, so that moneyed riches were confounded with wealth or well-being, and men were led to believe the affairs of the mart to be those of the commonwealth. Those who regard, as so many do, the science of political economy as more than a constant and minor part of the science of politics are thus in the constant habit of drawing false inferences from true principles, and of confounding skill in buying and selling, in manufacturing and in transmitting, with statesmanlike ability in the government of mankind.

In this confusion of thought among many of the writers and speakers of the day, a confusion not accidental but essential, and which is thus liable to vitiate the whole structure of their argument, we trace one cause of the extreme difficulty which all admit to attend the solution of the question of housing the homeless poor. Questions of very varied nature have to be solved, as it were, by the same operation, and in the absence of that clear scientific grasp that should at once strike out the limits of the subject, deciding how much falls within the province of philanthropy, how much within that of commercial action, how much within that of the duties of the State, there is no room to wonder that we have remained so long paralysed in face of a great and admitted evil, and, what is more, of a great and crying injustice.

The state of things—we do not say which the deputation laid before the Premier, for the Society, to our minds, started on somewhat wrong grounds, and on the occasion in question were not very clear as to what they wanted, but which originated the necessity for both the interviews of the association so respectably represented—is briefly this. Our London poor, the very poor, are homeless, houseless, almost altogether shelterless. Daily their numbers are augmenting; daily the numbers of such poor and unfit abodes as are within their reach is diminishing. While the metropolitan population is doubling itself within forty years, it is stated that public and private enterprise has had the effect, within the last four or five years, of demolishing so many of the poorer dwellings as to thrust some fifty thousand of their former inmates into the scanty room already overcrowded by some four hundred and fifty thousand of their companions. The cases of personal hardship, of injury to health, and to morality, of irretrievable and therefore of unjust and wicked stress put upon so large a number of those of our fellow citizens who are just the least able to withstand it, are such as to raise the alarm of all who know them, and that not for the injured half million alone, but for the whole three millions of Londoners. It is not necessary in these pages to dwell on the frightful magnitude of the evil.

The sole question is as to the nature of the remedy or remedies best to be employed. It is of course in this, the therapeutic part of the subject, that the difficulties make their appearance. How is the accommodation so urgently required to be provided? By organised private charity, is one reply. Very noble have already been the efforts of private charity. Very mun-

ificent the charity of one honoured name, as to which, though we ought not to regret that it is American, we are at liberty to lament that its princely philanthropy has inspired so little emulation in our own country. But private charity can do little more for the great destitution than the collection of Peter's pence can effect for the chronic and fatal impecuniosity of the Roman revenue. It is a drop in the bucket. "Philanthropic and enterprising persons and associations have succeeded in providing improved dwellings" for how many of the evicted? For ten thousand out of the fifty; that is to say, a number equal to the average increase of the actually evicted poor during eight years! for less than the average natural increase of the half-million ill-lodged poor during a single year. Say that the demolitions now complained of have occupied a term of five years. During that time fifty thousand have been evicted, sixty thousand have been born or have come to the metropolis. A hundred and ten thousand souls have sought for shelter, and philanthropy and enterprise together—generous Englishmen, a noble American, shrewd minor capitalists, and builders anxious for work,—have among them altogether provided shelter for ten thousand. Nor is it beside the mark to inquire how many of these ten thousand lodgings have been appropriated by members of a less needy class.

If we now turn to the political economist for aid, we shall be told that the demand has only to attain a certain urgency to ensure supply; but the rule, golden as it is when wisely applied, here altogether breaks down. The demand=110—the supply=10. The equation will not work out. An important element has been left out in stating the sum, and usually is left out in similar arguments. Demand ensures supply when demand and supply are congruous—not otherwise. Take a well-to-do, rent-paying demand, an 8 per cent. return on investment demand, and supply will follow sure enough,—although in this matter of house-building the quality of the supply is not altogether to the taste of the intending tenants. But take a demand which, as in the present case, may represent a 4 or 5 per cent. return for capital, and even that uncertain, and requiring special exertion for its collection, and the supply is not likely to increase. The philanthropist does something; but he does it alone. The commercial man would do all; but it must be worth his while. Attempt to fuse the two, and you break down altogether. Ensure by wise arrangements an ample return for the capitalist, not exorbitant, but ample, and what do you do then? You provide comfortable dwellings, into which small tradespeople and others, now ill and expensively housed, but forming no part of the half-million, will readily gravitate, and your houseless poor are houseless still.

Again comes the question, what is to be done? and that in a tone too urgent to be considered in our usual English manner,—that is to say, by being left to answer itself. Lord Derby remarked, "The Government could not be looked to to find lodgings for the poor." We will not impugn the general statement, although it is familiar to one so versed in English history as the noble premier, and is tolerably evident to the most casual traveller through our country, that, since the time of Elizabeth, the Government has been, to a certain extent, both expected and accustomed to find lodgings for the very poor, and that the same authority that provided the stocks for "masterful beggars" has provided through our country parishes a last refuge for the otherwise homeless.

There is, however, a peculiar feature in the case before us to which we think that attention has not been sufficiently, if at all, directed, and that is the question of direct responsibility. In the happy anomaly of our institutions, we often find much that is clear to the instincts of

Englishmen without being altogether capable of presentation in an acceptable form to an intelligent foreigner. The glorious uncertainty of the law, as typified in what used to be called the palladium of our liberty, trial by jury, is a case in point. Another is to be found in the curious and often highly complex compromise by which legislation and administration are to some extent amalgamated and shared between Parliament and the Cabinet. The invariable tendency of representative assemblies to gather all possible power within their grasp has not been unhelpful in the House of Commons. Thus more and more of what is properly the judicial function has been assumed by the two Houses; and when the occasion for a new branch of administration has sprung up, as in the instance of railways, Parliament has readily occupied itself with details into which it was naturally incompetent to enter, instead of deciding on principles, and handing over details to a competent tribunal. Thus our railway system, as we have recently pointed out, has emerged in such a patched and crippled form from the scrambles of Parliamentary committees, as to have cost us two hundred millions sterling in excess—a tax of 10*l.* a head on every soul in England and Wales, if we leave out Scotland and Ireland,—a wasteful and needless expenditure, equal to adding a fourth to our National Debt.

This, accordingly, is a not unusual result of a mode of legislation which is just like deputing the appeal duties of the House of Lords to any casual sub-committee of half-a-dozen lay peers, or of debating all the clauses of all the evidence of a divorce Bill after a whip in the House of Commons. It is, therefore, hard, perhaps impossible, to lay the blame on the due shoulders,—to say the Cabinet did this, the House did that; this is due to the Government, this to the voice of the country.

Into questions of this nature neither the 50,000 homeless poor, nor the 450,000 quasi homeless poor, nor the 2,500,000 of Londoners pained, perilled, and damaged by the existence in their midst of a daily-increasing nomadic population, can be invited or expected to enter; but there is one broad fact patent to them all,—Cabinet, Senate, House of Commons, it is all one to them,—their governors, as a body, have done them this great injustice. Their governors, as a body, have passed, one by one, special laws, empowering other persons for their own, and may be for the public advantage, to turn them out of doors. It is by direct *ad hoc* legislation that officers of the legion whose name is Railway have been armed with artillery powerful enough to destroy, not only their poor dwellings, but even their native constitutional right to hold their English homes as their castles. Who does not remember the glorious burst of oratory with which a great statesman declared that, wind-swept and rain-washed as might be the poor man's home, the King of England dared not enter it if forbidden. That which the majesty of the law respected for so many centuries, public expedience has set aside. The legislators of the country have, by new legislation, unhoused 50,000 Londoners,—poor, ragged, very likely dirty, naked, destitute, but still Englishmen;—they have turned them adrift, *pro bono publico*, by the strong hand: they are bound in right and in conscience to shelter them.

If public attention, in and out of Parliament, be once fixed on the aspect of the case which we now present, a first and a most important step will have been taken towards the removal of the evil. We are at a loss to imagine what arguments can be urged against the truth of our view. As matter of special pleading, indeed, it is easy to produce arguments on either side of any similar question; but the doubt and hesitation which so often will arise in the breast of the conscientious man as to which is really the right side of a case are here, we think, quite excluded. It is a case like that of a trustee, who, with no bad intentions, has neglected his duty, and allowed the funds of his trust to be tampered with. Perhaps he knew nothing about it, and only signed some paper, of the contents of which he was ignorant, and which he was told was a mere formality. Nevertheless, the Law says he must pay; and Justice, in this case, accords with Law. Thus when the Legislature has given power to private companies to unhouse 50,000 helpless poor,—poor who must live, if they live at all, God help them, within a certain area,—and has neglected to insist on due provision being made to supply the want thus created, the Legislature, the careless trustee in this instance, must pay. It has

allowed the companies to go scot-free—it must stand in their shoes.

If this be once admitted,—regarded as a national and not as a party question,—as the noble premier most justly puts it, the way out of the difficulty is, to a great extent cleared. We can, in this case, at once provide for the evicted; and, by the time that we have succeeded in so doing, we may have collected information and experience enough to enable us fairly to deal with the whole great question of housing the City poor. What is immediately requisite is, to do for the poorest class at once, somewhat less than private enterprise now annually effects for the enlargement of London. We might, indeed, say very much less, if we regard the nature of the accommodation required, the number of cubic feet per tenant that should be allotted in the new streets and terraces that must replace much of the crumbling, wasteful, ruinous back yards laid open in so many instances by the course of railway demolition. Private enterprise accommodates 75,000 new inhabitants of London, of all classes, per annum; the restitution now demanded by the evicted is that of dwelling accommodation for 50,000 of the very poorest. The cubic space to be occupied by the requisite buildings cannot be the half of that which is annually roofed in by the London builders.

The mode of providing this accommodation will readily suggest itself to those accustomed to deal with public works, so soon as Government or Parliament admits its fair responsibility. Nothing can be simpler. We speak without the authority of any of those benighted and active friends of the poor who have been, and who will be, at the front when required, but we feel that we can speak in their names with little hesitation. Let Parliament guarantee five per cent. per annum on a certain maximum sum to be expended in providing decent and frugal accommodation for the evicted metropolitan poor, of course with proper stipulations to obtain the right sort of dwelling. Power must also be given to obtain the removal of positively uninhabitable dwellings, and sites for the new ones, by means of such a bill as that brought in by Mr. Torrens, amended as may be needed, and philanthropy will do the rest. Men will gladly come forward to consecrate their time and their talents to the task, as well as to advance their money, with this one assurance, that they are not to lose it. The organisation familiar to Englishmen for the execution of great works can be at once commenced. The names of an efficient and a trustworthy board of directors can almost be decided on by acclamation. Responsible architects and engineers must be properly engaged. Over the whole expenditure of the association, in purchase of sites, and in building, as well as over the rate and mode of collecting rental, the Government will be bound, in virtue of their contingent responsibility, to exercise just that species of control which will be most useful, so that there shall be no chance of any misappropriation or any sentimental extravagance. The *Poor Men's Home Association*, to which all who would assist the poor man will gladly contribute all the aid they can afford, commanding an adequate capital, expecting no profit, but secured by Government guarantee from losing the ordinary interest on their advances, bringing all that science can effect and that philanthropy can wisely suggest to bear on the removal of that which, if longer neglected, will be a national crime, would raise its head with honest pride among the munificent associated Institutions of London.

THE NEW TOWN OF EDINBURGH: ITS DRAINAGE AND WATER SUPPLY.

We promised to return to the questions of the drainage and water supply of the New Town of Edinburgh, as affecting its sanitary condition.* Before doing so, however, it may be as well to glance,—and we shall do so very shortly,—at its situation, the variations of climate and temperature, the prevailing winds, and the annual rainfall. It stands, as we have seen, in close proximity to the Frith of Forth, at a considerable elevation. The valley of the Princes-street Gardens is 169 ft. above the level of the sea; George-street is 226 ft. above it, and from this the New Town descends gradually down about 180 ft. to Leith-river, where it is about 45 ft. above the sea. It is situated in 55° 57' north

latitude, and 3° 14' west longitude from Greenwich. The average temperature is 47° Fahrenheit; but the alternations of temperature are very great, having been observed in the same day to vary from 30° to 40°. The annual mean of atmospheric pressure, as indicated by the barometer, is 29.52 in.; and the annual rainfall is 24.35 in. The coldest months are January, February, and March. The mortality is, however, greatest in the months of November and December, when, although the barometric cold is not so great, the city is blown over by piercing east and north-east winds.

With regard to the supply of water, both the old and the new towns are fortunate. Private wells are unknown in the New Town, as indeed they are in the old; and thus the inhabitants are exempted from the evil of the sewage escaping from defective cesspools into them, and so polluting the drinking supply. There are but two public wells in the New Town,—one in the Upper Water of Leith district, and the other in the Calton and Greenside district. There is a number of drinking-fountains chiefly erected by the late Miss Catherine Sinclair, of Ulbster, to whom, by the way, the city is indebted for the numerous wooden benches which are to be seen placed alongside of the various gardens under the grateful shade of trees.* These fountains are of simple action. By pressing a valve stand the water is made to flow into the metal cup, attached to the fountain by a chain, while an ample waste-basin prevents the water from wetting the pavement. Most of these fountains are made of iron, but there are others of granite, a species of well-case with self-acting tap fixed to a wall front; but they are too few in number; nor is it creditable to the town to leave their erection to the generosity of private individuals. Edinburgh appears to be amply supplied with good water from the Crawley and other springs on the Pentland Hills by the Edinburgh Water Company, which was formed in the year 1819. At various times, as the population increased, the company have had to make application to Parliament for powers to acquire new springs. The Crawley springs discharge their waters into a covered cistern, which is 45 ft. long, 15 ft. wide, and 6 ft. deep. Thence they are conveyed to town, a distance of nine miles, by a chain of pipes varying from 20 in. to 15 in. in bore. Towards the town, termination of the line the pipe is carried through a tunnel 2,160 ft. in length, and about 80 ft. under the surface of Heriot's Green. Then, as it crosses the Grassmarket, it bifurcates by one branch to a large reservoir on the Castle-hill, and by another 120 ft. beneath the reservoir, right through a tunnel 740 ft. long out through the rock, of which the ridge leading to the Castle is composed. Branches are laid through all the principal streets. The pipes, the joints of which are spigot and faucet, were tested before being laid down by a pressure equal to a vertical column of 800 ft. of water. The branch leading to the reservoir can deliver into it 253.56 cubic feet of water per minute. In 1843 the company obtained power to bring in the Black Springs and those of Listonshiels and Bavelaw, situated respectively nine, ten, and twelve miles and a half from Edinburgh. In 1847 the Bavelaw and Listonshiels springs, about forty in number, were made available by being conveyed in clay pipes into a stone cistern at Westring, distant twelve miles from town. They are thence conveyed for nearly five miles through an aqueduct to Torphin

* It is intended at once to proceed with the erection of a memorial of that lady. The monument, which is to be placed at the junction of North Charlotte-street and St. Colme-street, will resemble in design some of the old English market crosses, such as those of Winchester and Leighton Buzzard, or those erected in memory of Queen Eleanor. The structure, which will be placed above a flight of three steps, will consist of a basement and two superincumbent stories, and will attain a height of about 60 ft. The basement, which is octagonal in plan, and 25 ft. in diameter, will have its eight compartments separated from one another by buttresses, which, divided into stages by set-offs and ornaments, will be surmounted by a variety of grotesque animals, will terminate in pinnacles enriched by crockets and finials. Each compartment will contain a semicircular canopied niche, surmounted by a light triangular pediment with crockets and finial. The niches will be occupied by statues, placed on pedestals resting on elaborately carved brackets or corbels, which in their turn will be supported by shafts. A gallery, protected by a parapet pierced by flamboyant tracery, runs round the top of the basement, and is broken by the heads of the buttresses and of the pedestals. Within this parapet the first story will be carried up octagonal, and will resemble the basement, except that there will be no buttresses, and that the niches will be empty. The second story, diminishing in size, will be similar, and will be terminated by a massive crocketed pinnacle, surmounted by a finial and the figure of an angel with outspread wings. The architect is Mr. David Bryce.

* Vol. xxiv., p. 518.

Hill, and from that to Edinburgh by an iron pipe, with an internal diameter of 16 in. These works were designed by Messrs. Rendel & Beardmore, of London, and carried out under the superintendence of Mr. Leslie, C.E., of Edinburgh. The total storage of water in the company's reservoirs at Loganlea, Clabidean, Torduff, Glencorse, and Bonally is 109,619,786 cubic feet. These reservoirs alone can supply 350 cubic feet of water per minute for a period of four months without rain.

In 1863 the total sum expended by the company amounted to £85,937l. 5s. 1d., and the daily supply of water amounted to 31-12 gallons for each inhabitant. By their Amendment Act, passed in the same year, they obtained powers to raise £6,000l. for the purchase of new springs, &c., and it has been calculated that when these have been added the daily supply will reach 89 gallons.

The Lord Provost, magistrates, and council of the burgh and city have adopted various clauses of "The General Police and Improvement (Scotland) Act, 1862," by one of which it is made compulsory on all proprietors of houses to introduce water into them, and the writer believes that this provision has been generally enforced. The water-rates are 10d. per pound on four-fifths of the actual rent or value of houses above ten pounds; 4s. on houses under five pounds; and 3d. per pound on four-fifths of the rental on shops.

The supply of water has contributed much to the comfort and health of the population by enabling them to have baths and other conveniences easily and cheaply.

It is believed that, situated as it is on high ground, and at no great distance from the sea, Edinburgh may be readily relieved of its surface waters and the washings of its streets, as well as of its sullage (by which is to be understood its cloacal matter and washing and kitchen waste) by a single system of sewers, and such is the system there in use. Each street is provided with a main sewer, into which the sullage is carried by a branch drain leading from each tenement, while the surface-waters and washings of the streets are conveyed into it by gutterways lying between the foot-pavement and the causeway. The main sewers, which drain the western portion of the New Town, have hitherto discharged their contents into the Water of Leith, converting into a great festering open sewer what many persons remember as a pure, unpolluted stream, abounding in speckled trout. The horrors of this crying nuisance have been so often exposed in the pages of the *Builder* that it is unnecessary here to make more than this passing allusion to the subject, the more so as the Water of Leith Drainage Works, which are expected to remedy the existing state of matters, will, in all probability, be completed in a very few months. These works consist of a main conduit and ten branches, and extend from Colt Bridge to the Black Rocks in the Frith of Forth, a distance of about five miles and a quarter. They commence at Colt Bridge with a brick culvert or tunnel 4 ft. high and 2 ft. 8 in. wide, which is carried through below the Colt Bridge-road to the Colt Bridge dam. From that point to the Caledonian Railway viaduct, the sewer consists of a 2 feet cast-iron pipe, placed in the bed of the river. From the viaduct to opposite Donaldson's Hospital, it is again a culvert of the same dimensions as above. From the hospital down to Canonmills Bridge, for the most part the great sewer, which is placed in the bed of the river, consists of cast-iron pipes, varying in diameter from 2 ft. to 2 ft. 9 inches. Between Stockbridge and Malta Green Ford, there is a pipe on either side of the river, the one on the north side, a 12-inch pipe, being intended to intercept the Deanhaugh drain, and the other drains on that side of the stream. From Canonmills Bridge to below Bonnington dam, a brick culvert, 4½ ft. high by 3 ft. wide, is substituted for the iron pipe. Down to this point the great sewer is entirely finished, as are nearly all the lateral drains connected with it. Between the dam and the new Sugar-house at Bonnington, the works are in active progress, and from the Sugar-house down to the Old Town, at the shore of Leith, they are completed. Along the shore the sewer is constructed of iron pipes, 3 ft. 6 in. in bore, while above that there is a culvert, 5 ft. 3 in. in height, and 3 ft. 8 in. wide. The great sewer crosses Leith sands, and up to Tower-street consists of iron pipes of the same dimensions as those along the shore. The pipes, which cross the sands, lie upon a framework of green-hearted

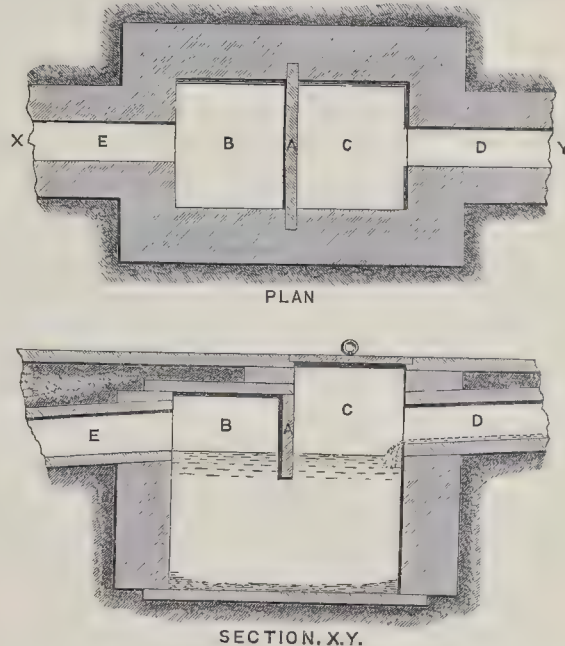
timber. The culverts, so far as they have been completed, are already in use at the Water of Leith village, Stockbridge, Canonmills, and the shore, and the sewage at these places is no longer discharged into the channel of the river. The works for the drainage of the mill-lade, at present a highly dangerous nuisance, have not been commenced as yet. They will be of a very light description, and will not occupy any length of time. They will commence near St. Bernard's Bridge, and terminate at the old ford below Warriston Cemetery. The Messrs. Stevenson are the engineers, and Mr. T. C. Hunter, the contractor.

The works will supply drainage for a population of 80,000. The expenses will be defrayed by an assessment of 2s. 6d. per pound imposed upon the proprietors of the Water of Leith district. The Act of Parliament also allows a charge ultimately to be imposed for their maintenance.

While it is to be regretted that so much valuable sewage should be thus thrown into the sea instead of being turned to account, we must congratulate the citizens of Edinburgh upon

der malaria, nor act in any appreciably hurtful manner on the health of the human beings inhabiting their neighbourhood." It may be so, and Dr. Strang's opinion is entitled to much weight; but we confess to being very sceptical on the subject, especially when we reflect on the two following facts. In 1849, the village of Restalrig, which is situated in the midst of the celebrated Craigentinny meadows, was more than decimated by cholera. The returns gave the large proportion of one attacked out of every five, and one death out of every nine of the population! And within the last twelve months the Army and Medical Commission have condemned Piershill Barracks as the most unhealthy in Scotland; in consequence of which the headquarters of the cavalry will be removed to Hamilton.

In connexion with the branch drain which leads from each house to the street sewer, there is generally a cesspool placed in the front sunk area. The superintendent of streets and buildings, in a recent report, stated that it might be taken for granted that all the houses in the New Town erected before the year 1854, as well as



their riddance of the Water of Leith nuisance. We cannot doubt that the medical officer of health's report for next year, should other necessary ameliorations take place, will show a great diminution in disease and mortality in the upper and lower districts of Water of Leith, of Canonmills, Bonnington, and the shore at Leith.

The north-eastern portion of the New Town is drained by a sewer, which, terminating at London-street in a canal, flows past Gayfield-square, and finally falls into the Water of Leith above the harbour. The sewage of the houses on the Calton Hill and vicinity is carried to Leith in ditches between the London-road and Leith-walk, chiefly covered in. The contents of all these sewers, except those falling directly into the Water of Leith, are used in irrigation. Nearly 1,000 acres of land in all are so irrigated in the vicinity of the city, the grass raised on them letting annually for from 25s. to 50s. an acre. It has been confidently asserted that this sewage irrigation of meadows is not prejudicial to the health of the city. "One conclusion then alone admits of being drawn from the facts collected," says Dr. Strang,* and that is that the irrigation of meadows with the sewer-water from a town does not appear in this climate to engen-

many built since that time, have each a cesspool. These cesspools have proved a prolific cause of discomfort and disease. Here it is necessary to observe that an Edinburgh cesspool is a very different thing from what goes under the same name in England, which is either a covered receptacle for sewage, unconnected with any drain, or an uncovered receptacle for ashes, in connexion with a privy. The accompanying plan and section will enable the reader to understand the construction of one of these Edinburgh cesspools, which, we may mention, cost from 3l. 10s. to 5l. 10s. A pit, B C, 7 ft. 4 in. long by 5 ft. wide and 5 ft. deep, is dug in the course of the branch-drain or house-sewer, D E, which runs along the ground-floor of the house, and joins the street-sewer. The cesspool is laid with pavement, and its walls are made with rough masonry, often of the "shivers" or chips struck off by the mason in shaping his stones. Across the cesspool, and resting on its side-walls, a tongue, A, descends about midway, somewhat beneath the lower edge of the house-sewer D. An opening is carried up at C, covered with a square flag, with a ring attached. This admits of the cesspool being inspected and cleaned. The cesspool, of course, fills up to the level of the drain E, by which the overflow is discharged into the street-sewer. The tongue A thus separates the air on the side of the street from

* "Inquiry into some Points of the Sanitary State of Edinburgh." By James Stark, M.D.

that on the side of the house. It further serves the purpose of preventing rats from finding their way into the house from the street-sewer.

Into these cesspools are discharged the ejecta from the waterclosets and the kitchen and washing waste. As we have said, they are a constant source of discomfort and disease. The first evil attending them is a *very apparent* one. The solid matter of the sullage carried from the house into the cesspool is of course deposited, and each time that water passes into it the whole of the seething putrescent mass in the division C is disturbed, evolving sulphuretted hydrogen and other noxious gases, which find their way into the house by the drain D. If we consider that the compartment C has an evaporating surface of nearly 7 square feet, we may form some idea of the extent of these fetid emanations. Although there is a very simple and cheap remedy for this state of matters, it has been only very sparingly employed as yet. A syphon pipe, like that shown in the woodcut,



and which only costs a few shillings, possesses these advantages. It is water-tight; it effectually prevents the entrance of rats; and by allowing the water to flow for a few minutes, it prevents the sullage from being arrested long enough either to deposit sediment or to throw off noxious gases. The water gradually fills up the space A, until it reaches the level of the outlet at C, which is usually about 2 in. or 3 in. lower than the inlet B. The quantity of water retained, although somewhat less than 8 cubic feet, instead of 37, as in the present cesspool, is sufficient to form a trap.

Further, cesspools are seldom water-tight, in which case the basement story is invariably found damp. The green moss and fungi which are so often found on the area walls and round the edges of the flagstones, are in nine cases out of ten caused by the leakage of the cesspool. Stringent as are the regulations of the Edinburgh Police Acts, to which we shall advert by and by, regarding the removal of ashes and solid refuse from the houses, it is to be regretted that there is none requiring the periodical cleaning out of those receptacles of all abominations. Will it be credited that in many parts, even of the New Town, such a cesspool common to the six or eight flats of a tenement, and receiving the discharges from the soil-pipes of as many or more families, frequently remains uncleared for several years? Yet that such is the case is attested both by the medical officer of health for the city, and by the superintendent of streets and buildings. In self-contained houses this happens comparatively seldom, but in a tenement of flats, where the expense of cleaning the cesspool, which is considerable, is distributed among the different proprietors or tenants, the latter of whom are continually changing their place of abode, it is difficult to obtain the necessary consent of all the parties. Before this has been done and a thorough cleansing effected, "each house," we quote Dr. Littlejohn, "has been filled with emanations from the sewers. The windows have been kept open in order to dilute the nauseous smell; and although the object is partially effected, the sewage gases are sucked into the house in greater volume, on account of the draught which has been occasioned. It is not to be wondered at, if, under such circumstances, ill-health, in varying degrees of intensity, should be the result, requiring, it may be, little medical attendance, but causing great discomfort. Should epidemic disease of any kind affect the inmates, the illness is intensified, and the ailment may assume a character of malignancy, which can only be accounted for by the faulty sanitary state of the house. But it must be remembered, that the air in the street also becomes tainted. A cesspool filled to overflowing, and leaking, can be recognised in the street by its odour. It is placed in the area, and of course the emanations escape in all directions. It is urged as an amelioration of the nuisance, that a survey should be made of all the cesspools in the city, that a register be kept of them, and that the city engineer be instructed to have them inspected from time to time; and enforce the regulation that every cesspool within the

municipal boundary be cleaned out at least once a year."

The remedy proposed would abate the evil, but there would still remain the nuisance of the intolerable stench, which is caused by the existing method of emptying cesspools. Cases have occurred where the men employed in doing so have been afflicted with temporary blindness by the ammoniacal vapours given off. If they must be retained, the plan adopted in the City of New York might be considered. Attached to an airtight cylinder, which has its air exhausted, is a large leathern hose. The hose is lowered down into the cesspool, when, on opening a valve, the whole sullage, solid and liquid, is quickly forced into the cylinder by the atmospheric pressure. The hose is then drawn up and coiled into its barrel, which is filled with disinfecting fluid. The New York cesspools are provided with a lid or cover, which is tightly kept down, and which is removed at night when the cylinder is brought round at stated periods. The only proper remedy is to get rid of the cesspools altogether.

Still further mischief arises from the imperfect construction of the house sewer or drain. Made in most cases of shivers, it allows the drainage to escape through its crevices in all directions, and the fetid exhalations find their way into the house. The form, too, of the house-drain is radically faulty. It is a large square drain, commonly called a box-drain, and permits a greater or less quantity of black putrescent filth to accumulate in its interior with such deleterious results as might naturally be expected. It is impossible in any private house to command a stream of water sufficient to carry away the deposit which collects in this manner. These box-drains should therefore be at once got rid of, and smooth tubular pipes should be substituted.

The evils attendant upon defective cesspools and house-drains are clamant for a remedy; but so long as the authorities have not the power to enforce it,—so long as landlords are apathetic, selfish, and money-grasping, and so long as the general public is ignorant of the real and serious extent of the evil, little will be done. The Local Police Act, 11 & 12 Vict., cap. 113, sec. 190, does indeed provide that any person who "shall suffer any cesspool to become stagnant," shall be liable to a penalty not exceeding forty shillings; but the enactment is practically a dead letter.

In too many instances the main drains of the streets have been constructed on the same faulty principles as the house-drains, being built of rough fragments of stone roughly cemented together. The consequence is, that the sewage is arrested in its onward flow by the ragged and uneven surface over which it has to pass, and oozes out on all sides, soaking the ground and polluting the atmosphere, while admittance is given to rats. From all this it frequently results that the street gives way and falls in.

THE DESIGNS FOR THE NEW NATIONAL GALLERY.

HAVING last week made our readers acquainted with the conditions,—or so far as by the Government they were set forth,—of the problem comprised in the alternative projects for the National Gallery reconstruction or rebuilding, we are now in a position to invite attention to detailed particulars of some of the designs. To such particulars we must mainly confine ourselves at present: for examination should precede judgment; and such examination, if the judgment is to be of value, must necessarily be of a deliberate and painstaking sort. The ten or other number of competing designs, in any case, are like the same number of books on a given subject; which, to be critically estimated, must have been read. It may not require so much time to read a design as to read a book: but, there is this difficulty for the untrained observer, that nothing is completely represented on any single sheet; or, so to speak, the nouns are on one page, the verbs on another, and the adjectives on a third. Thus, there are impediments to examination of architectural drawings in an exhibition; which the general public, who cannot be said to attempt the examination, and who would be incompetent for

it, have no idea of; and which even the competent men, professional architects, habitually disregard, ignore, or forget. An opinion expressed merely from the examination of a perspective-view, cannot be conclusive, even as to the decorative part of an architectural production; and, of course, it leaves entirely untouched the question of the suitability of the design to the uses of the building, that question which must be responded to before the effect shown in the drawing can be deemed possible of execution,—unless by a negation of the special art, architecture.

As it is, opinions are freely pronounced condemnatory of the whole number of the designs in their decorative character; and so much so is this the case, that "Wilkins's design" is said to be the best. We alluded in our last article to the fact that there were merits in the present structure. But any conclusions formed without examination of the geometrical drawings,—those which really, and alone entirely, have in themselves the materials for the formation of a judgment of the appearance of the building when erected, must be worthless, and should especially be steered clear of by architects, whose art and profession both are so much misunderstood through the erroneous manner, on the part of the public, of looking at drawings.

It may be that this competition repeats the experience of previous cases, in merely affording hints, without supplying the exact design that should be adopted in building. There is certainly (we say so, after much careful examination), less evidence of *art* in the designs, than the profession should have presented; and even the questions of arrangement and lighting are not conclusively solved in conjunction with the production of good decorative character. Of one or two of the competitors it may be said that they have expended a liberal sum out of the 200l. of each, on the mounting and getting-up of drawings; whilst money would have been better earned by a devotion of their personal study of the subject and their origination thought. We must, however, refer to what we said in our last, as to the "Instructions." Architects call out for instructions; whilst the need is at most of suggestions. In the present case, arrangement and lighting of the pictures should have been mentioned along with whatever might be the views of such men as Mr. Wornum and Mr. Redgrave. Instead of this, we are constrained to believe that the "Instructions" have in one way or another run counter to both those authorities, without leaving the competitors room to choose or think. We differ from the conclusions to which Mr. Thos. Fairbairn arrived in his letter this week in the newspapers, as to the essential superiority, for pictures of every size, of the wide, lofty galleries of the 1862 Exhibition and the Manchester Art-Treasures Exhibition; though, also we by no means agree with him that there was superabundance of light in 1862 on the frequent rainy days, whether of the summer of that year, or of the approaching winter. Extent of wall-surface, which may be somewhat increased by lessening dimensions of width to 42 ft. at most, is one consideration for a National Gallery; whilst another, not mentioned, and tending, it might be said, the other way, or against small rooms in public galleries and museums, is that such rooms would not permit of required supervision of certain classes of visitors to the Gallery. But as to side-lighting, set down in the "Instructions" as admissible for cabinet-pictures and drawings, there is much to be said in deduction from the advantages which it might give for planning the building generally. The wall in which the window is, is worthless for hanging pictures upon, and had best be given to the largest area of opening. The wall opposite the window is a bad place, for small pictures more than any others; because the spectator's head will be apt to cast a shadow upon the pictures. On the sides of the rooms, or recesses, the pictures are not lighted as they should be; and the shadows of the frames have to be considered: whilst there is a necessary deduction for the doors of entrance and exit. These disadvantages were very clearly exemplified at South Kensington on the recent occasion of the Exhibition of Portraits. The conclusion is obvious, that no one of these points of planning and arrangement of the galleries, should have been named either dictatingly, or as though it would be a thing likely to meet with approval. An architect desirous to be selected to complete, and to be paid 200l., should have been credited with power of selection and judgment as to data that might have been offered him.

* "Report on the Sanitary Condition of the City of Edinburgh." By Henry D. Littlejohn, M.D., Medical Officer of Health for the City, p. 103.
† To be continued. ‡ See p. 23, ante.

Whatever the results of this competition, however, we would by no means revert to the system of unlimited competitions. The public will not readily learn that these latter competitions defeat their object; but no one with an architect's experience could often advise them.

With all the improvement as to arrangement of the drawings, and space provided for them, that the exhibition of the National Gallery designs affords, there is one capital omission in it. It is, indeed, generally made in such exhibitions. The plan of the ground, documents, and "Instructions," which were the basis for the competitors' labours, are not to be seen.

In noticing the designs, we shall not place them with reference in any way to merit. Accident in this case seems to have determined the order in which they are disposed, and are generally examined by visitors.

Mr. Owen Jones's design made in response to the demand for a project involving "no costly alterations" in the "existing building," and which he distinguishes as Design B, contemplates no change in the present building, but of course appropriates the new ground, or what is occupied by the workhouse and the premises east of it, and by the passage at the back of the Royal Academy. In planning the additional buildings he has observed the same distribution as in his design A, to which then it may be sufficient to confine description. Mr. Jones believes that it will be impossible to add to, or improve, the present building, so as to produce a satisfactory result; and he makes this remark:—"It is as difficult for one architect to alter the work of another as to forge handwriting; and if the building is to remain, it had better, he thinks, remain as it is—a record of the state of the art of architecture at the time of its erection,"—an excellent remark,—though there has been an architect, Sir Charles Barry, who was particularly successful in altering the work of others, and yet leaving the mark of his own hand distinctly.

Mr. Jones's chief design (A) deals with the whole of the ground, inclusive of the site of the barracks as well as of the workhouse and present National Gallery; which last he would remove, and erect a new frontage of buildings of entirely different character, and set back considerably. Viewing the complete plan, it is distinguished for its extreme rectangularity. In several of the designs, the eastward projection of the new ground, in St. Martin's-place, has led to an obliquity of the line, on that side, with the line of present frontage, and to angles which are more or less acute, unless where the angle is rounded off. Again, Hemming's-row and its continuation, Orange-street, not being parallel with the frontage, but tending somewhat northward, and a line of frontage being carried along that side, the north-west angle of the plan as intended when the barracks are removed, is made acute. But Mr. Jones has no frontage taking the line of Hemming's-row: his rearward line would be parallel with that of the main front and of the Square. The two lines would be intersected by three others, leaving ground for two large internal courts. The southern ends of these lines of the plan become centre- and end-pavilions of the Trafalgar-square front; whilst the northern ends differ from one another in projection, according to the rake of the ground. The only deviation from this rectangularity, is as regards a portion of the building which occupies part of the eastward projection next St. Martin's-place. This portion is semicircular on plan, and incloses its own court. Thus, in the building, there would be that simplicity of distribution of the galleries which would be important for the easy circulation of crowds. The entrance would be as required by the "Instructions," namely as at present; and there also would be the way of exit. Visitors would enter a grand circular hall, from a wide porch or projecting loggia of arches, ascended by steps, and would have in face of them the staircase, and, right and left, galleries of the ground-floor. This circular hall has a balcony round it, carried by columns, and has a vault after the manner of that of the Pantheon, at Rome, as regards the lighting, but with the coffered ornamentation disposed on diagonal lines, somewhat after the method adopted by Mr. Jones in several of his recent works. From this hall, or rotunda, the visitors, having turned to the left, would make the entire circuit of the building; from the hall again, they would ascend the stairs: from the top-landing of these they would pass south to the gallery round the

hall: thence they would pass westward, to make the circuit as before. The principal gallery would be 300 ft. in length by 51 ft. 6 in. in width; and an arched ceiling is shown, with a light in the centre, and effective ornamentation. The longest projecting block, on the north, 95 ft. by 51 ft. 6 in., would be devoted to purposes other than the exhibition of pictures. In the central projection towards Hemming's-row, would be the keeper's residence. It may be well to mention, referring to what was said some time since respecting the provision of a residence in the present structure, that the keeper is required to reside in the building. As to the amount of provision in the designs now at Westminster, it varies considerably. We do not quite make out that in the design before us, the provision is adequate. Near to the residence in this design, is the unpacking yard; and it is considered that the keeper would command the galleries, as well as supervise the matters of business requiring his attention. The re-entering angles of the two chief courts are filled with little blocks of building, containing rooms for police, attendants, and the service generally. Side-lighting is of course the principle, in this design, for the entire ground-floor: it also obtains in the second story or first floor, for the south and east fronts of the building, or for drawings and cabinet-pictures, to be "placed on screens at right angles to the windows." Mr. Jones says, "as they were in the National Portrait Gallery at South Kensington." He adds that this method "admits of increasing the hanging-space as the collection may require it." If the increase be meant as contrasted with what might be got in top-lighted galleries, we think we should hardly admit the force of the observation. The piers of the building are narrow, and the openings wide: the former are 15 ft. from centre to centre; which, therefore would be the distance of the screens. The side-lighting allowed by the "Instructions" has furnished "the key-note" of the design. Mr. Jones expresses as his opinion, that "a façade without windows would be like the human face without eyes, and be void of all expression." We think this the wrong way of reasoning in matters architectural, and a way that Mr. Jones, judging from what he has written, would not have followed excepting by an inadvertent subjection of himself to the ever-troubling "Instructions." The first question for the competitor's decision was, or ought to have been,—what is the best, or the sufficient, mode of lighting? It might be that Mr. Jones would have replied, as he seems disposed to do, side-lighting, considering what are other conditions of the planning; but, had he felt obliged to say with some others, top-lighting, we hardly think that he would have therefore made a bad building. Surely, a building may be without windows, and yet not void of expression. Indeed, are there not old styles in which the window plays hardly any part,—the Greek, for instance? Though, we should not deduce from that, that a picture-gallery must necessarily be columnar. Mr. Jones knows how many ways there are of decorating a wall: even Soane's attempts, dispensing with windows, at the Bank of England, would show that something may be done without them. Or if top-lights there would be, might they not be made to contribute to the external decorative character? The character as it is in Mr. Jones's design, may be called a variation of Italian; but, as usual in productions possessing originality and art-character, the decorative expression and details of this design cannot easily be stated in words. There are seven major divisions in the length of the front, including the ends. These are pavilions: each of these, with each of the two recesses next the centre, has its own roof hipped at the ends,—the central pavilion, however, having the roof covering, of the rotunda, circular on plan. The centre, in the highest part, is made just the same as the loftiest feature in the present building. All these roofs being about the same height, there is defective grouping; which was never the result from their prototypes, the French roofs. The character of the front is mainly resultant from the details; but general features not described, of the designs, are a podium-base, two stories of modified orders,—the lower order being of panelled pilasters, and the upper one of columns clustered with pilasters, and the group having somewhat elongated shafts,—and an attic filled in with large panels for sculpture, whilst the piers between are terminated by anthems. In the

interpilasters of the lower story, the windows are square-headed, and have moulded and enriched sills, and sills which are carried by a peculiar feature including two bracket-forms placed parallel with the wall-line, instead of projecting from it. The windows of the upper story have sub-arches, carried by an elongated baluster-mullion in the centre. There is much good ornament in the panels of the pilasters, and in the friezes of both orders, especially where anthems are introduced. It is right to say that the different intimations from the Office of Works as regards the drawings, such as that none of the perspective-views should be in colour, that no drawings to a larger scale than 16 ft. to an inch would be received, and that the elevations were to be in line only, or etched with Indian ink, but not tinted,—disregarded, one or more of them, by some of the competitors,—have all been attended to in the design that we are examining. Mr. Jones's particulars, however, state that he would use terracotta, of varied colour, and some coloured marble, in the south and east fronts. One journal has stated that the upper windows in this design were blanks. It will be understood that this was an error. Mr. Jones's approximate estimate for design B, is 95,500l. That for design A, taking in the ground of the barracks, is 375,000l.

Mr. C. Brodric's drawings, which come next, comprise three designs, Nos. 1, 2, and 3. They display considerable ingenuity in planning; and for the chief design a somewhat imposing effect of columnar architecture. Design No. 1 would preserve the present building, only making the staircases with the opposite flights. The buildings would form three sides of a courtyard, of over 150 ft. each way, the south side being formed by the half of the building now in the occupation of the Royal Academy. In this yard there seems to be lost space. The eastern range of building, transverse, is not at right angles, but askew with the main front. From this eastward range there is a large semicircular projection; that is to say, it is similar in position to the semicircular projection on plan in the design last described. But there is here no court. The semicircle and that part of the line to which it is attached, are arranged somewhat ingeniously, for side-lighting. The divisions, or screens, in the semicircle, radiate from the centre, or rather from a small semicircle about the centre. This latter curve, on the inner side, is filled in with niches, and being enriched with columns, it would, properly treated, form a very pleasing feature in the plan; whilst as to the divisions of the larger space, the radiating arrangement would mitigate greatly the short-comings of side-lighting. The space not in the semicircle or apsis is divided in the ordinary way. The north gallery, following the line of Hemming's-row, would be 280 ft. in length and 50 ft. in breadth. As designed, the internal effect of this gallery would be highly satisfactory. The divisions of the length are formed by arches and side-openings, the arches carried by columns, and the spandrels enriched. These features carry an entablature, continued from that of the room. From this latter rises an arched ceiling; which has an opening for light in the centre. Both the general features and the ornamentation resemble, in some measure, what may be seen at the Louvre and Versailles.

The design No. 2 includes the site of the barracks; whilst as to the ground, bounded by Hemming's-row and St. Martin's-place, the plan corresponds with what we have described: in effect, there are two large courtyards, instead of one,—the western one, of course, being the larger. But as regards the site of the present building, or rather building itself, the treatment is important, both as regards what would be built and what would be left; for, in the latter category there is much. Thus, whilst the decorative character of the building would be entirely changed, though still kept columnar,—or rather, made markedly so, by a profusion of added columns,—the present exhibition-rooms, which we have taken care to inform our readers are liked by Mr. Wornum, (or, at any rate, three of them at each end of the building) would remain unaltered. A new staircase-hall, of large dimensions, would be added in the centre; and in advance of it, there would be a recessed portico, of fourteen columns between ante, in the front, and of eight internal columns, placed two together, or dividing the length into five spaces of three intercolumns each. This portico has a flight of steps in front. The order, Corinthian, is continued, or with six columns

on each side, to the ends of the building, where there are quadrants, each formed with two columns in the space. The centre-portion has no pediment; but ten of its columns, in the front, carry the same number of columns of the front of a temple-formed attic-building, which has eleven columns on each side, and of which what we may call the *naos* or *cella* is the upper part of the staircase-hall. This attic-building has a pediment, of which the tympanum is charged with sculpture. There is an attic or balustrade, to the order of the wings; and the piers, corresponding with auzes, are terminated by groups of figures. Where the attic would be interrupted by the portion of ten columns, the cornice-lines of the attic-pedestals are carried across, or partly round the shafts. This device is no doubt intended for tying the different parts together; but the aim is not reached; and the shafts of the upper order look stunted. The larger order runs along the east end of the building, and round the semicircle or apse, where there are two stories of niches. In the rear-walls of the porticoes are sculptured slabs. The staircase-hall would be highly effective, judging from the plan and section. There is a centre flight of steps up, opposite the entrance; and there are two parallel flights at the sides, down. Round the hall are columns, twelve on each side: the entablature of these forms the base for a passageway and arcade,—the archivolts of the latter being carried by Persians or Caryatides, which are set in the reveals. Behind the arches are windows in the intercolumns of the attic-building.

The front for Hemming's-row and Orange-street presents an effectively decorated wall, with a pavilion for the centre, Mr. Brodrick's design is set off by two large and effective views: indeed the drawings are complete, and the design matured, as compared with his design on the last occasion of a competition of which the drawings were exhibited in the Royal Gallery; when he was so fortunate as to get the third premium for what could not have been executed in the way that the drawing showed the work. Mr. Brodrick proposes to alter the arrangement of the Square by taking away the terrace-wall, and substituting steps for the whole length between the two large pedestals, of which one bears the statue of George IV. It has been suggested to us that Sir Charles Barry's choice of the balustraded wall in preference to steps, must have been governed by the design of the National Gallery, and made different from what it would have been had a flight of steps been a feature of the portico. The courts in Mr. Brodrick's design are characterized by extreme plainness. The principal galleries are 50 ft. in width.

Design No. 3, by the same author, is explained in a mere plan, which shows the spaces of the courts of the other design, nearly filled by parallel galleries, each 30 ft. in width.

We must sometimes reverse the order in which the two chief projects are taken up by the competitor. We adhere to the order in which they were originally stated by the Office of Works. Thus we arrive at Mr. Street's design for the "Enlargement of the Existing National Gallery." Of the drawings in this case, he says it is not necessary to say much in explanation. He has prepared them because "desired to do so; not because it will even be possible to enlarge the present Gallery with satisfactory results, unless, indeed, the existing building is so much altered as to make the work nearly as expensive as a reconstruction." He notes that the ground-floor is useless for exhibition-purposes; but, if side-lighting be admissible, we imagine that the main objections to the ground-floor now are as to the two ways through the building, and the steps down from the entrance-hall. He also notes the universal condemnation of the chief front; and he points out that the front to the rear would require treatment—apparently forgetting to note that there must be a new rear-front in any case, at least to Hemming's-row. His design consists of an addition, in the Gothic style, to the present Greco-Italian front. Retaining the present entrances, the staircase would be formed out of the large room lately added. The 50-ft. galleries would run north from this, and would have side-lighted cabinets at the side. With other galleries, these would form a quadrangle,—much as he has the arrangement of his other design. The floors would be raised considerably above the levels of the floors of the present building, "so as to render the ground-floor rooms really available as exhibition-rooms." The area of galleries and rooms for

pictures would then be as here given, stating, however, the floor-space:—

The Gallery-floor:—			
Existing Galleries	14,300 ft.		
Additional Galleries	20,950		
Cabinets		35,350 ft.	
		7,175	
Total		42,425 ft.	
The Ground-floor:—			
Existing building (space of an inferior kind), Turner Gallery and drawings of old masters	6,339		
New Building:—			
1. Gallery and Rooms for drawings and prints to East Wing	6,450		
2. National Portrait Gallery on north side	9,145		
3. Rooms on west side of quadrangle, suitable for water-colour drawings or original drawings	10,188		
		25,813	
Total Exhibition-space		32,153 ft.	

We have modified the form of statement; but the figures of course are the competitor's. Mr. Street points out that a great portion of the 74,577 ft. would not be so valuable as in the other design. He has certainly succeeded in designing an addition as inconspicuous as possible with the present structure, decoratively regarded.

In his design "for rebuilding the whole Gallery," he has been in his due position; and he has expounded his views, and given particulars of his intentions, in an elaborate pamphlet. Whatever be our estimate of the result of Mr. Street's work, in his drawings, we must say that his written statement, however we may sometimes differ from what is said in it, cannot be read without advantage. He says that the invitation to compete was one that he felt it was his duty to accept, as it had long seemed to him that the public mind was unjustly biased towards a particular style of architecture "for our great institutions." After an expression (which, from him, we were gratified to read) of his distress and surprise at any disparagement of the Houses of Parliament, he says there has been a return, with bad results, to the old course wherein it seems to be assumed that some adaptation of Classical or Renaissance architecture is the only style allowable for museums, picture-galleries, and other such buildings. He mentions the fact that when his name was first uttered in connexion with the proposed competition, objection was immediately taken to him in the House of Commons on the ground that he would be sure to design a Gothic gallery, and that such gallery must needs be a failure. Now it seems to us, without expressing any approval of the decorative part of his present design, that Mr. Street is just as much in the wrong in his way of answering these remarks in the House, as were those who made the remarks. Is it not clear that the moment any architect allows the decorative character, chosen or imparted, of his design, to influence disadvantageously the serviceableness of the building, his production departs so much from good architecture? The operation of designing the gallery, in fact, should make the style, or help to do so: the gallery must not be adapted to a style. If our architects, whether Classicists or Gothicists, as designated, are unable to produce a well-lighted and otherwise suitable building for a National Gallery, the cause must be that they are alike moving in courses which are nearer to those of copyism and subjection to precedent, than to those which are the proper ones for the architect, and artist-architect, of his day. Mr. Street himself gives evidence in the mere matter of the writing to his drawings, of this subjection. When an architect prints "National Gallery" in such a guise that the greater number of people will read "Paciopol," or perhaps "Episcopal," Gallery,—and when for "Pictures" he writes what looks like the French for "Cigars," he not does not even offend,—but he also helps to narrow his own mind. We could also believe that the seemingly-studious had drawing of the portion of St. Martin's Church, in one of the views, had some similar explanation.

In Mr. Street's chosen arrangement of the galleries and rooms, as in much of his statement of principles of the planning of galleries, there is, as we have intimated, matter that deserves attention. He however overstates, we think, the element of the problem, comprised in the ground and site for the National Gallery.

He says that when a gallery for pictures occupies one of the most costly sites in London, it is "criminal" on the part of the artist to waste land. Of course, he points here, and rightly enough, to the uneconomical planning of the present building, as regards its ground-floor, and its means of access to the portico. But he proceeds to say that "a Gothic building does not involve any of these difficulties,"—as though the defects of Wilkins's building had necessary connexion with present possible use of the style or models that Wilkins used. He has the truth of the matter lurking in his mind, where he says afterwards that he has "never seen a gallery yet, which was specially adapted for displaying pictures well, which had much architectural style of any kind in the planning or detail of the rooms,"—that what there is, "consists usually of decoration and nothing else," and that he "cannot conceive" why the "sort of work should present the slightest difficulty." He then states essentials of a gallery for pictures, very clearly; but he winds up by saying, he maintains that "these can be more easily obtained in a Gothic than in a Classical building." We cannot however go into all the points of the argument upon which Mr. Street has entered, or do justice to our own position, which is that in a right condition of our art, such questions would not be raised. It remains only to say with reference to the matter, that the Gothic influence has helped to satisfy Mr. Street of the advantage of covering the entire ground. His front to the Square is as symmetrical as that of any classic structure; but the eastern end of the building follows as nearly as possible the irregularities of the ground. He has not recollected that there would be some reason for giving up ground to the street.

We have yet more to say of Mr. Street's design, but must leave it for our next article.

PRIZES TO ART-WORKMEN, SOCIETY OF ARTS.

THE works sent in on the present occasion are 107 in number, and, though fewer than might have been anticipated, considering the numerous prizes offered, include works of greater merit than were found in the previous competition. The ironwork is much more satisfactory, and a piece of repoussé work in metal deserves especial commendation. The prizes have been awarded by Mr. Redgrave, R.A., and Mr. M. D. Wyatt, with the secretary, Mr. Le Neve Foster.

INCREASE THE SCHOOLS.

THE principal changes sought by the deputation from the Social Science Association who attended the Lord President of the Council on Tuesday last, were that a "certificated" teacher be not necessarily required "in town schools in which the fees in the aggregate do not amount to more than one-ninth of the total annual expenses," in order to obtain the Government grant; that the grant for average attendance be raised, except in infant schools, from 4s. to 5s., and the grant after examination from 8s. to 9s.; further, that wherever additional expense is incurred for industrial teaching a grant in aid be given. The Hon. A. Kinnaird, M.P., introduced the deputation. Mr. G. W. Hastings read the memorial setting forth what was asked; and the Rev. W. Clay further set forth the various points in it. It was shown that it is vain to expect that schools for this class of children aimed at can be permanently maintained by benevolent persons, for the burden is too heavy. In other elementary schools, the subscribers have to provide only about one-third of the annual income, the children's fees and the Government grants furnishing the rest; but in these the fees range from nothing to about one-ninth of the total cost, while experience has shown that schools frequented by the children of poverty-stricken parents, even if the conditions of the Revised Code were complied with, must always fall below the average standard, and consequently obtain, on the present terms, very small assistance from Government. That as to a certificated teacher, the existing requirement places poor schools at a great disadvantage, because the more efficient certificate-holders will not take charge of a school for destitute children in a squalid neighbourhood, unless induced to do so by a high salary. And with reference to

the asked-for grant in aid of industrial teaching, that however desirable industrial teaching may be in other elementary schools, in those for "neglected and destitute children" it is almost a necessity; partly because from their habits they are unfit to bear long mental exertion, and partly because they have to be taught in school to earn their livelihood.

The Rev. G. H. McGill supported the views set forth with illustrations from his own labours in the East of London. Mr. Charles Ratcliff (Birmingham) showed how the changes were needed in his town. From Manchester, evidence was given by one member of the deputation that masses of children were growing up without going to any school whatever. Mr. Godwin set forth, from his own experience, the condition of thousands of children in the metropolis whose only education was downwards, and who served to keep up the ranks of the criminal classes at great cost to the country. Mr. R. C. Hanbury, M.P., Mr. James Heywood, F.R.S., and others, also made confirmatory statements. The Duke of Buckingham and the Hon. Mr. Corry, who was with him, entered fully into the matter, and promised it should be considered by her Majesty's ministers.

In asking for exceptional treatment in favour of poor town schools, two dangers have to be avoided. In the first place, no inducement should be held out to any schools to lower their fees and their standard in the hope of obtaining larger grants; and, in the second place, parents able to pay the usual fees should not be tempted to send their children to free or very cheap schools. The first danger is guarded against by the moderation of the petition now forwarded. There are not many town schools in receipt of Government aid where the charge is so low as 2d. a week, and almost none where it is less. The demand is so moderate that, if granted, it will not be worth the while of any school now charging 2d. to lower the charge to 1d. Against the second danger it will be for the Education Department to guard. But as it has been found quite practicable to exclude from the existing schools a higher class than that for which they were intended, so it will not be difficult to confine the humbler description of schools which we wish to help to the use of the really poor. For our part, we go much further than the Association, and would insist upon education to good for every child. We assert, as we have often asserted before, that if this were done, even at the country's expense, the country would be the gainer, as well in a pecuniary point of view as in others more important still.

PARIS EXHIBITION AND ENGLAND.

At the last meeting of the Commissioners, presided over by H.R.H. the Prince of Wales, it was determined to appoint a committee to promote a proper representation of Indian architecture. The Prince, on the same day (January 11), presided at a meeting of the Associate Commissioners, when deficiencies in certain classes were made known. We find that Terra-cotta, Bronze Castings, Plans and Models of Farm Buildings, and Plans of Cheap Dwellings, as matters at present stand, will be very inadequately represented in the Exhibition. Something should be done to remedy these deficiencies.

PARIS EXHIBITION OF 1867.

The concession of the International Theatre has been granted to M. J. Reynier by the Commission, who has decided also that the internal decorations may be regarded as objects exhibited, after having been received by the Commission. Consequently they will be inscribed in the catalogue, and can compete for the prizes.

Russian peasants have been for some time in Paris: they are occupied during the day in constructing, in the park surrounding the building, huts after the model of their country. According to the French papers, they are anything but happy in their new life. They seem to be plucked in an incurable melancholy state. The snow enlivened them a bit, and gave them reason to exclaim that there was at least one good thing in Paris.

As to the Russian section, it occupies 1,000 square metres (square metre equal to 109 square feet nearly) in the rectangular part of the park,

situated between the Exhibition building and the Avenue de Suffrein. We remark there:—

1. A large outhouse, two stories high, the lower portion being for exhibiting agricultural machines, and the upper story containing an inquiry office, lodgings for six *monijiks*, and the forage store.

2. Opposite, the office of the Russian commissioners,—a wooden pavilion, very ornamental, in the style of the boyards of Northern Russia. All the mechanism of construction is apparent. The chimney, of terra-cotta, is, as is the custom, capped with an iron pot turned upside down, and the bottom knocked out.

3. A great *isbah*, or peasant's cottage, composed of three buildings grouped together. There is, first, a building of red deal, forming a complete habitation. The walls are composed of round trees, barked and squared with an axe. The lower end of each piece is mortised, to receive a tenon on the top end of the lower piece, and the joints are made tight with tow.

The ground floor is laid out in stables and cow-houses. The upper story, divided into two rooms, comprises the habitation of the peasant and his children. In the angle is placed an immense stove, serving the double purpose of warming and baking. The staircase is outside. Adjoining the building is a covered courtyard, serving specially for sheltering the farm-carts which the Russians construct rather hastily.

Next follows a small habitation without stables, in white deal, put together as in a great house. It is a sort of guard pavilion, preceded by a portico.

In these different constructions there is neither nail nor peg. The whole of the *isbah* is a special article exhibited by the Domains, under the direction of M. Gromoff, one of the greatest wood-merchants in St. Petersburg.

4. A vast construction, 249 ft. 4 in. by 23 ft., with pavilions at each side, and projecting main body in the centre, is intended for stabling the horses sent by Russia. These types of Russian breed will be arranged longways parallel to the wall, so that a visitor can see them to advantage; provided, of course, that one side of a horse is the same as the other side, and we think that it is. On the upper story there are lodgings for ten *monijiks*.

This building is well ornamented; the style being an application of the Russian hospodar art of the centre of the country to modern usage.

5. A *youth*, or tent, 19 ft. 6 in. in diameter, in the form of a bee-hive, of felt sewn together. Above is an aperture for letting in light and air, and giving an exit to the smoke. How the air can go both ways we will not stop now to explain; suffice it to say that it is the national habitation of the Cossacks and the nomade Tartars.

Among the curiosities of nations to be presented to the public at the Exhibition we may cite the Chinese portable kitchen.

One man carries it on his shoulders and serves out his culinary produce to customers. It is a structure of wonderful lightness; especially so by the employment of bamboo cane, to which it is suspended. The contrivance is 2 metres high and 3 metres wide. One hand of the carrier steadies the machine while the other minds the cooking, tends the fire, and serves the public; in the front compartment, on the first shelf, are plates and dishes well arranged; on the second shelf, wood and matches; on the "ground-floor" is arranged the cooking apparatus. The back compartment contains all that can comfort man, in a raw state. Meat, poultry, fish, vegetables and herbs, peppers, spices, &c. For an extremely small sum a workman, in China, can have a comfortable repast without quitting his place of work; all he has to do is to beckon to the *restaurant*-man, and up comes the dinner.

Another ambulatory occupation is that of barber. This Chinese "shaver" has a boiler of hot-water on his head. On his shoulder is a bamboo, carrying at one end the provision of cold water, at the other end the traditional shaving-dish, a razor, and towel. He not only takes off the beard, but the hair of the head also, leaving a small tuft, enjoined by the Mandchou under penalty of death.

A bull-fight circus, to accommodate 15,000 persons, is to be erected. The horns of the bulls in action will be balled, so as to render them innocuous, and the sword blunted; so that, instead of blood, the only vital element spent will be money in the shape of costumes, which are to be represented in the most sumptuous manner. A lecture-building is being constructed in the

park, in the form of a theatre, by a company of whom M. Pierre Petit, the photographer (photographic concessionist for the Exhibition), is director. It will hold 600 persons seated. Several lecturers have been engaged to explain the progress of science, arts, manufactures, the machines exhibited, &c. These lectures, given in French, English, Italian, Spanish, and German, promise to be extremely interesting.

PROPOSED ART EXHIBITION IN LEEDS.

THE prospects of the proposed "National Exhibition of Works of Art," to be held in Leeds, in 1868, appear very promising. The guarantee fund amounts to 110,000*l.*, or some 35,000*l.* more than the Manchester people raised for the Art Treasures Exhibition in 1857.

The Right Hon. the Earl Fitzwilliam is the president of the general council, and Mr. W. Beckett Denison, chairman of the executive committee.

Castle Howard and Chatsworth are placed at the disposal of the committee, and the Exhibition bids fair to be one of truly national importance; we hope even surpassing that of Manchester in 1857. Mr. J. B. Waring is the general manager or chief commissioner.

SANITARY MATTERS.

Chorlton.—The monthly report of Mr. G. Greaves, the consulting medical officer of the Chorlton workhouse, states that, on November 30, there were 13 fever cases in the hospital, nearly all of which were convalescent, 15 more were admitted to December 31; during that month one patient died, 11 were discharged cured; and on the 31st of December, 16 remained in the hospital. Mr. Greaves wrote, under date January 1, that the only unsatisfactory feature in the returns was the increase of typhus in some parts of the union, which some months ago had almost disappeared from the wards. Fifteen fresh cases had been admitted, most of them within the last fortnight. Two entire families had been admitted, and, having visited the house from which one of them came, he thought it right to lay before the guardians the result of his inspection. The house was in Riga-street, Hulme, a low and crowded neighbourhood, and very near the river Medlock. The back windows overlooked Riga-court, which was closed at one end, and at the closed end, under the windows of the house, were some filthy and dilapidated public conveniences. The drainage of the surface and the ashpits appeared to be imperfect. No attempt had been made to purify or disinfect it. The floor and walls were very dirty. He was informed that the furniture had been seized for arrears of rent after the fever had broken out, and, after passing through the broker's hands, had most probably been distributed over the city, carrying with it the infection, which was of a most malignant type.

Newcastle-upon-Tyne.—Another of the local medical men has been cut off by fever. Mr. Gilchrist, surgeon, after attending to fever patients located in some of the most filthy places in the town, there caught the fever of which he died. Newcastle is notorious for fevers and a high rate of mortality.

Winchester.—Eleven competition plans have been sent in for the sewerage of the city. There is a surmise that the estimates for the main drainage works will range from 13,000*l.* to 20,000*l.*, but nothing certain was known of the result. In connexion with the utilization of the Winchester sewage, the *Hamshire Independent* gives the following extract from a letter in a daily paper:—"I do not know what difference there may be as regards productive capabilities between sand recently removed from the sea-side and the sand of those immense plains in which Berlin is situated, and which, extending to the Baltic, are, I presume, of marine origin; but this I can state with absolute certainty, that of all descriptions of manure, sewage is here in the greatest request, and that very abundant crops are produced by its application to the sand soils of this district, which have not any surface vegetable soil, and are certainly 10 or 20, or more, feet in depth."

Carnarvon.—Dr. Seaton, who was sent down to Carnarvon by the Privy Council, has just made his report on the cholera in that town. Dr. Seaton found that, out of a population of 9,000

persons, there had been during the five weeks preceding his visit not less than sixty deaths from cholera. The disease has not been confined to any particular portion of the town, nor has it by any means been limited to the very poorest people. One-third of the deaths have, however, occurred in a single street; and in the county gaol, which is situated in a narrow street, in a low part of the town facing the Menai Straits, there have been, in a population of thirty prisoners, six cases of cholera (four of which have proved fatal), and three or four of diarrhoea. Of the sanitary state of the town Dr. Seaton speaks thus:—"In Carnarvon there exists everything to invite and give intensity to an outbreak of cholera, or any other infectious or epidemic disease—great overcrowding and bad house construction, bad water-supply, bad drainage, absence of privy accommodation, and accumulation of surface nuisances." The overcrowding he describes as being of the worst kind. Not merely are the people crowded into houses numerically incapable of holding them, but the houses themselves are huddled together on a wholly insufficient space of ground.

OLD HOUSE AT COLOGNE.

NOTWITHSTANDING the ravages of time and the worse destruction caused by the requirements of modern times, the ancient city of Cologne still possesses many fine specimens of Mediæval domestic work.

The houses are of two distinct classes; first the ordinary gabled half-wood buildings common in all old towns; and, secondly, large stone fortified houses of very superior architecture and construction. Of these latter, perhaps, the "Gürzenich-haus" is the finest example.

Our illustration, drawn on the spot, represents the angle of one of these fortified houses near the Rath-haus.

GREENOCK COURT HOUSE, SCOTLAND.

THE principal front toward Nelson-street, of the new Court-house, for Greenock, presents a façade 100 ft. in length, and three stories in height, with a massive tower in the centre. The tower is finished above, at the angles, with corbelled turrets, and is surmounted by a spire, which rises to the height of 112 ft. from the ground. The door, which penetrates the base of the tower, is flanked with columns, and buttresses on either side supporting the lower part of the tower. A boldly moulded segmental arch springs from the capitals of the columns. Above the level of the street floor, and extending up to a level with the ridge of the roof, the tower is square, having no projection or break; but each angle of the front is recessed, the recess containing a shaft carved in a spiral form. Above the door is a window, with label and panel over it, and opening upon a stone balcony, carried out above the doorway, and having a parapet of cusped tracery. This window is on a level with the first-floor of the building. Above it, and level with the second-floor, there are two windows with plain segmental arched heads, having above and between a large circular carved panel, with a shield on which will be engraved the arms of the town. On the level of the upper part of the roof, and at a height of 57 ft., the upper portion of the tower is carried out, and flanked with circular turrets, finished with conical roofs. From the corbelling rises a parapet, and behind and between the corbels the front of the tower is finished with a high gable, filled with a semicircular-headed window of two lights, the gable being crocketed, and surmounted with a lion *sejant rampant*. The roof of the tower beginning in a square form, becomes octagonal, as it tapers upwards to a height of 30 ft., from which altitude rises an octagonal lantern, with a conical roof, the lantern having columns at each of the eight angles, with bold bases and capitals. The façade on each side of the tower shows a row of three windows in each story. Those on the ground-floor have segmental arched heads, with label mouldings over them. Those on the first-floor are simple square-headed windows. Above the first-floor is a parapet carried on corbelling, from which rises the upper tier of windows, projecting from the roof, and finished with gables furnished with crockets and finials. This portion of the



ANCIENT DOMESTIC ARCHITECTURE, COLOGNE, GERMANY.

building presents at each end a double gable. Between the gables there rises a high ornamental chimney-stalk; and flanking the gables on the outside are circular turrets, somewhat similar to those on the tower, between which the corbelled-out parapet is continued on the same level as that described in front. The turrets are supported on shafts spirally cut, like those in front, and resting on the top of the buttresses, which extend up through the ground-story of the building. On the north gable the principal feature is the great window of the staircase, extending through two stories, and divided into a large centre division of two lights, and two side divisions of one light, each moulded and finished with label mouldings. In general style, the building may be said to belong to the Scottish Baronial.

The building is divided into two portions, the front portion, which extends back about 50 ft., being three stories in height, and containing offices for the sheriff, the sheriff's clerk, the procurator fiscal, &c., with a dwelling-house for the keeper. The entrance-hall is lighted, when the door is shut, by narrow windows on each side of the doorway. This hall is 16 ft. wide, 22 ft. in length, and runs into a corridor 17 ft. wide, and about 60 ft. in length, having at one end of it the public staircase, giving access to the upper portions of the building. Opposite the door, at the further end of the corridor, is the Court-room, forming the back part of the edifice.

This apartment is 47 ft. long by 38 ft. in width and the roof is placed at a height of 31 ft. On either side of the Court-house there are narrow corridors leading at right angles from the large corridor, and giving access to the different portions of the floor appropriated to the accommodation of the jury, witnesses, &c. The back building is only of one story, but it rises to the height of the second story of the front part of the building. There is a smaller Court-house, situated for the sake of convenience in the front building. This apartment is on the right-hand side on passing through the door into the entrance-hall, and has rooms for the sheriff attached to it.

The architects are Messrs. Paddie & Kinnear.

The foundations of the building have been laid, and the works are being proceeded with as speedily as the present state of the weather will allow.*

* The following is a list of the contractors:—

<i>Mason's Work.</i>		
John Coghill & Co., Yoker	.....	£5,981 0 0
<i>Joiner's Work.</i>		
Stewart Alison, Greenock	.....	2,373 0 0
<i>Plumber's Work.</i>		
Malcolm Chalmers, Port Glasgow	.....	502 0 0
<i>Plasterer's Work.</i>		
Colin Paul, Greenock	.....	341 0 0
<i>Slate's Work.</i>		
Shaw & Imrie, Greenock	.....	109 10 11

Total.....£8,386 10 11



NEW COURT HOUSE, GREENOCK, SCOTLAND.—MESSRS PEDDIE & KINNEAR, ARCHITECTS.

ART IN ROME.

We have seen the groups executed by the Danish sculptor, Jerichau, for the Princess of Wales, as already mentioned in the English papers. His "Adam and Eve," at the moment the former awakes to find his newly-created spouse at his side, is impressive and original, admirable for the expression of astonishment and delight, tempered with tenderness, in Adam (whose head is nobly beautiful), and for the modest, timid sweetness of Eve, who kneels beside his half-reclumbent figure. The group of "Girls Bathing," or rather leaving the bath in alarm at some stranger's approach, represents a younger and elder sister, the former taking refuge in alarm on the bosom of the latter,—the situation presented with much grace of movement and outline. This artist's statue of a hunter taking away the cub from a panther, and defending himself from the enraged dam, ordered by Sir Francis Goldsmid, is the reproduction of a work first executed several years ago, and hitherto the most popular of all he has done during a residence of many seasons in Rome.

Among other novelties that we have seen in Roman studios within the last few weeks, we may mention with praise such fine examples of portrait-sculpture as the bust and statue of Mr. Gladstone, and the bust of Lord Brougham (stat. 89) by Mr. Adams, alike admirable for the expression of calm power and for strongly-marked individuality. If, as that aged statesman declared to him, no other artist is to be honoured by sittings from Lord Brougham in his future life, Mr. Adams's likeness will indeed acquire additional and extrinsic interest for posterity.

THE PRESERVATION OF WOOD IN DAMP AND WET SITUATIONS.*

In 1846, eighty thousand sleepers of the most perishable woods, impregnated, by Boucherie's process, with sulphate of copper, were laid down on French railways. After nine years' exposure, they were found as perfect as when laid.† This experiment was so satisfactory that most of the railways of that empire at once adopted the system. We would suggest washing out the sap with water, which would not coagulate its albumen. The solution would appropriately follow.

Both of the last-named processes are comparatively cheap. The manufacturing companies of Lowell, Mass., have an establishment for "Barnettizing" timber,‡ in which they prepare sticks 50 ft. in length. Under a pressure of 125 pounds per square inch, they inject from two to eight ounces of the salt into each cubic foot of wood. The cost, in 1861, was from 5 dols. to 6 dols. per 1,000 ft., board measure.‡ Boucherie's method must be still cheaper. It costs less than creosoting by one shilling per sleeper.¶

An American engineer, Mr. Hewson, for injecting railroad sleepers, proposes a deep trench for the timbers to stand upright in. The pressure of the surrounding solution upon the lower ends of the sticks will, he thinks, force the air out at their upper extremities, kept just above the surface of the solution, after which the latter will rise and impregnate the wood. In 1859, he estimated chloride of zinc at 9 cents per pound, sulphate of copper at 14 cents per pound, and pyrolignite of iron at 28 cents per gallon. He found the cost of impregnating a railway tie with sufficient of those salts to prevent decay, to be—for the chloride of zinc 2-8 cents, for blue vitriol 3-24 cents, for pyrolignite of iron 7-5 cents.¶

Among the numerous other preservative compounds, may be mentioned, Le Gras's mixture** of double salt of manganese and lime (or zinc) with creosote, Payne's solution†† of sulphate of iron and muriate of lime, forming by double decomposition an insoluble sulphate of lime among the wood fibres; Margery's solution of

acetate of copper, and Ransom's liquid silicate of potassa.‡ Payne's process met with some favour, but neither of the last is of appreciable value.

Vessel-owners had long ago observed that those ships which have early sailed with cargoes of salt are not attacked by dry-rot; indeed, several instances are well attested of vessels whose interiors were lined with fungi, having all traces of the plant destroyed by accidental or intentional sinking in the sea. Acting on such hints, a trader of Boston salted his ships with 500 bushels of the chloride, disposed as an interior lining, adding 100 bushels at the end of two years.† Such an addition of dead weight (35,000 pounds in this case) is sufficient objection to a procedure which has other great disadvantages.

The unpleasant odour of creosote is greatly against its use upon lumber for dwellings, and Bethell's process, therefore, is not described here, although the most satisfactory known. Pyrolignite of iron is offensive, and also highly inflammable. The affinity of the chlorides for water keeps the structure into which they are introduced wet; besides, they corrode the iron-work. Sulphate of copper is free from these objections, and is at present cheaper than the chlorides; therefore, for protecting wooden structures against dry-rot, in damp situations, like mines, vaults, and the basements of buildings, sulphate of copper seems preferable, and Hewson's or Boucherie's method of injecting it cheaper and more expedient, according as the timber is short or long.

II. Wood alternately wet and dry.—The surface of all timber exposed to alternations of wetness and dryness gradually wastes away, becoming dark-coloured or black. This is really a slow combustion, but is commonly called wet rot, or simply rot. Other conditions being the same, the most dense and resinous woods longest resist decomposition. Hence the superior durability of the heart-wood, in which the pores have been partly filled with lignine, over the open sap-wood, and of dense oak and lignum-vite over light poplar and willow. Hence, too, the longer preservation of the pitch-pine and resinous "jarrah" of the East, as compared with non-resinous beech and ash.

Density and resinousness exclude water; therefore our preservatives should increase those qualities in the timber. Fixed oils fill up the pores and increase the density. Staves from oil barrels and timbers from whaling-ships are very durable. The essential oils resinify, and furnish an impermeable coating. But pitch or dead oil possesses advantages over all known substances for the protection of wood against changes of humidity. According to Professor Letheby,‡ dead oil, 1st, coagulates albuminous substances; 2nd, absorbs and appropriates the oxygen in the pores, and so protects from rancidity; 3rd, resinifies in the pores of the wood, and thus shuts out both air and moisture; and, 4th, acts as a poison to fewer forms of animal and vegetable life, and so protects the wood from all parasites. All these properties specially fit it for impregnating timber exposed to alternations of wet and dry states, as, indeed, some of them do, for situations damp and situations constantly wet. Dead oil is distilled from coal-tar, of which it constitutes about 30, and boils between 390° and 470° Fahr. Its antiseptic quality resides in the creosote it contains. One of the components of the latter, carbolic acid (phenic acid, phenol) C₆H₅O₂, § the most powerful antiseptic known, is able at once to arrest the decay of every kind of organic matter.¶ Prof. Letheby estimates this acid at

1 to 6 per cent. of the oil. Chrysic acid C₁₁H₅O₄, the homologue of carbolic acid, and the other component of creosote, is not known to possess preservative properties.

Bethell's process* subjects the timber and dead oil, enclosed in huge iron tanks, to a pressure varying between 100 and 200 pounds per square inch, about twelve hours. From eight to twelve pounds of oil are thus injected into each cubic foot of wood. Lumber thus prepared is not affected by exposure to air and water, and requires no painting.† A large number of English railway companies have already adopted the system.‡ Eight pounds of oil per cubic foot is sufficient for railway sleepers.§

The cost of "creosoting," as this process is sometimes called, was given in 1855, by Ronald and Richardson, at somewhat less than 4d. per cubic foot,|| in England. At 1s. per gallon,¶ the price at which dead oil was obtainable in England in 1863, 4d. per cubic foot would, we presume, be sufficient.

A process recently patented, and described in the *Scientific American*, February 17, 1866, proposes to introduce highly heated oleaginous vapours among the timber, confined in an iron tank. The patentee** hopes, that as fast as the moisture is expelled from the wood, the vapour will take its place. Whether this substitution would not soon arrest itself, should it even commence, is in our mind a debatable question.

While an external application of coal-tar promotes the preservation of dry timber, nothing can more rapidly hasten decay than such a coating upon the surface of green wood. But this mistake is often made, and dry rot, instead of wet rot, does the work of destruction.†† The reason must appear from what has been said on dry rot. Carbonizing the surface also increases the durability of dry, but promotes the decay of wet, timber. Farmers very often resort to one of the latter methods for the preservation of their fence-posts. Unless they discriminate between green and seasoned timber, these operations will prove injurious instead of beneficial.

In this connexion, we remark, that inverting a post from the position in which it grew, is by some supposed to retard decay. According to the president of the "Northern Architects' Association," England, "the values" close against moisture ascending through the ducts from the earth into the post.‡‡ But, according to Gray, thin plates will only separate contiguous ducts. Fluids can pass through them in one direction as well as in the other.¶ When age obliterates these thin mediums, nothing opposes the flow upward or downward. Furthermore, the passage of fluids through wood is not confined to ducts: it takes place on all sides of them as well. In face of these facts, very careful experiments will be requisite to convince us that a post is more durable in the inverted than in the normal position.

III. Timber constantly Wet in Salt Water.—We have not to guard against decay when timber is in this situation. *Teredos navalis*, a mollusk of the family *Trochilidae*, Lam., soon reduces to ruins any unprotected submarine construction of common woods. I quote from a paper read before the "Institute of Civil Engineers," England, illustrating the ravages of this animal:—

"The sheeting at Southend pier extended from the mud to 8 ft. above low-water mark. The worm destroyed the timber from 2 ft. below the surface of the mud to 8 ft. above low-water mark, spring-tide; and out of thirty-eight fir-timber piles and various oak-timber piles, not one remained perfect after being up only three years."§§ Specimens of wood, taken from a vessel that had made a voyage to Africa, are in the

solution containing only 1/2 per cent. of acid, or by exposure to the air containing a small portion of the acid.

¶ By examining the action of a leaf, we find the albumen is coagulated. All animals with a naked skin, and those that live in water, die sooner than those that live in air and have a solid envelope."—Dr. I. Lemaire, *Ann. de. Dioc.*, 1866, p. 239.

* Ronald and Richardson's "Technology," p. 79.

† Ure's "Dictionary of Manufactures and Mines," The Great Western, North-Eastern, Bristol and Exeter, Stockton and Darlington, Manchester and Birmingham, and London and Birmingham.—Ure's "Dictionary of Manufactures and Mines."

‡ *Journal of the Franklin Institute*, vol. xiv., p. 276.

§ *Chemical Technology*, p. 731.

|| Dr. J. G. Ashby in the *London Mechanics' Magazine*, July, 1852. He says, "Crude carbolic acid can be obtained for one shilling," but undoubtedly means dead oil.

¶ Louis S. Robbins, New York City.

†† According to Col. Bertie, the Michigan Central Railroad Bridge, at Niles, was painted, before seasoning, with "Ohio fire-proof paint," forming a glazed surface. About five years after it was so badly dry-rotted as to require rebuilding.

‡‡ *The Builder* for 1866, p. 70.

§§ *Civil Engineer's Journal*, vol. xii., p. 333.

* Fifty pounds of carbonate of potassa are dissolved in water, and a little lime is added to neutralize any free acid; 100 pounds of flints are added, and the whole exposed ten or twelve hours to a temperature of 300° F. This solution is evaporated to 1500 at 60°.—*Civil Engineer's Journal*, vol. ix.

† *American Journal of Science*, vol. ii., p. 17.

‡ *Civil Engineer's Journal*, vol. xxiii., p. 218.

§ "Creosote from coal undoubtedly contains two homologous bodies, C₁₁H₅O₄ and C₁₂H₅O₄,—*Ure's Dict. of Arts, Manufactures, and Mines*, vol. ii., p. 623.

¶ "I have ascertained that adding one part of carbolic acid to five thousand parts of a strong solution of glue will keep it perfectly sweet for at least two years."—*Ure's Dict. of Arts, Manufactures, and Mines*, vol. ii., p. 623.

§ "Carbolic acid is sufficiently soluble in water for the solution to possess the power of arresting or preventing spontaneous fermentation. Saturated solutions act on animals and plants as a violent poison, though containing only 5 per cent. of the acid."—*Civil Engineer's Journal*, vol. xxii., p. 216.

¶ Parasitic and other worms are instantly killed by a

* See p. 25, ante.

† *Journal of the Franklin Institute*, vol. xxiii., pp. 2, 3.

‡ *New American Cyclopædia*.

§ The Philadelphia, Wilmington, and Baltimore Railroad Company have used the process since 1860 with complete success. The Union Pacific Railroad Company have recently erected a large building for this purpose. Their cylinder is 75 ft. long, 81 in. in diameter, and capable of holding 250 ties. They "Barnettize" two batches per day.—*Report on Pacific Railroad*, by Col. Simpson, 1866.

¶ *Journal of the Franklin Institute*, vol. xxii., pp. 2, 3.

|| *Ibid.* vol. xxvii., p. 8.

¶ *Civil Engineer's Journal*, vol. xvii., p. 20.

†† *Ibid.* vol. vi., p. 207.

museum, and show how this rapid destruction is effected.

None of our native timbers are exempt from these inroads. Robert Stephenson, at Bell Rock, between 1814 and 1843,* found that green-heart oak, beef-wood, and bullet-tree were not perforated, and teak but slightly so. Later experiments show that the "jarrah" of the East, also, is not attacked.† The cost of those woods obliges us to resort to artificial protection.

The teredo never perforates below the surface of the sea-bottom,‡ and probably does little injury above low-water mark. Its minute orifices, bored across the grain of the timber, enlarges inwards to the size of the finger, and soon becomes parallel to the fibre. The smooth circular perforation is lined throughout with a thin shell which is sometimes the only material separating the adjacent cells. The borings undoubtedly constitute the animal's food, portions of woody fibre having been found in its body.§ While upon the surface only the projecting siphuncles indicate the presence of the teredo, the wood within may be absolutely honey-combed with tubes from 1 in. to 4 in. in length.

It was naturally supposed that poisoning the timber would poison or drive away the teredo; but Kyan's, and all other processes employing solutions of the salts of metals or alkaline earths, signally failed. This, however, is not surprising. The constant motion of sea-water soon dilutes and washes away the small quantity of soluble poison with which the wood has been injected. If any albuminate of a metallic base still remains in the wood, the poisonous properties of the injection have been destroyed by the combination. Moreover, the lower vertebrates are unaffected by poisons which kill the mammals. Indeed, it is now known that certain of the lower forms of animal life live and even fatten on such deadly agents as arsenic.||

Coatings of paint or pitch are too rapidly worn away by marine action to be of much use; but timber, thoroughly creosoted with ten pounds of dead oil per cubic foot, is perfectly protected against teredo navalis. All recent authorities agree upon this point. In one instance, well authenticated, the mollusk reached the impregnated heart-wood by a hole carelessly made through the injected exterior. The animal pierced the heart-wood in several directions, but turned aside from the creosoted zone.¶ The process and cost of "creosoting" have already been discussed.

A second destroyer of submarine wooden constructions is *limnoria terebrans* (or *L. perforata*, Leach), a mollusk of the family *Asellotes*, (Leach), resembling the sow-bug. It pierces the hardest woods with cylindrical, perfectly smooth, winding holes, 1-20th to 1-15th of an inch in diameter, and about two inches deep.** From liguorous matter having been found in its viscera some have concluded that the *limnoria* feeds on the wood, but since other mollusks of the same genus, *Pholas*, bore and destroy stone-work, the perforation may serve only for the animal's dwelling. The *limnoria* seems to prefer tender woods, but the hardest do not escape. Green-heart oak is the only known wood which is not speedily destroyed.†† At the harbour of Lowestoft, England, square 14-inch piles were, in three years, eaten down to 4 in. square.‡‡

While all agree that no preparation, if we except dead oil, has repelled the *limnoria*, an eminent English engineer has cited three cases in which that agent afforded no protection.§§

We do not find that timber impregnated with water-glass has been tested against this subtle foe. The experiment is certainly worthy of a trial.

A mechanical protection is found in thickly studded the surface of the timber with broad-headed iron nails. This method has proved successful.||| Oxidation rapidly fills the interstices between the heads, and the outside of the timber becomes coated with an impenetrable crust, so that the presence of the nails is hardly necessary.

In conclusion, we cannot but express surprise that so little is known in this country (America)

concerning preservative processes. Their employment seems to excite very little interest, and the very few works where they are being tested attract hardly any attention. Those railroads which have suspended their use assign no reasons, and those upon which the timber is injected publish no reports concerning the advantages of their particular methods. Even the National Works, upon which Kyan's process was formerly employed, have laid it aside, and now subject lumber to dampness and alternations of wetness and dryness, without any preparation beyond seasoning. When sleepers cost fifty cents and creosoting thirty cents each, it is cheaper to hire money at 7 per cent., compound interest, than to lay new sleepers at the end of seven years. Allowing any ordinary price for the removal of the old and laying down the new ties, the advantage of using Bethell's process seems evident. If some cheaper method will produce the same effects, the folly of neglecting all means seeking to increase the durability of the material is still more palpable.

H. W. LEWIS.

THE DESIGNS FOR THE LAW COURTS.

The designs have been sent in, and will be hung forthwith. To admit of certain preliminary arrangements they will not be open to view till next month; probably on Friday and Saturday, the 8th and 9th of February, for private view by members of the Government, peers, members of the House of Commons, judges of the Superior Courts, foreign ambassadors, and other distinguished persons. After the first two days the exhibition will be open for four weeks, i.e., as at present arranged, till Saturday, the 9th of March. On Mondays, Tuesdays, and Wednesdays, to the Commissioners and their officers, the legal and architectural professions, and to artists. On Thursdays, to the public—by cards obtainable at the office of the Commission. Fridays will be reserved for the special work of the Commission; and Saturdays for members of the Government and members of both Houses of Parliament.

We understand that the cost of the shed in New-square for the exhibition of the designs has been exaggerated. Including furniture and matting, it amounts to about 1,120l.

Previously to any decision on the designs, the Architectural Clerk is to examine them and report as to how far the instructions have been attended to, and on the comparative merits of the plans with reference to other matters ascertainable by calculation. In this, we believe, Mr. Geo. Pownall and Mr. John Shaw, architects, will assist.

We have received letters from the provinces begging that efforts may be made to keep open the Exhibition of the National Gallery designs till those for the Law Courts can be seen, or, at any rate, till nearer this time than the 26th inst.; now spoken of for closing it; so that architects and others from the country may be able to see both without sacrificing nearly three weeks.

DUBLIN.

A CONSIDERABLE addition has been made at 74, Grafton-street, Dublin, enclosing with the front house a court in the centre, like several of the dwellings in Paris. The arches of the windows are varied on each story, and are surmounted by hood mouldings and fascias which are continued on the front. A tank has been built of brick and cement, to hold a large quantity of water, to flush and cleanse the drains; and care has been taken to prevent damp in the foundation-walls. Mr. Oliver Healy, of Dublin, was the architect; and Mr. Peter Casserly, the contractor.

BUILDING OPERATIONS, DURHAM.

At the Quarter Sessions, held on the 2nd instant, the magistrates agreed to expend the sum of 5,000l. in remodelling the Assize Courts, from plans prepared by the county architect, Mr. William Crozier, assimilating the internal arrangements and ventilation of the courts to the Manchester Assize Courts. The county architect has the following works in course of construction, viz.:—a new men's wing, containing 126 cells, &c., at the county prison, Durham; Mr. D. S. Appleby, contractor; cost, 7,000l. At

Darlington the same contractor is building a new county police station and courts; amount of contract, 3,000l. At Castle Eden is also being built a new police station and courts, at a cost of 1,200l.; and at Ryhope and Washington villages, second-class police stations and cells, at a cost of 450l. each. Plans are also in course of preparation for two new wings to the Sedgfield Lunatic Asylum, for 320 patients, at an estimated cost of 10,000l. Mr. Crozier has charge of all these works, and has designed and carried out during the last seven years for the county upwards of 50,000l. worth of work, consisting of additions to the gaol, lunatic asylum, police stations and courts, and three large militia barracks at Hartlepool, Barnard Castle, and Durham respectively. The magistrates at their last meeting increased his salary 100l. per annum, besides presenting him with 400l. for past extra services.

THE TRADES MOVEMENT.

A SOCIETY, we hear, is in course of formation, having for its object the succour and protection of those members of the working classes who disagree with the tenets held by the trades unions. The society has already received large promises of support, and several eminent manufacturers have consented to sit upon the committee.

Leamington. — A meeting of the Master Builders' Association has been held to further consider the application of the operatives for an increase of 3s. per week in their wages, raising the amount to 30s. It was decided that the present condition of the building trade in Leamington would not justify a compliance with their request.

Liverpool. — Half the shipjoiners on board the *Great Eastern*, those employed by Messrs. Jones, Quiggin, & Co., have struck for an advance of wages from 5s. 6d. per day and 1s. a day river money, to 6s. a day and 1s. river money, as paid to the other half of the men by Messrs. W. H. Potter & Co. The men on strike are paid full wages by the society of joiners while they remain idle.

Carlisle. — The strike among the stonemasons which has been going on for so many months is nominally continued; but virtually it may be said to be at an end. The builders, while persistently refusing to accede to the regulations which the society sought to impose, as to the apprentices and other matters, have conceded the advance of wages 2s., and the local *Journal* states that all the masters have now as many men as they require. The new bank at the top of Rothergate is making much more rapid progress, there being now about a dozen masons employed upon the work, in addition to the apprentices. After they decided to give the masons an advance of 2s. a week, the masters sent word to the bricklayers that in the summer the same advance would be given to them. With this, however, the bricklayers are not, it is said, content, and they have asked for an increase of 4s. instead of the 2s. offered. — The master joiners of this city dined together at the Lion and Lamb Hotel on Wednesday evening before last.

Lancashire. — The strike of operatives in Lancashire has come to an abrupt termination, and the men, 5,000 in number at Darwen alone, who refused to proceed to work on the reduced terms, have intimated their intention to return to their employment. Similar decisions have been arrived at by the operatives in other towns where a dispute was anticipated.

DISTRIBUTION OF THE PRIZES OF THE ISLINGTON EXHIBITION.

On Saturday afternoon the ceremony of distributing the prizes won at the Metropolitan and Provincial Working Classes' Industrial Exhibition, at the Agricultural Hall, Islington, took place at Exeter Hall. Mr. G. J. Goschen, M.P., presided. A pretty pamphlet, forming a record of the exhibition from its opening to its closing, was presented to every person who attended the ceremony. The awards numbered altogether 461, of which 55 were silver medals, 187 bronze medals, and 189 certificates of honourable mention. In addition to these, which were one and all got up with taste and appropriateness, a framed view of the late Exhibition had been prepared for presentation to every one of the 1,500 exhibitors. There

* *Civil Engineer's Journal*, vol. xx., p. 16.

† *The Builder* for 1852, p. 511.

‡ *Civil Engineer's Journal*, vol. x., p. 1.

§ *Ibid.*, vol. xii., p. 382. Also *Dict. Univer. d'His. Naturel.*, tome xii.

|| *British and Foreign Medical Review*.

¶ *Civil Engineer's Journal*, vol. xii., p. 191.

||| *Dict. Univer. d'His. Naturel.*

†† *Civil Engineer's Journal*, vol. xxv., p. 206.

‡‡ *Ibid.*, vol. xvi., p. 76.

§§ *Ibid.*, vol. xiv., p. 206.

||| *Ibid.*, vol. xii., p. 382.

were, besides, the special prizes, which amounted to 57*l*.

In addition to the silver medal, the highest of the prizes, which was the sum of 10*l*., the gift of the directors of the Agricultural Hall Company, was carried off by Mr. E. A. Mayor, a letter-carrier, for the best painting in oil in the exhibition. Mr. Dockree, of the civil service, was the successful competitor for the second best oil painting, the gift of Mr. C. Comfort, director of the Agricultural Hall. Miss Alice Haselden, aged 17, in addition to the silver medal, received a prize of 6*l*., the gift of Mr. J. Harris, for the best water-colour drawing in the exhibition. In addition to silver medals two silver cups were awarded to A. M. Franklin, smith, of Bedford, for his model plough, this prize being given by the Messrs. Howard, the agricultural steam-engine manufacturers, of Bedford. A cup to Mr. W. H. Myers, printer, was for an invention in railway signals. Two bronze medals were awarded to Mr. E. J. Broughton, printer's reader of the *Bell's Life and Observer* office, for a bouquet of flowers made of wafers, and a carving in linewood. At the conclusion of the prize presentation, which occupied upwards of an hour, the framed and glazed representations of the opening ceremony were presented to the rest of the exhibitors,—1,200 or 1,400 in number, by the chairman. At the conclusion of this lengthy and tiring proceeding,

Mr. Beresford Hope addressed the assembly on the intimate connexion of labour with art. A table, he said, was in a certain sense as much connected with art as the painting of a picture. For a handicraftsman to despise art was to despise the means of making the most of the labour of his hands. There had been too much of the idea that workmanship was one thing and art another—that the workshop was the solid, practical thing, and that art was merely something pretty and beautiful—that the workmanship was the week-day clothes and that art was the Sunday. This was all a mistake—a fallacy. He contended that art meant good work, and that all good work was art.

THE ACCIDENT ON THE METROPOLITAN RAILWAY.

SIR,—In the transit and removal of heavy loads, every precaution suggested by an intelligent foresight, and tending to diminish the risk of accidents, should undoubtedly be adopted. It is deeply to be deplored that in this painful case no such foresight was exercised, and, consequently, no such precautions taken as might have averted the untoward disaster which resulted from so unfortunate a combination of circumstances. But it sometimes so falls out, that accidents and casualties will happen, in spite of all the studied plans and skilful arrangements which the mature experience of able men may devise. Unfortunately, in the case before us, even this plea cannot be urged in favour of those to whom the work of removal was intrusted, as not even the most ordinary care was taken to ward off and prevent the catastrophe which ensued, in consequence of such egregious neglect. At the same time, however, I am firmly convinced that it is quite within the range of possibility for the accident to have arisen in such a manner as, if proved, would go far to exonerate these men from the most serious charge of deliberate carelessness, and resolve it into one of want of judgment.

In your last week's impression may be found the following passage:—"It appears that no arrangement whatever existed for staying proceedings while a train was passing below, although the steam of the engine prevented the workmen from even seeing what they were about at the moment."

It is upon a careful perusal of this sentence that my opinion is based, the which I will endeavour to demonstrate as intelligibly as possible.

It appears from the evidence that it was found necessary to haul the girder one or two feet in order to bring it to its intended destination, and which might in the ordinary course of things have been done without any serious risk. Whilst this operation satisfactorily progressed the approach of a train was announced. According to superior orders signals were immediately transmitted to stop the engine. This was at once accomplished, but the immense tension on the connecting rope, generated by the traction of the engine and resistance of the load, un-

avoidably remained. Now, from this it occurs to me that the steam from the passing locomotive coming in contact with the rope, already strained to a very great degree, caused its contraction, thereby still more increasing its attractive tendency upon the girder. At the same time, the vapour of water impinging upon the latter acted as a lubricant, consequently diminishing the friction developed by the insistent pressure of the girder in question. It resulted from this aggregation of contingencies, in conjunction with the vibration caused by the moving vehicles, that the increased tension of the rope, and the decreased resistance of the girder, allured it beyond the insufficient margin allowed for safety, and caused it to cant over and topple into the cutting below, where the ill-fated train at that moment happened to be. The consideration of the fact that the girder descended after the primary portion of the train had passed, still stronger imbues my mind with the truth of the theory above enunciated; as, according to the doctrine of probabilities, there is more reason to conclude that it would have fallen either just previous to the arrival or subsequent to the departure of the line of carriages.

All the refined argument and cunning ratiocination in the world will not, however, extenuate censure of the executive for the lack of caution displayed in not employing some means to check the girder in case its progress should become too rapid, as actually occurred.

In conclusion, sir, I think you must concur with me that overhead work of this description ought not to be attempted during the regular traffic, unless, indeed, the intervals of time between the trains are rather considerable; so that no work should take place within, at least, a quarter of an hour of the arrival of each, in order that there might be ample time to give warning to the guard of the expected train in case of accident. S. W. WORSSAM, JUN.

WATER-PIPES IN HOSPITALS.

SIR,—I wish to draw the attention of builders and architects to the condition of the lead-piping in hospitals during the late cold weather.

I have just visited Yorkshire and Lancashire, where I saw some very fine recently constructed buildings. There were hardly any of them where the supply of water had not been partly interrupted. Lavatories and water-closets were in a lamentable condition for a day or two, the water being frozen up in the piping. I know quite well that the piping can and ought to be protected against the cold by covering or wrapping it up with hemp, flannel, or cloth; but could not greater care be taken of the pipes when the hospitals are constructed? The mischief done in private houses is bad enough, but in hospitals matters are worse. In those hospitals which are now in course of construction I hope better care will be taken to prevent freezing and leakage of the water-piping in cold weather. It must be simple enough to provide for it by properly placing and encasing the pipes. F. OFFERT, M.D.

THE REMOVAL OF SNOW.

As a heavy fall of snow in London streets causes not only considerable inconvenience, but serious expense and loss to the inhabitants, it is necessary that means should be provided for clearing the streets of the snow as it falls, or as soon after it has done falling as possible. This, it should be, the duty of the local Boards and vestries, in whose care the streets are placed. The plan of carting away the snow to the Thames, or elsewhere, is far too slow and too expensive; I would, therefore, with your permission, propose a different scheme, as follows:—

Let snow-shafts be formed by the sides of the main sewers, from 200 ft. to 400 ft. apart, with water-tight tanks at bottom, and overflow doors discharging into the sewers. Let also moveable horizontal gratings be placed in the shafts, and strong rough iron covers fixed flush with the streets. And near each shaft let a stand-pipe be set up, with screw nozzle, in which a length of hose, with a fan-spreader, may be screwed.

Immediately a heavy fall of snow occurs, let the officers of the Local Board and vestries collect a sufficient number of men, dust, slop, and rubbish carts, trucks and barrows, shovels and scrapers, and other appliances, and set them to

work in the chief thoroughfares; some to open the snow-shaft covers and screw on the hose; some to scrape the snow into heaps; some to shovel it into the carts, or trucks, or barrows; some to tip and shovel it down the shafts, and direct streams of water on it by means of the hose, and some to assist the discharge into and along the sewers. The snow, if only partly melted, as washed into the sewers, would soon melt there, as the temperature of the sewage and the sewer air ranges from 70 deg. to 80 deg.; and the strong currents of water in the sewers would carry it away.

It is evident that, by this method, the chief streets of traffic could be not only quickly, but economically, cleared of the snow; and, in conclusion, I would observe, that at many places the gullies themselves might be used as snow-shafts, the snow being washed down them by the hose. JOHN PHILLIPS.

SINCE the above was in type we have received a communication from Mr. George Jennings (Stangate) suggesting that for the future any snow that may impede thoroughfares should be melted in chambers formed in accessible places, and warmed by hot-water pipes or melted over gullies in central situations by jets of steam from portable engines hired for the occasion.

HABITATIONS FOR THE METROPOLITAN POOR.

SIR,—I have read with great interest a report of the deputation to Lord Derby on this subject. It appears to me that some of the difficulties of legislating on the subject would be obviated if the Bill contained a preliminary clause providing "that upon any dwelling being judicially condemned, the owner should be compelled to pull it down, and then have liberty to rebuild it, conformably to the 'Act,' or failing that, then that he should be compelled to sell the land to the local authorities, who should be authorised and compelled to buy the site, the value to be fixed by mutual agreement, or by arbitration;"—the distinction being, between buying what the landlord calls a dwelling-house, and what the judicial condemnors of it consider a vacant plot of ground,—a much more (as I conceive) equitable view of the matter. JUSTITIA.

RECORDS OF OUR BUILDINGS.

SIR,—Can there be anything more absurd and eccentric than the usual practice of hermetically sealing up written documents and coins of the realm under the foundation or corner stone of our buildings? secreting invaluable information for centuries, perhaps for ever, from the anxious inquirers that shall come after us, when a grand pile erected in this and subsequent periods, from age, may become a tottering ruin, with its walls here and there supported against the storm by the turning ivy, similar to many once noble buildings which have now almost vanished from us, and from the remains of which writers assume their date.

It seems to be very desirable and important that records should be carefully written, preserved, and handed down to the rising generation. Let them be written with an iron tool on polished granite, built on the inside of the edifice during the progress of the work, with its plan, section, and elevation laid down to scale engraved thereon, so that its history shall be read at a glance; and let those engaged in executing a noble work, in an age of advancement like the present, be it a cathedral, town-hall, mansion, or cottage, like the Assyrians of old, delineate on stone their handy works, which shall be read by all people and for all time. ONWARDS.

AN ARCHITECT'S STUDIES.

SIR,—At the last meeting of the Architectural Association, something was said of the course of study which students should pursue; several books were mentioned, the names of which I did not catch.

Many of us students have not parents who can afford to give them that long and expensive education which we should like, and perhaps ought,—to have; and we should be most thank-

THE ARCHITECTURAL ASSOCIATION.

THE usual meeting of members was held on Friday evening, the 4th inst., at the House, in Conduit-street, the president, Mr. R. W. Edis, in the chair.*

Mr. Lucy W. Ridge read a paper "On the Influence which the Architecture of the Past should have at the Present Time." Having remarked upon the persistent manner in which we constantly recur to the past for copies until, in the nineteenth century, a heathen temple (the Parthenon), no bigger than the church of St. Martin's-in-the-Fields, was still regarded as the model of art, and glanced at the works of Inigo Jones, Sir Christopher Wren, Chambers, and others, Mr. Ridge commented upon the marvellous change which the genius of Pugin had wrought in the public taste, and the impetus which he had given to Gothic art; and observed that, in his opinion, one of the great evils of the present day was, that architects looked too much to the examples of the past without reference to the materials with which they had to deal. He recommended the students of architecture to endeavour to rise above the level of mere copyists of ancient works; and, instead of going back to the remote antiquity of Greece and Rome, to study the architecture of the North-west of Europe from the eleventh to the thirteenth century. The propositions which he ventured to submit as a solution of the problem involved in the question which he had raised, were—first, that the architecture of the past ought not to influence the plan and arrangement of our buildings; secondly, that the architecture of the past ought not to influence the construction of our buildings, when inconsistent with the materials of the present; thirdly, that the architecture of the past ought not to influence the mode of executing utilitarian details so as to interfere with their usefulness; fourthly, that the architecture of all good styles should have great influence in educating the mind of the architect in outline proportion, and all the principles of design; and, fifthly, that the details of our buildings should be in accordance with the style in which the architect works, although the general inspiration be drawn from another style.

Mr. Blashill having expressed approval of much that had fallen from Mr. Ridge, remarked that he did not think blame could fairly attach to architects who might have two important works in totally different styles going on at the same time; because, although an architect might have a speciality for Classic as against Gothic, or for Gothic as against Classic, he would not be justified in refusing a commission for that one which might happen not to be his favourite study. The success of the great monuments of art bequeathed to us by our ancestors of monastic times, was no doubt, to be attributed to two causes. The first, that the monks thoroughly understood good architecture; and the second, that they were not controlled in the matter of time and expenditure by clients. The only way, in his opinion, to get a new style, would be to avoid servile copies of the past, and to take a thoroughly practical view of the work which they were actually engaged to carry out.

Mr. Phené Spiers thought that the great evils of the present day were that students of architecture did not study from old works, but from those of their masters, or of professors; that they were more inclined to design than to obtain a thorough knowledge of construction; and that they looked out too soon for remuneration for their work before they gave themselves time to study. He would be glad to see a system introduced into England similar to that which prevailed on the Continent, namely, that the student should begin by a careful examination of the best examples of the old masters. He would commence with the study of Classic architecture, so as to ascertain the principles upon which the old masters worked. After that he would begin Gothic, and take for his special study the Early English style, than which no better examples could be found than in our magnificent cathedrals. After this he would begin to design, always bearing in mind that he would have to adapt his designs to the requirements of the present day. One of the great difficulties with which the architects of the present day had to combat was involved in the matter of contracts. In olden times our great cathedrals were built by degrees. The works extended over many years,—twenty, thirty, even fifty or sixty; and the architect was thus enabled to avail himself of all the improvements which time and progress might develop. Now, however, no matter what might be the magnitude of the work, the architect was huddled down by inflexible contracts, which shut him out from those advantages which his predecessors in olden times were enabled to enjoy. As an illustration, he might state that he believed Mr. Woodward had scarcely got his new building at Oxford &c. above the ground, before he wished heartily to be able to remodel the whole of it.

* The following gentlemen were elected members of the Association: Mr. Chas. Moore, Mr. Williams, Mr. H. Jekell, Mr. Turner, Mr. Bainbridge, Mr. H. Jekiers, Mr. Seare, and Mr. Perkon.

After some discussion, in which Mr. Potter, Mr. Tarver, and other gentlemen took part, The Chairman, in putting a vote of thanks to Mr. Ridge, observed that he thought too much had been said and written about the absolute necessity of copying old examples. He saw no more reason why we should do so in respect to architecture than that we should go back to the very primitive attire of the earliest period, and take to fig-leaves and bear-skins as items of apparel. The study of the works of ancient times was valuable, no doubt, in an educational sense, but he deprecated that sort of professional instruction which led to servile copies instead of original ideas. Neither could he agree with those who held that "Gothic men" were higher in the scale of fame than "Classic men." The object of education and travel was to enlarge the mind and expand the intellect, to imbibe original inspiration, and not to copy, but to emulate the greatness of those who had gone before us. With regard to the paper read by Mr. Ridge, he considered that gentleman was entitled to credit for having grappled with a subject which other members of the Association had hesitated to undertake, even for a prize.

Books Received.

VARIORUM.

"THE Prince of the Fair Family," by Mrs. S. C. Hall, published by Chapman & Hall, is a charming quaint story, told with all the author's usual grace and purity of feeling. It will interest and delight others besides the little people to whom it is more especially addressed. The greater number of the illustrations are by the veteran Kenny Meadows, whose hand (we might say, literally, for that important member is a favourite object of illustration with him), appears throughout the book, and Mr. Walter Allen. Mr. and Mrs. E. M. Ward, and Mr. Noel Paton also co-operate effectively; and the result is a book that may be most safely recommended.—The "Emblems" of Francis Quarles gives pleasure to only a certain number of persons, but no one can dip into it without profit, and few books of its class have been more often reprinted or imitated. None of his imitators have equalled him, much less surpassed him. The new edition, published by Tegg, "Emblems Divine and Moral" is well got up, and soundly bound, and will doubtless command the same steady sale that has followed other issues of the Hieroglyphics of the Life of Man.

Miscellaneous.

RIVER STEAMERS CUTTING THROUGH SANDBANKS.—It is said that a Prussian engineer has made an invention by which steamers on rivers can cut through or cast aside sandbanks. The invention is not described; but if it does what is said, it will be very useful in many countries, especially on the Continent, where rivers navigated by steamers are frequently obstructed with sandbanks. Might not a machine for deepening rivers be constructed upon some such principle?

"THE PARLOUR STEAM-ENGINE."—The toy issued under this title by the Stereoscopic Company is calculated to be very serviceable to boys and girls, and may be made the means of conveying to them knowledge as to the rarefaction of air by heat, the pressure of air, centrifugal force, and other scientific phenomena. Moreover, it pleases while it instructs. Although from its name some may expect to find the little machine in a different shape from what it has, it is in truth a reproduction of the first known engine in which motion was produced by steam, that of Hero, invented, if we remember rightly, some 400 years before the Christian era. We do not observe that this has elsewhere been pointed out.

THE NEW OIL TRADE OF NORTH STAFFORDSHIRE.—A new and very extensive field of industry has recently been opened up in North Staffordshire, under Young's process for extracting oil from canal coal, the common shale of North Staffordshire possessing similar properties. This shale abounds in millions of tons near the North Staffordshire ironstone seams, and has hitherto been considered as worthless refuse, a premium having been frequently paid by colliery proprietors for its removal. Young's patent has expired, and nearly 100 tons of crude oil are now being produced every week within a short distance from Burslem and Tunstall, though, as compared with its future magnitude, the trade can scarcely be said to have begun. Refining works have been opened. They have been built at a cost of 12,000l., midway between the Burslem and Tunstall stations.

EFFECT OF COLD.—The Registrar General's return says,—The effects of the cold are now visible in the returns, for instead of 1,436, and 1,437 deaths, as in the two preceding weeks, there appear on the registers of last week 1,891 deaths. The change of temperature has killed about 455 people in London. Few were directly frozen to death; the majority having vital force enough to struggle against the freezing cold, but not enough to prevent them from succumbing under bronchitis and other affections.

MAKING AND TAKING.—Recently, commenting on an assertion that the iron-trade was leaving us, the *Examiner* quoted, against such a belief, a statement of facts as from the *Mining Journal*. Thereupon the *Birmingham Daily Post* remarked,—"The quotation here given as from the *Mining Journal* was taken by that paper from our own leading columns, word for word, without acknowledgment." On which, down comes the *Iron Trade Circular* with,—"The editor of the *Birmingham Daily Post* has omitted to mention that he took his facts and figures from us, and we may as well say that ours were supplied to us by the *Economist*." Something of the same kind has happened with a paragraph of our own, as to the importation of joiners' work from abroad, with which paragraph, quoted, by the way, as "from a London paper," the walls of two or three provincial towns, we are told, are now placarded.

VICTORIA STATION AND PRIMEICO RAILWAY COMPANY.—The report read at the ordinary half-yearly meeting of this company stated that the revenue account for the six months ending December 31, admits of the payment of the same dividend as that of last half-year—namely, 3½ per cent., or at the rate of 7½ per cent. per annum; and that the very large outlay recently incurred by the Brighton, Great Western, and London, Chatham, and Dover Companies, in making the new approaches to the Victoria Station, both north and south of the Thames, and in widening the bridge, and the approaching connexion of the Victoria Station with a station of the Metropolitan District Railway, are calculated to place the maximum aggregate rental of 33,125l. (which commences on and from the 1st of April next) in the highest class of freehold ground-rents. The report was adopted, and a dividend of 3½ per cent. for the half-year declared.

A ROMANCE OF THE NEW YORK SEWERS.—A strange story of "untold treasures" having been found by a young girl and two companions in the New York sewers, is related by a correspondent of an American paper. The result of a week's search is roughly estimated at 1,500,000 dollars, in realizable value, of jewelry and other treasures. "A bushel" of jewelry contained diamond rings worth some thousands of dollars each. One plain gold ring was inscribed in Dutch,—"*Peter Stuyvesant to his Wife*." Altogether, however, the story has an air of improbability about it; and if it were true, the New York sewers must be managed in a totally different way from those of London. "Miss Walker (who took the hint from an old newspaper) and her brother, who find themselves thus lifted suddenly from penury to great wealth, intend to proceed to England, where they have relatives," and where they will no doubt visit the London sewers, and report wonderful progress in the New York papers!

THE ART STUDIO OF MESSRS. RANDEL, JEWELLERS, BIRMINGHAM.—Nearly a year ago we recorded the praiseworthy example set by Messrs. Randel, goldsmiths and jewellers, Victoria-street, Birmingham, in erecting a spacious and well-appointed studio for the promotion of gratuitous art-education amongst their workmen and apprentices. The results, it appears, is a decided success. The whole scheme has been organized and superintended by Mr. J. J. Allen, sculptor, who is the designer and superintendent of art-works to the firm. Prizes, consisting of books (given by the editor of the *Art-Journal*), colour boxes, and other appropriate articles, were lately distributed to the most deserving of the pupils, whose art-works were exhibited at a meeting for the purpose, attended by a considerable number of workpeople and other invited guests, who partook of a cold collation in the studio. Mr. Randel presided, and the mayor and various other gentlemen interested in art were present. The average attendance at the school is about forty-five nightly for two nights weekly. The firm compel every apprentice to learn drawing on the work

STEAM IN VENICE.—It is proposed to organize a service of steam gondolas on the canals of Venice. The lovers of the picturesque think this a desecration, and the gondoliers are equally indignant, from less disinterested motives.

MUSEUM OF PRACTICAL GEOLOGY.—This museum has been lighted up at night, and the Lords of the Committee of Council on Education have ordered that in future the museum shall be open to the public on the evenings of Monday and Saturday in every week. The throwing open for the inspection of the working people of the metropolis of an interesting and instructive museum such as this, at the only time at their disposal, is a boon which, when properly known, will, no doubt, be extensively availed of.

COAL IN SHROPSHIRE.—The works in connexion with the sinking of a pair of shafts in the reputed dead ground at Prior's Lee, the successful issue of which has opened up a new coal-field, are now complete, the miners having reached the "cold coal," the ultimate stratum of the bed. The original estimate of the yield from this mine is fully confirmed by the working, and it is computed to contain upwards of 10,000,000 tons of coal. The shafts have been named the Granville Pits, in compliment to Earl Granville, one of the principal partners in the Lilleshall Company, who are working the mine.

DISCUSSIONS AT THE SOCIETY OF ARTS.—The council have decided to set apart the first Wednesday in each month, during the present session, for the discussion of various questions connected with Arts, Manufactures, and Commerce: these discussions may commence either with or without the reading of a paper. On the evening of Wednesday, the 6th of February, Mr. Henry Cole, C.B., will introduce the following subject:—

"On the existing legal regulations in reference to the Cab Fares in the Metropolis, and their effect in rendering the Vehicles inferior to those provided in other European Capitals and the large Municipal Towns of this Country."

THE RAILING ROUND ST. PAUL'S.—The Commissioners of Sewers have recently appointed a deputation to wait on the Dean of St. Paul's, for the purpose of endeavouring to have the railing of the churchyard set back, so as to widen the thoroughfare surrounding the cathedral, and a correspondent thinks the present a favourable time to suggest the removal of the railing altogether. He does not seem to be aware that this is a subject which has been repeatedly mooted in the *Builder* already. We would not wish the railing altogether removed, or at least the space thrown altogether open, but we think, as we have all along done, that a rearrangement should be made, and a portion of the space thrown into the roadway, where it is most needed.

GROWING COLOURED WOODS.—We hear of an invention by Mr. Hyett to make trees imbibe colour while growing. The results were exhibited lately at the *conversations* of the Cirencester Royal Agricultural College, in the form of sections and planchets of wood, stained with various hues. Metallic salts are introduced into the substance of the growing tree, apparently carried up by the sap, and forced into the fibre and cells of the stem. It is not said what metallic salts are used as dyes. The idea reminds us of some curious experiments recorded, though not the same, in the *Builder* many years since, in which dahlias were varied in colour by means of substances such as charcoal imbedded with the bulbs in the soil. We think, too, we have heard of colours being infused into dead woods under exhausted receivers.

LONDON ASSOCIATION OF FOREMEN ENGINEERS. The fourteenth annual meeting of the members of this society took place on the evening of the 5th instant, at their rooms in Doctors' Commons, City. The assembly-room, notwithstanding the exceptional inclemency of the weather on the occasion, was crowded. The sitting was devoted to the election of six or seven new members, the reception of the previous half-year's audit of accounts, the annual address of the president (Mr. Joseph Newton), the election of officers for 1867, and the completion of arrangements for the anniversary festival of the institution, appointed for the 16th of February. Mr. Newton was re-elected with acclamation. Mr. Keyte was chosen vice-president; and Messrs. Dawson, Edmonds, and Irvine, jun., committee-men. We understand that this society now numbers 160 members, and that it has a balance of 1,200l. at its bankers.

"CENTRAL COTTAGE IMPROVEMENT SOCIETY."—Competitors are complaining that the results of the competition have never been properly made known, and that they cannot get back their designs.

BRIDLINGTON HARBOUR.—A considerable improvement by the extension of the north pier has been effected in this harbour, which until recently was very unquiet in gales of wind from certain quarters of the compass. The new works have been executed from the design of Mr. John Coole, C.E.; the contractors being Messrs. Simon & Thomas Crawshaw, of Ashham Bryan, near York. In addition to the quieting effect of the new pier extension, there are 4½ ft. more water at the entrance than previously. The additional depth has been gained without any expenditure in dredging.

NORTHERN ARCHITECTURAL ASSOCIATION.—The eighth annual meeting of the Northern Architectural Association was held on Tuesday, the 8th inst., in the Old Castle, Newcastle, Mr. J. Johnston, vice-president, in the chair. Mr. M. Dunn, in the absence of the secretary, read the annual report of the committee, which stated that there had been an increase of members and associates during the year. After meeting all expenses there remained a balance in hand. The vice-president read a paper, in which he reviewed the past history of the association, its present position, and its prospects for the future.

EXPLORATIONS IN THE NORTH.—The late Mr. Rhind bequeathed 400l. to the Society of Antiquaries of Scotland, for the archaeological exploration of a rich field of antiquities in the upland districts of the counties of Caithness, Sutherland, and Ross. The secretary of the society, Mr. Stuart, has lately examined the districts, and he finds that around Wick especially there is an accumulation of important remains not to be found elsewhere. The objects referred to comprehend,—1. Picts' castles, variously called round towers or brochs; 2. Erde-houses, or weems, which at times are double; 3. Circular hut foundations, with and without an underground chamber; 4. Groups of small cairns, frequently in connexion with the hut-foundations; 5. Large cairns, long, circular, oval, and "horned," with one or more central chambers or galleries; 6. Standing-stones, single and in circle; 7. Rows of standing-stones radiating from cairns; 8. Rows of standing-stones without any apparent connexion with cairns; 9. Hill-forts of stone ramparts; 10. Hill-forts of vitrified stones; 11. Stones and boulders with cup and ring (or concentric circled?) markings. Mr. Stuart recommends a certain course to be followed in the investigation, and it is probable the Society will forthwith authorise the thorough exploration of these interesting remains.

COMMUNICATIONS BETWEEN PASSENGERS AND GUARDS.—Notwithstanding the multiplicity of plans and the fact that it is not from want of such plans that railway authorities are slow to adopt means of communication between passengers and guards, still invention is at work in devising plans; but perhaps one of the oddest is that now under notice. A number of railway directors and gentlemen connected with mechanical science have just been attending a series of experiments with it made on trains running between Victoria Station and the Crystal Palace. The apparatus is applied to a carriage, or any number of carriages, by simply drilling a hole in the roof. A tube, having a slight slit in it is then in reach of the passenger. In the slit is a pair of jaws or jaws, covered with a chemical composition of an ignitable character, but which can only be ignited by the touch of another composition having affinity to it. This second composition is to be supplied by touching the passengers' tickets with it, and the insertion of a ticket will at once explode a rocket! which can be heard from end to end of the train, and ignite coloured fire, which will flare up for several minutes on the roof of the carriage, so pointing out where the explosion came from. The passenger's ticket will show who caused the explosion. The exploded rocket, one would think, or its vacant place, rather, would also speak for itself. Of this lucifer ticket, might we suggest, that since that is the ticket for safety (?) it might contain also a life assurance security, so that should the passenger fail in securing his life, it would at least be insured for behoof of his heirs, should the rocket explosions lead to fatal accident, such as by delay of the train or otherwise.

THE ROADS.—In Kensington and Brompton, during the frosty weather, the roads have been, and are being, well sprinkled with sand early in the morning, by means of which much inconvenience and suffering have been avoided. We give credit alike to Mr. Broadbridge, the parish surveyor, and the vestry under whom he acts.

MEMORIAL OF LORD PALMERSTON.—It has been decided by the committee that the memorial of Lord Palmerston shall be the putting in of a stained-glass window at the west end of Romsay Church, and if the funds are sufficient, the east window also; and that a statue shall be erected in the Market-place of the town. The latter is to be placed entirely in the hands of the Hon. Wm. Cowper to carry out.

THE CROYDON FIRE.—It has been resolved to call a public vestry of the parishioners, in order to consult them as to what is to be done as to Croydon Church. The general opinion is, that the remaining walls and tower are so calcined by the intense heat that it will be better to clear the ground, and have an entirely new church. There can now it seems, be no doubt that the fire was occasioned by the over-heating of the Gurney stove at the south-west corner of the church.

TENDERS

For the erection of casual wards, at St. Marylebone Workhouse. Mr. H. Saxon Snell, architect. Quantities supplied:—

Ebb & Sons	£1,347 0 0
Brown	1,316 0 0
Nightingale	1,263 0 0
Hall	1,263 0 0
Kelly	1,243 0 0
Higby	1,193 0 0
Stuart & Sons	1,176 0 0
Potter	1,130 0 0
Shaw	1,117 0 0
Crabb & Vaughan	1,083 0 0

For building St. Matthew's Church, New Kent-road. Mr. Henry Jarvis, architect:—

Patman & Fotheringham	Church. Spire.
Thompson	£7,376 ... £260
Hall	6,890 ... 670
Gannon	6,370 ... 605
Dove, Brothers	6,335 ... 620
Henshaw	6,184 ... 728
Myers & Son	6,075 ... 530
Higgs	5,295 ... 618

* Mr. Higgs having made a mistake, Messrs. Myers & Son's tender being the next lowest, was accepted.

For villa residence in the Seven Sisters-road, for Mr. H. Taylor. Mr. William Smith, architect:—

Masfaians	£1,680 0 0
East	1,665 0 0
Grover	1,648 0 0
King	1,640 0 0
Johnson	1,628 0 0
Crabb & Vaughan (accepted)	1,569 0 0
Dimdale	1,540 0 0
Blanch	1,123 0 0

For alterations to 164, Fenchurch-street. Messrs. John Young & Son, architects:—

Chester	£1,365 0 0
Ashby & Horner	1,350 0 0
Henshaw	1,293 0 0
Webb & Sons	1,246 0 0

For the erection of two warehouses in Aldermanbury, for Mr. Meyerstein. Mr. T. C. Clarke, architect. Quantities by Messrs. Hovenden & Heath:—

Servic	£7,183 0 0
Hill & Sons	7,167 0 0
Macey	7,159 0 0
Patman & Fotheringham	6,739 0 0
Newman & Mann	6,371 0 0
Kuby	6,310 0 0
Henshaw	6,196 0 0
Conder	6,117 0 0
King & Sons	6,098 0 0
Browne & Robinson	5,974 0 0

For alterations and additions to premises, 85, City-road. Mr. Thomas J. Hill, architect:—

Bishop	£390 0 0
Perry	312 0 0
Anley	203 0 0
Sabey	194 0 0

For alterations and additions to No. 231, Upper-street, Islington, for Miss Tibbs. Mr. William Smith, architect. No quantities supplied:—

Waters	£755 0 0
Sabey	485 0 0
Mackintosh	350 0 0
Hunt	390 0 0
Cubitt	232 0 0

For alterations at No. 20, Kensington Park-terrace, Baywater. Messrs. Bird & Walters, architects:—

Huggitt & Russey	£301 15 0
Newman & Mann	379 0 0
Brown	350 0 0
Williams & Son	347 0 0
Kelly, Brothers	337 0 0

For alterations to the Sun Tavern, Ranelagh-street, Piccadilly. Messrs. Bird & Walters, architects:—

Henshaw	£217 0 0
Ebb & Sons	589 0 0
Williams & Son	587 0 0
Brown	549 0 0
Newman & Mann	539 0 0
McLachlan	510 0 0

The Builder.

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Life and Death at Sea.

WE lately have been the losses at sea. In a maritime country like ours there are few persons who are not at some time or other anxious for one who has business in the great waters, and to whom the voice of the storm, as heard in the driving rain and moaning wind, does not now and then bring a message of anxiety, if not of fear. The dangers of the deep are continually being brought home to us, and no one of a reflective disposition can hear the raging of the storm without bestowing a thought of pity upon those who go down to the sea in ships. Such being the case, the annual publication issued by the Board of Trade, and

known briefly as the *Wreck Register*, must, or at least, ought to, possess very general and widespread interest. We may remark that these returns refer solely to "wrecks and casualties which occurred on and near the coasts of the United Kingdom." The volume for 1865 has been recently published. Let us see what story it tells.

The number of wrecks and casualties from all causes on the coasts of the United Kingdom, and in the surrounding seas, amounted to 1,656, against 1,390 in 1864. The annual average number of casualties during the five years ending 1859 was 1,204, and during the five years ending 1864, 1,483. Referring to this alarming increase in the number of accidents, the report says, "As has been before observed, the general average number of casualties reported will probably increase from year to year, owing to the increase in the number of ships frequenting our coasts and narrow adjoining seas." This passage requires a little closer consideration. It is well known that the authorities at White-hall issue certain rules and regulations respecting the lights, chain cables, boats, &c., to be carried by vessels; and in the case of steamers, the boilers must be inspected and passed by an officer of the Board. The Board of Trade have, of course, no authority over foreign vessels,* but nearly 1,700 of the 2,012 ships in which casualties happened were British ships, and therefore subject to Government regulations. On the present occasion we have nothing whatever to say as to the value of these rules and regula-

tions, and we shall not inquire whether they were ever really instrumental in saving a single life or preventing a single "inevitable" accident. Assuming, however, that the system is a good one, it appears to follow, as a matter of course, that it must always be capable of improvement. New inventions ought to furnish new means of preventing accidents, and the experience of one year should yield some hints for the improvement and extension of the system during the next. Improvements are constantly taking place in the construction and fitting of vessels, and there appears to be no reason why the requirements of the Board should not be made stricter as science provides us with ready and simple methods of fulfilling those requirements. It is quite evident, however, from the sentence we have quoted above, that the Board is now, in its own estimation, perfect, so far as the enforcing of precautionary measures is concerned. "We can do no more," the officers seem to say; "we are quite satisfied with the results; and, as the shipping trade increases, so will the number of casualties. We cannot do any more good, and we promise not to do any less harm." Having protested against the implied opinion of the Board of Trade, that they may now fold their arms in mute admiration of the perfect machine which they have invented and set going, we return to the immediate subject of our article.

Although the number of casualties reported in the year under consideration amounts to 1,656, the number of ships lost or damaged reached 2,012, representing a registered tonnage of upwards of 377,000 tons. The number of ships exceeds the number of casualties, because in cases of collision two or more ships are involved in one casualty. The number of ships in 1865 is in excess of the number in 1864 by 271, and is larger than any number yet reported.

Passing now to a more important part of our subject, we find that no less than 698 human beings were swallowed up by the pitiless sea during the year 1865. This is in excess of the number lost in any year, excepting 1859, when the loss of the *Royal Charter* brought the return up to 884. It is very interesting to notice that the whole of the lives lost in 1865 were lost in 164 ships. Out of the 2,012 to which casualties happened, 124 were laden vessels, thirty-three were vessels in ballast, and in seven cases it is not known whether the vessels were laden or light; 131 of these ships were entirely lost, and thirty-three sustained partial damage. Of the 698 lives lost the very great number of 275 were lost in vessels that foundered, fifty-three lives were lost on board vessels in collision, and 335 in vessels stranded or cast ashore. The remaining thirty-five were lost from various causes, such as by being washed overboard in heavy seas, by explosions, &c.

We find then that the fury of the storm was only appeased by the sacrifice of 698 human beings. How far has this enormous sacrifice been necessary? Let us see to what extent the loss of the 275 lives in vessels that foundered was due to causes altogether beyond human control. We find, on reference to the return, that they were lost in forty-three vessels, but it does not state how many of these vessels were unseaworthy. It appears, however, that of the eighty-five vessels which foundered in 1865, thirty, or about one-third, are returned as unseaworthy. We may, therefore, say that one-third of the lives lost in foundered vessels are due to causes which human foresight might have avoided. It is melancholy to think of the number of lives which are annually sacrificed by the cupidity of owners, who, rather than go to the expense of keeping a vessel in proper repair, will risk the lives of the crew in a craft which is scarcely fit to make a voyage from London to Gravesend. What says the report? "In 1865 there were ninety-eight casualties to smacks and other fishing vessels. Excluding these ninety-

eight fishing vessels, it will be seen that the number of vessels employed in the regular carrying trade that have suffered from wreck or casualty during the year is 1,914. If this number be again sub-divided, it will be found that about half of it is represented by the unseaworthy, overladen, or ill-fitted vessels of the collier class, chiefly employed in the coasting trade. For the three years ending 1865 the number is more than half." There is another point which is brought out in the report, viz., the great age of some of the ships to which casualties have happened. During the last year 1 of the vessels wrecked was more than a century old; between the ages of 91 and 100 there was 1; between 81 and 90, there were 5; between 71 and 80, 9; between 61 and 70, 20; between 51 and 60, 61; between 41 and 50, 84; and between 31 and 40, 145. "The state of rottenness and want of repair of some of the ships above 20 years old often calls for remark. Even at the age of 25 to 30, it sometimes happens that a ship is so rotten as to fall to pieces immediately on touching the ground, without giving the crew the slightest chance of getting out their boats." What, then, are we to expect in the case of ships 40, 50, 60, 70, and even 100 years old? We wonder whether the owners of rotten craft like these, which ought to have been sent to the ship-breaker's yard long ago, ever think that they are in some degree responsible for the deaths of the often notoriously insufficient crews who work these vessels. If they ever think of the matter at all they probably say, "Well, we know that these vessels are rotten, we know that the crew is insufficient, but the voyage is short, and should the vessel meet with a misfortune the cargo will be covered by the insurance: and, as to the crew, they will in all probability be picked up by some life-boat or passing ship," and the conscientious shipowner sends his guinea subscription to the National Lifeboat Institution, and thinks no more about the matter. It may be that the multiplication of lifeboat stations has a tendency to make owners more careless, in the same way that founding hospitals are found to encourage immorality. Be this, however, as it may, it is most gratifying to learn, that during the year 1865, no less than 4,162 persons were rescued from a watery grave, some by lifeboats, some by rocket apparatus, some by the ships' own boats, and some by passing vessels. It is not our intention to speak here of the lifeboat crews, whose bravery is, as a rule, beyond all praise. The number of lifeboats in the United Kingdom, now amounts to 192. In 1855 it was 127.

There is some difficulty in dealing with the 53 lives lost on board vessels in collision. The number of fatal collisions was 20, whilst the total number of collisions amounted to 354. Of this number 86 are put down as being caused by bad look-out, 18 by neglecting to show proper lights, 22 by want of seamanship, 27 by general negligence and want of caution, 30 by inevitable accident, and 31 by error of judgment. We may fairly attribute the casualties classed under the first four heads to causes entirely under human control. The total amounts to 153, or about two-fifths of the whole number of collisions. We may conclude, then, that 20, or two-fifths of the 53 lives lost by collision have been needlessly sacrificed. It is to be noted that the number of lives lost in collision is, with one exception, less than the number lost from the same cause in any year since 1858.

We now come to consider the 335 lives lost in vessels stranded or cast ashore. The return does not furnish us with the materials necessary for determining with much exactness how far the loss of these lives was due to negligence. The number of casualties other than collisions and cases of foundering for the year amounts to 1,215; of which 236 were due to "inattention,

* In January, 1863, certain regulations were agreed upon by this country and France for the purpose of preventing collisions at sea. Since that date thirty-one other governments have adopted the same regulations, which are now almost universal. It does not appear, however, to have had the slightest effect either upon the absolute or relative number of collisions which take place annually. The proportion between the number of collisions and the number of casualties other than collisions was the same within a small fraction in 1865 as in 1861 and 1861, and differed but little from the proportion in 1862. The absolute number of collisions has been steadily increasing since 1861.

carelessness, or neglect," and fifty-six arose from "defects in ships or equipments,"—292 in all, or about one-fourth of the total number of casualties other than collisions and foundering. Thus upwards of eighty lives, or one-fourth of the number lost by strandings and foundering, might have been saved. The neglect of the lead in cases of doubt, as revealed in the course of the official investigations, is nothing less than scandalous. The stranding of the *Louisa* on the old Head of Kinsale is a case in point. This vessel, with a crew of eighty-one hands and 500 passengers, left Queenstown on the 12th of April, 1865, and in little more than two hours afterwards she was ashore. "In commenting upon this casualty," says the return, "which took place within two hours after leaving port, the Court were much struck with the want of common prudence on the part of the master in hauling the ship to the westward when the fog came on, as he had the whole Irish Channel open to him; nor had he any reason whatever for approaching the land, having left port so recently; and although the fog was very dense and the position of the ship uncertain, the important and necessary precaution of using the lead was entirely neglected." Fortunately no lives were lost, but the Board suspended the captain's certificate. So long as Board of Trade certificates are granted to men capable of committing such fatal errors, "the general average number of casualties will probably increase," to use the Board's self-satisfied utterance. The *Byzantium*, which was stranded on the Carrigrohane sands in February, 1865, with loss of fourteen lives, might have been saved had the lead been used. The *London*, stranded near Blackhead Quay on the 5th of April, was lost "by the gross neglect of the lead."

We must omit the consideration of the thirty-five lives which were lost from "various causes," from want of the necessary details, and we will admit, for argument's sake, that they were all preventable. We have, however, clearly shown that of 698 lives lost last year on our coast, at least 200 have been literally thrown away and wasted. The most industrious special plunderer would, we think, hardly venture to argue that a ship is lost "accidentally" when the captain neglects the ordinary rules of navigation; that a collision is "inevitable" when, as in the case of the steamer *Allegro*, the officer keeps in his course, without slackening speed, because "he supposed the schooner was taking the same course as the steamer;" or that it is a matter of surprise that ships built about the time of the battle of Trafalgar should founder by the dozen whenever a sudden storm overtakes them a few miles from land.

With reference to the geographical distribution of shipwrecks, it appears that by far the largest number of casualties happen on the east coast. Last year the numbers were: east coast, 868; west coast, 386; north coast, 187; Irish coast, 146; other localities, 69. The number of lives lost is, however, greater on the west coast. During the past year the lives lost from the Fern Islands to the North Foreland amounted to 113, whilst the Irish Sea (between St. David's Head and Carsore Point in the south, to the Mull of Cantyre in the north) swallowed up 139. The disproportion is more striking if we take the totals for the last seven years, which give 256 and 1,799 respectively. The most fatal wind is that from the south-west, and the least so that from the north. Westerly gales are far more fatal than easterly gales.

Much has been said and written lately about the advantages and disadvantages of extending Government inspection to ships' compasses, and the subject has occupied the attention of the Royal Society. It may be well to see how far the casualties of 1865 were due to compass errors. We find accordingly that six casualties, none of which, however, were attended by total loss of the vessel, were caused by "local attraction and defects of compasses," but the return does not show what loss of life took place in consequence of these accidents. Referring to the *profits* of special inquiries ordered by the Board during the year, we find that the *London*, which was stranded on a sunken rock off the island of South Uist on the 19th of June, was lost from this cause. Before leaving port, the vessel had undergone extensive repairs, water had entered her prominent masts, and the compensating magnets of the steering compass had been removed, and not replaced. The court acquitted the master of blame. In the case of the *Hector*, which was stranded off Wicklow Head on the 9th of November, the

master was acquitted. "Either the compasses were inaccurate, or the evidence of the witnesses as to the courses steered was false; and the Court being reluctant to come to the latter conclusion, and finding the evidence as to the state of the compasses conflicting, gave the master the benefit of the doubt, and returned him his certificate." The master had only joined the ship a few days, and before leaving Liverpool he wished to have her re-swung, as he had heard that the compasses were inaccurate; but on the assurance of the former master, he proceeded to sea on the assumption that they were correct. Amongst the vessels lost abroad we find that the *Portuga* steamer, which was stranded eighteen miles west of L'Agullas, on the 26th of June, 1865, was lost in consequence of a defect in the compasses. "It appears there always had been a great difference between the vessel's compasses, for which the master made allowance, but for which he could not account. The Court were of opinion that up to the time of reaching L'Agullas the deflection of the compass was constant, and that the vessel was kept on her right course, but that after passing L'Agullas some change unaccounted for occurred in the performance of the needles of the compasses, which put the master out of his reckoning. The present state of our knowledge of the variation of the compass on iron ships is most unsatisfactory, and it is doubtful whether Government control would be attended with any good results. It may be laid down as a general rule that any attempt to maintain by legal enactment a higher state of efficiency than has already been proved to be practicable is bad."

Before quitting the subject, we take the opportunity of protesting for the hundredth time against the reckless waste of precious human life which takes place every day, and which is either justified by the "pressing demands of a high state of civilization," as if civilization were a Moloch only to be appeased by the annual sacrifice of a certain number of human beings, or is put to the account of "inevitable accident." Human nature always was and always will be infirm, and wood and iron are sometimes as ineffectual as a broken reed in resisting the fury of the storm. But until we give human nature a chance, for instance, by not allowing the lookout men to remain at his post some hours after he should have been relieved, we can hardly plead negligence, and we refuse to recognise as accident when a vessel fails to ride out a gale with a cable notoriously weak and in bad condition. Viewed even in the abstract, the preservation of human life is a sacred duty with all. It is not that the life of a particular individual is of apparently little or no value either to himself, to his own circle, or to the community at large that it is not precious. It is not that the life of a man who is poor, insignificant, and wretched is of any less value in the abstract than that of one who is rich, famous, and happy. It is still a life—something which ingenuity cannot create and wealth cannot buy. Property may as a rule be replaced—not so human life. The waste of material possessions is reprehensible, but who shall estimate the sin of needlessly sacrificing human life?

DORÉ'S PARADISE LOST.*

"ANS LONGA" said the alchemist, "VITA BREVIS." Yet, wide as is the domain of art, it has its definite and natural limits, and no artist can attain the highest degree of excellence who is not aware, either by theory or by instinct, both of the nature of those lines of demarcation, and of their relation to his own genius, his own skill, and his own material and method of expression. With this still in mind, the true artist is never wholly content. Let his progress be as rapid as has been that of any great master before him, the outward expression will never adequately convey the full force of the inspiring idea. At times we may recognise the intellectual presence of an artistic spirit in one to whom deficient education or even niggard nature has almost entirely denied the faculty of expression. It is impossible to look at the works of Haydon without a saddening impression of this kind, an impression, moreover, that must have been but too keenly experienced by that unfortunate limner himself. At the other extreme of the scale may be ranked such a master of expression

as Titian, in a comparison between whose earlier and later productions we may trace the mode in which minute and conscientious attention to detail has educated the hand until it seemed able to counterfeit life almost without the mechanical intervention of drawing—to throw on canvas the thoughts of the artist, or the likeness of his subject, by means that can neither be copied nor altogether comprehended. In some of the later sketches of Gainsborough this marvellous power is fully evinced. One may be particularized as an example in which a donkey seems all but alive, although, on a close inspection, you can define neither the eye nor the ear. In the gradual change of the style of Turner, after the culmination of his powers we trace something more than the carelessness of conscious power, we detect the growing imperfection of the artist's eyesight. Some of these latest of his productions, which look at first mere unintelligible puzzles, become almost outstanding nature if gazed at through nearly closed eyes.

Of the three chief forms under which art appeals to the imagination, that which forms the province of the sculptor is by far the most narrow. The æsthetic limit of delicacy of detail in marble is almost as confined as is the mechanical limit. The architect may fret his tracery into lace work, and the only check upon the exuberance of his fancy, or the delicacy of his detail, is to be found in the texture of the stone which he employs; but if the sculptor force his work to smelt of the chisel and the file, if he obtrude upon the sense any *tour de force*, the impression produced is rather that of wonder than of admiration. Take, for instance, that highly elaborate statue in the San Severino chapel, at Naples—the man in the net—its equally finished veiled companion. No fault can be found in the detail. The anatomy is perfect. The net might have been taken from a fishing-boat in the bay, and only petrified after being entwined around the limbs of a finished statue, or of a man turned to stone. And yet the impression produced on the mind, if compared to that left by the bronze Mercury in the Museo Borbonico, is like the recollection of a visit to Madame Tussaud's museum, rather than of one to the Elgin marbles. Again, the subjects fit for sculpture in relief may be unfitted for statuary. Few figures are more admirable than the "Evening" of Thorwaldsen, but that great artist was instinctively aware that his art could embody that poetic idea only in bas-relief. The great anatomical difficulty of adding a third pair of limbs to that vertebrate skeleton of which alone we know the homology, can only be evaded—it cannot be mastered, and the hint which is given by the prophet who saw in vision winged intelligences, and which seems to be consonant with that singular osteological provision which has given to the double shaft to the extremity of each vertebrate limb, has never yet been taken by the artist.

Again, the sculptor, more than any one, suffers from the restriction and from the changes of fashion. It was long before the artists of Greece dared represent the nude form, and the habits and temper of a people who dwelt in a climate where clothing is at times an incumbrance, and whose chief national solemnities included the contests of the Palæstra, had to be duly respected by the sculptors, no less than by the philosophers of Athens. The nude, when once arrived at, might be thought to be beyond the pale of the caprices of fashion. Yet it seems, even to us, incongruous to find Roman emperors represented by pure heroic statues. It would be intolerable to see our own kings or captains so represented. The sculptor, then, is driven either to an adoption of the costume of his time which in a couple of generations seems to be grotesque, or, as we call it, old-fashioned, or he is forced to adopt a sort of conventionalized drapery that is destitute alike of truth and of meaning, that is a sacrifice to a confused idea of decency and of experience, and that would have been well avoided even by the earlier contrivances of terminal figures, or of partially unwrought forms. In the first instance, where, from a longer lapse of time, the costume ceases to be old-fashioned by becoming antique, the work of the artist who is true to the costume of the day will regain or exceed its original value—the work of the conventionalizer will be despised.

No more illustrious instance can be cited of the struggle of genius with this great difficulty in a branch of art that forbids the use of what is vague and undefined, than is presented in the works of Ronbilio, the artist whom Lord Chesterfield called a sculptor among stone-cutters.

* Milton's "Paradise Lost," illustrated by Gustave Doré, 2 vols., with notes and a Life of Milton, by Rev. Vaughan, D.D. London: Cassell, Petter, & Galpin, 1866.

No sculptor, of any age, appears to have exercised more perfect, if so perfect, command over marble. Of the life-like expression that he could communicate to countenance and to form, as in the head of Sir Isaac Newton in the ante-chapel of Trinity; the hand and arm of Mrs. Nightingale; the attitude of the Argyll "Eloquence," the statue which Canova pronounced to be the finest in England, there has never been but one opinion expressed by any competent critic. In the drapery of his figures there is equal command of the chisel—equal truth, to nature,—patience without any parallel; but the very truth to the nature of the last century is unfavourable to a full appreciation of many works of this sculptor in our own.

It has been the fashion for some persons, admirers of a meagre quasi-classic elegance, or of a servile portraiture that could be equalled or exceeded by mere mechanical means, to speak of the works of Roubiliac as being inconsistent with their own more excellent taste, because of their allegorical nature. A sneer at the terrible "Death" of Roubiliac is consistent with the taste of an age in which the progress of sculpture is represented by that of the Nelson Column, and its purity and dignity by the forms of Wellington on the archway, and of George IV. in Trafalgar-square. It is true that in the groups that adorn the nave and transepts of Westminster we see the same habit of thought and motive of taste that gave us the stately verse of Pope or the nervous vigour of Johnson; but the word "allegoric" may be used as a reproach to Phidias as truly as to Roubiliac. The Minerva of the Parthenon is as allegoric a subject as the Minerva of the Argyll monument. The "Eloquence" that stands beside her is as ideal as the antique and not more beautiful pleading figure in the Louvre. The moment she departs from pure portraiture, Sculpture can only produce symbolic figures, and in the choice between those afforded by the Parthenon, and those to be copied from the Misaal, the real artist will feel that he has but little room to hesitate. Fame, Love, Death, from the chisel and burin of the sculptors and gem-cutters of the age of Praxiteles and of Pyrgoteles are members of the same Homeric, Dantesque, or Miltonic families that contain the Death, the Time, the Fates of the great Frenchman. The Apollo Belvidere is as true to the heroic costume of the Olympic games as is the Newton of Cambridge to that of the fellow students of the great philosopher.

The artist who covers plain surface with his productions, whether of brush, of chalk, or of pencil, has a far wider field and more unlimited range than the sculptor. He can, if a master of his craft, leave that which he dares not too minutely define in almost as much uncertainty as can the poet. But the limit of the painter lies in another direction. The artist who represents form by the chisel appeals to the same sense of beauty in whatever age he labours. He is impeded only by that which conceals his outlines, and he will ever be admired by those in whom the same blood and race produce the same appreciation of beauty. The Greek Venus will always stir the pulse of the European. The Egyptian kings and gods shed a solemn awe into the minds of men of like blood with themselves. But in the wide field over which the draughtsman revels we find the too opposite and contemporary principles of Gothic and of Latin art. There is a marked opposition between the schools—an inability of mutual comprehension. The Italian artists, of whom, in this respect, Raffaello may be taken as the loftiest type, worship beauty and idealise nature in the effort to render human beauty more divine. The imagination of the Gothic artist, when once he departs from exactitude, turns to the grotesque and the diabolic. Beauty with him is realistic, the portraiture of modest and true maiden, of comely youth, or stalwart man; he does not elongate the limbs, and diminish the head, contract the mouth, and lower the brow. When he is anything but truthful, he becomes either unmeaning or quaint and grim. In the Dutch painters and Flemish artists we find the realism of the Gothic school most fully displayed; in the portly beauties of Rubens, in the clumsy forms that are invested with the marvellous light and shade of Rembrandt. The imaginative element, which peopled the black forests and giant mountains with gnomes, and trolls, and elves, we find in such men as Albert Durer or Retzsch. It may be true that the Virgin Mother of Bethlehem, if we recall her blood, her country, and her age, is not more truthfully represented by the Sistine Madonna than by the hard-

featured vrows of Durer. But the poetic, superhuman purity of the most prominent object of Italian worship is embodied in the divine conception of the Italian painter. The Gothic artist, son of the race who in the time of Tacitus owned *simulacra nulla*, can only converse with the grotesque when he leaves the region of the real. Let the Italian attempt the grotesque and he produces only the disgusting. The political caricatures attempted by the new-born press of Italy since 1860 have proved most contemptible failures.

Of the two great opposing schools of art there can be no question as to which has the right to claim the gifted illustrator of the *Contes Drolatiques*. There is, no doubt, a classical school in France, of which it is not here needful to speak, and that the less so since neither in poetry nor in painting, neither in the tragedies of Racine nor in the pictures of David, does it commend itself to our insular taste. But there is also a widely different class of art, which is characterized by all the pointed wit, and by much of that dramatic action which we uncivilly call the grimace, of our politer neighbours. Its object is to excite a smile, and very often the smile is of that bitter kind that we term sardonic. A great master of this pictorial form of satire has just laid down his pencil; a satirist who was to Paris what our own lamented Leech was to London, save that where *Punch* chastised with whips, Gavarni chastised with scorpions. The field of an artist of this nature is very closely limited, and perhaps the more perfect is his command of his peculiar class of subject the more restricted is the range of his powers. The "*Enfants terribles*" of Paul Chevalier would have been impossible of depiction to Leech; the Frenchmen of the latter were not the *gamins* nor the *lorettes* of Paris, the longgers of the Boulevards, nor the bearded lions of the *Pays Latin*, but the vagrant Gaul, sea-sick, *égaré*, and uncomfortable, as we meet him in steamers or see him wander forth in search of "Leester-squarry"—the foreigner who eats cold crumpets at the pastry-cook's,—the Parisian as he is not at home. Gavarni, on the other hand, when that artist visited London, not only failed to catch the idea of the Englishman, but is said to have been actually spoiled by our gloomy climate for the use of his native pencil. With all the fire, and with more than the power of Gavarni, Gustave Doré has inscribed his name in the admirable illustrations of the *Contes Drolatiques*, as a realist rather than an idealist, a Gothic rather than a Latin artist,—a lover of force, of truth, and of humour, rather than a worshipper of beauty, if we except the beauty of landscape.

In the whole range of literature, it would be hard to produce a work more incongruous to the genius of such a designer than the "Paradise Lost." A great artist,—and Doré is a great artist, unrivalled in fecundity, unsurpassed in power and truthfulness of drawing, mastering the difficulties of torsion and foreshortening with a touch that recalls that of the great Florentine, massing light and shade with a brush dipped in the gloom and glow of Rembrandt, depicting animal life, up to a certain point, as faithfully as Landseer or Rosa Bonheur, and possessing an acquaintance with the manner in which the direction and massing of lines give at will, either height, or breadth, or distance, which seems to be peculiarly his own,—such an artist may say, *Nihil humanum a me alienum puto*. Who shall forbid such a one to enter into Eden, the garden of God? The attempt we cannot lament; of the success we must speak with high, if not with unrestricted admiration. Doré has achieved much, but he has not achieved a miracle. It is not for the artist who could paint the very knight that Cervantes drew to him the chaste matronhood of Eve, or the proud though fallen majesty of Satan.

To realise the scenery of the "Paradise Lost," we must remember who and what was its author. An English puritan, with the education of a classical scholar, whose slowly maturing genius had been ripened by the bright skies and lovely scenery of Italy, and whose bardic talent was so fired by his religious sentiment that he failed to distinguish, in his verse at least, between the poetic and the prophetic inspiration. A puritan who would love to linger in the dim religious light of the cathedrals built by his Catholic ancestors. An Englishman who read and who wrote, Greek, Latin, Italian, both in prose and in poetry, to whom Homer, Dante, Virgil, were familiar friends, a man of earnest thought and ardent action, of personal beauty as remarkable as his personal purity was unblemished; and

who, looking forth from the early darkness which he shared with "blind Tityrus and blind Meonides, and Tiresias and Phœbus, prophets old," saw an Eden peopled by such glorious forms as have appeared to no mortal vision since the ladder was beheld by the Syrian patriarch that reached from earth to heaven. Such was the man to whom the English poets are indebted, if we may not say for their theology, yet at all events for that organised and detailed interpretation with which they have been wont unconsciously to overlay the simple grandeur of the Hebrew Scriptures. That the Paradise of Milton is not the Eden of the Pentateuch, is admitted by those admirers of our great poet who tell us that he drew his ideas from the whole of the Bible, or, in other words, that wherever a beautiful idea could be culled from the language of sacred allegory, or of prophecy, or of comfort, he repeated it in his melodious diction, and applied it to the scenery of his divine drama. Nor has the price been light that our days have seen paid for yielding to the seduction of Milton. As science has deciphered the stony records of the past,—as we have slowly learned that many of the things long most sorely believed among us, are inconsistent with the certain record that God has left of his works,—the creed which rested mainly upon imagination has been rudely shocked, and the pupil has echoed the accusation that Geology contradicted Moses,—when it only contradicted Milton.

Between the genius of such a poet as Milton, and the genius of such an artist as Doré, no very lively sympathy can exist. That M. Doré should have attempted the illustration of "Paradise Lost" speaks much for his courage. It speaks yet more for his genius that we should have to speak of the work as a qualified success, and not as an unqualified failure. The splendid volume which has been published simultaneously in London and in New York is one of the noblest that has issued from the press. A picturesque life of Milton, from the veteran pen of Dr. R. Vaughan, is followed by a brief introduction to the poem, written in a fair and moderate spirit. The only fault to be found with the letter-press is the frequent deforming of the page by notes, as to which it is difficult to conceive what class of readers they are intended to benefit. It irritates the eye to be attracted from the even flow of the metre of Milton to receive the intelligence that "grand parents" means "first or great parents;" that "witnessed" means "expressed;" that "suffice" means to "satisfy." Such comments are rendered the more excusable by the great beauty of the page, and the injury which it suffers from the small type of the impertinent and idle comments. There is no list of plates,—an omission the more to be lamented as the order of their insertion is not that of the numbering engraved on their margins; so that it is only by counting them one by one, and by assuming that the copy consulted contains all, that we arrive at the number of fifty. Of these fifty plates we have a few words to say, regarding them as naturally consisting of six several groups.

The drama of "Paradise Lost" is mainly divided into the two distinct series of human and superhuman action. To the latter class of scenes M. Doré has devoted more than half of his designs, no less than twenty plates giving the fall, the struggles, and the councils of the evil angels, and five being devoted to the denizens of Heaven. A difficulty of great magnitude awaits the artist at the very threshold of his task. We can present to the imagination flying anthropoid forms under one of three possible suppositions. We may conceive the human body to be raised by the direct exertion of some occult spiritual power, such as is attributed by the Roman Church to the ecstasies of her saints, and is represented by the great Italian masters in the Apotheosis of the Virgin, or the rapture of St. Paul. Such, too, were the classic representations of the gods, whether arriving, like Iris, with a message from Olympus, or fading from view like the Venus of Virgil from the side of *Æneas*. The classic artists never gave pinions as instruments by means of which celestial beings passed from earth to heaven. Wings with Phidias and his contemporaries were symbols alone, given to Victory and to Love, indicating in *Psyché* the resurrection of the soul by the allusion to the butterfly, bound on the talaria, the caduceus, and the petasus of Mercury, and shading the madness of Medusa; but in none of these instances are they presented to the eye as the mechanical instruments of flight. Christian art, improving after its fashion

on the men in white garments seen by the apostles, and on the earlier messengers from heaven, whose nature was recognised only on their departure, peopled the sky with repetitions of the classic victory. The artist who follows in this fantastic course has to contend with the impossible. The more profound his knowledge of anatomy, and his sense of weight and of poise, the more impossible is it for him to satisfy himself with the delineation of figures supported and moving in the air by the mechanical agency of wings. His angels writhe, and flap, and flounder,—but fly they do not. The wings are inadequate to the weight of the figures, the positions assumed are not those which are consistent with their flight; and yet the simple idea of the ancients, the wingless volitional flight of which we are most of us conscious in dreams, is forbidden by the introduction of these unmanageable pinions. It is true that a third method may be drawn by fancy from the analogy of nature. If we suppose the angelic forms to be destitute of gravity, or, rather, to possess the specific gravity of the surrounding atmosphere, we may consistently regard them as hovering around, and we may then imagine the wing to be employed, not as that of a bird to sustain weight, but as the fin of a fish to give impulse, and the difficulties of proportion and of position will then no longer exist. But in this case the artist must be able at the same time to present to the mind the ethereal nature of his celestial subjects, whether delineated by such lines of light as Doré has occasionally and very beautifully employed, or indicated by some effect of transparency or of pious and aerial structure which destroys the sense of weight. Such an effect, to some extent, has been attained in the outlines of Retzsch. But the very accuracy of the drawing of Doré is opposed to this mode of eluding the difficulty, and the eye accustomed to the requirements of physiology and to the observance of the laws of dynamics will, for the most part, wander ill content through the winged hosts that soar or that struggle on his pages. The happiest exception to this criticism is to be found in the group of angels circling in chorus of praise. In this plate the aerial poise of the figures is most masterly, and yet it will be observed that the most perfectly floating figure is one without wings. The effect is no doubt heightened by the absence of any ground-line. There is not, however, a single beautiful face in the group, and the two undigested figures in the centre will not find favour with many English readers of Milton. Again, in the flight of Ithuriel and Zephon round the Garden, we have eagerly-moving, well-poised figures, the sense of mechanical weight being relieved by a delicacy in the treatment of form and of drapery that suggests an ethereal nature in harmony with the posture of the angelic guards. The direction of the main lines of the figures in this plate is signally skilful and happy. We cannot say as much for that which has been selected by the publishers as the sample to adorn the prospectus, the Descent of Satan towards our world. The body of the fiend is palpable and material; indeed it seems as if the artist had purposely sacrificed the aerial lightness of the figure for the better intimation of his moral character. For the same reason, we presume, his attributes are gradually changed; the feathered pinions degenerate into bat-like wings, the feet turn into hoofs, horns appear in the later scenes, and the armour and clothing of the Archangel is gradually laid aside, so that in the most carefully-drawn of the representations of Satan, in which he sits contemplating the Serpent asleep, the highly-finished figure is perfectly nude. In the flight towards earth, the apparent weight of the body is such as altogether to overpower the foreshortened wings, and the effect of the figure, carefully and accurately drawn, is that of a tumbler, the backward movement of the foot rendering the unpleasant conclusion irresistible. In this plate, moreover, is to be noticed an oversight most rare in the works of Doré. The small size of the globe of earth is, of course, intended to denote its distance from the fiend, and the effort which the observer has to make, is to realise its position as a planetary body, delineated as we sometimes see the dark side of the new moon by earth shine. But this illusion is dispelled by the shadow which a cloud, so near to the eye that we detect its structure, casts on the very body of the planet, thus entirely destroying the sense of distance.

More imaginative, but, we think, less successful than the angels, are the marine monsters evoked from the abyss by the wand of the artist.

The revelations of paleontology might be studied with profit by M. Doré, with benefit to his own future works, and with great benefit to the geologist, who might hope for a better rendering of the forms of those extinct monsters, of the anatomy of which so much more is becoming known than is at present to be learned from any attempted restorations. In the work before us, the Leviathan, though wonderful in its rendering of the idea of length, is neither a dragon nor a fish, but a gigantic Proteus or Syren. Its head is decidedly that of one of the batrachian family, and the position of the second claw renders the succeeding length of tail homologically impossible. Of the dragons that fill the hall of Pandemonium, we can only say that they are diabolic, as no doubt they were intended to be.

In the third group of plates, those presenting single figures, or groups of two or three carefully elaborated forms, we must note the draped sworded figure in the group of Sin and Death, as meriting the appellation of sublime. Death, we cannot doubt, is the subject; but if so, the companion figure by no means will answer for the representative of Sin. The first plate, where the fallen archangel uprears himself from the gulf, gives one of the finest single figures in the book; but here, again, the recumbent figure bears so close a resemblance to the succeeding representations of Satan, that we are in doubt as to the meaning of the artist. In the clambering of the fiend over the wild and fearful rocks of another plate, we again are made to feel that a figure armed with such wings could not have been so painfully dependent on his hands and feet. The most carefully finished of all this series of plates is the one to which we have before referred, of Satan seated and contemplating the Serpent. The figure is superb; but the head, though a fair representation of the monkish Satan, falls far below the dignity of the Archangel of Milton.

Apart, in their idea and composition, from the other groups of designs are the three episodic plates of the building of the Ark, the Deluge, and the Descent of Moses from Sinai. The first of these gives one of the striking contrasts of light and of shade so characteristic of this remarkable master; although the size of the vessel, of which the ribs stand out black against the sky, is but that of an ordinary bark. The patriarchal figure with the frame-saw is evidently unaccustomed to the use of that implement. The Deluge recalls the plague of darkness in Egypt. The figure of Moses, though small, is fine and dignified.

In approaching that division of the designs in which the chief human interest of the work centres, we desire to keep as free as possible from any disposition to carp or to cavil at the works of a great artist, the feeblest of which possess much to excite respect and admiration. Yet it is impossible not to feel that the very truth and accuracy with which M. Doré represents nature as he sees it, has excluded him from the Eden of Milton. In almost every instance in which he has drawn the inhabitants of the fairy scenes which he conjures up, we feel that their eyes have been opened. There is a sense of something slightly uncomfortable or improper clinging to the figures—they are not unclothed, but stripped. The feet, too, of Eve, have evidently not only been shod, but seem never to have been otherwise than well and luxuriously shod,—they are not the feet of a woman who walks barefoot. The attitudes of Adam, true as is the drawing, are those of a model. There is one perfectly unconscious Eve,—the one asleep; but the figure, though an admirable representation of a sleeping woman, is not that of a beautiful woman, nor of one whose attitudes are instinctively graceful. The face never is beautiful. In the scene in which the pair are listening to the recital of the angel, that of Eve is from a fourth to a fifth larger than that of Adam. Had M. Doré filled his memory with glimpses of the unclothed tribes of Africa, with the dances and the bathing, not of negroes, but of the well-formed races that resemble animated bronze, and that regard clothing as an impertinence; had he even lingered by the side of the Mediterranean during those hot months that drive strangers to the north, and natives to the sea, his truthful pencil would have limned noble, free, unconscious forms, clothed only in their native grace, and thinking no more of drapery, or of its absence, than do the antelopes or the swans.

Among these groups it is a pleasure to dwell on one that affords room for unrestricted ad-

miration,—that in which the approach of the angel through a glade, throwing the glances of his own light on the seated figure of Eve, unites the charm of landscape, of figures, and of that effect of light and shade in which Lord so eminently excels.

We have reserved the landscape for the last. Although not equal to the wonderful tropical scenery of the Atala of the same artist, they are generally charming. The separation of the waters in the second day of creation is the finest representation of a chaotic scene with which we have ever met. The river pouring into Paradise is a study, and a marvel of rush and movement. The evening of the sixth day, although it suffers from the fidelity of the artist to that description of the poet which cannot be graphically represented without exciting a feeling of incongruity, is another scene of great beauty; and the two recumbent elephants, in especial, are wonders of animal life. Above all, the representation of the fifth day, the sharp lines of the engraving, and yet the effect of river mist and the aerial perspective which they afford, the delicacy of the plumage and the grace and truth of the forms of the birds, the harmony of the rustic landscape, present a scene in which we find no element of discord or room for hesitating admiration. Nor must we omit to mention the wonderful train of angels descending after the fall, although the human figures in the scene are disagreeable; the departure of the angel into heaven, where the fading form of light is watched from the bower of Adam; or the steady, evil, terrible progress of the Serpent towards his unconscious victim. In these eight plates alone there is enough food for admiration to render the volume worth the purchase of those who can afford the price.

We would offer one word of suggestion to the gifted artist, and to his enterprising publishers. For the prolific pencil of M. Doré we can only express two wishes; one, that it should ever and anon be dipped into fresh scenes of living nature; that the artist seek, at times, repose from his labours in travel, especially in eastern or in southern travel; and secondly, that it should be employed on subjects of a nature germane to the genius of its master. There are two English poets who come much more naturally under this description than does Milton. The illustrations that Doré could give us of the "Faery Queen" might combine all the excellences of his best works. Satyr would peep through the ivy, and the quaint tilting armour of the fifteenth century would gleam on the magic page. And for a Christmas book for 1867, leaving aside the historic plays, which the patriotism of a Frenchman would forbid him to illustrate to our satisfaction; avoiding Elstest, so eminently English; if we turn to the scene in which Shakespeare gave the reins to his imagination, we shall have all that the artist needs. No work that ever issued from the press ought to exceed the beauty of the "Midsummer Night's Dream," illustrated by Gustave Doré.

THE DESIGNS FOR THE NEW NATIONAL GALLERY.*

In our last number we described the several designs of two of the competitors, for the enlargement or reconstruction of the National Gallery, and for a building nearly or entirely new; and we noticed the design for the enlargement, by a third competitor, Mr. Street; whose views as to lighting, principles to be observed in planning, and style or decorative character, we adverted to. We have now to describe the design for a new building by this last-named competitor.

As Mr. Street does not deal with the site of the barracks, we shall be spared trouble in description. On the ground now occupied by the work-house his plan shows an open court; which, as may be understood, is not rectangular. The entrances to the building are, advisedly, two only; and they are placed, one, as directed, in the centre of the chief front, and the other at the north-east angle of the ground. The chief features of the front towards the Square are a lofty dome, in the middle of the range of building, and an advanced porch,—the latter, from its doorway and other features, very ecclesiastic in character. This porch is tripartite on the ground, and in arrangement of its roofing. It is flanked by circular features of the plan, which are dome-capped; and the general parapet would

* See pp. 23 and 40, ante.

stop upon the curve, in the case of each of these small domes, in an unsightly manner: had the drawing been correct, this would have been observed. From the porch, the entrance leads into a groined hall under the large dome. The floor here is 6 ft. above the pavement outside. Opposite the entrance, is a doorway from the hall; whilst flanking this doorway are the commencements of two flights of stairs which afterwards run parallel with the transverse axis of the building, and lead to the floor above. There is a considerable slope upwards from Trafalgar-square to Hemming's-row; and instead of getting all his steps in the front, Mr. Street raises the floor-line of the portion of the building on the new ground, and places steps to the doorway from the hall. The several features of the hall are shown in one of the effective views that Mr. Street knows how to make. Right and left of the hall are the galleries for the drawings. The ground-floor, including the rooms round the quadrangle, according to Mr. Street, should provide also for the National Portrait Gallery, for engravings, and perhaps for an art-library; and we hope that the two latter requisites in a National Gallery will not be omitted in the building that is to be built. The wing to the west of the hall contains the rooms of the keeper's residence, and others. These are arranged in two floors; and the division is marked externally by a transom of tracery, which is repeated in the other windows of the front. The external decorative character of the wings is produced chiefly by a range of arches. The arches spring from columns; they carry gables or canopies; the columns carry tabernacles; and the arches, or bays, enclose besides the windows, traceries, to which we have alluded, and which are coupled, certain openings, apparently not to be glazed, that would light a corridor which is external to the line of galleries of the first floor. These corridors, with others, are intended to assist the free circulation of crowds; and this point seems to have been well studied by Mr. Street. His Trafalgar-square front, however, is anything but satisfactory: indeed, it is open to some of the gravest charges that the Gothicists have brought against Classicists. It reminds one of a church that has lost an aisle, where piers and arches have been filled in with new walling and windows. The portion of the front that is most satisfactory is the dome, with its octagonal tambour decorated in a manner that recalls Pisan models, and with a clever setting of the octagon upon the square of support, aided by pinnacles at the four angles. Before leaving this front, let us say that Mr. Street would introduce a flight of steps in the middle of the terrace of the Square. He advisedly dispenses with railing like that enclosing the front at present. We have no space to describe the end- and rear-fronts; though these contain parts that are sufficiently picturesque. Amongst them is a feature that is placed in a re-entering angle, near to where the raking line of St. Martin's place and the line of the main frontage meet. Another feature forms the north-east angle of the whole building, where the secondary entrance is: here the roof is carried up; the staircase is reflected in the stepped arrangement of the windows; and there is a cluster of tabernacles, or niches and sculpture, on the angle. In the east front there are arches, but somewhat different to those of the chief front. All the galleries of the ground-floor are side-lighted; but the disadvantages, comparatively, of the system, are sought to be overcome by giving great height to the rooms. This would increase the number of steps; but Mr. Street shows that his design has not more steps to the principal floor-level than there are in the cases of the Dresden and the two Munich galleries. On the principal floor, the galleries occupy the four sides of the quadrangle (or including the galleries in the eastern half of the main front) and the western half of the front. The 50 ft. galleries are top-lighted; and, in the main front, the light to these galleries, by an arrangement of the roof, not appearing towards Trafalgar-square, is taken from the north. A double skylight is rightly deemed essential. Alongside of the large galleries, in most cases, is a range of galleries for the cabinet-pictures; and these latter galleries, which are side-lighted, are placed in two stories, that is, two in the height of one story of the large gallery. The opportunity for making this economic arrangement is certainly an argument for the side-lighting system, albeit not conclusive. The galleries for cabinet-pictures are divided into

compartments by screens, which are 15 ft. in height.

Mr. Street's pamphlet testifies to attention that he has given to the subject of picture-galleries, aided by examination of such galleries as there are at Dresden, Berlin, and Munich. Besides general features, he has attended to details, as the provision of a lift for pictures, of closets in the walls below the pictures, and of receptacles in connexion with dust-shoots, for the sweepings of the floors. As to the 50 ft. width, prescribed, he, in common with so many others, thinks it excessive. He would have no gallery more than 40 ft. to 45 ft.: he points out that the Dresden Gallery is only 31 ft., and the Pinakothek at Munich about 38 ft.; and he justly says that the increase of height in top-lighted galleries, operates not for the advantage of the lighting, but as a temptation to hang pictures where their finer qualities cannot be seen. He differs from several of the competitors in one respect: he provides no sculpture-gallery. He regrets the omission; but he thinks, were sculpture provided for, that sculpture and paintings should not be brought close together: according to him, the effect "is generally found to be conflicting." Comparing his provision of space for paintings with that in other galleries, he gives some useful particulars of the galleries at Dresden, Munich, and Berlin, from his measurements; though we see that his dimensions are only those of floor-space. The Dresden Gallery he considers the best of the number,—that is, four, counting two at Munich. At Dresden, the gallery-floor contains 24,700 ft. The ground-floor is appropriated to engravings and casts. Of the floor, or floors, alone appropriated to paintings, 8,700 ft. are top-lighted, 8,000 ft. are side-lighted, and 8,000 ft. in the upper cabinets are top-lighted for the most part. None of the galleries are more than 46 ft. 6 in. in length by 31 ft. 2 in. in width; whilst the cabinets are generally each 14 ft. 6 in. by 16 ft. The Pinakothek Gallery at Munich is badly lighted: the cove is too large, and the skylight too small; whilst, as there is no second skylight, blinds are necessary to exclude the sun; but which then exclude light. The entrance at the end of the gallery, instead of in the middle, is said to be the cause of unnecessary traffic through the rooms at Munich; and the cabinets, 12 ft. 6 in. by 17 ft. 6 in., and 12 ft. in height, seem to be too small and too low. The Berlin Gallery, of recent erection, Mr. Street supposes to be the worst contrived in Europe. As to the Louvre, he mentions Sir Charles Barry's estimate, 62,000 ft., and that given in the Summary at the end of the Appendix to the Report of the National Gallery Site Commission (1857), which was 80,000 ft.; but he is not disposed to place any reliance on the dimensions in the Summary. The area of the exhibition-rooms in the present National Gallery, he gives as 9,734 ft., and that in the Royal Academy as 7,462 ft.; which would make a total of 17,196 ft. The area provided in Mr. Street's design, of course excluding corridors, keeper's residence, offices, and the like, would be:—

	Sq. Ft.	Sq. Ft.
On the Gallery-floor:—		
Principal Picture-galleries	38,839	
Cabinets on the gallery-floor	5,110	
Do. on floor above the gallery-floor	8,934	
Total		50,203
On the Ground-floor:—		
Turner Gallery	1,680	
Gallery for Drawings of old masters, and exhibition-rooms	11,679	
Water-colour Galleries	5,580	
Library or Drawings (Eastern Gallery)	3,467	
National Portrait Gallery	8,056	
Total		30,781
Grand total: Floor-area of Rooms for Pictures and Drawings		80,984

So that, without building on the barrack-yard, the ground would allow, according to Mr. Street, on the gallery-floor alone, space exceeding by about 46,500 ft. that now provided in the National Gallery, or space about equal to that of the Louvre galleries. We give these dimensions without thereby intending at all to designate Mr. Street's design as that which should be selected, and without feeling that we are bound to give the estimates of other competitors. Neither can we enter into any comparison of figures, though we must point out that it is one that the judges are bound to make. We give the estimate for whatever interest it may have with our readers, and as affording some approximation to an idea of what the future building may be, as to the provision for pictures. We would, however, observe that difficulty of

comparison, for the judges or ourselves, is occasioned by the differences of reading of the "Instructions," as to what works of art space had to be provided for. Here, indeed, "Instructions" should have been definite. As the case is, some of the competitors provide for sculpture, inclusive of antiquities from the British Museum; others exclude sculpture entirely, or in the main, but include the National Portrait Gallery; whilst some express an opinion, not without grounds, that a collection like this last, which is interesting not chiefly in connexion with the art of painting, but otherwise, should be excluded from a gallery of art-works. We may add that Mr. Street estimates his building as likely to cost 374,000l., inclusive of 25,000l. for sculpture upon it.

Mr. Cockerell's designs are three in number, and are marked No. 1, No. 1a, and No. 2. The drawings are somewhat mixed together in the Gallery, as compared with those of designs of other competitors. The design for altering the present building is the No. 2. The design No. 1a, however, retains the portico of the centre, and would use again the columns, pilasters, and entablature of the present front; whilst by a slight modification in the arrangement of the decorative features, the existing galleries might be preserved. No. 1 is the design for an entirely new building. Galleries on the site of the barracks are shown on the plans; but description of the designs should here exclude them. The design No. 2 would involve but little pulling down of what is existing. The present dome and the "pepper-boxes" would be removed; and there would be added an attic and two domes in the centre, and two other domes to the wings, making four domes to the front. These domes would be carried on columns or iron-supports. The arrangement would involve the removal of the present staircases, and construction of a new staircase. The attic would be decorated with terminals or caryatides; and round the springing of each dome, or upon the tambour, would be obelisks. The galleries in the new ground would be the same as in the designs "1" and "1a," (which we are about to describe,) excepting as to a slight difference in the matter of floor-levels.

In design No. 1a, the dome and the lanterns of the wings are removed as before; but, whilst the present portico is in fact retained, a very different character is given to it, as also to the rest of the building. We should mention that the two staircases are not retained; but that in the centre of the front-range of building, a large staircase-hall is planned, with balconies round, which are reached by three different flights of steps from the landing between the stories; to which landing there is a single flight opposite the entrance. One of the three upper flights, without turning from the landing, leads straight to the new galleries on the line of transverse axis of the plan: the other upper flights, returned back, give access to the balcony-landing, leading from which the galleries of the front are entered. As regards the portico: for the present podium-wall are substituted an upper and a lower stylobate; the latter being a continuation of the same feature, which is added to the whole length of the building, and is rusticated with horizontal channelling; whilst the upper stylobate, to the portico itself, has ordinary cornice- and base-mouldings of a pedestal. Flanking the portico, and not interfering with its columns at the sides, two-storied and domed masses, square on plan, are added to the main line of the building: in these are the entrances, flanked by salient columns; whilst the upper story is pilastered, and contains niches. Between these two masses, and forming the back-ground to the roof of the portico, there is an attic-wall, with niches; and above and to the rear of this is a square mass, slightly enriched, enclosing the upper part of the central space of the staircase-hall. The order is continued to the ends of the building: the columns here are salient; and they stand on the bold set-off or base which corresponds with the lower stylobate of the portico. The salient portions of the entablature, over the columns, carry scroll buttresses to an attic; and upon the latter are vases. From behind the attic rises the steep slope of the curb-roof. At the ends of the front, however, masses are carried up higher than the general line of attic, or as pavilions. Decoratively, they add a super-order to the main order,—their features being pilasters, and salient columns carrying a central pediment in each face, besides niches. As termination to the whole, there are obelisks,—which Mr. Cockerell seems to be enamoured of. A good termination, other than

statue, to the piers, or pedestals of an attic, of a building of the classic character, still remains to be designed. The intercolumns of the main order in this design, are filled with very lofty windows, each with a pediment, and a decorated mullion-and-transom window-frame. On the whole, we prefer the design to the No. 1. The description of the plan and arrangement of this last-named will answer for No. 1A, with the exception of what is connected with the staircase.

In his design No. 1, Mr. Cockerell, like so many of the other competitors, has adhered to the raking lines of the ground, next Hemming's-row and St. Martin's-place. To avoid the eyeseer of acute angles he has substituted for them, circular forms on plan, on the principle observed in the triangular block containing the Lowther-arcade, in the West Strand. This very arrangement, however, as to the north-western angle in Hemming's-row, would become a defect in the event of a prolongation of the line of building, westward: indeed, this appears in an elevation which shows the combined or extended frontage. We may confine description, as in previous cases, to the design not-inclusive of any buildings on the site of the barracks and barrack-yard. The lines of the chief frontage are the same as in the present building, excepting that the general line for the wings is advanced 4 ft. This would preserve a view of the portico of St. Martin's Church, to any spectator standing at the portico of the College of Physicians, or at some distance westward on the opposite side of the street. One competitor, whose design we have to notice, felt so much doubt as to the interpretation of the "Instructions" on this point of the view of the St. Martin's portico, that he has prepared alternative plans. Mr. Cockerell's building would be entered, in the middle of the front, through a loggia of arches approached by side-flights of steps. This loggia has five arches in front, and has one arch at each end, or to the projection from the main line of building. Arches corresponding with those of the loggia are the chief features of the general front; where, however, they are filled in with walling containing window-openings. All these arches rest on a podium, channelled horizontally, and pierced with circular openings at long distances. The arches of the loggia and front have no impost or consoles. In their spandrels are wreaths. The piers have some kind of cable-formed decoration up the face of each. They stand on dwarf-pedestals of peculiar appearance. The ends of the loggia break forward slightly in front, and on the returns, to form square masses on plan: these carry dome-capped turrets. From the loggia the way leads into a circular entrance-hall; from which stairs lead, right and left, to galleries of the principal floor; and from which the galleries on the transverse axis of the plan are entered. The entrance-hall has an opening in the centre, in the ceiling, for light from the hall above. The latter hall is lighted, through a domical ceiling, from openings in a lofty outer dome which is the main feature of the building externally. We must say, however, that the external dome has been made an inelegant feature. The external details generally of the "Design No. 1" are inferior to what Mr. Cockerell can accomplish; but those of the tambour of this dome—a sort of "Debased Italian"—are really bad. They are as inferior to much of the work of the period of the original "Debased Italian," as work of a village-mason striving to imitate that Italian, might be to the original. As to the dome itself, the openings proposed to be filled with glass-tiles,—by which means, according to Mr. Cockerell, "the effect of a conservatory would be avoided, and the dome would have a solid appearance,"—would not in our opinion conduce to the solidity or other ingredient of the effect externally. Internally, as to the domical lighting of the circular hall, and the decoration, the case is very different. The ceiling, or vault, is divided into two parts in the height, by mouldings. The lower division, which is entirely decorative, presents, at the base, a series of lunette-spaces enclosing sculpture in relief: above these are circles enclosed by wreaths of laurel, and containing portraits of celebrated artists: in the intermediate spaces round the springing, are winged figures holding the wreaths; and ornamentation is carried up as support to the dividing-mouldings before mentioned. The space above, to a central "eye," is divided into compartments; and these are filled in with large panels of glass, in an arranged on a geometric pattern. The "eye"

is capped by a small lantern. On the walls, in the drawing, the Cartoons are shown; but these works would surely be too large, either singly, or altogether, for any hall of no greater circumference than that which Mr. Cockerell proposes. Round the well-hole aperture in the floor, there is a seat; which is made an architectural feature. The entrance-hall below is divided by columns of the Phigaleian Ionic order. Besides the features of the exterior that have been described, there are pavilions to the ends of the front, somewhat as in the other designs. They have rusticated piers, and an emphasized centre, and pediment, in the lower part; whilst there is, in each case, a super-order of columns and pilasters, with arches, and niches; the whole being crowned with vases and obelisks. The general front, or between the wings and centre, also is terminated by vases, on an attic; and there are obelisks to the angles of the turrets in the centre. The lunette-spaces in the arches of the front are filled in with what seem to be raised panels. The best bit of contrivance in the exterior is comprised in the arrangement of the steps to the entrances. In this design, as well as the other, there is almost too much of building up, merely to get sky-line: indeed, this is becoming a common fault: it is seen in several designs in the Gallery. Mr. Cockerell's masses above the general cornice-level, as in the case of the pavilions at the ends of his front, are indeed enclosures to portions of the actual height of rooms in that part of the plan. But the idea of two stories internally, is given by the exterior; and the question is whether the actual arrangement, of square halls at these parts, which are of greater height than the galleries intermediate, is not what should appear. In the arrangement of the galleries and rooms, taking in the new ground, a four-sided central space is first enclosed by buildings which follow the lines of the ground; and the enclosure is then divided so as to leave four courts, by galleries. Of these galleries, those parallel with the front are of but one story in height, and are lighted from above. The principal galleries are, of course, 50 ft. in width; but there are others narrower. The angles of the rooms are generally cut off, so as to allow pictures to be shown the more advantageously. Side-lighting is designed for galleries which are to contain cabinet-pictures, as also for all galleries of the ground-floor that have other galleries over them. Some portions of the plan are arranged with galleries in which are screens that are at an angle with the wall wherein the window is. Mr. Cockerell rightly advocates, and has provided in his plan, large and small rooms alternated; and he quotes Eastlake and Dyce in arguing that small pictures should not be exhibited in the same rooms as large ones.

The observations of these authorities (in a report on the lighting of the Taylor and Randolph Galleries at Oxford) have also led him to suggest a system of top-lighting modified from that one wherein a horizontal screen below the skylight is a feature; though, in his drawings, he adopts the South Kensington system, to which the attention of the competitors was called. The principle is the same as is exemplified in one of the galleries at Munich; of which gallery one of the competitors in the present case adopts the arrangement nearly. The arrangement advocated by Mr. Cockerell has for its chief feature the lighting the pictures by a direct light from the ceiling; whilst the source of light is in some measure screened from the eyes of the spectator by a breadth of central *plafond*, the length of the gallery. One objection brought to the Munich arrangement being that the result is the tricky effect of a panorama; he believes that he avoids this by leaving the ceiling at the level of the top of the cove, or little lower, instead of bringing it further down; whilst he proposes to form his ceiling with thick double-ground glass, so as to relieve the heaviness, whilst preserving the effect. A curtain would be hung in summer, from the apex of the outer skylight, or dividing the roof-space above the ceiling into halves, to screen the direct rays of the sun, without detracting from the light. The interactions of the smaller galleries are made very effective by the use of an arrangement of domical light, similar to that of Hanover Chapel, Regent-street. We should mention that the space for pictures in this design is estimated as, on the ground-floor, 1,360 lineal feet of wall-space, and 2,601 ft. of screen-space; and as on the principal floor, 3,644 ft. of wall-space, and 620 ft. of screen-space: the total being 7,625 ft.; and to this may be added 550 ft. of screen-space

in a second-floor gallery that there is towards Hemming's-row; and which is suggested as suitable for the National Portrait Collection. The building is estimated to cost £269,000; whilst for No. 1A, the amount would be £51,000. Design No. 2, retaining the existing building, would be 143,500 ft. Mr. Cockerell proposes no alteration in the Square: indeed, the competitors who suggest alteration are fewer than we at first supposed.

We have still to notice many of the designs.

ON THE CONSTANT SUPPLY OF WATER FOR LONDON.

THE City Officer of Health having pronounced so strongly as he has done against the practicability of a "constant" supply of water for London in lieu of the "intermittent" it was desirable that some one who could speak with authority should say what there is to be said on the other side. This was done on Monday evening last, at a meeting of the Health department of the Social Science Association, by Mr. Bateman, C.E., who has constructed, in whole or in part, the waterworks of some twenty-five or twenty-six different towns and cities, varying in size from 7,000 to 600,000 persons, and containing a gross population of upwards of 2,000,000. In all these towns there are, we believe, but three which, at the present time, give an intermittent supply of water, and these are towns in which waterworks existed previously. In one of these, the town of Belfast, the system will be discontinued as soon as new works now constructing have been completed. In many places, and most importantly those of Manchester and Glasgow, the mode of supply has been changed from the intermittent to the constant system, and it was his experience specially with reference to these cities, and the change of systems, that he laid before the meeting. We give some passages from his address.

The question of constant supply is one which most materially affects the comfort and convenience of the poorer classes, and the inhabitants of smaller houses. In larger houses ample cistern space is generally provided to secure the equivalent of a constant supply; but where water is constantly laid on from the street mains there is scarcely any occasion for house cisterns, except for the supply of water-closets. By proper arrangement, little or no inconvenience is experienced from the occasional shutting off of water for the changing or attaching of house services. The first cost of introducing the water to the houses is reduced to the lowest possible point, and the pollution which more or less commonly attends the storage of water in house cisterns is entirely prevented; the water is delivered in the purest, freshest, and coolest condition; and very much of the annoyance and inconvenience arising from frozen cisterns and burst pipes, which are the common attendants of the winter season, is avoided. There is no occasion for exposed pipes in out-of-the-way places, for cisterns in roofs or the tops of the houses to be filled with soot and dust in summer and to be frozen in winter,—and a man may live in tolerable comfort without the dread of the water bursting above his head, and deluging the apartment in which he resides. But the advantage of constant supply to the consumer has been so often and so clearly demonstrated, that it is useless to dwell further on this branch of the subject. The question of its adoption does not entirely rest with the consumers; but with those who have to provide the water. It is believed by many that the consumption under the constant supply system is so great that no company or waterworks can meet the demand,—it would be ruin to them if they attempted it. I cannot but think that all this is a delusion,—it is not that more water is actually consumed for the use of the individual under the one system than under the other; but that the amount of waste which results from bad pipes and bad fittings constantly supplied with water is so great as to occasion serious loss and inconvenience to a water company, and perhaps in some cases to exhaust their supplies. The experience of those towns where the supply has always been on the "constant system," and where every precaution has been taken for the purpose of securing good workmanship, the best and strongest materials, and the most improved apparatus, the consumption of water per head is certainly not more, probably less, than it is in towns similarly circumstanced in all other respects, but supplied with

water on the intermittent system. This is abundantly proved by the statistics of water-supply in such places. For instance, the average consumption of water in the manufacturing towns of Lancashire and Yorkshire is from sixteen to twenty or twenty-one gallons per head per day for all purposes, including trade, and of course, all the waste which may be taking place. In Manchester, the quantity consumed by about 800,000 persons, and by the trades demanding water within the district supplied, varies from 12,000,000 to 13,000,000 gallons per day. Of this quantity it is estimated that one-third is supplied to manufactures, leaving the net quantity consumed for domestic purposes, including waste, fourteen gallons per head per day.

The experience of Preston, Blackburn, Bolton, Stockport, Halifax, Warrington, and all the other manufacturing towns in the north of England is identical with that of Manchester; and if this be compared with the consumption which obtains in towns supplied under the intermittent system, it will be found that scarcely in any case does the supply fall to so low a point as under the constant system.

In London it is thirty-two gallons per head per day, and in Plymouth, Devonport, Shrewsbury, Oxford, and other places supplied on the intermittent system, the consumption amounts to thirty gallons or more per day.

The quantity required in different towns no doubt varies according to the class of inhabitants, the circumstances, and the habits of the people; and it is universally found that where water-closets exist as a general rule, the consumption is greater than where they are comparatively absent.

At Newcastle-on-Tyne the water has always been delivered on the constant supply system; but the consumption gradually increasing to an extravagant point, a vigilant inspection was introduced, and means taken for checking the wasteful expenditure of water, sufficient powers having been granted to the company by a recent Act of Parliament, and this was effected to a great extent.

Shortly after the introduction of a new and ample supply of water into Manchester in the year 1850, the old system of intermittent supply was superseded by that of the constant system; but it was only gradually introduced. The city was divided into small districts, and all means were taken for seeing that all the pipes and water fittings were of the best description, and suitable for use under the constant supply system before the inhabitants were allowed to enjoy that advantage. At my suggestion, the corporation in whose hands the water supply was, adopted the plan so successfully pursued in other towns of being their own plumbers; but the clamour and opposition of the plumbers of the city was too much for popular representation, and the system was gradually relaxed. They discontinued the plumbing, but they established a warehouse or shop for the sale of fittings, purchasing the very best, and, as far as possible, compelling the plumbers to purchase from them, allowing the adoption of none which were not approved.

After a time this was discontinued, and a certain number of plumbers were licensed or authorised to do the requisite work on certain conditions, with which they were obliged to comply. These regulations are still continued, and there is probably no great water supply in the world which is administered with as little waste and with as much convenience and comfort to the inhabitants.

It will be thus seen that where everything is in good order, and both the water provider and the water consumer do their respective duties properly, there is no disadvantage to either party by the supply of water on the constant supply system, while the advantage to the consumer in the facility with which he obtains water, and the trifling cost at which it can be introduced into his premises, are incomparably greater than can be enjoyed under the other system. Where, however, the intermittent system has hitherto prevailed, the desirableness, and indeed the practicability, of abandoning it, and adopting the constant supply, depends very much upon the consumers. If they will submit to such regulations as are necessary for preventing waste, there can be no difficulty in introducing constant supply; it will occasion no more waste than the intermittent system. The only changes which are required are the abandonment of all bad fittings, such as common ground taps, leaky cocks, and wasteful water-closets. The cisterns already existing in houses which have been adapted to the system hitherto

employed may remain, if it be the will of the owner or occupier that they should. If they are large enough they do now practically give a constant supply, and it is only just to the provider of water that care should be taken to prevent improper use. Those who prefer to abandon their cisterns and to take their water direct from the pipes, can do so at very little expense. In all new buildings there would be no necessity for the expensive paraphernalia of cisterns. A stop-cock on the service-pipe of the house would enable the water to be turned off whenever repairs or alterations were required to be made within the house. Little inconvenience is felt by grouping a number of houses together, commanded by one stop-cock; and, indeed, it may be said, that complaints of inconvenience arising from interruption to the supply of water are scarcely ever heard in towns where the constant supply is at work. If the public will not submit to introduce the best description of fittings, and to prevent waste, and will not subject themselves to the vigilant inspection which ought to be exercised by the provider of the water, and be willing to correct everything which requires correction, it will be difficult, and in some cases impossible, to introduce the constant supply.

I must not omit, however, to notice the great consumption of water which obtains in many of the Scottish towns, and notably in the city of Glasgow. There, under both the intermittent and constant system, the quantity supplied has been enormous; but it is easily accounted for, and might be remedied.

Under the old system of intermittent supply, when the water was pumped from the Clyde, the gross consumption was at the rate of forty gallons per head per day, thirty-six gallons of this being due to domestic consumption and waste, the latter element being mainly chargeable with the extravagant consumption.

After the ill-use of water-closets, one of the great causes of waste in Glasgow was the wretched character and condition of kitchen-taps and the water-fittings generally.

In one tenement, while one careful man wasted nothing, another negligent fellow ran down his sink-siphon for no useful purpose to himself, no less than 850 gallons a day.

This waste is principally caused by the universal custom in Glasgow, of using the common ground-tap—the worst description of tap for water under pressure which can be adopted, and which has long since been exploded in all improved and well-regulated water-works in England.

The total consumption of the city from Loch Katrine and Gorbals together is 22,000,000 gallons a day, being at the rate of about 50 gallons per head, and just twice, in gross quantity, as much as Manchester and Salford take for a larger population.

This case of Glasgow will no doubt be much relied upon by the opponents of the "constant supply system;" but the extravagant consumption is clearly due to causes which may be remedied, and to the fact that the Corporation have never resolutely and perseveringly set to work to apply the requisite remedies. The people of Glasgow look upon Loch Katrine as practically inexhaustible. The works are constructed on a scale for bringing more than twice the quantity now used. They are their own property, and as the water is supplied by gravitation, the excessive waste which takes place costs them nothing at present. In conclusion, Mr. Bateman said, I see no reason to doubt that if in this great metropolis the providers of water and the consumers of water will each do their duty and work harmoniously together, the citizens may enjoy the inestimable benefit of an unlimited supply of water constantly laid on, without consuming a gallon more water, if, indeed, as much as is now supplied by the water companies.

TELEGRAPHIC PROGRESS.—A prospectus has been issued at New York, of an East-Indian Telegraph Company, with a capital of 5,000,000 dollars, for the purpose of "connecting all the principal seaports of the Chinese Empire with the Collins line, across Behring's Straits, with San Francisco and New York and the Russian Government line to St. Petersburg, and with London, Paris, and all the principal cities of Europe." It is stated that there are now wanting only 850 miles of wire to connect New York with Pekin.

ARCHÆOLOGIC ITEMS FROM ROME.

The immutability of Rome and the absence of all signs even of the life that desires outward improvement or inward progress, seem particularly curious and characteristic, now that such clouds of uncertainty are hanging over her political horizon, and such inevitable destiny of change is threatening to overtake her, whether with or without her co-operation. Amidst all that can be urged against the Papal Government, and whatever the feebleness or inertness that may be endangering its vital interests, there is still a token of some regard for intellectual claims in the activity with which certain antiquarian researches and works for the illustrating of the past are at this moment advancing,—in some instances matured, in others incipient, or but promised. We find the range of catacomb-excavations continually enlarging; we see at the S. Calisto hypogæe on the Appian Way, most interesting among those subterranean cemeteries for art-objects, a set of labourers daily at work, and, in consequence, a daily admission of visitors with tickets; and at the supposed most ancient of all these catacombs, those of S. Priscilla, the diggings are also in continuance, though we are informed (and here is the other side of the picture) that—so little can authorities afford for such undertakings,—not more than sixteen men are actually employed upon all these labours in Rome's sacred subterranean! It is different at the Palatine, where the works directed by Signor Rosa, in the gardens purchased by Napoleon III., are proceeding with vigour, and where every Thursday brings crowds of visitors admitted by gratuitous tickets. And if, indeed, as Rosa concludes, the vast mass of ruinous substruction, apparently belonging to an extent of terraces, can be identified as the Temple of Jupiter Stator, or at least its enclosed premises, the discovery is indeed important for historic illustration. Not that anything like architectural elevation has been added to the monumental range on the "imperial mount" by the researches of the last year. Some beautiful sculpture-fragments are now on view in the magazine within the gardens; the finest a draped and headless female statue; but surpassed by the antiques now represented here only in plaster, a torso resembling the Fawn of the Capitol, ascribed to Praxiteles, and a Cupid with part of the limbs but no head, the marble originals of both which truly exquisite works have been sent to Paris.

Other antiquarian undertakings lately announced, as ordered by Government, at a meeting of the Roman Archaeologic Academy, are the resuming of labours initiated some years since on another part of the Palatine, the slopes and low ground at the north-western angle not included in the Emperor's purchase; also the excavations at Ostia, necessarily suspended on account of malaria during the summer. Signor Guidi (a well-known explorer) is going on, at his own risk, with the some three years since commenced diggings just beyond the southern limits of the Caracalla Thermae, where the extensive ruins of halls and passages brought to light far below the surface of the gardens that extend round the vast imperial buildings, must certainly pertain to some residence of superior scale and splendour. Five of the chambers, into whose dark interiors we can look through broken doorways or at depths below our feet, are at present explorable, for the sinking in of soil has frustrated much of what the labourers had accomplished, concealed (we are told) much that had been discovered of artistic character; but we penetrate, stooping, into three small chambers under the same span of heavy brick vaulting, on whose walls we see decoration in flowery and foliate designs well preserved on the stucco surfaces. And still more curious are the mosaic pavements of rooms now roofless,—one, in particular, that comprises four large figures, in black and white, and sea monsters, each ridden by a male or female figure almost nude, the designs exhibiting a certain degree of knowledge and spirit; one of the nondescript creatures having a goat's head to a dragon body, another being a robust specimen of the sea-centaur, half man, half dragon.

In dirty and dismal Trastevere, within the area of a wretched little court, amidst squalid cottages, near the old church of S. Crisogono, we find another excavation for antiquarian interests lately begun by a Signor Gagliardi and another proprietor, also at private cost and risk, which has resulted in the uncovering of a great extent of walls in good (though not the best) ancient brickwork, tra-



CHURCH INSTITUTE, LEEDS.—Interior of Lecture Hall.

versed by two archways of large tiles above entrances into chambers, identified as a military station of the Vigiles, and reported to be that of the 7th cohort belonging to that corps; the interiors here opened being still adorned with some frescoes on walls and some mosaic pavements, but not, we regretted to find, accessible at present, owing to a similar disaster as at the other newly-opened ruins,—the sinking of the soil so as to fill up the areas just cleared out. In their present state we look down upon these structures as they rise against one side of an oblong excavated space; and if the parties interested can obtain permission to extend these diggings after the demolition of some paltry houses above, greater results may be expected. Near them rises another ruinous wall in the same ancient brickwork, with the traces of a vaulted chamber leaning to the outer side, high above, and enclosed within the filthy court of a small house,—probably another remnant of the Vigiles' station, which has long stood con-

spicuous, but scarce noticed in this wretched Trastevere quarter. Visconti has written a full report on the discoveries of this site, to be read, in translation from the Italian, to the English Archaeological Society.

As to the proceedings of that still youthful association, we have to report signs of activity, and things that promise. The nucleus of an archaeological library, hitherto collected through donations, has been formed, for the use of its members, at the consulate, the place of rendezvous hitherto. Within ten days we have attended, since the 28th of December, two meetings, before numerous audiences at the same English consulate, at the first of which Mr. Shakspeare Wood, the sculptor, and secretary of the same society, read a paper "On the Appian Way," translated from the Italian of Signor Pellegrini, a Roman antiquary, conveying a very full but somewhat dry report on the entire range of monuments upon that classic way between Rome and Albano. At the second, Mr. J. H.

Parker delivered (for we should not say read, seeing that, but for the use of a few notes, all was extempore) a learned lecture "On Roman Aqueducts," referring to all the remains of those structures in the observer as well as the best-known examples, and illustrating his theme, as he went on, by a series of excellent drawings, plans, and photographs prepared by a French artist expressly for the occasion. Mr. Parker's support was never more ably given to the new association; and it struck us that, of all we have hitherto heard at its meetings, this lecture on aqueducts was the master-piece. Weather did not permit the resuming of the study under the same efficient guidance, on two successive days of peripatetic investigation, for which the lecturer had invited his hearers to accompany him, as well to the sites of all aqueduct ruins within the walls as to the more remarkable of such antiquities on the Campagna; which promising expeditions have not, however, been put off *sine die*.



CHURCH INSTITUTE, LEEDS.—MESSRS. ADAMS & KELLY, ARCHITECTS.

REFERENCE TO PLANS.

Ground Plan.

- A. Reading-room and Library.
- B. Entrance-hall.
- C. Principal Staircase.
- D. Clergy-room.
- E. Corridor.
- F. Class-rooms.
- F. Secretary's Room.
- H. Back Staircase.

First-Floor Plan.

- K. Lecture-hall.
- L. Platform.
- L. Council-room.
- M. Class-rooms.
- N. Landing, Principal Stairs, and Entrance to Lecture-hall.
- O. Passage.
- P. Lift.



GROUND PLAN



FIRST FLOOR PLAN

SCALE OF FEET

LEEDS CHURCH INSTITUTE.

The foundation stone of this building was laid not long ago by the Archbishop of Canterbury. The design selected in public competition is by Messrs. Adams & Kelly, architects, of Leeds.

It is in the Decorated style of architecture. The principal fronts face Albion-place and Land's-lane. That towards Albion-place is divided by buttresses into five bays, which are gabled and finished with stone coping and carved finials; at the spring of the coping are gurgoyles, carved with grotesques, and supported on coloured shafts. The traceried windows are of stone, and light the library and large lecture-hall. The bay next Messrs. Hebblethwaite's premises has a projecting gabled porch, over which are flying buttresses. The principal feature towards Land's-lane is the large gable, pierced with coupled three-light traceried windows, with circular one over. This window also lights the lecture-hall: on each side of it is an arched, and beneath it traceried windows lighting library and reading-room, also secretary's room. The clergy and council room have also windows in this front. The building is of brick, with stone dressings and coloured brick bands. The tympana and spandrels of arches are filled in with pattern brickwork.

The roofs are covered with slates, laid in bands of two colours, and surmounted with ornamental iron ridge cresting. In the centre of the lecture-hall roof rises a *dôme*, terminating with a metal cross and finial; this, together with the pierings in the end of the large gables, serves for ventilation. In the basement floor is the librarian's room, with kitchen and pantry; attached; coal-place, heating-chamber, large kitchen fitted up with boilers, &c., for institute purposes, and store-room. A lift is provided for the several floors above. The ground-floor has a spacious hall in direct communication with principal staircase, which is lighted by a stone traceried window; reading-room and library, with secretary's room. At the back of the library runs a corridor communicating with class-rooms, clergy-room, and back staircase. On the first floor is the large lecture-hall, 48 ft. span, and extending the whole of the frontage towards Albion-place. The roof of this room is formed of principals, with curved braces and hammer-beams, supported on moulded and carved corbel shafts. The ceiling is boarded, and divided into panels by chamfered ribs at the end. Next Land's-lane is a raised platform. At the back of this room runs a passage communicating with class-rooms and council-rooms. The second-floor is allotted to bed-rooms.

SANITARY MATTERS.

Chichester.—The report of Mr. Arnold Taylor, the inspector recently sent down to Chichester by the Home Office to report upon its sanitary state, has been presented to the Town Council. It represented the necessity of works for drainage and the supply of water, and directed that the town council should take immediate action in these respects. Upon this report being presented and considered, the town council, true to its opposition to all sanitary improvements in the city, expressed, through Mr. Councillor Adames, the opinion that Chichester did not suffer more from disease than other parts of the county which were drained; that if there were any powers under the Sanitary Act to compel them to adopt a most expensive system of drainage, it was a most despotic enactment, and more outrageous than any tyranny ever practised in Russia or Austria; and that, with such an enormous increase in the rates as that contemplated, hundreds of people in Chichester would be ruined. It was ultimately decided that the town clerk should acknowledge the receipt of the report to the Home Office, stating that it had been laid before a meeting of the Council, called expressly for the purpose; and that, in order that the report might be in the hands of every one interested, the council had ordered it to be printed and distributed among the council and the inhabitants generally.

Wolverhampton.—We deeply regret, says the *Birmingham Journal*, to observe that the town council of Wolverhampton, following the bad example of the town council of Birmingham, have refused to appoint a medical officer of health. The sanitary committee did their duty in recommending the appointment, but the corporation lamentably failed in theirs in upsetting

the decision of the committee. The grounds on which the council arrived at its decision—if, indeed, the grounds stated were the real ones, which we much doubt—were that the sanitary inspectors were able to do all that was necessary up to a certain point, and that at that certain point they could call in a medical man to do all that was necessary. The fallacy of such reasoning is so obvious that one would scarcely expect a deliberative body of intelligent men to fall into it. It is like setting a builder to erect a house, and calling in an architect when the builder has got into such a mess that he can get no farther. When the advocates of bad smells and the owners of small house property are in the majority, it is in vain to urge sanitary reform.

Liverpool.—There is a prospect of an early accomplishment of important sanitary reforms,—the substitution of water-closets for open middens, the closing of existing slaughter-houses, and the erection of abattoirs near the Stanley market. The town council has given its sanction to the clause in the Improvement Bill, which seeks power to close the slaughter-houses and to erect abattoirs, on the proposed site outside the town; and the health committee have passed a resolution in favour of application being made to Parliament to grant compulsory power for the conversion of privies into water-closets, a proportion of the cost to be borne by the Corporation. Both schemes, however, are threatened with opposition.

DRAINAGE OF BRUSSELS.

At a recent meeting of the common council of Brussels, the mayor, M. Ansapach, made an explanation with regard to the arching of the river Senne, which, as our readers are aware, has been undertaken by the Belgian Public Works Company (Limited). The question has been discussed for some years, and has been reported upon repeatedly by all sorts of commissions, committees, and boards. The citizens appear to be getting impatient, and the mayor explained at the meeting above referred to that the works were to have been commenced on the 22nd of January, but in consequence of the severity of the weather the company were not ready, and the opening has been postponed until the middle of February. The King is to perform the principal part of the ceremony, and it was felt that the opening should not be a merely formal one, but should mark the commencement of the work in earnest. It will take four years to complete, and the purchases of the houses and compensations will be made in May; but, so far as the middle of the town is concerned, no notices to quit will be served this year at all events, as the operations in the outskirts will occupy some months. Part of the work has been sublet by the company to Messrs. Mantion, contractors, of Liège. M. Cogniaux is to superintend the works on the part of the Government, and M. De Rote is to look after the interests of the town of Brussels. These appointments have not yet been confirmed by the Government, which delay has in some measure necessitated the postponement of the opening ceremony.

PRUSSIA.

NAVIGATION AND TELEGRAPH.

An influential committee is now being formed at Berlin, for establishing, under the patronage of the Prussian Government, an important line of packets between Germany and the United States, *via* Southampton. The service is to be performed by packets of large dimensions, which will have, as an auxiliary port, that of Geestemünde, a Hanoverian port near Bremerhaven, now made Prussian by the recent annexation. It is to carry the European mails directly to New York; each of the vessels, seven in number, is to be built in France or England, and is to carry 100 first-class passengers, 100 second-class, 600 third-class, and 1,000 tons of freight. The project is said to be backed by the Count Bismark and other ministers.

We will give some details of the telegraphic system in Prussia. The department of national telegraphs is under the superintendence of a director, who is directly under the orders of the prime minister. In the central station at Berlin may be seen an apparatus connected with all the lines of the country, and many foreign ones. Among the objects of special interest, the mag-

netic accumulators, the permutator, which is the largest in the world, are the most remarkable; also there are worthy of interest the machine for daily meteorological despatches, and that by means of which the same correspondence can be transmitted simultaneously to all parts of the kingdom.

The lines, as well as the stations, are classed in such a manner, that the system of centralization in no way prevents direct communication between neighbouring places. The service is carried on by a special staff of telegraph clerks, except on the lines called *omnibus*, which are at the disposal of small towns and villages, and which are worked by the post-office employees. On these secondary lines the needle or some other simple machine is used instead of the Morse system applied to the great lines.

With a good organization, and by the adoption of the most simple mechanical combinations, the Prussian public, it is said, are served at a cheap rate and rapidly; moreover, the excess of the receipts over the expenditure has much encouraged the Government to lower the tariff. The lowest price is 8d., and the net profit for the last year has been 100,000l.

FROM MELBOURNE, AUSTRALIA.

The Intercolonial Exhibition, preparatory to the Universal Exhibition of 1897 at Paris, has been opened with *déclat* by his excellency the Governor of Victoria, Sir J. H. P. Manserv Sutton. The building is so arranged as to form hereafter a permanent addition to the public library. The first addition was found to be inadequate to the purposes of the Exhibition, and a new annex had to be built. The whole space available for exhibits throughout the Exhibition buildings, is 39,600 superficial feet. The chief feature is the central hall, designed by Messrs. Reed & Barnes, containing an area of 17,200 superficial feet.

"Its noble proportions [says the *Melbourne Age*] are seen to the greatest advantage from a central gallery. Looking down the length of the right and left aisles, some conception may be formed of the number and great variety of the exhibits. Suspended from the ceiling are the lanterns and organs of the municipalities throughout the colony, which, from their variety and rich decorations, add materially to the general effect. The visitor, if he pleases, may pass into the rotunda on the right of the grand hall; or enter the central aisle, which is the display of the colony, and other vehicles manufactured in the colony. In the rotunda, the superficial area of which is 3,000 ft., the exhibits are of a very interesting character, consisting principally of articles of vertu, some of which are of great value. At the southern end of the grand hall, beneath the organ loft, access is obtained to the picture gallery, where the chief attraction will consist in the numerous pictures of views of scenery throughout the colony. A very large collection of water-colour drawings and oil-paintings, contributed by various individuals, will also be on display. The department allotted to machinery is at the northern end of the grand hall. Steam power employed for the working of the machines is supplied by Messrs. Wilkie, Welch, & Co., the exhibits being of a very high order. The manufacture of many familiar articles of ordinary use. The quadrangles north and south of the rotunda are embellished with fountains, and fountains of ice and plasterwork of the antique and modern styles. A covered promenade is provided beneath the grand hall for refreshments, access to which is obtained by steps leading from one of the quadrangles."

An excellent project is in hand for the improvement of the National Gallery in Melbourne. The Fine Arts Commissioners have resumed their labours, and taken practical steps towards procuring some additions to the gallery. On the death of Sir Charles Eastlake, it became necessary to make a new arrangement for this purpose; and it is understood that communications have been addressed to several of the most eminent artists in England, stating the circumstances under which the project of a Victorian National Gallery originated, and requesting each to furnish such a picture as he can for the sum of 300l. The gentlemen to whom these overtures have been made are said to be Messrs. Stanfield, Crewick, Leighton, Phillips, and Macfie. Should the overtures be responded to in the genial spirit which is anticipated, the National Gallery of Victoria will become another link of intellectual sympathy with the mother country.

The inaugural ceremony of the Victorian Deaf and Dumb Institution took place on the 13th of October. The building was formally opened by the governor. The building is situated adjacent to St. Kilda-road. It was stated that the cost of the present building, including the fencing and outbuildings, was 6,800l. Towards the liquidation of that amount, the Parliament had voted 4,000l.; and a sum of 1,500l. had been received from private subscriptions; leaving

000. still to be provided. The building is surmounted by a lofty tower.

The congregation of the Independent Church, Collins-street, are erecting a new place of worship. It is to be completed in nine months, at a cost of 12,000*l.*, and it is designed to accommodate 200 persons.

An attempt has been made to get up a demonstration of unemployed, for political purposes, it is said, but the attempt was a total failure. One of the deputations to the chief secretary, from a meeting of at the utmost 200 persons, was a working blacksmith, who confessed that he had thrown up his employment because his employer refused to give him more than 4*l.* 10*s.* a week. Other meetings were to be held, but the result was nil.

The Registrar-general's report on the vital statistics of Melbourne and the suburbs, for the month of August, is published in the *Government Gazette*. From it we learn that 218 persons died during the month. The deaths were fewer by 20 than the average of the month in previous years, and this notwithstanding the districts have greatly increased in population during the period. The deaths of males and females furnish a proportion relatively to the whole mortality of 57 per cent. and 43 per cent. respectively. Deaths of children under five exhibit a proportion of 44 per cent. to the whole, against 49 per cent. in August, 1865; 34 per cent. in August, 1864; and 49 per cent. in August, 1860. Forty-nine deaths, or 22 per cent. of the whole, took place in public institutions, viz.,—30 in the Melbourne Hospital, in the Lying-in Hospital, 5 in the Benevolent Asylum, 2 in the Immigrant's Home, 3 in thearra Bend Lunatic Asylum, 4 in the Industrial schools, 3 in the Melbourne Gaol, and 1 in the prison bulk Success.

The *Geelong Register* states that the Geelong Woolen Cloth Company's building, on the banks of the Barwon, is nearly completed. The building first erected is of limestone, and the main room is 111 ft. in length. The new building now being erected will also contain a room 11 ft. long for the reception of looms, besides engine-room, and the long room is 44 ft. wide. Between the two buildings there is an open space about the same width as the room, which is intended to roof over and inclose at each end, so that there will eventually be a range of three large buildings all conjoined, forming an immense factory. The building now being completed is on a plan sent from England. The main room will be the same length as that of the old building, but will be 44 ft. wide in the rear.

THE SHORT-TIME MOVEMENT.

AN experiment has recently been tried at Melbourne, by M. Jean Dollfus, so well known for numerous philanthropic schemes, with very great success. It occurred to him that the working-day of twelve hours might be shortened one hour without any decrease in the quantity of material produced, and that the loss of one hour would be compensated by the increased power of production in the workman. For the first few weeks the quantity fell off; but it increased gradually, and eventually from one to a per cent. more work was done in eleven hours than had formerly been done in twelve. There is also a large saving in the wear and tear of machinery, and the cost of warming and lighting the mills.

THE TRADES MOVEMENT.

Stockport.—The operative masons employed at the New Connexion Chapel, Wellington-road, Stockport, on the ground that Mr. Peirce was securing their work, a practice they would not permit. The masons at the St. Peter's Gate Lodge were all taken away. Mr. Peirce, notwithstanding the works to stand still, gave his word he would not repeat what was objected to. He was not required to pay them their wages for the time they had been stopped, and was informed he would not be allowed to go on until this was done. To this last demand Mr. Peirce objected. The men, apparently ashamed of their conduct, commenced work again, having lost their time. The matter is to be brought before the master masons and the General Builders' Association. *Nottingham*.—At a meeting of the Nottingham Chamber of Commerce, Mr. A. J. Mundella re-

ferred to a paragraph in the annual report which had relation to arbitration, and remarked that there ought to be something done to allay the state of chronic warfare which now existed throughout England on the question of wages. In the hosiery trade they had found a board of arbitration work most satisfactorily. During the last two years the state of matters in the hosiery trade had been of a very anxious character, but they had been able to take their contracts without fear of strikes. In fact, they considered a strike an infraction of the rules. The Board consisted of seven workmen and seven employers, and they bound themselves to stand by the decision which should be arrived at, and they were able to settle their difficulties in the most amicable and satisfactory manner. They had found that, during the last six years, all the decisions of the board of arbitration had been agreed to. Mr. Hill said the workmen appreciated the board of arbitration, and considered it a great blessing to them.

Wolverhampton.—An address and a silver inkstand have been presented to Mr. Robert Kettle for his able services in the cause of arbitration, by the master builders and operative carpenters and joiners in this town. Most of the architects and builders were present at the presentation, as well as many operatives.

THE LATE M. INGRES.

THE town of Liège possesses a very beautiful work by this artist, which was painted by him when a very young man. It is a portrait of Bonaparte as first consul. In 1804, just previously to the establishment of the Empire, the consular government decided that the portrait of the first consul should be sent to the principal cities of the Republic, and M. Ingres was the artist entrusted with the work. The original painting, of which several copies were made, was placed in the town-hall at Liège. In compliance with the wish of M. Ingres and the French government, it was sent to the Paris Exhibition of 1855, the municipal authorities having first stipulated that it should be insured for 20,000 francs, and conveyed to Paris under the personal supervision of a deputy to be appointed by the artist, and returned immediately the Exhibition was closed.

PICTURE FOR CHRIST CHURCH, MARYLEBONE.

We have before now mentioned the large picture intended for the east end of Christ Church, Marylebone, on which Mr. W. Cave Thomas has been for some time at work. It is now completed, and will probably be placed in its intended position next week. In form it is a flattened area of a circle: the subject is the diffusion of the gifts of the Spirit, as suggested by the text, "And when He had ascended on high, He sent them gifts." Christ, the central figure, seated, is despatching his angels loaded with good gifts. On the one side are sailing earthwards Power, Wealth, Beauty, and Plenty; and, on the other, Faith, Wisdom, Justice, and Honour. The figure of the Saviour is one of dignity and power, the drapery admirably painted: the heads of the various angels are expressive and beautiful. The result, as a whole, is more than admirable; and we congratulate alike Mr. Cave Thomas on his most successful completion of a not easy task, and the congregation of Christ Church on the possession of a fine work of art.

The background, according to a Russian method, is sand and gilt, the nimbus of the Saviour being alone of flat gilding.

SCHOOLS OF ART.

The Cirencester School.—The distribution of prizes gained by students of this school in local and national competitions took place at the Corn Hall, Earl Bathurst in the chair. Numerous drawings by students of the school were hung upon the walls. The report states that the Cirencester School has successfully maintained the high position which it has achieved in previous years, and is now ranked amongst the best schools in England. At the last national competition Cirencester out-distanced some of the largest towns in the kingdom, carrying off, amongst other prizes, a national scholarship and

three medals. This gratifying result is attributed to three causes—the industry of the students, the careful superintendence of the committee, with their secretary, Mr. Zachary, and above all, to the great experience, ability, and assiduity of the art-master, Mr. Miller. Having obtained one silver medal out of twenty, and two bronze medals out of fifty distributed among the 100 schools in the kingdom, besides other prizes, says the report, we congratulate the students on the fact of their success in the Third Grade Examination, having ranked us with the best schools, as we have been surpassed only by nine of the largest, including the Metropolitan. Mr. J. B. Atkinson, of London, afterwards addressed the meeting at some length on the subject of art.

SOCIETY OF FEMALE ARTISTS.

THE ladies make a better show this year in the gallery of the Architectural Union, Conduit-street, than they did last year. 396 works are exhibited (three being pieces of modelling), and include some very good pictures and drawings. Madlle. Rosa Bonheur sends a graceful drawing of "Doe and Fawns" (64); Madame Henriette Browne a good "Study of a Head" (54); and the Dowager Countess of Westmoreland, "Wellington writing his Despatch after Waterloo" (14*). "The Conscript's Departure" (212), Miss E. Brownlow; "The Orphans" (215), Miss Kate Swift; "Persevere" (208), Miss G. Swift; Mrs. Lee Bridell's capital contributions; "Moved on" Miss F. Claxton; and Miss Jeykell's "Jehu" (235), are the best figure subjects. In works of another class, Madame Bodichon, Miss Williams (239), Miss Jane Deakin ("the Old Tower"), Miss S. S. Warren (77), the Misses Rayner, Miss E. Walter (127), Miss Florence Peel, Miss F. Minns ("May Blossoms"), Miss E. James (300), and Mrs. F. Marable, who sends a number of vigorous sketches from nature, stand out prominently.

MONUMENTAL.

MR. NOBLE, the sculptor, is charged with the execution of the statue of Lord Palmerston, to be erected at Romsey; and the memorial window in the Abbey Church will be executed by Mr. Clayton.—Mr. George Wightwick, architect, has designed a public monument, which, according to the *Gloucester Chronicle*, it is proposed to erect on the Dowerstone, Dartmoor, to the late Mr. N. T. Carrington, "the poet of Devon" (father of the late Mr. F. G. Carrington, of the paper alluded to). The Dowerstone is a huge cliff, overhanging the valley of the Cad—one of the most charming scenes in south-west Devon. The design comprises a bust of the poet, placed on a pedestal resting on a platform approached by three steps, and surmounted by a canopy fixed on granite columns.—Preliminary steps have been taken for the erection of a public memorial of the late mayor of Margate, Mr. G. Y. Hunter, who died during his mayoralty.—The Emperor of Austria has given 40*l.* towards the erection of a monument, in the town of Arezzo, to the monk Guido, the inventor of the musical notes.

SOCIETY OF ENGINEERS.

ON Monday evening, being the opening of the session for the present year, the president Mr. N. H. Le Feuvre, delivered an inaugural address, in which he congratulated the members on the position the Society of Engineers had at length attained. It at present numbered amongst its members some of the foremost practical men of our time, and not in one branch of the profession alone. It might be said, indeed, that there does not exist a society with kindred objects possessing so many and varied elements of future success within it. Amongst its members and council were men of large experience in works of design, construction, and art; in boiler and marine engineering, electrical engineering, iron ship-building; gas, ordnance, railway, and hydraulic engineering; inventors, and designers of some of the most valuable processes of machinery employed in connexion with the arts and manufactures of our time. The Society also possessed the privilege of having upon its council the representatives of leading scientific journals.

In his address the president said,—

"I would desire to call your attention also to a circumstance which has lately begun to assume a serious importance to us as engineers, and which promises to endanger one of the most extensive of our manufactures, that is, the production and manufacture of iron. This has been carried on to such an extent now in Belgium, that after an interval of a very few years, the run of competition is altogether on the side of Belgium as manufacturers. They successfully compete with the most extensive of our iron-works in England. As examples, I would mention, that during the progress of the Exhibition lately erected in Amsterdam, it was found that while the earlier portions were being constructed, it was cheaper to import the ironwork from England, but before the works were completed, a considerable quantity of ironwork was supplied from Belgium and Holland, as it could be obtained at a lower price, and from that period to the present the competition has run hard between those countries and our own. In the new Kimble Wheel Works, in London, which, as may be known, perhaps, to most of you, were constructed by our firm, we had also to give way to the importation of ironwork from Belgium; and it is the case also with regard to some works we are now carrying out in India, where the ironwork is actually shipped from Belgium to London, and re-shipped to Bombay, at a less cost than it could be purchased from English manufacturers. I cannot but view these circumstances with regret and apprehension; and I hope that, before such a state of things is permitted to become more serious, some co-operation may be induced amongst our leading manufacturers, so that the branch of our industry may not be altogether wrested from us. I mention these instances as facts which have come under my personal observation and experience. We find one of our leading railway companies (the Great Eastern Railway), before some of our locomotives from France, which resulted after a competitive tender, to which our leading firms were invited. The incursions of foreign competition have at length reached to such an extent, that one of our leading railway companies invited a French firm to compete with our manufacturers for the supply and erection of the ironwork of their terminal station in London. I cannot, therefore, but repeat with respect to this branch of our industry, and trust that these remarks may lead to some practical suggestions being made during the ensuing session, as to the ameliorating the present condition of our iron manufactures."

Speaking of the difficulty which the state of the roads had interposed on the occasion of the burning of Croydon Church, the speaker said,—

"Sanitary engineering has not yet sufficiently impressed itself upon our own profession, and I cannot but wish all our engineers would exercise their skill and influence in pointing out the necessity of devising the best scheme, irrespective of cost, for the drainage of our large towns and cities. The difficulty is an increasing one, and alarming in all thinking minds. The population of our large towns and cities increases daily, the sanitary measures which have already been carried out in some of our towns have had a most marked improvement in the health of those places, but they have at the same time, materially deteriorated the watercourses of the country, many of which, after receiving the abominations attendant on sewage, are used as the only source of water-supply to large populations. From a paper read before this society in session 1865, we were informed that a quarter of a million of money has been made out of a portion of the sewage of Edinburgh, and that every acre of land under its influence produces ten times the amount of the average of agricultural land in the country. The question of the drainage of our large towns will come under the consideration of Parliament during the ensuing session, as the conservators of the river Thames have introduced a bill with a view to prevent all sewage matter flowing into the Thames; and if this measure becomes law, it will be a precedent which will affect all the rivers and streams of this country, and no doubt it would be far preferable that Parliament should interfere, and legislate on this important subject."

The character of prevailing architecture cannot fail to be of interest to a society like ours. We have still to regret the absence of anything like conformity in the several practices of architects and engineers, and to regret the character of our nation, judged by its architecture alone, would not stand very high. We have, of course, no modern undertaking which bristle could be compared with Westminster Abbey or St. Paul's. The more we go back into the architecture of our country, the more grand and refined it seems to stand out. We have at length reached no style or character of architecture at all, and consider this to arise in a great measure from the antipathy amongst certain professors which are antipathies, and the failure of modern architects to accommodate their designs to the progress of engineering science. A system is now being extensively adopted with regard to modern buildings which may be called, not less, a system of iron architecture. The immense gain in strength and durability, in building where this material is employed, is undeniable. Architecture is the science of building, and therefore the engineer, to an iron bridge or other structure in which iron is employed, is as much an architect as the designers of Gothic structures with stone roofs, flying buttresses, and pinnacles. Considering the Church of St. Peter, at Rome, and the Cathedral of St. Paul, and other so-called architectural wonders of Rome, from a constructive point of view, it will be found that what is now called civil engineering was exercised by the architects of these structures in a very great degree. They built with the materials connected to be used, and adapted to the locality of the structures, and their works have remained commanding and imperishable. And it is considered that there can be but one system of building, we cannot look forward to any works likely to deserve our own admiration or the admiration of others."

As to the streets:—

"Our metropolis, containing a population of 3,000,000, has been for nearly a week in a helpless state of inactivity in consequence of the inefficient means we have at our disposal for clearing away the snow, and the utter want of system and care in the paving, lighting, cleansing, and traffic arrangement, is well worthy the attention of our profession. The snow might be removed at night by means of snow ploughs, and rapidly melted by heat in convenient places. The relaying of our pavements and streets might be effected by improved machinery, and a diminution of time and inconvenience would thereby ensue. The introduction of subways, as suggested by

the Metropolitan Board of Works, would tend to prevent the incessant breaking up of our main street. The lighting of our public thoroughfares is a disgrace to this city; the design of our lamp-posts and lamps a neither novel nor elegant; our finest streets are in comparative darkness as soon as the shops are closed. The cleansing of our streets is effected by means of manual labour at the most inconvenient hours of the day; the watering-carts lay the dust, and, raising and ankle deep, destroy the pavement, create dirt, bespatter our persons and carriages. The owner of the mud cart and its two or three assistants completes the delights of a summer-day's walk, ride, or drive in town."

The traffic arrangements in our streets in the metropolis must shortly receive attention, as we are informed from statistics obtained that more accidents and loss of life take place in the streets in our metropolis, than on the whole of our railway system in the United Kingdom. How is this occasioned? We may naturally inquire. The immunity of the traffic might be relieved by employing the present area of our streets in a twofold manner, viz., by constructing subways for traffic under or viaducts above our existing streets."

DESTRUCTION OF THE NAMUR THEATRE.

THE theatre at Namur was totally destroyed by fire on the 14th inst. The representation of *Faust* had finished at a quarter-past eleven, and the fire was discovered at one o'clock next morning. The entire building was one mass of flame in a short time afterwards, and at two o'clock the roof fell in. Fortunately no lives were lost, and the library and part of the wardrobe were saved. The cause of the fire is said to have been an over-heated fire. The Namur theatre has been singularly unfortunate, no less than three fires having taken place within six years. The old building was destroyed on the 17th of November, 1860; it was rebuilt, and again burnt down on the 25th of November, 1862. Another building was erected from the plans of M. Fumère, and opened in October, 1863, but only to share the fate of its predecessors. The building was insured for 350,000 francs.

A BRIDGE ON BONES.

MR. C. A. ELLIOTT and Mr. Bryant, engineer, engaged on the new Blackfriars Bridge, brought before the British Archaeological Association on Wednesday evening last the curious fact that, after they had got up the foundation of the second arch, on the Middlesex side of the river, as they were dredging up the ground from under the foundations, they dredged up a quantity of bones, fully 15 ft. below the bed of the river, and below the masonry for the whole foundation, which did not go down to the clay. In the gravel and near the clay they got up a large number of bones of the ox, the sheep, the horse, and a few human bones. It appears that the foundation of the old bridge was upon these bones. The bones were darkened, but in a high state of preservation.

THE LATEST ABOUT SIR JOHN SOANE.

THE last "wills and testaments" of English architects are very little known—and yet our architects, from Bishop William, of Wykeham, to Sir Charles Barry, have died—sworn under a good figure, and with characteristic clauses, bequests, and conditions, in their wills. The writer who signs this communication was the first to turn attention to, and the first to print, the will of Inigo Jones. It is his purpose, from time to time, to print in the *Builder* extracts from the wills of English architects, or matter of interest connected with them.

The great Will benefactor among architects to Great Britain was Sir John Soane. The general tenor of his will is known beyond the regions of law and lawyers. What I have now to tell about is new and of moment.

On the 22nd of November of the year just past, the trustees of the Soane Museum in London had (as by will directed) to open, and exhibit, certain locked and sealed repositories in the hidden and secure cellars of the Museum. This direction was fully performed, and in great state, and what was opened was found to contain some pounds' weight of slips of blank paper, cuttings from books and magazines—the *Gentleman's* and the *Ladies'*—a mass of old newspapers, a parcel of old circulars, sundry small and useless things, like old visiting-cards (not so good as the lot Miss Banks, Sir Joseph's sister, bequeathed to the Print-room of the British

Museum); letters (hundreds in number) addressed to him between 1780 and the last days of his vanity. All were in a mass without classification. Many, however, were endorsed, but few have proved of interest. *Begging* and *asking* letters predominate;—some from John Taylor of the *Son* newspaper; others from James Perry of the *Morning Chronicle*, and from B. R. Haydon. There are not a few letters, too, from John Britton and Mrs. Hofland. A passage of letters between Sir John Copley (Lord Lyndhurst) touching a debt due to Soane from John Singleton Copley, R.A., the Lord Chancellor's father, will be read with interest.

We were attracted additionally by one paper—an inquiry from a man in authority relative to the charge per lamp for illuminating the Bank of England, for the rejoicings of the peace of 1814. A tender was made to the Bank architect,—10d. a lamp if for one night; 7d. a lamp for two or three nights.

Lord Stanhope, the learned biographer of William Pitt, will be pleased to learn that Egland's great prime minister, Fox's formidable rival,—dabbled in architectural elevations (his father, the great Lord Chatham, was fond of landscape gardening), and that among "Soane's Papers" (just opened) is a brief note from the minister, and an outline pencil plan of a house, endorsed by Soane as drawn by William Pitt.

The present curator of the Soane Museum is performing his work well.

PETER CUNNINGHAM.

SLIPPERY PAVEMENTS.

I TAKE the liberty of calling public attention, through the medium of your columns, to the incompleteness of the police request, that every one shall keep his own door clean after a snowfall, for we may observe that pedestrians choose to walk in the road on such mornings as we have had lately, as the scraped pavement is far more slippery than where the snow is allowed to lie; and I would suggest that an addition be made to the request now in use, desiring householders to plentifully bestrew the footpath before their houses with ashes. Sand is thrown into the roads, and is of great utility; ashes cost less, and will serve the purpose equally well. Many folks already do this, and, after slipping about elsewhere, it is quite pleasant to feel something underfoot that will not horizontalize you; and, although as a rule, it is not a pleasing sensation to scrunch ashes, the process is preferable to a broken limb obtained on a "clean" pavement.

J. G.

MUSICAL CHIMES AND CARILLONS.

MOST persons who have listened to the delightful music of the *carillons*, in Belgium, or certain other parts of the Continent, must, I think, regret that we have so very few sets of chimes in England that can play even a plain and easy melody in a satisfactory manner. By the word "chimes," as here used, I mean a set of eight, ten, or twelve bells—of which we possess many fine examples in our church towers—"tuned to the modern musical scale, and struck by hammers acted on by a pinned cylinder or barrel, which revolves by means of clockwork." Sacred or secular melodies are thus performed at certain intervals. "I never hear chimes," says Robert Southey, "that they do not remind me of those which were formerly the first sounds I heard in the morning, which used to quicken my step on my way to school, and which announced my release from it, when the same tune methought had always a merrier import. When I remember their tones, life seems to me like a dream, and a train of recollection arises, which, if it were allowed to have its course, would end in tears."

Now, the mechanical chimes at present existing in this country, with here and there an exception, have clumsy wooden barrels, the pins of which are fixtures: so that if times as inappropriate and detestable as "Drink to me only," and certain others of a similar class, have been set upon a barrel, one or other of such tunes must be played so long as the same barrel is used. A far better apparatus has, however, been made, the most prominent feature of which I will now endeavour to point out. Instead of a wooden barrel, a hollow metallic cylinder is introduced, which is so constructed that any tune or tunes of suitable length, the notes of

which correspond with the several sounds of the bells, can easily be set upon it by any intelligent musician. And as the pins of the cylinder are movable, by merely turning the nuts of the screws, new tunes can be substituted for the old ones on the same cylinder as often as you please.

These few hints are therefore offered in the hope that they may lead some of our influential countrymen to take up the subject.

With regard to carillons, or Continental chimes, may observe that, in several instances, these have from 40 to 48 bells, which are tuned to the chromatic scale, and worked by a pinned cylinder of enormous dimensions; so that a machine of such a magnitude is capable of performing appropriate selections of music, certain passages being harmonized in three or four parts.

Many towers also contain an instrument known as the *carillon à clavier*, having a set of keys and pedals—the former for the hands, the latter for the feet,—communicating with the bells as those of the pianoforte and organ with strings and pipes. "These keys are protecting sticks, wide enough to smother to be struck with the hand sideways, without hitting the neighbouring keys." In some places an organist performs on this instrument two or three times a week.

I may take this opportunity of stating that *carillon* is likewise the name of a small keyed instrument, now but little known, to imitate a peal of hand-bells, the tones being produced by box hammers striking metallic rods of different lengths. Handel, it is said, used to accompany his air in Milton's *dequo*, "Or let the merry bells ring round," with this instrument; and in Saul, the chorus, "Welcome, welcome, mighty king."

In conclusion, permit me to add that it appears to be very desirable to have superior machinery constructed to play at certain intervals of time upon the ordinary peals of bells at many of our English churches; and in some particular instances, if a very few new bells were added to the peal, so much the better. It, having surveyed the bells in the tower of St. Peter's Cathedral, as well as those at the Hall of Bruges, and often listened to their music, I could say,—Do not for a moment think of introducing a set of chimes on the Continental scale unless you are in a position to order a set of bells, the largest of which shall be considerably heavier than the tenor of any peal in Great Britain. I venture to throw out this hint, because it was proposed some time ago to place in the beautiful tower of one of our country churches a set of chimes, "equal in extent to those of the Belgian chimes," by adding thirty-six smaller bells to the present peal of eight. And I happen to know that the weight of the tenor, or largest bell of a peal is only 22 cwt. It may, therefore, be safely asserted that it would be well to place within the lofty tower a set of excellent chimes, on a moderate scale; and, for this purpose, ten bells added to the present peal would be amply sufficient; but, to carry out such a scheme as the above-mentioned, would be as great a mistake as that of substituting in a very large concert-hall a small pianoforte for a "Broadwood's grand."

THOMAS WALESEY.

EXHIBITION OF DESIGNS.

With much pleasure I read in your journal some mention of the desirability of prolonging the exhibition of Designs for the National Gallery until the time of those of the "Law Courts" will be a great one. If, through the medium of your paper, you would encourage the minds of those in power to accomplish an end,—or, at any rate, to have the former on view as a fortnight, during the term allotted to the exhibition of the latter,—I believe you would be the means of affording a great convenience on country architects.

ONE OF THE NUMBER.

CEILINGS IN IRON HOUSES.

Remove the Peninsula and Oriental Company's buildings at Bombay, is one of which the top story is roofed with corrugated iron, but in the rest of two kinds of iron are made use of, about a foot apart, and free access is left for the external air into the cavity between them, and good ventilation is given to the room itself at the ridge. I have been in this room in the hottest part of the day, and its temperature was then not more than two or three degrees higher than that of the two lower floors. I considered it strange, though I did not test the fact experi-

mentally, that there must be a current of air constantly circulating in this space between the two coverings. Even if, however, there was no current, the layer of air would serve the purpose of a non-conductor of heat excellently well, just as it does when double windows are used.

Probably, therefore, your correspondent "G. P." will diminish or cure the evil he complains of by putting on a second skin of corrugated iron, a foot or more above the present one, and leaving the space between as uninterruptedly open as possible, with free ingress and egress for the external air. He had better, also, paint it white outside, a well-known precaution. T. R. S.

In reply to your correspondent from the Cape of Good Hope, I think the best and cheapest non-conductor of heat for his ceiling, will be some good thick brown paper, well stretched, and tacked on some slight woodwork, about 6 in. from the iron. The cost of brown paper will be about 2s. to 3s. per cwt. 1 cwt. will cover about 60 sq. square. F. F. D.

In answer to the inquiry from your correspondent, as to the best means for cooling the rooms of his iron houses, and as cheapness seems the object, the following he will find to answer his purpose.—Have a number of holes made as near as possible below the spring of the roof, the size of an ordinary air-brick, at 4-ft. or 5-ft. intervals, then place light timber midway between the holes, size about 7 in. by 15 in., and fix a strong iron pole across the roof as possible, with bell mouth. Place a common 3-in. pipe to the outside of the building, between the timber, to the middle of the room, then canvas and paper the upper sides of the roof, bringing the ends down where the holes are to the middle of the same. By this means the hot air that is generated will be expelled through the shaft; then, by finishing the under sides of the joint with canvas and paper, and making holes in different places, and making a hole in the centre of pipe, will form as cool a room as any European room is summer-time.

M. B. (Mechanics).

In reference to the question as to "ceilings in iron houses," I beg to remark that it is a non-conductor of heat; so, at least, it is generally admitted. The question is, therefore, how to apply it. I would suggest that a ceiling should be formed of felt, stretched or supported by a metallic wire-rope from wall to wall. This mode of construction dispenses with timber, &c. H. WATER.

COTTAGE ARCHITECTURAL MUSEUM.

Sir,—In reply to your remark in last week's *Builder*, I beg to say that there has been no real delay on the part of this society. The matter has been under the anxious deliberation of the council ever since they provisionally awarded the prizes. Every effort has been made to obtain a suitable site on which the buildings are to be erected. The prizes cannot actually be given till the contracts are made, as the essence of the whole competition is, that the cottages should be erected complete for the one hundred guineas. And I now hope we are in a fair way of obtaining the land. H. MARTIN, Secretary.

HIGH-PRESSURE BOILERS FOR BATHS.

Sir,—In a new house, in course of erection, I have attached to my kitchen stove a small high-pressure wrought-iron boiler, for supplying a bath on the story above, and reducing the amount of the domestic expenditure at Mayor Constable's, near Hull, I began to feel anxious lest the pipes (1 in. diameter), should ever get frozen, and then consequently (there being no valve, or any way of escape), the boiler would burst. I have spoken to the ironmonger who is doing the work, and he assures me such a thing is not likely to happen once in ten years. I tell him it might be just once in ten years too often, and that nothing will satisfy me but having some valve or other mode of outlet when the pipes are frozen, and the water thus hermetically sealed. He tells me that valves nearly always leak, and are very troublesome. Can one of your readers help me out of my difficulty? I would rather dispense with my bath altogether than run such a risk as I shall do without some outlet, in case of stoppage of pipes from any cause whatever. B. L.

DAMAGE BY FALL OF CHIMNEYS.

In the Bail Court, at Nisi Prius, before Mr. Justice Shee and a Common Jury, the case "Kingsford v. Wells" has been decided.

The plaintiff was a dentist carrying on business at 54, Piccadilly, and the defendant was a jeweller at 55, Piccadilly, and the action was brought to recover damages against the defendant for negligence, in not having properly repaired his stack of chimneys, so that on November 22, 1865, the chimneys fell through the roof of the plaintiff's house and damaged it.

The defence was that the plaintiff's roof was not in a proper state of repair. The defendant, upon taking possession of the premises, in 1859, gave a builder instructions to go over the premises, and put everything in a proper state of repair, and such repairs were done. The weather in October and November, 1865, was extremely boisterous and stormy—a sort of "whirlpool" wind. On the 22nd of November, 1865, the stack of chimneys, which was built about fifteen years ago, was blown down.

One of the assistants of the meteorological department in the Board of Trade stated, that he was in London on the 22nd of November, 1865. The state of the weather on that day was blowing a strong gale at eight in the morn-

ing, and a more than ordinary strong gale at half-past nine. The scale went from 0 to 12. On that day the force of the wind was 11. The accounts were published every morning in the *Times*. If the wind blew with a force of 12 no ship could carry any sail. Such a force of wind had not been registered for several years.

The jury found for the plaintiff, but thought the defendant was not aware of the dilapidated state of the chimney.

REMOVAL OF SNOW.

Sir, On the Saturday following the recent snow-storm, I employed a number of the road-men in collecting the snow in trucks from the narrow and important thoroughfares, and had it shot down the side entrances into the sewers, where it passed away with the stream as fast as the workmen shovelled it in. I am so satisfied with that experiment, that should another fall of snow occur, carts will be employed in lieu of trucks, and by that means a considerable extent of ground will be soon cleared. The warmer temperature of the sewer air and water quickly reduces the snow to water. JAMES LOVEGROVE.

Hackney Road of Works.

CHURCH-BUILDING NEWS.

Fulford, York.—A new church at Falford, near York, which has been erected at the cost of nearly 5,000*l.*, and designed by Mr. J. P. Pritchett, architect, Darlington, has been consecrated and opened by the Archbishop of York. The style of the church is the Early Decorated, and at the south-west corner is placed a tower and spire 140 ft. high. The name of the church is St. Oswald's, and the contractor for the works was Mr. Wentkerley, of York. The pulpit and reading-desk were executed by Messrs. Forayth & Co., of Skidmore & Co., of Coventry; and the carving was done by Messrs. Bursall & Taylor, of Leeds.

East Rainton (near Durham).—St. Cuthbert's Church, East Rainton, has been consecrated. The church consists of nave, chancel, south porch, and vestry, and affords accommodation for 150 people. It is built in the Early Decorated style. A simple bell-cot over the west end contains a bell. There are two stained-glass windows, by Mr. Wailes, one in the chancel of the "Good Shepherd," and one in the nave representing St. Cuthbert. The church has been built from the design of Mr. C. H. Fowler, architect; Mr. Graddon, of Durham, being the general contractor; and Mr. Thornton doing the mason-work.

Wigan.—The church of St. James the Great, Haydock, has been consecrated. The church, which stands to the east of the highway leading from Haydock to St. Helen's, is built mostly of brick, and it adjoins a new schoolroom which has been added to the old building, while in the interior there are large doors opening into both these rooms, so that the space for those who wish to worship may be increased considerably beyond the west wall of the church proper. The style is Gothic; and, owing to the material employed, nearly the simplest form of Gothic has been chosen by the architects, Messrs. W. & J. Hay, of Liverpool, and carried out by the builder, Mr. George Harris, of St. Helen's. The church consists of a nave and chancel, with a porch and vestry. The porch is at the south-west, and some few of the dressings here are of stone; the nave is about 40 ft. by 20 ft., and 35 ft. high to the apex of the roof. It is lighted with nine single light lancet windows with stone sills, and filled with outedral glass, surrounded by a border of stained glass. The roof is open to the summit, and all its timbers are stained and varnished. The sittings, which will accommodate 160 persons, are of pitch pine, stained and varnished; and the pulpit, reading-desk, lectern, and faldstool, which stands at the chancel entrance, are of the same material. There are also seats in the chancel for the choristers. The chancel arch is like all the other arches in the church, of coloured brick, and in addition it rests upon carved stone corbels. The chancel itself is 15 ft. square, and the floor gradually rises by six steps to the altar. It is lighted by a three-light window filled with glass of the same character as in the nave, and by a couple of smaller windows to the south; on the opposite side being the vestry. Staffordshire red and blue tiles form the floor of the church. The interior of the walls are not covered with plaster, and the effect of the red bricks, relieved with the darker shades round the arches, is not altogether a disagreeable one. The whole of the seats are free and unappropriated. The cost of the building is between 1,300*l.* and 1,400*l.*

Stockbridge.—The Bishop of Winchester has consecrated a new parish church at Stockbridge,

where the old parish church had become so decayed and dilapidated as to be wholly unfit for Divine service. The new building has been erected by Messrs. Paul & Sons of Southampton, from designs furnished by Mr. J. Colson, of Winchester, architect; the total estimated cost of the structure being 2,800*l*. The east window, of stained glass and three lights, was a gift from Mr. John Day, of racing celebrity, and cost 100 guineas.

Cheltenham.—St. Mark's Church, which was opened for divine service five years ago, has now been completed by the addition of a tower and spire, and it was opened by the Lord Bishop of the diocese, on Thursday in last week. The additions were part of the original design of the architect, Mr. Middleton; they were not carried out when the church was built on account of the want of funds. The site is high, and the spire is a conspicuous object in the town landscape; it is at the west end of the nave, with which it is connected by a lofty arch, with clustered columns. The lower part is intended for the Sunday school children; a gallery above serves for the choir. The west door and the window above are good specimens of the general style of the church. The former has blue Forest stone mixed with white in its arch, and red Forest stone jambs with foliated caps. The tracery of the west window is boldly mannered and richly cusped; the upper stage of the tower is lighted by four two-light windows, with deeply recessed jambs and arches, with red Forest shafts. The tower has a cornice and four pinnacles, hexagonal in plan. The spire is plain and severe in outline, being simply pierced with alternate rows of trefoils. The works have been carried out by Messrs. Wingate, of Gloucester.

DISSENTING CHURCH-BUILDING NEWS.

Scarborough.—The chief stone of a Baptist new chapel has been laid at Westborough. Messrs. Lockwood & Mawson, of London and Bradford (the architects of the South Cliff Congregational Church), are the architects. The chapel will form the central and prominent feature of Albemarle-crescent, in the middle of which it will be erected. The style of the building is Geometric, and the principal front will be built of Bradford rag wall stone, and with dressings of Whithy ashlar. At the south-west angle, a tower 12 ft. square, and surmounted by a spire rising to a height of upwards of 100 ft., will be erected. Internally, the church will consist of a nave and side aisles, divided by cast-iron columns, with foliated capitals, and supporting spandrel arches and an open timber roof; also, of transepts, baptistery, and organ chapel; and minister's and ladies' vestries. A small gallery is placed across the end of the chapel, over the vestibule, and which may at any future time be carried round the whole of the interior. The seats will be of open timber work, and, with the other internal woodwork, will be carved and varnished. The accommodation will be at present for about 850 adults; and the cost, exclusive of ground, about 4,500*l*. The works are being carried out by Mr. John Barry, jun., of Scarborough.

Bishop Stortford.—The new Wesleyan Chapel has been opened. It has been raised on the site of the fire in South-street, by members of the Wesleyan denomination. The building has been erected by Mr. Todd, of Cambridge; the architect being Mr. J. Cowell, of London. The Gothic style of architecture has been adopted. The interior will accommodate 220 persons. The vestries in the rear extend the width of the chapel, and will afford accommodation for the Sunday schools.

Tarporley.—The Wesleyans are about to erect a place of worship in Tarporley. Plans have been advertised for, and a competition amongst the Chester architects took place, the design sent in by Mr. Krolow being accepted. The plan of the chapel is a rectangle, 62 ft. long by about 39 ft. wide. The total length, including the singing gallery, will be about 79 ft. The design is in the Gothic style. The principal front consists of a central gable containing a five-light window; beneath this there are four small windows separated from each other by a dwarf column with cap and base. The height of the tower will be about 76 ft. The chapel is seated with open pews, and accommodates about 300 persons. The main timbers of the roof are visible, but the upper part of the roof is celled considerably below the ridge level, to assist the

acoustics of the building. The whole of the woodwork and fittings are to be stained and varnished. The stone used in the erection is a self-faced even bedded local stone.

Chester.—A new Welsh Calvinistic Methodist Chapel has been built in St. John-street, Chester, and opened for divine service. Attached to the chapel is a school-room, the whole structure involving an outlay of upwards of 5,000*l*. The design of the chapel is in the Early Pointed style, the French school being followed in the general details. The principal front to St. John-street consists of a gable about 65 ft. high, terminated by a foliated finial somewhat resembling a Prince of Wales's feathers. The two entrances in this front are protected by a large open porch, consisting of five pointed arches, supported on stone piers, and polished red granite columns, having carved capitals and bases. Over the porch is placed a rose window. The window is 22 ft. in diameter. The chapel is seated for about 650 persons, principally on the ground floor, there only being a small gallery at the west end. The interior is lighted by day with large windows filled with ornamental glass, and by night with a series of large wall gas brackets, in wrought iron. The school-room, situated in the rear of the chapel and vestries, is a room about 60 ft. in length. The architects were Messrs. W. & G. Audsley, of Liverpool; the builder being Mr. Thomas Hughes, of Aldford. The carving was by Mr. Stirling, of Liverpool; and the whole of the ornamental iron work, by Messrs. Charles Smith & Sons, of Birmingham.

Books Received.

The Water Question: a Letter addressed (by permission) to the Earl of Derby. By J. BAILEY DENTON. London: Stanford.

In this pamphlet Mr. Denton proposes to supply the metropolis from the higher sources of the Thames, in conjunction with the storage of surplus water, in preference to the more costly schemes of late proposed. The cost of Mr. Denton's plan he estimates at 4,500,000*l*. He stipulates for the purification of the sources of supply, where requisite, by the removal of all sewage water, "purified" or not purified, from the streams used; but thinks that such water might be allowed to be taken to the sea through the Thames below such water-supply sources as are requisite. He gives evidence that no purification can render sewage water, however much diluted, fit for domestic purposes. For the water withdrawn from the streams he proposes to compensate mill-owners and others by means of surplus reservoirs for flood waters. The head of his proposed works would be the fork formed by the Thames and Severn Canal, extending from its summit at Thames Head to its junction with the Thames at Lechdale, and the North Wilts Canal, which it was proposed to convert into a railway, not being profitable as a canal, and therefore to be had at a moderate price. The supply would be given to the present companies, and would not, without lifting, provide a constant supply at high pressure, as the grander schemes would do. Mr. Denton, however, regards the expense of re-arranging the whole system of service-piping as a set-off against the cost of lifting the supply to existing reservoirs.

VARIORUM.

"BARONIES OF FORTH and BARGEY, County Wexford, Ireland: an Inquiry into the Origin and Philological Relations of the Antique Dialect formerly spoken in this District." By J. A. PICTON, F.S.A. Liverpool: Printed, for private circulation only, by D. Marples. This paper was read before the Literary and Philosophical Society of Liverpool. It gives a learned and interesting account of a dialect based upon Old English, Danish, and other ancient sources, but now obsolete. The district where it was spoken is an almost insulated corner of Ireland, jutting out south-eastward towards England, whence it was finally settled by emigration of the Anglo-Normans, who, in 1169, landed under Strongbow and his companions, and took possession. The two baronies were then created; Forth being bestowed upon Robert Fitzstephen and Bargey upon Hugh de Montmorency. The dialect presents sufficient internal evidence that the population was largely recruited from Devonshire and the western coasts of England.

Vallancey, the Irish archæologist, of whom Mr. Picton speaks respectfully, seems to have first drawn the attention of philologists to this district in the "Transactions of the Royal Irish Academy for 1788." The two examples of the dialect given from Vallancey and Mr. Hore, of Wexford, the only two in existence, are thoroughly analyzed by Mr. Picton, and are very curious.—"Companion to the Weather Glass for 1867." By the Rev. R. Tysa, M.A., F.M.S. London: Barmose, Paternoster-row. This seems a very useful annual to all interested in the weather,—and who are not? It contains a calendar for the present year, with a column in which to note down the weather as it occurs. It also treats fully of the barometer, the rain-gauge, and the thermometer, as well as of clouds, winds, &c.; and is illustrated by engravings.—"The Garden Oracle for 1867" contains a new selection of the best varieties of garden fruits, descriptions of new plants, new flowers, and new fruits. Also selections in all the classes of show and decorative plants, in which are enumerated the best roses, dahlias, hollyhocks, gladioli, and pansies.

Miscellaneous.

THE CONTRACT FOR WORKS AT CHATHAM DOCKYARD.—The contract has been signed at the Admiralty for the construction of the basins, docks, factories, and other works connected with the intended enlargement of Chatham dockyard. The estimated outlay is a million and a quarter sterling. Although several of the most eminent of the railway, engineering, and other firms in England were invited to give in tenders for the execution of the works, they either shrank from the undertaking, or tendered on terms which the Admiralty deemed to be inadmissible, and the contract has accordingly passed into the hands of Mr. Gabrielli, the head of an Italian house. Mr. Gabrielli, we believe, executed the enlargement of the naval establishments at the Royal Dockyard, Malta. The works will be commenced in a few weeks, when 2,000 hands will be taken on in the first instance for the preliminary excavating operations.

THE LAW OF CONTRACT BETWEEN MASTER AND SERVANT.—A meeting of the subscribers and friends of the Law Amendment Committee of the Social Science Association has been held, to hear a paper "On the Law as regards Contracts of Service between Masters and Servants," read by Mr. Edgar. Mr. Clarke occupied the chair. Mr. Edgar stated succinctly the existing law upon the subject; considered the grounds upon which it is supported, and the objections to which it appears to be liable; and made some remarks upon the resolutions agreed to by the select committee of the House of Commons. He was persuaded, he said, that any legislation founded on the report of the committee would go but a short way towards putting an end to the dissatisfaction and discontent which undoubtedly existed on this subject, and which he believed would continue to exist until the same measure of justice was meted out to the working man as to the rest of the community.

DECORATION OF HORSHAM CHURCH.—The church of St. Mark's, Horsham, has been decorated in an inexpensive manner by Harland & Fisher, of London. The arrangement is as follows:—A broad band with a text is carried beneath the wall-plate. The text on the north side is, "Surely the Lord is in this place: this is none other but the House of God, and this is the Gate of Heaven!" That on the south side is, "I have hallowed this house, to put my Name there for ever, and mine eyes and my heart shall be there perpetually." The outline of the arches has a pattern of crocketing in red, carried round, bordered with a line of grey. On the spire there is a flowing pattern in grey, while on the soffits is painted a broad red band. From the floor to the springing of the arches is filled with a pattern of masonry. The stone corbels which carry the roof are picked out with grey and gold. The chancel arch and east end are treated more ornamentally, a text, "Holy, Holy, Holy, Lord God Almighty," being painted round the curve of the arch; a row of crocketing beyond that; while a painting of the "Agnus Dei," and "The Pelican and her young," are introduced at the springing of the arch, the intervening spaces being filled with geometric diaper work. The chancel itself was decorated by the same artists a few years back.

THE LICENSING SYSTEM.—Many persons being desirous of seeing some change for the better made in the present system of licensing public-houses and beer-shops, especially in reference to that clause in the Beer-shop Act which allows of drinking on the premises, it is proposed to hold a conference on the subject in Exeter Hall on the 29th and 30th of January. The Earl of Shaftesbury will preside.

NEW CEMETERY FOR BELFAST.—The committee appointed by the town council for the purpose of investigating the various plans for the new cemetery, on the Falls-road, have, we understand, selected the design of Mr. Gay, of Bradford. The area of the cemetery is forty-five acres within the walls, and the laying out of the ground, planting, draining, and boundary-walls is estimated to cost about 10,000l.

MUSEUM FOR THE EAST OF LONDON.—The iron buildings at South Kensington, which years ago and when the design was only on paper we bidden the Brompton Boilers in the endeavour to obtain an improvement in their appearance (a name that has stuck), are to go to a place of land in Bethnal Green. The Treasury has sanctioned the expenditure of a considerable sum of money to form a museum there for the eastern half of the metropolis.

LAND IN LONDON.—At the last meeting of the Union Bank, Mr. P. N. Laurie, chairman, said, the Corporation, having determined to widen Mansion House-street from the bottom of the cutty, have taken possession of the frontage of the buildings which the Union Bank were about to erect at that spot. For this little strip of ground, measuring, according to Mr. Laurie's statement, 15 ft., the Corporation have had to pay 43,000l.; the bank having failed to establish their claim for a larger sum. Allowance must be paid for a proportion of this amount allowed for works commenced.

PROPOSED PLEASURE-GROUNDS FOR ROCHESTER. project is under the consideration of the corporation of this city for leasing the whole of the castle-grounds, now let for market-gardens, and converting them into properly laid-out pleasure-grounds for the inhabitants of the city; the corporation also, at the same time, taking over the ancient Castle. We understand that the agent for the Earl of Jersey, to whom the Castle and the adjacent grounds belong, has expressed a willingness to accede to the proposal, and, indeed, enters very warmly into the project. Under these circumstances there is every probability of the contemplated arrangements being carried out by the corporation.

THE FATAL GAS EXPLOSION IN GRAY'S-INN.—The coroner's jury in this case gave the following verdict:—"We find that the deaths of Asini, Villa, and Cole were caused by an explosion of gas through a fracture in one of the watered Gas Company's service-pipes; which is much regret, knowing that the company are aware this service had not been renewed for many years. We are of opinion that the watered Gas Company, knowing this, should have given special instructions to their servants thoroughly examine the whole of the service-pipes, including all pipes as far as the meter." The foreman said the jury had but one opinion on the subject, and were unanimous in returning the verdict. The coroner said that that was equivalent to a verdict of "accidental death caused by the defective service-pipes of the watered Gas Company." He would enter that verdict, and transmit the resolution of the jury to read to the gas company.

EXPLORATIONS AT REPTON.—A discovery of some interest has been recently made in the ruins of Repton Priory. The boys of the school have been for some time engaged in pulling a part of the enclosure known as the upper Paddock, with a view to form a new cricket ground. In the course of this work they uncovered a considerable number of encaustic tiles, and a structure believed to have been used by the monks for the manufacture of encaustic tiles for the Priory Church. This is not the first discovery of a tile manufactory in connexion with a monastic establishment. It was, indeed, merely a question among antiquaries whether ornamental tiles were made in Great Britain, till the kilns found several years since at Great Oulton, and in Farringdon-street, London, have conclusively answered the question. The Repton excavations supply additional evidence, while in the construction they are unlike the other examples, and are said to be unique.

DAMAGE TO PLYMOUTH BREAKWATER.—A Government survey of the damage has been made, and its amount is reported to be about 10,000l.

THE REMOVAL OF MUD.—A correspondent ("P. E. M.") suggests, with reference to the necessity for the immediate removal of mud from London streets, that if manual labour be too expensive, a useful combination for the purpose might be made of the old sweeping-machines and noiseless smoke-consuming locomotive engines.

A GAS FIRE-LIGHTER.—An invention has recently been patented, under the name of gas fire-lighter, which is intended as a substitute for wood and paper in lighting fires. A row of three gas burners is fitted on below and behind the grate bottom, with a tap at one side, so that when a fire is wanted the gas is lit, and the flame passing amongst the coals sets fire to them without the aid of wood or paper. In summer, water can be boiled by the gas alone, as in an ordinary gas fire.

ACCOMMODATION FOR THE PARIS EXHIBITION VISITORS.—An excursion-manager has sent to the periodical press an account of the result of his inquiries as to the probable cost of accommodating visitors at hotels, and otherwise, during the Exhibition. His movements, especially if he have imitators, will simply have the effect of increasing the great expectations of Parisian hotel-keepers and landlords, and leading to great charges which will keep away thousands of visitors. Much better be quiet at present.

A GOOD SNIPE-GROUND BUT A BAD BARRACK-YARD.—The *British Medical Journal* says,—The cantonment of Dum Dum, in India, is notoriously sickly and fatal to the European troops quartered there; it is aptly described as a good snipe ground, but a wretched cantonment. The 91st Highlanders having been judiciously removed thence, the 29th Enniskillens have been substituted for them for reasons past comprehension. Only the other day the 53rd Regiment, marched from Dum Dum reduced and enfeebled by sickness. The *Friend of India* presumes that, when the 29th become sufficiently sickly and inefficient, when a sufficient number of men have died to justify the urgent remonstrances of a medical man, it will also doubtless be removed. But why are they sent there?

MOSCOW.—A correspondent writes us from this city:—"On Sunday, 13th inst., being New-Year's day here (Russian old style), the Prince Governor General gave a grand reception at 9.30 a.m. Every person invited had to appear in full evening costume, or in uniform—the latter most gorgeous. The day was lovely, a brilliant sunshine and a *Requiem* of heat: it was 20° of Reamur cold a few days previously. The staircase was lined three deep with 100 footmen in gorgeous liveries, and altogether it was a magnificent sight. At the opening of the Moscow Gas Works the English engineer had to march with the Prince Governor General; and, as representing the Company, he had to be blessed, sprinkled with holy water, and to kiss the cross. The alterations in temperature at Moscow seem very great. Such a mild winter has not been known for many years.

THE TELESCOPE FOR VICTORIA.—The Legislature of Victoria having voted the sum of 5,000l. for the construction of a large reflecting telescope, to be erected at Melbourne, for the purpose of effecting a thorough survey of the nebula and multiple stars of the southern hemisphere, the president and council of the Royal Society (whose advice and co-operation, our readers have heard, had been requested) selected Mr. Grubb, of Dublin, the eminent optician, to construct this instrument. The impossibility of obtaining discs of glass of the requisite purity has rendered it imperative to employ catoptrics instead of dioptrics—reflection rather than refraction—when a telescope of large size is to be constructed. An image is formed in the focus of the mirror, and is examined by suitable eyepieces. The tube has a diameter of 1½ ft., and is of proportional length. The diameter of the speculum is but 6 in. less than that of the tube, or 4 ft., being 4½ in. in thickness, and weighing about 27 cwt. The grinding was performed by a polishing machine and steam-engine, constructed for and belonging to the telescope, and which will accompany it to Melbourne. The weight of the telescope, when completed, will be about 10 tons, and it will be moved by clockwork.

AN ARCHITECT'S LIBRARY.—M. Alexandre du Bois, a Paris architect, who died recently, in his eighty-second year, has left behind him a library of 20,000 volumes, exclusive of pamphlets, sedulously collected during his life. Amongst other literary works nearly completed by him at the time of his death are a *Bibliographie des Beaux-Arts et Spéciallement de l'Architecture*, in three volumes; and a *Bibliographie des Architectes anciens et modernes*, also in three volumes.

GAS EXPLOSION AT SUNDERLAND.—A cottage has been blown to pieces and the furniture smashed by an explosion of gas in an instance where no gas was laid on. A street lamp stood on the pavement opposite the door, and the lamp-lighter had injured the gas-pipe so that the gas filled the hollow of the lamp-post, and got under the pavement and into the house. The smell of gas alarmed the inhabitants, and the tenant stupidly struck a light to see where the escape came from, when immediately the explosion took place. The walls of adjoining cottages were also shattered, but no one was seriously injured.

A STATUE FOR SHAKESPEARE.—A citizen of London reviving the opinion, that the Thames Embankment, fronting the present Temple Gardens, affords a good site for a statue of Shakespeare, says,—

"If the public saw a good design, I am satisfied funds ample for the purpose would be forthcoming. I therefore am willing, preserving a strict *incognito*, to offer a premium of fifty guineas for the best design, twenty for the second, and ten for the third."

The *Athenaeum* guarantees the good faith of the proposer, but something more must be done to get useful fruit from the suggestion. Precise terms must be laid down, and a proper tribunal named.

STREET BARS.—We have often urged the removal of the many bars which obstruct the metropolitan streets, and are glad to observe that the Metropolitan Board of Works are now moving in the matter. It was proposed by Mr. Shaw to apply to Parliament by petition, but eventually it was unanimously resolved,—"That it be referred to the Works and General Purposes Committee to take into their consideration the existence in the streets of the metropolis of many barriers, gates, and private tolls, to the obstruction of the general traffic, with power to take counsel's opinion thereon, and to report their recommendation to the Board." The Chairman suggested that there might be a difficulty in the way, as proprietors might be liable for breach of contract with persons who had taken premises on the faith and understanding that they should have quiet possession of them. But is not that the case, as regards possession, where persons have been expelled altogether from premises without even compensation?

SENSITIVE AND SINGING FLAMES.—Nolloyers' "Flames," but Dr. Tyndall's. At the Royal Institution last week the doctor delivered a lecture "On Sounding and Sensitive Flames," in course of which he amused his audience with a variety of very curious experiments, which culminated in his addressing some poetical lines to a flame by which he seems to have been smitten. Two gas flames were burning at the same time, one of them being long, straight, and smoky, and the other short and brilliant; and when a whistle was sounded the long flame became short and brilliant, and the other was converted into a long, dull, and smoky flame. By increasing the pressure of the gas a jet of flame about 20 inches long was produced which was peculiarly sensitive. On the slightest sound it sank down to 8 inches; and the crumpling of (pink note?) paper seemed to throw it into convulsions. By some sounds, however, it was not in the least affected; and it was interesting to observe, when Dr. Tyndall repeated the lines of poetry alluded to, how the flame was fluttered and affected by some of the expressions and was insensible to others. Whether it was a compliment or a declaration of love which most flattered it, the reporter did not note. On uttering the not very poetical word "boat," however, the flame remained steady; but at the word "boat"—Byron's "boat is on the shore," perhaps—it started; and a very ungallant threat to "beat" it threw it into violent commotion, and no wonder; but it was yet more powerfully affected by the sentimental exclamation "ah!" To silent sounds it was particularly sensitive: a hiss sent it down to the lowest point of humiliation. When a musical snuff-box, however, was put in action, it ~~was~~ got over its low spirits, and danced up and down to the tune

CHURCH WORK.—We are asked to add to our notice of the Wesleyan chapel, Rickmansworth, that the warming of both chapel and school is effected by hot-water apparatus erected by Messrs. J. Jones & Sons. —Also to the notice of church at Sydenham, that it is paved with encaustic tiles supplied by the Architectural Pottery Company.

SKATING.—A subscriber writes,—"On reading your sensible observations on skating, or the "suicide of skaters," where parties will still persist; the question is whether some additional suggestion might not be made for the preservation of human life, and it has occurred to me whether some simple contrivance in the form of a raft or grating might not be adopted, and kept at one end of the ice. It should be made about 12 ft. or 14 ft. square or less, of slight timbers, say 6 in. by 6 in., bolted together, having sufficient spaces between for parties to raise their heads and shoulders above the ice; and which would still float when the ice gives way and could be propelled forward.

FURTHER DISCOVERIES AT MALTON.—Some more Roman and British remains have been discovered in the cuttings for the Malton Water-works, which, however, have now been completed. The Roman station was engraved on an earlier British one, as clearly shown by the cuttings; in which Roman pottery, coins, and skeletons have been found overlying the original alluvium, in which the remains of red deer, flint implements, and bone pins were the chief relics. The cuttings just completed extend from the Lady's Spring, at the south-east corner of the great military station of Derwent, to a point just opposite the Prætorian Gate and the Roman ford across the river.

MITAL DOOR.—Mentioning the works in Miss Hosmer's studio in Rome, the *Morning Post* says,—"One of the most important is a door, 15 ft. high, to be cast in bronze and gold, for Lord Brownlow, who intends it for the entrance-door to a sculpture-gallery at Ashridge. The upper semicircular compartment represents, in fine bas-relief, the three elements,—earth, air, and water,—two of which, earth and water, are further illustrated, practically and poetically, by four oblong compartments, inclosing above a vintage scene on the left, and a fishing group on the right, and below centaurs and nymphs, and tritons with sea nymphs. The centre panels between these four corners are divided into twelve compartments, with charming figures and groups allusive to the twelve hours of the night. The jambs and upper arch will be of marble, inlaid with Byzantine mosaic. Another fine work, almost completed, is a fountain executed for Lady Mpcion Alford, surmounted by a syren, to whose song four Cupids on dolphins below are listening with upturned heads.

PROFESSOR LEONE LEVI UPON "OUR WORKMEN."—A lecture, under the auspices of the Nottingham Mechanics' Institution, has been given by Dr. Levi, at the hall of that society, the subject being, "Our Workmen: their Labours, Rewards, and Trials." The mayor, Mr. J. L. Thackeray, occupied the chair, and there was a large audience, amongst whom was the Duke of St. Alban's. The lecturer delivered an exhaustive address of about an hour and a half in duration. In speaking of trades' unions, he said, let them not do them an injustice. They did good in the discipline and order which they enforced upon the different trades, which acted as a check against riots and excesses, and how often were they made to subserve the purposes of charity and munificence. There were points in their action, however, decidedly objectionable. The restriction they put upon the number of apprentices, and every other hindrance imposed upon the freedom of labour, admitted of no defence whatever. They could not dispute the right to influence others living with them; but all coercion or intimidation used for that purpose was illegal, and reprehensible. If they desired independent action for themselves they must allow it to others. But what should he say in favour of locks-out? Not a word in their favour. Nothing could be more injurious to the masters or to the operatives than such an extreme measure. Concession on either side was better, and arbitration was better still. One great source of absorption of the working man's earnings was drink. It was a very sad fact that in the United Kingdom as much as 70,000,000. a year were spent in ardent spirits, exclusive of wine; and of that amount 50,000,000. or upwards came out of the pockets of the working men!

THE MANCHESTER ALBERT MEMORIAL.—The memorial of the late Prince Consort, in the centre of Albert-square, Manchester, has been inaugurated by Dr. Fairbairn. A view of the monument will be found in a previous volume of the *Builder*.

AN OBSERVATORY BURNED.—On Sunday last, the observatory connected with St. Gregory's College, Downside, near Bath, was totally destroyed by fire. It originated apparently in the heating apparatus, which kindled the joists of the ground-floor.

MODEL DWELLINGS IN HALIFAX.—Mr. John Crossley has erected, in Halifax, a stone building, in the Venetian style of architecture, at a cost of about 3,000l., as a model-lodging house. Mr. Crossley has conducted a model-lodging house at the Mulcture Hall, Halifax, for fifteen years, and the institution has peculiarly been successful.

THE OUTBREAK OF FIRES.—A correspondent, R. T., suggests, that while water and firemen are being sought for, every fireplace in a house, by previous arrangement, might be closed up by pulling a cord connected with an iron plate in the chimney-stack; and that a policeman, by breaking a hole in a fanlight, for example, might not only do this, but also break some fragile vase, hermetically sealed and containing fire-extinguishing materials, so arranged as to be thus brought into action. Or such a vessel could be carried to the locality of the fire and thrown in.

INAUGURATION OF A NEW BUILDING AT RYDE, FOR THE YOUNG MEN'S CHRISTIAN ASSOCIATION.—The building in Lind-street, Ryde, nearly opposite the town-hall, which has been recently erected for the use of this Association, has been inaugurated. For the designs the society is indebted to Mr. Thomas Dashwood, honorary architect. Two rooms on the ground-floor, fitted with shelves and bookcases, are set apart for the circulating and reference libraries. On the first-floor is an apartment capable of being used as a general reading and news room. There is a small apartment on the same floor, suitable for a conversation or retiring room for members. On the second floor there are two rooms of nearly equal dimensions, which are intended to be used as class-rooms.

THE "BUILDER" FIRE.—The accomplished author of "Ten Thousand a Year," Mr. Samuel Warren, Recorder of Hull, has recently borne voluntary testimony, in a letter widely printed, to the value of the mode of economically burning coals in grates which we described some years ago, and which is pretty well known in many parts of the country as our fire,—the *Builder* fire. Mr. Warren, however, omits in his otherwise excellent letter one of our special points, namely, that, when the bottom of the grate has been covered with a thin plate of iron (or, more cheaply, by spreading over it some fire-clay), and the coals have been put in, the fire should be lighted at the top. This necessitates lighting the fire some little time before it is wanted, or the mass will not have become incandescent; but the gain in point of economy, avoidance of trouble, and amount of steady heat, is very great indeed. From a fire thus lighted, properly, scarcely any smoke escapes, another very important advantage.

BRADFORD NEW EXCHANGE.—The exterior, with the exception of the final touches from the hands of the carvers in stone, is now all but finished; and the great hall, it is hoped, will in a month or two be completed. The medallions which are now being sculptured along the front of the Exchange represent men among statesmen, navigators, engineers, and manufacturers who have cleared the way for trade, and to whose lives and labours towns such as this owe their prosperity. Next to the tower, in the place of honour on the Market-street front, the head of Cobden is appropriately placed; and next to that is a head of Mr. Titus Salt. These are all that are finished on this front, but heads of Stephenson and Watt are partly completed, and there are to follow in order Arkwright, Jacquard, Gladstone, and Palmerston. The floor of the hall is now being paved with Maw's encaustic tiles. Along the sides the walls are tiled to the height of 5 ft. with encaustic tiles in relief. At their bases the beams supporting the roof are ornamented with figures carved in wood, symbolical of justice, commerce, science, navigation, &c. The crown of the roof is of stained glass. Messrs. Lockwood & Mawson are the architects.

THE COLISEUM, ROME.—According to the *Revue Artistique*, M. Visconti, architect, has been commissioned by the Pope to restore the upper part of the Flavian amphitheatre.

THE UNITED EXCAVATORS' SOCIETY'S ANNUAL MEETING.—The first annual meeting of this society was held at the Lambeth Baths, on Monday evening, under the presidency of Mr. G. M. Murphy. After an address from the chairman, the secretary stated that, notwithstanding the inclement season and the unsettled year through which they had passed, they had still fourteen lodges, comprising some 800 members, with a balance at the banker's of 320l.

INFREINGEMENT OF A BUILDING ACT IN PALESTINE.—Mr. George Williams writes from King's College, Cambridge, on behalf of "the smallest nationality in the world." This, it appears, is the Samaritan community, consisting of only 150 souls, who have experienced a literal fulfilment of the proverb, that "He that exalteth his gate seeketh destruction." They had heightened the street-door of their synagogue at Nabulus or Shechem, the ancient capital of Samaria, from 4 ft. to about 5 ft. 6 in.; they had also renewed some part of the pavement of the synagogue itself, which had become decayed. These repairs were declared illegal by the Turkish official, who, accompanied by a mob of 200 or 300 fanatics, went himself to the synagogue, in the south-west quarter of the city, where he directed and superintended the demolition of the new work, which was left a complete wreck, and its owners are not allowed to repair this their only place of worship.

TENDERS

For the erection of Premises, Leadenhall-street, for Messrs. Pound & Sons. Messrs. Humphreys & Son, architects:—

Myers	£6,179 0 0
Rider & Son	5,991 0 0
Henshaw	5,979 0 0
King & Sons	5,960 0 0
Sparks	5,880 0 0
Ennos	5,880 0 0
Ashby & Sons	5,875 0 0
Hart	5,831 0 0
Ashby & Horner	5,830 0 0
Brass (accepted)	5,834 0 0

For the new drapery establishment, Sheffield, exclusive of stoves, chimney-pieces, warming apparatus, gas, and any fittings, for Messrs. Boley, Brothers. Messrs. Flockton & Abbott, architects:—

Wilson	£10,350 0 0
Robertson	10,300 0 0
Huddleston	10,132 0 0
Barber	9,968 10 6
Gomersall (accepted)	9,950 0 0
Cubley & Stringfellow	9,424 0 0

For extensions to the Wolverhampton Union Work-house. Mr. Veall, architect:—

Higham	£1,100 0 0
Lyatt	1,085 0 0
Burkett	1,068 0 0
Roberts	996 0 0
Plunk	974 0 0
Thompson (accepted)	935 0 0

For rebuilding house No. 7, Green-street; Bathol-green for Mr. G. Bangh. Messrs. Tolley & Dale, architects:—

Withers	£756 0 0
Forrest	745 0 0
Higgs (accepted)	677 0 0

Accepted for Kent County Lunatic Asylum, new office buildings, dining-hall, &c. Mr. Martin Bulmer, architect. Quantities supplied by Mr. G. Ruck and Mr. T. Ladds:—

<i>Builder's Work.</i>	
Stiff	£16,767 0 0
<i>Smith and Founder's Work.</i>	
Weeks & Son	£1,285 0 0
<i>Plumber and Glazier's, &c., Work.</i>	
Aldridge	£2,438 0 0

For new sewer, Yeoman's-row, Brompton, for the Kensington Vestry:—

Bond	£587 0 0
Williams	400 0 0
Atkins	387 0 0
Morton & Mullion	365 0 0
Thackeray	365 0 0
Lacey	385 0 0
Wigmore	374 10 0
Whitlock	349 0 0
Whitlock (accepted)	295 0 0

For alteration at the Rising Sun Tavern, Strand. Mr. Wm. Nunn, architect:—

Anby (accepted)	£521 0 0
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For rebuilding the Countess of Huntingdon's Chapel, Mount Ephraim, Tunbridge Wells. Messrs. Wimbale & Ivy, architects:—

Edwards, Brothers	£5,611 6 0
Walker	5,361 12 0
Oreston	5,065 2 9
Dove, Brothers	4,970 0 0
Sims & Marten	4,634 0 0
King & Sons	4,277 15 0
Anscumb	4,973 0 0

The Builder.

VOL. XXV.—No. 1252.

Designs for the Proposed Law Courts.

THE Designs for the proposed Law Courts, submitted in competition, are admirably hung in the temporary building erected for the purpose in New-square, Lincoln's-inn. The competitors are eleven in number; it will be remembered; namely, Mr. Abraham, Mr. E. M. Barry, Mr. Raphael Brandon, Mr. Burges, Mr. Deane, Mr. Garling, Mr. Lockwood, Mr. Seddon, Mr. G. G. Scott, Mr. Street, and Mr. Waterhouse. The drawings of each competitor are hung in a separate chamber, so to speak, formed right and

left of a central pathway, and lighted from the top. Great praise is due to those who have the conduct of this competition for the endeavours so

that have been made, with a view to obtain the best possible design for the contemplated buildings. The amount of information afforded, and the completeness and clearness of the schedules furnished, are remarkable, and do great credit to those who constructed them. An impossible perfection is shadowed out by them, and to this the competitors have had to work up with such access as each could master.

The Commissioners have farther shown their great appreciation of the difficulty there is in coming to a proper decision in such a matter by granting Mr. Burnet, the architectural clerk, a large staff of assistants for several weeks, with the further aid of Mr. G. Pownall and Mr. John Haw, to ascertain how far the various points of the instructions have been attended to, especially as to the sizes of rooms and courts, provided by each architect, and as to the comparative merits of the plans with reference to other matters ascertainable by calculation, such as light, quiet, and facility of access. There will be another examination by Officers of the Law to show the commissioners how far and how well each scheme will supply the special wants of each court and department. Mr. Pownall and Mr. Haw will doubtless give their opinion too as architects; and then, with these statements before them, the appointed Judges of Designs, the First Commissioner of Works, chairman; the Chancellor of the Exchequer, the Lord Chief Justice of England, the Attorney-General, and Mr. William Stirling, M.P., will proceed to make their selection.

There are circumstances connected with the early arrangements for the competition that, but for the evidence before us of a strong desire to do right, would lead us to enforce the supplication for impartial consideration, made by one of the competitors.

It is no boy's task, as he says, which is to be dealt with as a mere trial of strength. It is,

probably, the greatest and most arduous labour ever imposed upon the members of a very laborious profession; it is a work which has employed the best thoughts, and time, and aspirations of the competitors, for three-quarters of a year. It is no academic competitive examination, but a most serious work of real life,—a herculean labour for a great practical and national object. Do not, then, we beg of you in all respectful earnestness, cast aside these labours on any trifling grounds, for they are the best efforts of carefully-selected minds, and the result of long, and anxious, and painful endeavours, stimulated by an ever-present sense of the immense importance of the object, and undertaken at a vast sacrifice of other professional demands. Above all, let us beg that the judges will rigorously impose upon themselves the rule which judges urge upon juries, to dismiss *in limine* from their minds all that they have previously heard or felt on the subject, for they have a work to perform in which justice to a number of selected and invited professors of a great and noble art is united with a most onerous and responsible duty to the nation for whose use this mighty edifice is to be reared.

With perhaps one exception, the competitors have set forth their designs in drawings of great excellence and beauty; some of the drawings, indeed, are exquisite, and by means of writing around them, called for by the Commissioners, the levels of the various floors, the extent of the departments, the purposes of the different rooms, and the general scope of each design, are made remarkably clear. All the designs are Gothic in style, only one competitor, Mr. Garling, sending an alternative design Italian in character. This gentleman, by the way, who avoids a central hall, has materially lessened his chance of success by covering the whole site, as Mr. Burges in a less degree has done by giving his building a military aspect instead of civil; and Mr. Seddon by a tower, with fourteen ranges of windows, which has little consonance with the London of the nineteenth century. His front next the Strand is very picturesque and clever. Mr. Deane's weak point, since we have fallen into this line, and with reference to appearance only, is the fact that the design takes the shape of several buildings which may or may not belong to each other. It is elegant, nevertheless. The first consideration for the judges is plain,—who best fulfils by plan and arrangements their multifarious requirements. Still the building must be a public monument, and the art-question must have full weight in making the selection. No matter how good, for example, might be the plan submitted by Mr. Abraham, to whom the other competitors are under obligations, the selection of elevations such as he has put to it is out of the question.

Mr. Waterhouse, as was to be expected, has submitted a very complete scheme, marked by thorough knowledge of the subject, and set forth in thirty good drawings. Dividing the buildings into Courts (with rooms immediately contiguous) and Offices; the first, as having the greater claim to quiet and the advantage of a central position, he masses together in two internal lines of building running east and west, with a long internal area or open street, 53 ft. wide, on each of their outer sides, and divided by a large covered hall, from which access is obtained on the one side (the north) to the Courts of Equity, on the other (the south) to those of Common Law. The offices he places in the external ranges of building which front respectively to the Strand, Carey-street, Bell-yard, and Clement's Inn, so as to form a complete barrier between all noise from the external traffic and the courts which they shelter.

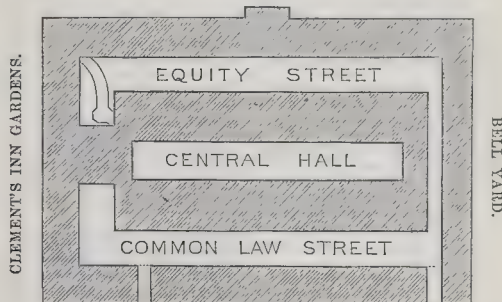
By these two streets, which he calls Equity-street and Common Law-street, he lights the rooms within the building. They are on the Strand level, and are approached by carriage-archways through the outer Strand range of offices. The accompanying plan shows broadly the arrangement adopted.

As to the best arrangement for the Courts, both *inter se* and with reference to their position in the building generally, he gives the following reasons for placing them, with little exception, in two parallel lines divided only by a central hall.

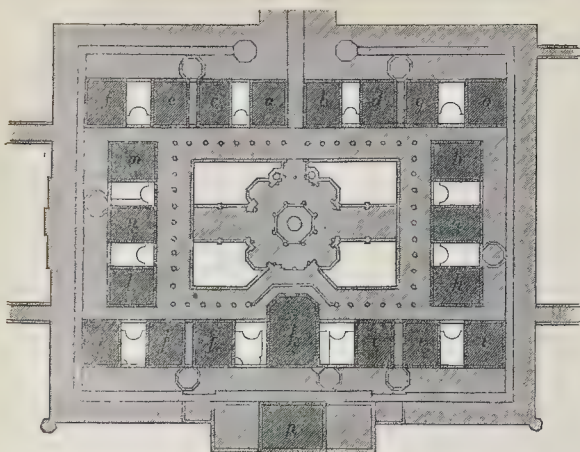
1. They are thus brought as closely together as possible.
2. The greatest possible simplicity of arrangement is thus obtained.
3. The Central Hall affords for barristers, solicitors, and, in fact, for all who are within the building on business, a place of meeting from which each of the Courts is immediately accessible.
4. The arrangement is one which secures a certain amount of elasticity for any future modification in the special purposes to which each individual Court is applied. In fact, it prevents any group of courts becoming so crystallised, if I may so speak, as to make such modification difficult or impossible; e.g., if the Courts of Equity should hereafter increase in number, the Admiralty Court might be converted into a Court of Equity, and the Court shown in the plans under the former name be removed elsewhere, without any detriment to the general scheme.
5. A proximity is thus secured between the Courts of Law and Equity which may hereafter be turned to account in the event of any further fusion between their respective systems of procedure, or between the Equity and Common Law Bars.

Besides the main entrance,—which is in the centre of the Strand front,—there are two archways on the south side, each wide enough for two carriages, through the Strand range of offices into "Common-Law-street." One of these opens from Pickett-street; the other is situated immediately to the west of New Temple Bridge, and by this access is obtained not only to the eastern end of "Common-Law-street," but also by means of an archway of equal width under the offices to the east of the court blocks into the eastern end of "Equity-street," which is, for carriages, a *cul de sac*. The central portion of the archway just alluded to is lighted by

CAREY STREET.



STRAND.



four areas open to the sky. A broad pathway is provided for foot-passengers at the side of the carriage-way.

In addition to the two principal entrances in the Strand and Carey-street some twenty-five subordinate entrances have been provided at various points in the external and internal streets. These give access either to particular portions of the building, the various departments and offices, or are intended for particular classes of persons. Thus, at the north-west corner, there is a private entrance for the judges' carriages, giving an access to the judges' private corridor by means of a carriage-way up to its level. At the north and south, at the extreme eastern end of the building, at a level of 17 ft. 6 in. above Carey-street, are entrances intended for the exclusive use of the bar and attorneys, who would thus approach the apartments appropriated to them after passing along the bridges provided for their use from Lincoln's Inn and the Temple.

The entire width of the court block between "Equity-street" and "Common-Law-street" is traversed on a level with those streets by two halls in a line with each other, which, in fact, would be but one, were it not for the central hall above and between them. They are each 64 ft. wide, with an average length of 83 ft., and a height of 32 ft. The width of each is divided into a nave, so to speak, 32 ft. wide, and side aisles. Over the aisles are galleries on a level with the central hall, which are approached at their north and south ends by bridges across the internal streets opposite the main entrances in Carey-street and the Strand. The transverse halls themselves are entered by doorways in the internal streets immediately beneath these bridges. The space between these halls is open to the roof of the central hall above, excepting where crossed by the bridge uniting the two halves of the latter.

The great central hall covers an area of 478 ft. by 60 ft., and is 90 ft. high to the apex of the roof. It is divided longitudinally as to its floor space into two nearly equal portions by bridges which unite the corridors and offices on either side of the court level. The roof would be supported by ornamental wrought-iron principles, resting on projecting stone corbels, and buttressed by the main walls of the courts. The designer proposes that the roof should be divided into alternate bays of larger and smaller size, the larger being covered entirely with glass, the smaller being boarded and decorated.

The sides of the hall would be appropriated to three stories of witness and consultation rooms attached to the several courts, with windows looking into the hall itself. Between each set of these would ascend a staircase, leading from the floor of the hall to the barristers' corridor, and giving access to the witness and consultation rooms themselves.

The great hall in the centre of the building is intended for a *salle des pas perdus*; a place of rendezvous for all who have business to transact in the courts, as opposed to the general public who come only to see and hear, and who would have no access to it.

The style adopted is that of the thirteenth century. Admitting that to be the style in which a building should be erected in London in the nineteenth century the building is effectively composed. The mass includes two lofty towers for the deposit, one (284 ft. high) of Wille, and the other (354 ft. high) of Registered Copies. A clock tower rises from the Strand front, and there are two other towers appropriated to smoke and ventilation. Pricing the main building at 1s. 1d. per cube foot (obtained by adding 40 per cent. to the cost of the Manchester Assize Courts, which was 94d.), and the towers at 1s. 9d. per cube foot, we get 1,339,328l.; or, with Temple Bar, roads, approaches, and so on, 1,419,842l.

The edifice, it may be added, contains 1,141 apartments, as required by the instructions, and 163 extra rooms to meet future requirements.

The sum originally suggested to the competitors was 750,000l.

Mr. Scott has sent the largest number of drawings of any competitor, and a very fine set they are. He is greatly impressed with the magnitude of the task:—

"On first entering upon the consideration of the subject, two impressions force themselves upon the mind:—the nobleness of the project, and the vastness of the labour of carrying it out, even upon paper; and, strong as the first impression must be of the labour to be undertaken, I think all of us must have found it so much greater in reality than in idea, that, had we on first entering upon it realized its magnitude, we might well have shrunk back from the task; indeed, it is only the grandeur of the undertaking which has enabled one to face out the almost incredible labour of the design. Others may possibly have greater facility of arrangement than myself, though I have probably had as much experience in arranging large buildings as any man; but I may say that to me the labour has been such that, though I embarked on it vigorously on the very day after I agreed to join the competition, I have ever since been hard at work upon it, often giving to it eight hours or more a day for many days together."

Broadly speaking, Mr. Scott has adopted Mr. Abraham's early plan; that is to say, an outer shell of buildings containing the departments less connected with the courts, an internal street within this shell, and a central block containing the courts with their appurtenances, and such departments as are more directly connected with them; this block including in its centre an open space round which the courts are arranged.

It is so far varied as to limit the outer shell to three sides, so as to bring the central block forward to the front. Twenty-two out of the twenty-four courts required are placed in the central block, throwing off two only into the outer shell, the Matrimonial and the Bankruptcy Courts. These are connected with the general group of courts, each by a bridge ("perhaps of sighs") across the internal street.

Mr. Scott claims to have carried out in its integrity Mr. Webster's scheme of concentric circles.

"My circles (to use Mr. Webster's term, and considering the middle space as their centre) are, first, a spacious and (as I should wish) magnificent ambulatory of nearly 30 ft. wide, running round a central area (about 200 ft. by 116 ft.). This is of two stories in height, the one being used only by those immediately interested in the business of the courts, the other one by them and by the public jointly. Round this comes the second circle, consisting of the courts themselves, with their intervening areas and passages; external to this is the third circle, consisting of the judges' rooms and those for the juries, with the neces-

sary staircases and appurtenances; next to these is a corridor all round, for the bar and attorneys, beyond and opening out of which are the rooms appropriated to their use, and to that of the various officials, &c., connected with the courts."

The accompanying plan shows the position of the twenty-one courts which surround the main ambulatory. We can specify only some of them. (a) and (b) mark the Courts of the Lord Chancellor and the Master of the Rolls; (c) is the Lords Justices' Court, and (d) Vice-Chancellor Kindersley's Court; (e) and (f) are the other Vice-Chancellors' Courts. The three Courts of Queen's Bench (h h h) are to the east of the central area. On the eastern part of south side are the three Courts of Common Pleas (i i i); and on the western part the three Courts of Exchequer (j j j). The centre of the south side is given to the spare court (k), which exceeds all the others in dimensions, and which Mr. Scott calls the "Sensational" Court. The three courts at the western end of the area are severally the Exchequer Chamber (l), the Admiralty Court (m), and the extra Ecclesiastical Court (n).

It must be remembered as to the designs generally that the site, viewed roughly, may be said to be level from east to west, but to rise some 17 ft. from south to north—the lower line of boundary facing the Strand, the upper one facing Carey-street; and the sloping-end boundaries facing severally Bell-yard and Clement's-inn. The leading fact to which this gives rise is that the north frontage is an entire story above that of the south, so that what is ground-floor on the north is first-floor on the south, and what is ground-floor on the south is basement on the north.

Mr. Scott gets between the level of the Strand and the level of the floor of the courts a lofty story for public offices, and regards this as a reason why, without serious disadvantage, there cannot be a central hall in the sense in which that term may be most naturally understood; that is to say, a hall from which the courts would directly open, like Westminster Hall, or that designed by Sir Charles Barry for the Lincoln's-inn-fields area. "This would be only practicable," he thinks, "were the courts on the ground-floor; for, if adopted in the case of elevated courts, it is clear that little or no light could be given to the space below such hall, or to the lower stories of the parts surrounding it." It is this which has led him to give a double width to his ambulatory, that it may take the place of such a central hall. He adds to it, however, a central hall in the middle of the open area. In the centre of the central hall rises the great staircase. The hall is a large octagon, overshadowed by a magnificent dome. The court level is reached from the Carey-street entrance, without the aid of the central staircase, by a direct corridor.

In adopting the Gothic style, Mr. Scott claims it as affording the greatest facilities for the developments suggested by modern requirements, modern materials, and modern modes of construction, and in many parts of his design he has evidently worked in this spirit. An immense amount of painted and sculptured decoration is shown, though not insisted on. The interior of the Strand entrance would be a fine work; so also the interior of the dome. A massive tower for records is a prominent feature.

The cubical contents of the building at 1s. per foot cube give 1,253,626l., exclusive of figure sculpture and figure painting. 1s. per foot is taken on the ground that the Foreign Office is being built at 1s. 0½d. per foot, and that the stone fronts there bear a larger proportion to the whole mass than would be the case at the Law Courts. The contract for Glasgow University, a less expensively-finished building, gives 7½d. per foot cube: both materials and labour, however, are cheaper there than in London. We must break off for the present.

THE DESIGNS FOR THE NEW NATIONAL GALLERY.*

EXAMINATION of competition-designs, on the part of the public, the judges in the case, or the profession itself, has hitherto been, from various causes, quite out of proportion with the efforts of competitors, and with the benefit capable of being realized in whatever there might be of suggestion in the designs, or of full response to the appeal of the promoters of the competition. Advantage accruing, whether to either of the parties, or to the art and science of architecture, has been but trifling: designs on which much

* See pp. 23, 40, & 58, ante.

labour and money-outlay had been expended, have gone back to their authors, to be thenceforward lost to sight, having left no result whatever influenced by their preparation. Accumulated observation of the facts has led us, therefore, on the present occasion of the competition of designs for the National Gallery, to attempt to supply what has not been attained even in the exhibition opened in the Royal Gallery of the Palace at Westminster, and to leave on record particulars that might be valuable, and might otherwise be lost. Our readers must be content with the speed at which we acquit ourselves of our duty.

We have, so far, noticed the works of four of the competitors, comprising about twelve different designs. Mr. Murray's designs, which come next, are classed by him as three in number; but with the different alternatives of plan or decorative treatment, we should count them as five or six. Of the three, his "Design No. 1" would involve an extensive remodelling of the existing building, together with the erection of new galleries on the ground to the north-east; "No. 2" is for an entirely new building "in the Greek style," and "No. 3" is for a new building, "Italian in style." The treatment of the two latter designs so entirely comprises the ground occupied by the barracks, that a western front, forming one side of a new street from Pall Mall East, is shown in each of the views. St. Martin's-street would be widened, and prolonged to Leicester-square; whilst the College of Physicians would form an effective termination, southward, to the new opening. Mr. Murray has chosen to design each of his buildings "in what is commonly termed 'Classic,' because of the character of the buildings of the locality.

As regards the first design: from the present building would be removed the dome, and the lanterns or "pepper-boxes"; the portico, which Mr. Murray regards as too small for its situation, would be taken down; a larger portico would be erected; and a colonnade would be added to each wing, for the greater portion of its length—using the displaced columns, and leaving those of the side-porticoes. The central intercolumn of these last being wider than the side-intercolumns, whilst a similar arrangement is that of the pilasters of the other projections from the wing, we doubt whether the effect would be good. The case of a long colonnade is different to that of the Vitruvian eastyle portico; as to which even, we are not sure that the effect was quite pleasing. Above and in the rear of the central portico, would be a square attic, terminated by a cornice and antefixæ, and groups at the angles: this would form the upper portion of a hall for sculpture, of 100 ft. in length by 65 ft. in width. The terminations of the present side-porticoes would remain much as they are: but in place of each lantern on the wings, the mass of the projection on plan would be carried up as an attic, and terminated by a balustrade: four statues would be placed over the columns; and in the centre would be a panel for sculpture. But in this arrangement there is an alternative, comprising a much larger pavilion-mass projecting from the wings. The staircases would be altered; as would the last new gallery; but the other galleries would remain. The ground would be enclosed with, in place of the present railing, a balustrade; to which would be added, lamps, and steps at the ends. The terrace and steps of the Square would remain as at present. The arrangement that the author would recommend for the new portion of the ground, is not quite clear; but we may take it to be as shown in "Design No. 2," excepting that "Design No. 1" has at the eastern end of the ground, a large semicircular double-columned portico, entirely open, or without wall at the back of its columns, other than the wall of the end of the building on the line of its diameter; whilst the other design has an ordinary portico of six columns. In each design a considerable portion of this end-ground is given up to the street. According to one arrangement, the lines of the eastern frontage would be at right angles with the chief front; whilst, parallel with the eastern front, would be galleries, covering, with the galleries parallel with Hemming's-row, the entire ground, or leaving only a very small court between the present galleries and the ends of the new ones, and allowing of mere air-shafts at the other ends. The ground-floor would be used chiefly for storage. There would be staircases in the centre of each of the three fronts. The northern galleries, of 50 ft. in width,—like the others, to which we have referred, of which the width varies from 50 ft. to 22 ft.,—would be top-

lighted, and would have rooms alongside of them, which might be lighted from the street. A design, which is an alternative to "No. 1," has the line of the end of the building, and other lines, askew, instead of at right angles with the front,—the hexastyle portico taking the place of the semicircular; whilst in place of what would be the acute angle, north-east, there is a quadrant with columns. In the latter part of the plan, a circular guard-room is shown. In this design there is an attic like that over the portico in the other case, but developed to occupy a large portion of the entire area of plan.

"Design "No. 2" is colonnaded; but it is in other respects different to "No. 1," though it resembles the alternative of the latter design in those features of plan that we have particularized. Otherwise the plan in "No. 2" may be described as having the whole range of buildings, including the site of the barracks, grouped about two courtyards, of which the smaller measures 95 ft. by 85 ft. The main entrance, in the centre of the Trafalgar-square frontage, is under a grand portico of fourteen columns in the front, and of six inner columns: behind this is a space of 100 ft. by 27 ft.; beyond which again are a vestibule and staircases. The landing of these latter, with the entire space, is open to the portico,—the arrangement resembling as nearly as possible that of the portico and staircases of the Museum by Schinkel, at Berlin. It is an arrangement that is of doubtful propriety,—whether for the climate of the capital on the banks of the Thames, or for that of the capital on those of the Spree. The resemblance to the Berlin structure is continued in the portico; which is without pediment. Thence space over the staircase-hall and entrance-hall is carried up as an attic; but in this, the resemblance to the Berlin structure is not so great as in the attic of design No. 1. The space is arched over, and hypæthral-lighted; and the external framework of this covering is a temple-like structure, with ten square ante in front, in place of columns, and with a sculptured pediment. The order of the principal portico of the building is continued, with three-quarter columns, on a rusticated stylobate; and the angles of the building take the quadrant-form on plan. The ground-floor windows have pediments; and the wall over them is enriched with sculpture. The portico of the eastern front has a pediment. The external walls generally are surmounted by a well-designed attic, with dwarf-piers, panels, and statues. The ground-floor is devoted almost exclusively to sculpture. If sculpture be to be provided for, probably that would be the best appropriation of the ground-floor, as compared with provision there for the National Portrait Gallery along with the Turner and other drawings. Sculpture is seen to more advantage by a side-light than a top-light. In Mr. Murray's design, the larger galleries, 50 ft. in width, for sculpture, are lighted by large windows from the courts. The north-east and south-east angles of the building are occupied by the residence; the rooms of which are joined by a corridor across the space in the centre of the east front, where one of the staircases is. Although the competitor has considered that the instructions required him to provide staircases at the north and east, he does not advise that there should be so many altogether as he has shown. On the upper floor are the galleries for paintings. The grand-staircase would lead to a vestibule, 103 ft. by 20 ft., in the Trafalgar-square front; whence on three sides galleries of 50 ft. width would open; and from these last would open galleries of 25 ft. Top-lighting is recommended for the galleries along the north, as for all the others. The elevations towards the courts have a certain decorative character, as they should have if they can be seen from windows.

The design "No. 3" is in plan a modification of "No. 2," but in decorative treatment it is very different. The wide sculpture-galleries are made external; whilst the narrow ones are lighted from the courts. The characteristic feature of the front, the staircase open to the air, is suppressed; and in place of it there is an entrance-hall, 97 ft. by 50 ft., over which the picture-galleries run in an unbroken line; whilst the staircase itself is seen, on entering, beyond the entrance-hall, and through a perspective of columns. The narrow picture-galleries would be side-lighted. The Trafalgar-square front would display two stories on a rusticated podium; the ground-story would have rusticated arch-headed windows, and the upper story a Corinthian pilasterade, niches, and statues. In the middle of the front, the drawing shows a double-storied

portico of columns, coupled in the thickness,—the order below being Roman Doric, with rusticated shafts, and that above, Corinthian,—and the lower portico being approached by side flights of steps, and the upper one crowned at the top by a balustrade and statues. This is not the sort of design that we wish to see carried into effect. If a building that is new be an art-work, there must be novelty in it. Such element, required, need be but small; indeed, in presence of countless attempts that realize no more than novelty, and with recollection of the difficulty of combining novelty with taste, we would restrain rather than urge the flight after novelty. But some novelty is required. All which we have often said. Mr. Murray estimates the cost of his design "No. 1," or including the remodelling of the present building, at 210,000. But leaving the present structure as it is, and building upon the north-eastern ground only, he estimates that the cost would be 161,000. His estimate for the entire design "No. 2" is 326,000.; whilst "No. 3" would be 330,000.

Mr. E. M. Barry's designs are marked respectively A, B, and C; but including variations of plan, they may be reckoned as more than three in number. "Design C" is that which deals mainly with the new ground, and makes only alterations in the present structure. "A" and "B" are designs, not very dissimilar to one another, for an entirely new structure; and both of these deal with the ground, entire, and inclusive of the site of the barracks. In all the designs, the principle of distribution of the galleries and rooms occupying the north-eastern ground is the same. In all, the eastern boundary of the plan is at right angles with the front; and in all, the present arrangement of the terrace and steps of the Square is retained. In designs "A" and "B," there is a frontage to a new street at the west.

In "Design C," the dome and the pediment to the portico are removed. The three principal rooms of each end of the building, for pictures, are retained,—as are also the "octagon-room" of the Academy, and the room in the projection from the front corresponding with that in which the octagon-room is. The lanterns on these projections are removed. In place of the pediment, a raised attic is shown, with balustrade and statues. This feature forms the upper portion of a large staircase-hall, which has galleries and columns on the four sides. The projections from the wings are terminated by attics similar in treatment to the large attic. In planning the buildings for the added ground, Mr. Barry has not availed himself of the ground-floor for purposes of exhibition, unless exceptionally, as for the Turner drawings. In his opinion, picture-galleries cannot be considered satisfactory without top-light; and he believes that, though a large additional wall-space would be gained should ground-floor galleries be considered admissible, a larger wall-space is provided by any of his plans than would be likely to be required for many generations. Confining our description, first, to the gallery-floor, and as regards the new ground: the plan comprises a group of buildings consisting of galleries surrounding a quadrangle, in the centre of which is another group, and of a range of buildings in the rear, or following the line of Hemming's-row. The group within the quadrangle is square on plan, but having the angles canted off: galleries of 22 ft. in width form the outer circuit; whilst the four angles are planned as octagons. In the centre of this group is a space of 56 ft. square, which is entered on its four sides by short passages. Spaces of the form of the letter L are left at the angles, between the 22 ft. galleries and the 56 ft. square space, for the object of light to the rooms below. The central space is planned somewhat after the model of the so-called landscape-gallery at Munich, of which the competitor gives a section. The principle is the same as that of the arrangement advocated by Mr. Cockerell,—with only this difference, that the suspended ceiling is brought much lower in the Munich example, as well as in Mr. Barry's design, than it would be according to Mr. Cockerell's suggestion, which greatly resembles what was carried into effect some years ago by Mr. F. E. H. Fowler in the gallery of the Society of British Artists. Mr. Barry, however, like Mr. Cockerell, and for much the same reasons, would relieve the heaviness of the *plafond*, by openings or coffers, which would be glazed. The method is "suggested" by Mr. Barry "as being very suitable for landscape and subject

pictures of moderate size," but we should say, that if the principle be the right one for pictures of any kind, it can have no special suitability for either landscapes generally, or works of small size. As to the latter, the observer would necessarily approach so near to the work, that the source of light would no longer be concealed: though whether this would affect the principle, we must leave others to decide. We believe that, as might be supposed, the proposal does not find favour with those of the judges who have paid most attention to the arrangement of galleries. It should, however, be well considered. But if the principle be correct for one gallery, it would seem to be so for others. The principal galleries in Mr. Barry's plan are respectively 50 ft., 45 ft., and 42 ft. in width. He does not omit to state that the prescription of the 50 ft. has exercised an important influence on his plan, and on the extent of accommodation he has been able to provide. Whilst expressing his preference for top-lighting, he has provided a few side-lighted galleries for cabinet-pictures. In the floors of each of the large galleries are openings for light to rooms below. This arrangement is one that, having regard to chances of fire, would have to be well considered before adoption. It is a leading feature in a design that we have yet to notice. The ground-floor in Mr. Barry's design is planned so as to be capable of adaptation to different requirements. There are a staircase and a covered porch on the Hemming's-row side; and there is a large carriage-porch, with coupled columns as the main feature, to an exit-way that is at the eastern end of the building. The author thinks it right to state that he has prepared his "Design C" in obedience to the "Instructions," but that he cannot recommend it as "an adequate or satisfactory way of supplying the want" of a National Gallery.

In his designs "A" and "B," Mr. Barry has allowed himself more liberty; and, as we have said, he has dealt not only with the site of the present building, and with the north-eastern ground, but with the site of the barracks. He had some difficulty in understanding the condition that the front was "not to obscure the view of the portico of St. Martin's Church, from Pall Mall East, or from any part of Trafalgar-square," since the present building obscures the view to a certain extent. He has therefore shown alternative designs, so far as the lines of front are concerned,—involving of course in one of the designs, diminished convenience. The chief feature of the building viewed from the Square, would be a large dome, in which the newspapers have discovered too much resemblance to that of St. Paul's, and which certainly resembles that fine model in having columns about the tambour. This feature is borne upon a large square mass which has turrets at the four angles, forms the centre of the front, and projects in part as a portico or loggia of Corinthian columns carried on rusticated arches. The columns, eight in front, and eight internal, are placed between piers that carry two of the turrets. Besides the central dome, there are two other domes to the front, that is to the ends, where the angles are massed square on plan. These smaller domes are without the feature of a very lofty tambour. Each of the other two angles of the entire building would have a dome similar to those last mentioned; though the acute-angled form of the ground to the north-west, would throw the dome there out of what would be its proper place, symmetry being considered. Opposite the entrance, and beyond the space in the plan covered by the dome, is a grand staircase and sculpture-gallery, with a vaulted ceiling carried by columns which are at the sides, and which separate the side-galleries from a central straight flight of steps, broken by landings. The staircase is lighted through coffers and lunettes. In the two recesses of the front, or between the masses of the wings and centre, in each case, is a loggia of balustraded arches, having Ionic columns on the piers. It is lower than the adjoining Corinthian order; and forms a covered way parallel with the chief galleries of the front. There is a portico to each of the end-fronts,—the columns being on the upper story. One of these is not sufficiently different from the portico of Covent Garden Theatre. The design "B" has quadrant-corners to the building; the other design, "A," has re-entering angles to the same parts of the plan, or in place of the quadrants. This appears to be the chief difference between "A" and "B." There is, however, a plan showing an arrangement of the galleries with an extra number of cross-walls for additional hang-

ing-space. Mr. Barry observes that this increase would be attained at a certain "sacrifice of grand architectural effect." There appears to be an opinion, however, that the longer a gallery, the more monotonous would it be. The truth is, that lengths of rooms, or galleries, should be varied, and the architectural features also,—though these last are necessarily confined to the ceilings, for the most part. The difference in the levels of the ground, which, according to Mr. Barry, is about 13 ft., led him to the arrangement of the ground-story, or it would seem, chiefly to give height. In the space under the dome, he would place allegorical groups, and statues of the old masters. The staircase and its galleries he would reserve for statues of deceased British architects, sculptors, and painters; and by such arrangement he thinks "the public would be led to form correct ideas as to the past history of art," and that "honours would thus be paid to British artists, similar in degree to those so often accorded to their foreign brethren, although not hitherto customary to any great degree in their own country." The best features of these designs, "A" and "B," decoratively, appear to us those of the interior, section or meeting of the points of intersection on the plan, and in the hypothetical lighting of the staircase and its side-galleries. The design "C" is estimated to cost £220,000; the estimate for "A" is 460,000, excluding the portion of building in the site of the barracks and barrack-yard; and that for "B" is 480,000. In a concluding paragraph of the paper accompanying his designs, Mr. Barry alludes to steps that should be taken to obtain a satisfactory selection from designs proposed. He considers that "a small body of judges, however eminent for their ability and architectural knowledge, would be liable to be led astray by strong prepossessions in favour of a particular style or mode of treatment;" he rightly adds,—"The consideration of such a subject, and even the power thoroughly to understand the various plans and sections, require considerable professional qualifications," &c.; and he suggests the Royal Academy and the Institute of Architects as "suitable bodies to be requested to co-operate with the Government, and such lay judges as may be appointed."

We are now obliged to depart from the order in which we had at first arranged to notice the designs.

The designs by Mr. M. D. Wyatt are two in number. A design marked "B" comprises additions and alterations to the existing building; and one marked "A" is for an entirely new National Gallery. Each design is very completely shown by drawings, including an unusual number of perspective views. They are accompanied by a brief report; in which however the author's conclusions from examination of the site, constituting the guiding principles for his design, are set forth in terms that should be duly considered: for, assented to or the reverse, they may conduce to a right decision. There can be no doubt that Mr. Wyatt has given great attention to the subject of picture-galleries. As to the present matter, he expresses an opinion that the general wish of the public is to have an entirely new Gallery, worthy of the country, and that to lose the opportunity would be disgraceful, and would prove the source of future regret. As regards the design "B," it has proved "an even more difficult task" for him than the other. In dealing with the present building, he would remove the dome, and the lanterns on the wings. He would also remove the side-porticoes; but he would attach others to the projections of the wings, (using doubtless the displaced columns,) and would crown each of these new porticoes with a pediment. The columns of the principal portico would be as now; but the pediment would be altered, at least so far as that it would be charged with sculpture in the tympanum, and upon the acroterium of the apex. Above the general cornice, an attic would be added to the building, composed of square antæ with Corinthian capitals, and a cornice and antefixæ, and of a filling-in of panelled masonry to the interstices, for about three-fourths of their height, or leaving open space below the cornice, between the capitals. At each of the two projections, the drawing shows decorated masses carried up to a greater height than the general line of the attic-cornice. In the centre, beyond the portico, is a larger crowning mass; which takes the form of a structure having a portico of caryatides in the front, and a similar portico to the rear. This mass is the termination to the entrance-hall. The hall, internally, is flanked by columns; which

separate it from two other halls, and new staircases, that are shown on the plan. Here in each of the flanking staircase-halls, a central flight, parallel with the transverse axis of the building, leads to a landing from which the upper flights branch right and left; whilst from the entrance-hall, steps in front of the entrance descend to the new galleries. The entire arrangement is capable of being made highly effective. On the further side of the ascending stairs of the eastern portion of the front building, is a second descending flight to a rotunda with columns. The rotunda forms part of the plan on the new ground, and is the vestibule to galleries in the middle of that ground, which are cruciform in plan. The stairs of descent first-mentioned, lead to a gallery of 28 ft. 6 in. in width; at the north end of which is a rotunda similar to the other, and placed like it at the end of an arm of the cross. At the eastern end, opposite, is a third rotunda, with an intervening compartment of plan wherein there are large semicircular recesses. Several such features are to be found in the plan; which generally is devised with great regard for the pictorial effect resulting from circular forms, and from the effective introduction of columns. The particular column used would be, in design, greatly varied from those of the classical orders. The base and lower part of the shaft would approximate to the Egyptian type, in outline, and in the decoration. All the galleries on the new ground, with the exception of those which are circular, and of the gallery reached directly from the entrance-hall of the main front, are placed parallel with, or at right angles to, the facing line of Hemming's-row. The principal gallery, on the north, would be 50 ft. in width; and those of the cruciform disposition would be 43 ft. 6 in. in width. Outside the latter, and between them and the present building southward, and the 50-ft. gallery northward, are four open courts, these being in addition to a court more to the east, as well as to different small courts. In the re-entering angle at the meeting of the line of St. Martin's-place with the end-line of the present building, a colonnade, or portico, quadrant-shaped and curving inwards on plan, would be placed; whilst attached to this would be an apsidal recess, with columns on the same radii as columns in front. The axes of the entrance, halls, and galleries are planned, to accord with one another, in a manner that deserves much commendation. In this design "B," the Square would remain as at present; though, in the other design, some alteration would seem to be contemplated. The ground-story would provide for the National Portrait Gallery and the Turner Gallery. It would be side-lighted in some parts; but generally Mr. Wyatt advocates top-lighting; and he proposes an arrangement, that is peculiar, for so lighting a story that has rooms over, which we must mention in speaking of his principal design, "A." An argument used by Mr. Wyatt in favour of an entirely new building, is that the present structure could not be made fireproof unless with almost entire reconstruction.

Mr. Wyatt's views with reference to an entirely new National Gallery, are so far important, that we feel called upon to give them at some length, prior to describing his "Design A;" though we should have preferred his starting with the consideration of the internal planning of the building, and with an inquiry into modes of lighting, instead of setting out with examination of the special conditions for external effect. Looking, however, at these conditions, which are of the site, he observes, first, that the most important view of the building would be from the south-east, and to persons going towards St. Martin's-lane, and that consequently, the angle next St. Martin's Church should be the central feature of the whole composition. Secondly, he observes, that the next most important view would be that from the southern side of Trafalgar-square, wherein the Gallery-façade would be cut in half by the Nelson Column, whilst the terrace-wall and steps would constitute the platform of the building. Wherefore he concludes that it would be "a grave error of judgment" to adopt any central feature of the façade, and that the existing symmetrical divisions of the terrace-wall should govern the disposition of the façade of the Gallery, so that the former might appear as the original podium to the latter. Mr. Wyatt, therefore, places a doorway of the main entrance to his building coincident with the axis of the principal flight of the steps at the north-eastern corner of the Square. The few returned steps are taken away, and others are

placed as top-steps to the present flight: the roadway is then widened; and the top of the flight is flanked by two pedestals and equestrian statues, instead of one pedestal and statue. He places a doorway opposite a correspondingly-altered arrangement of the steps westward. Thirdly, he finds that the next most important view must be from Pall-Mall East; and says that "that form of design which, dispensing with a central feature in the southern façade, provided leading eastern and western motives to close a long range of regular, large, and monumental features, say either colonnade or arcade," would, he "at once saw, compose most attractively when seen both from Pall-mall East and from Duncannon-street." He shows, in drawings, how his building would look from each of the points; and he considers that no building should be deemed satisfactory that would not look well from each. But we do not quite see that his design accords with his conditions. Having decided upon the south-eastern angle as his central feature; having placed there the doorway mentioned, which gives access to the grand-staircase to the galleries; and having also emphasized the angle by a circular feature, and by two domes,—whereof one is over the entrance in the front, and the other in the return-end, or side, of the building,—he establishes at the other end, features precisely similar, in everything, with the exception that westward there is but one dome. In short, the design is a compromise between the first-stated principle, and that of exact balance of two ends of a façade. Either there is a dome wanting; or there is one too many.

The western doorway of the façade gives access to the National Portrait Gallery; which, thus, rightly, would be as distinct as it well could be, if in the same building, from the National Gallery proper. Mr. Wyatt noted an authoritative statement in the House of Commons, that accommodation would be provided in the New National Gallery for the other collection, as well as that it might be desirable to provide in the Gallery for works of art other than pictures. General features of his design, besides what have been named, were established on conclusions, one of which was as follows: that "no building could appear monumental, and exhibit a becoming repose, which should have a ground-floor lighted by windows, and a first-floor, either without any openings, or, what would be worst of all, with sham windows." The curious reader will mark the divergence, on this occasion, of two practised enunciators of principles, Mr. Owen Jones, and Mr. Wyatt. We are scarcely overstating the facts in saying, that one allows his plan to be under subjection to a notion that a front should necessarily have windows for effect, whilst the other allows his to be subject to the idea that the front must either have windows in each of its stories, where there are more stories than one, or have no windows at all. However, Mr. Wyatt's conclusion led him to devising "means," as he says, "of lighting" his ground-floor by top-light entirely, or excepting the case of narrow galleries in internal court-yards. He considers that thus he has obtained three advantages: first, the giving the building "a fine solid plinth and dado, by way of base to rest upon"; second, the utilization of the recesses necessary for effect of light and shade; and, third, the doing away with "the distracting and dazzling effect produced by daylight, which, when seen in immediate contrast with any picture however brilliantly painted, invariably make it look dead and colorless." The main feature of his façade towards the Square, consists of seven arches on the level of the second story, and formed at the back as large niches. Immediately under each of these is an oblong panel for sculpture. This feature has a pediment that forms the front to a little glass-roof through which light is obtained to a recess belonging to the gallery of the ground-floor. Corresponding niches and pediments appear in a portion of the front towards St. Martin's-place, and have similar use. In the former case, each of the arches corresponds with one bay in the length of the principal gallery of the ground-floor, devoted to the National Portrait Collection; where the floor above is carried by columns similar in character to those described in speaking of "Design B." In the rear, each alternate recess corresponding to one of those of the front, is similarly top-lighted, but through a larger area of glass. There are similar lighting arrangements for the galleries on the new ground. In this part of the plan, the galleries, with the exception of one that is semicircular, next a court, and with the exception also of

the gallery that is next St. Martin's-place, are at right angles to or parallel with the principal front. But there are other features of the plan besides those of the recesses, intended to be subservient to the top-light of the ground-floor. These consist of well-hole openings from the floor of the gallery above. Their purpose is of far more importance than that of the few openings mentioned as provided in Mr. E. M. Barry's design; where the rooms below are not meant for exhibition of pictures. Mr. Wyatt would seem to rely upon them for the bulk of the light that he would get to the middle of the area of his ground-floor galleries of the greater width; but, it seems to us that only the space immediately under the well-hole would be adequately lighted, or from the top-lights of the galleries of the principal floor, and that a large portion of the area in the ground-floor would be much worse lighted than it would have been had he substituted windows in the walls, combined with adequate height of the ground-floor story. Moreover, the same objection would apply to this arrangement as we have noted of Mr. Barry's, that it would negative the "fire-proof" construction that Mr. Wyatt recognizes the importance of. As regards the distribution generally, of the parts of the plan, the author of the design under notice has considered that looking to the great value of land in the situation, "and its limited extent when compared with that allotted to similar galleries in other great capitals of Europe," "as much of the land as should be consistent with ensuring due light and ventilation to every part" should be occupied with buildings; and he holds that his system of top-light for the ground-floor generally has enabled him to effect the object referred to, more completely than he could have done had he relied mainly on side-lighting; in which latter case, as he rightly says, his court-yards would have had to be larger, and his buildings fewer in number and lower, so as to admit uninterrupted rays through vertical windows. He adds that utilizing the present site to its full extent would probably render unnecessary future acquisition "of most costly land;" for it will have been understood, he has designed no extension over the site of the barracks and barrack-yard. As we have shown, however, we do not think he has quite succeeded in demonstrating the superiority of his system to that of comparatively large courts; which, indeed, are necessary for ventilation, air, and the prevention of continuance of dampness of soil and walls. The proper size for courts, with reference to light-admission to rooms, and height of buildings, should surely be better understood in the profession than it seems to be, judging from the different methods of treatment that we observe.

Mr. Wyatt appears to contemplate a considerable provision for sculpture; and there is this difference between him and Mr. Street, that, whilst the latter doubts whether sculpture and paintings should be in the same gallery, Mr. Wyatt considers that it would be best not to separate them: he would rather group the works of the two kinds "freely together, as in the Tribune and other galleries of the Uffizi at Florence." He adds,—“Such a mixture greatly relieves the strained attention of the visitor, whilst adding to the decorative effect of the whole structure. In fact, to take sculpture from a museum and place it where it enhances rather than detracts from architectural grandeur, is to redeem it from misapplication and to restore it to its legitimate function.” We incline to this opinion, whilst recognizing that what is the best manner of lighting pictures is not necessarily best for sculpture, and that the convenience of a ground-floor cannot be overlooked where weight is in question. The principal galleries in Mr. Wyatt's plan are of course 50 ft. in width, as required by the "Instructions;" but he, differing from other competitors, considers this the proper width. In place of wall-surface above the height to which pictures would be hung, he would spring a decorative vaulted ceiling from the level, agreeing with the semicircular form which is that of the main ribs of his roof. Along the middle of this would be the opening for light. He says that, besides saving brick-work, his system "offers the great advantage (for a picture-gallery) of presenting surfaces receding from the light, and so falling into half-tints, thereby enhancing the luminous effect of the vertical surfaces" on which the pictures would be hung. Between the transverse ribs of the ceiling are lunettes. At the intersection of the galleries the space is domed over from pendentives, so as to produce a good feature of effect.

The entrance to the National Gallery proper, and that of the Portrait Gallery, are, as we have explained, in corresponding positions towards the ends of the front. Beyond each of them, there is a quadrant-corner of the building, with a columnar arrangement of the lower story, affording a needed place of shelter, as for persons waiting for carriages. The entablature of the order here carries arches which are over the intercolumns. Above these there are several decorative stages or stories: but the whole is a mere piling up of incongruous parts, or quite beneath the art of the rest of the design. It should be understood that the centre of the façade, containing the niches, has considerable elaboration of detail. Each recess would contain a statue of some celebrated painter; and the relief below would set forth some incident of his life. In the spandrels of the arches would be heads representing some of the artists' scholars. In the frieze there would be decorative panels of marble or granite; and red granite columns would be attached to the narrow spaces separating the niches. These last would be coffered in the vaulting, and enriched with vitrified materials; and generally, a rich polychromatic effect would be attempted with the aid of terra-cotta. A balustrade, and ten pedestals for statues of Apollo and the Muses would crown the whole. In each of the blocks where the entrances are, and which support two of the domes, there is some beautiful composition. To the doorway itself there is a species of balcony carried by cantilevers and Persians; and above the balcony is tracery, as though to the head of the door. Flanking the doorway are very large granite tablets, that some of the newspapers say are sepulchral, for names of great painters, with the dates of births and deaths. Above the doorway is a long panel, in a frame, like that of a picture, for sculpture. Above and below the panel, the mass is enriched with good mouldings. Each dome is combined with its supporting mass in a manner that is highly effective, and, we think, new. With the tambour are grouped four dormer-windows terminating the sides of the pavilion; attached to which are seated figures. We have stated that the south-eastern entrance leads to the grand-staircase. Next to this, and so that, between the stories, there is one landing, is a second staircase. Both staircases are shown, as they would appear, in one view. In the principal staircase a vaulted ceiling is carried in the centre, by a small arch from the entablature-blocks of two Corinthian columns which stand on pedestals that are joined together by a panelled piece of masonry. Some of the principal details of this staircase have a Renaissance character. The internal colouring, with the exception of that of the staircase, it is proposed should be quiet in tone, or as vellum-colour, gold, grisaille, and sparingly in low reds, greens, purples, &c., not overpowering any of the pictures.

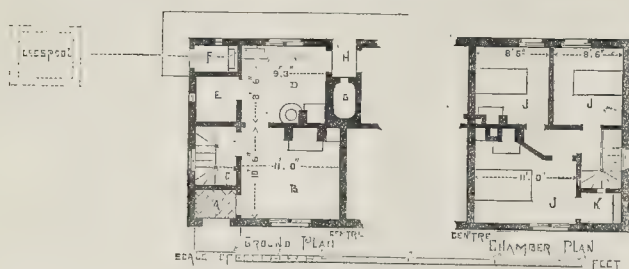
Mr. Wyatt has estimated the lineal feet of walls and arcades for pictures, in each of his designs; and he makes the total quantity in "Design A" about 460 ft. more than in "Design B." The figures in "A" are thus stated:—

National Gallery:—	Ft. lin.	Ft. lin.
Ground-floor,—		
Wall space	1,063	
Screens	838	
		1,901
First-floor,—		
Wall space	2,944	
Screens, nil		
National Portrait Gallery:—		
Ground-floor only,—		
Wall space	700	
Screens	344	
		1,044
Feet lineal	5,899	

According to an experienced surveyor, the design "B" retaining the present building and making the additions and alterations, would cost 275,000*l.*; whilst the design "A" for the entirely new building, would cost 420,000*l.*

We have not yet noticed designs by three of the competitors.

MACHINERY FOR MAKING BRICKS.—Mr. C. H. Murray, in a patent dated June 8, 1866, claims cutting the clay into the form of bricks by forcing the clay forward by means of a pushing board, or otherwise, against a series of fixed wires, so arranged that the clay is pushed on or forced past the wires on to a movable board provided with handles, so that twelve or any other convenient number of bricks may be removed at the same time, as described.



CONCRETE COTTAGES, SELLING, KENT.—MR. B. ADKINS, ARCHITECT.

CONCRETE COTTAGES.

Our engraving shows a pair of labourer's cottages just built at Selling, near Faversham, for Mr. E. Neame, under the directions of Mr. B. Adkins, architect, Faversham, and which from their economy of construction will, doubtless, interest those who are anxious to see the dwellings of the working classes improved.

These cottages are built of concrete, composed of gravel found near the site and Portland cement, and have been entirely completed ready for occupation at a cost of 100 guineas each. The same material was used for all paving, sinks, hearths, and other places where stone is generally used. The external walls are 9 in. thick, and the internal 6 in., and they are formed by laying concrete between sliding boards, the surfaces being floated over with a little fine cement and sand as the work is carried up. By these means a sufficiently smooth surface can be obtained to dispense with the usual inside wall plastering: the outside surface is afterwards jointed in the manner shown, and when dry enough coloured in the usual manner.

The use of concrete for these purposes enables the introduction of a common and inexpensive description of material generally found near the site, for if gravel is not handy, stones gathered off fields, or broken clinkers and burrs from the brickyard itself, mixed with a small proportion of sand, may be used, and with proper care stronger and dryer walls can be built with these than of ordinary 9-in. brickwork. Mr. W. Goodman, of Whitstable, is the builder.

In proof of the economy of this description of construction, these cottages when compared with a block of three similar brick cottages recently built in the same neighbourhood under a close competition, show a saving of about 50l. per cottage. A greater question, however, even than cheapness arises, and that is the absorbent or non-absorbent qualities of materials. Bricks such as are too often used in such constructions absorb a large quantity of water, during rain for example, and retain it a long time. Experiments upon well-made stone concrete seem to show that its power of absorption as compared with that of brickwork, is very small indeed, especially if the concrete be made with cement.

REFERENCES.

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| A. Porch. | F. W.C. |
| B. Living-room. | G. Oven. |
| C. Pantry. | H. Lobby. |
| D. Washhouse. | J. Chamber. |
| E. Wood and Coals. | K. Store-closet. |

THE DEATH OF ALEXANDER SMITH, THE POET.

With regard to the sanitary circumstances we have referred to as connected with Alexander Smith's death, we must always remember that an individual member of a community or a country is of necessity as subject to its malpractices in government—sanitary or otherwise—as he is to any other part of its constitution. A man who chooses to reside in Scotland must make up his mind to certain risks. Just as Count Cavour was blest to death by ignorant physicians, so may the poor poet be said, on similar principles, to have fallen a victim to the sanitary police of his country. Those who choose to read what we printed in a recent impression (Jan. 19th) with regard to the sanitary condition of the new town of Edinburgh, will see that even the modern Athens is anything but a bed of roses. But the new town is a paradise compared to the old town; and the Edinburgh University, where Smith had his office, is situated in the very centre of the old town, which has been for centuries one of the filthiest of modern cities.

The secretary's office itself has been described to us as a sort of mural cell—excavated rather than built—in one of the piers of the stupendous arches which cover the roadway into the very handsome and stately quadrangle of the Edinburgh College. At best it is only fit for a porter's lodge. How it is heated we cannot say; but it is lighted and probably ventilated by entreat window only, of fanlight pattern, one of which, the south window, opens upon the well-known College street cab-stand. The opposite pier of the central archway—6 yards or so from the secretary's door—is converted into the public urinal of the college; and our readers may judge how much the atmosphere of these conveniences would conduce to the salubrity of the secretary's office. We will say nothing about the dissecting-room on the one hand, or the hospital on the other. But round the north corner, right under the "principal class-room" windows, is one of those horrible public privies for which Edinburgh has become infamous, and which of itself is enough to pollute the atmosphere within the radius of half a mile! Was ever a poor poet so environed? Yet here he sat from ten till four every day for nine months in the year.

It was in all probability in order to escape from these compound nuisances that he fixed his residence close to the sea. But here he was perhaps as badly circumstanced. The village of

Wardie lies half-way between Newhaven (one of the most uncleanly fishing villages in the British islands) and Granton, near which there has recently been erected an extensive manufactory of artificial manures, the smells proceeding from which were sufficient last year to drive Sir John Macneill and his family from Granton House just as if it had been invaded with pestilence. This was bad enough, but this was not all. The beautiful slopes which spread from Edinburgh to the sea are irrigated more or less with the Edinburgh sewage, and the natural surface-drains or water-courses are thus filled with sewage. Sometimes in hot weather the flow is abated and the contents become stagnant. But we need not dwell on details which we have often given. In the midst of these "Elysian fields" the poet had his little villa, and here he cultured, we shall suppose, moss-roses and anemones, or grew some wild thyme and lobelia upon the arid banks.

He might try, perhaps, to console his nature during his sufferings by "gazing out into the over-surfing waves." But here, alas! was perhaps his most fatal enemy—a bitter, cold, biting, acrid, and unextinguishable draft of north-east wind. If such a neighbourhood caused the death of the powerful and robust Edward Forbes, it is no wonder it proved fatal to Alexander Smith.

The immediate cause of his death was diphtheria—a name given by M. Bretonneau to a class of diseases which are characterised by a tendency to the formation of false membranes, and which affects all the dermoid tissues, but chiefly the mucous membranes of the throat and air passages. Such diseases have invariably their origin, it is thought, in some form or other of blood-poisoning, and the present case will add additional strength to the belief. Those profound physiologists who roundly assert that there is no danger in bad smells will take warning from this case, perhaps, and amend their philosophy. But we will not dispute with them on their nice speculations. It is enough for us that Alexander Smith is dead; and a valuable life has been prematurely extinguished,—more than possibly by sanitary neglect and misgovernment. Who is responsible for this it would be tedious to inquire. In Scotland they manage those matters so as to divide and evade, often to destroy, responsibility. In Edinburgh, at this moment, there is a medical officer of health, a superintendent of streets and buildings, two or three sanitary inspectors, besides the ordinary staff of

seers and their officials. But all these are subordinate to a committee of the town council, which consists chiefly of respectable tradesmen. There is a similar junta in the burgh of Leith. To discover the responsible party in this series of local authorities would puzzle a better investigator than we profess to be. We therefore rest the onus upon the whole of them.

We have little else to say. If we speak strongly on such a subject, it is because we feel strongly. Without going the length of the Pantheistic doctrine so finely illustrated by Sir Walter Scott:—

"Call it not rain! they do not err
Who say that, when the Poet dies,
Mute Nature mourns her worshipper,
And celebrates his obsequies!"

Without going this length, we may say that we hold the opinion very strongly that the death of a poet or man of letters like Smith is a loss to the country. But how much are our feelings of regret intensified when we find this death due to circumstances which we may not only control, but, with some carefulness, prevent! Indeed, we confess that indignation in such cases often rets the upper hand of our softer sentiments. But we have said enough. It only remains to add a single word concerning the poet's burial-place. Alexander Smith lies buried in Warriston cemetery, within a pistol-shot of his residence at Vardie. He lies, says a spectator of the funeral, in a sunny spot, commanding one of the finest views of the city whose beauties he had so eloquently described; and the cold but rich light of the early sunset seemed yesterday in melancholy harmony with the last scene of his bright but brief career!

ANCIENT SYNAGOGUES IN CENTRAL EUROPE.

(QUOTING and commenting on our recent article on this subject, and the View of the ancient Synagogue in Worms, the *Jewish Chronicle* says,—

"It is true that no very ancient monuments are found in the cemetery adjoining the synagogue referred to at Worms, as the populace, at the repeated risings against the Jews, during the Middle Ages, was wont to vent its rage as much upon the dead as upon the living, and to destroy the tombstones. There are, nevertheless, a few monuments in it dating, we believe, from the fourteenth century. Some years ago there appeared a very interesting publication, containing copies of all inscriptions on the sepulchral stones in this cemetery, as far as they could be made out."

If it is really true, as the writer asserts, that where still exist in the cemetery at Prague monuments of a date as early as the fourteenth century, they can only be plain inscribed stones, and as such are of no value architecturally. Many of the tombstones in this cemetery commemorate persons who lived as early as the tenth and twelfth centuries; but the original monuments have been destroyed, and those which replace them are sixteenth and seventeenth century works.

"A splendid synagogue, almost entire, still exists in Prague. It is situated at the end, and was built by Rabbi Samuel Hanagah, the finance minister of Don Pedro the first. The synagogue, we believe, was built in the fourteenth century. A description of this ancient place of worship was given, among others, by the late E. H. Lindo, in his 'History of the Spanish Jews,' and who had paid it a visit in person."

It has been supposed by many people that the building called the "Jews' House," at Lincoln, was originally a synagogue; but the fact of its being on two floors, and the remains of ancient chimneys, are sufficient proofs that it can never have been anything else than a dwelling-house, though one of no ordinary class. This building is a late Norman, and has a very pretty little doorway. With reference to our observation as to the isolation of the Jews, the writer in the *Jewish Chronicle* remarks,—

"There is abundant evidence to show that this isolation did not exist then, but that the intercourse between the Jews and Christians was habitual and most cordial; that there existed no ghettos and scarcely any of those exceptional laws which in subsequent ages brought about that lamentable isolation which in process of time led to a great estrangement between the followers of Moses and Jesus. It is principally two agents which brought about this isolation. The first was the fanaticism gradually caused in the general population by bigoted monks, priests, and the decrees of the councils; secondly, the rivalry of the guilds and the trading classes. Wishing to defend themselves of the competition of the Jews, they were at all times ready to join in the outcry against the Jews by bigoted priests; to propagate all kinds of false reports against them; and to influence enough with the authorities to obtain decrees which either kept their rivals altogether from the field of competition, by banishing them from the cities, or deprived them of all means to interfere with trade, by confining them to special quarters,

and keeping them, as it were, in prison under lock and key. Most of the expulsions of the Jews, confiscations of their property, and even massacres, can be traced to one of these causes, or to a combination of both. The isolation of the Jews was only gradual, and the work of centuries. We need not, therefore, be surprised to find that the Medieval synagogues have so much in common with Medieval churches."

Now, although it is perfectly true as stated here, that there were no penal laws against the Jews in the earlier centuries of the Middle Ages, yet it is quite clear, from historical evidence, that the Jews kept themselves aloof from their Christian brethren, retaining their own peculiar manners, customs, and dress; and this being the case, it is difficult to imagine that they should have copied Christian churches in the erection of their synagogues.

There can be no doubt that the ill-feeling which existed against the Jews, during the Middle Ages, was not only a religious prejudice or commercial jealousy, but even a far deeper feeling than either; it was the antagonism of race. The feeling against the Jews in the Middle Ages was what we now see exemplified in the bitter hatred of the white man to the black in America; and even at the present time there are many persons who are utterly indifferent to all kinds of religion, and care little for commercial interests, who retain the most cordial dislike to the Hebrew people; and it is a singular fact, that until the year 1848, no Jews were allowed to live in Nuremberg, and no one would accuse the Nurembergers—the most Protestant people in Germany—of being led on by monks and priests.

M. Viollet-le-Duc, in speaking of the synagogue at Worms, seems to doubt the fact of its having been originally built as such. He is most certainly in error; for not only is there the strongest historical evidence, but the fact of the plan being nearly identical with the synagogues at Prague and Frankfort, forbids belief that this building could have been erected for any other purpose.

GLASS PAINTING; ANCIENT AND MODERN.

On this subject Mr. T. Gambier Parry has been lecturing in Gloucester, and here is part of what he said:—

With peace restored at home, and leisure to return to the arts of peace, the relics of old days and old things at home, of home history, home romance, home devotion, soon begin to touch people to the quick, and to engage a warmth of cordial affection which all the copies from Athens, Rome, Spalato, or Corinth could never command. Among the relics of our national arts none engaged a more general attention than those associated with our national architecture, and pre-eminently that of painted glass. It was valuable for its heraldry, its costume, its legends; but some loved it for its beauty, and caught the first glimpse of the refinement of its art, which for centuries had shared in the contempt of all things Gothic. People had been taught to look at everything through Palladian spectacles. All avenues to really national taste had long been closed. This country had been overwhelmed by three centuries of invasions—religious invasion of the old form of faith, democratic invasion of the old forms of government, invasions of Dutch arts and notions with a Dutch king and Dutch nobility. But things began to settle down. People began to yearn for something of their own. The old national arts were revived with all the interest of novelty. Their very principles had been forgotten. Italian fiddlers, French cooks, Flemish painters, and Dutch architects had put out all memory of them. But the national arts, once dear to all our people, were soon to live and flourish again.

The first glass-painters of this modern Renaissance in England were unhappily no artists. They floundered about in a perfect mosaic of difficulties. They were staggered by multiplicity of styles; they had no good art in themselves, no good materials in their workshops. There seemed to be no standard of excellence; there was no standard of public taste. The contrast between the vigour of the old work and the poverty of the new grew more and more painful; the old savoured of art, the new savoured of the shop. What was to be done? To imitate? Yes, to imitate; and to the necessity which drove them to it will be hereafter traced the cause of the pre-eminence which I firmly believe our artists will attain. Imitation the most laborious is the very foundation for all hope of ultimate

success in the education of artists. The processes, the theory, the rationale of art, need to be analysed before the mind can digest them. Imitation is not base, except in this—that it is the very base of all success. The most heaven-born genius must first have learnt to spell. England did not stand alone in difficulty. In Germany the art was taken up with spirit, but the old examples were too soon cast aside. The reasons of their beauty, the nature of their materials, the very alphabet of the future language of the art, were neglected. In Germany the only real success has been in an art unsuited to the large scale of windows, in the beautiful cabinet examples of enamel-painted glass, principally of copies on a small scale of old pictures of their own school. Their merit is in technical dexterity—no more. For the high purposes of an independent art such works are but hinderances, influential only for bad. I know nothing more futile, more unhappy, in matters of taste, than the attempts to mimic the productions of one art by the processes of another. The attempt to reproduce in glass the works of the oil or fresco painter might be made in a modest admiration of the great works of other men; and so far the motive could be respected, but no further. Glass-painting is no mere supplement to any other art. It has an individuality all its own: it will stand or fall on its own merits, and for them it need not fear. The Germans have been among its most unfaithful followers. In other styles of art their painters are not strong colourists. It is strange that this should be so; for as a nation Germans are the greatest of musicians, and music is essentially the art of colour; but their painters, with rare exception, do not share in this great gift. It was therefore not unnatural that in an art of which colour is the great characteristic they should fail to seize the true ideal: they failed even to perceive the true properties of their material. Regardless of the principles of old art, they formed a dull ideal of their own; they went to work on glass as if it were canvas or paper. They worked as if they were afraid of it; they coated their glass with enamel; they did all that was possible to get rid of it; they reduced it to the condition of transparent calico, and then painted upon it, but with the veriest abuse of glass,—brilliant, glancing, jewelry of glass! such as in the days of Gothic art filled their cathedral windows with a glory as yet unrivalled, and blazed and sparkled with a reckless brilliancy. With such as this, the genuine use of glass, our modern Germans have but little sympathy, at least if we are to judge them by their works. I must be understood to be speaking thus in general terms. There are honourable exceptions among German artists of glass-painting, pre-eminently in their cabinet copies of old pictures. It is hard and thankless work to try to make people see what they cannot see. In matters of this kind they are in general satisfied if only they find things, as Irish people call them, "pretty." There is little or no perception of aptitude and inaptitude in works of art. If glass is made to look like calico, or calico made to look like glass, so long as it is "pretty" indifferent people say, "Who cares?" In modern Italian glass there is very much the same radical error. But then the Italian is essentially a colourist. In glass, however, he, like the German, has begun at the wrong end. The Italians never had much sympathy with Northern art. They rather affected to despise their Gothic neighbours,—they ignored those Northern Teutonic schools of art, which nevertheless had covered church walls with paintings, and windows with storied glass, and had matured an art, marked with all the individuality of national character, well nigh 100 years before Giotto dipped his first brush in colour. And now, too, in their modern (Italian) revival of glass painting they ignore those schools again, from which the first lessons of the true art in glass can best be learnt. They have missed, too, those identical principles, even when displayed in their own glorious cinquecento windows, the principles of translucent colour. They have rather gone in for a style of art more suited to paper than to glass. They have produced some designs, tempered certainly with great beauty and refinement, and they have transferred these designs to glass. But why to glass? Why to great sheets of fragile glass, toned down with dense enamel, worked and laboured at till all the glass was lost sight of, changed, got rid of, treated just as ciled cardboard might have been treated, and with precisely the same result? Again, we look in vain for the glancing jewelry of glass: instead

of it we find pictures, which in treatment, texture, and effect resemble precisely large coloured lithographs varnished into transparency—labour misplaced, art misplaced—one indeed in which we admire the frequent beauty and merit of design, and delicate execution; but it is not the Art of Glass. Refinement and tenderness are merits indeed, but they become morbid and vicious when they occupy exclusively the heart and hand of an artist, leaving no room for other qualities such as vigour and decision. Why are the glories of old glass at Florence and Venice, at Chartres and Bourges, passed by, rich as they are with many a lesson which a glass-painter need learn, examples which illustrate the entire powers of the art, and its scale complete, from gorgeousness to solemnity? Let those old works be equalled first, before there be any pretence to improve upon them.

In France and in Belgium the revival of this art has been carried on with much the same feeling as in England. The principle that has appeared to guide the best men in these countries has been to keep one hand stretched out behind with firm grasp upon the past, while the other was stretched out toward the future. They took no heed of the taunts about copying. They knew that they were but working out great secrets of past excellence to be the groundwork of their own. There has been, indeed, a most mean and miserable copyism, carried on by men who could do no better; and through their ill-doing the reproach has been misplaced to all. They knew all the while what they were about. They knew well what was good, what had in the works they studied. If in the Gothic Medieval art of France and England figures were painted in ignorance of anatomy, and architecture in ignorance of perspective, what matter! You might as well look for the word "photography" in Johnson's Dictionary as for the rules of the Academy in a Gothic window. No; the grand old fellows of those Middle Ages did their best. They felt with poetry, and they worked with earnestness; but, what is more to our purpose now, and for our study, they had a most thorough knowledge of the use of glass. That is the lesson we have to learn from them. We may draw better, our technicality and science may be greater. How could it be otherwise when each generation does but light its lamp from the one that has gone before? But those dull generations between them and us unluckily let the lamp of glass go out. So we, to light our own, must reach still farther back to the old lamp of our forefathers, which is bright and glowing still. The revival of this art on such right principles as this gives, not only hope, but confidence in ultimate success. One may grieve at the atrocities which have filled cathedral and other windows with disgrace in modern days; but there have been some grand things done. If there has been one fault more prominent than another, it has been that both the artists and the public have thought too much about the subjects painted, and too little about the glass itself. The result has been in too many cases that glass-painters have consecrated works to the genius of the arts which ought rather to have been consigned to the simpler genius of the pestle and mortar.

Of the early history of the art very little is known. There appears no reason for supposing that coloured glass was used in windows before the Christian era. The early Egyptian and Greek coloured glass, so far as we can acquaint ourselves, was but semi-transparent; commonly used for coating earthenware and in making small ornamental vessels. Somebody has lately taken out in England a patent for glass coffins. He must have a very high opinion of his friends. The Egyptians and Persians made glass coffins between 200 and 300 B.C. There are some in the British Museum. There were few colours made in glass in those times, but a good many varieties of tints. A good red is not to be found. There are tints of deep and pale blue, ochre and straw colour, browns and greens. About the use of glass in windows before our era little or nothing is known; what is described bears no analogy to our system of flat sheets set in frames. That glass was used in windows at about the beginning of our era we know from the remains at Pompeii, and Wroxeter in England. But we have no trace of coloured glass used for the purpose. Pliny's expression about glass is that "*Nulla est materia sequior aut pictura accommodior*" which at once suggests the idea of a pictured window. I conceive that in reality it refers to opaque enamels and to the ornaments in the glass bottles and vases of his

time, which were made with many-coloured pieces, twisted or drawn out when hot, and worked into all kinds of forms by means of their extreme ductility. Many materials besides glass are described as used in Roman windows, such as talc and alabaster. The Japanese used the same expedients, and in addition to them large transparent shells. St. Wilfrid, of York, describes church windows in his time (he died A.D. 709) as filled with transparent stones. The rareness of glass in windows would be inferred from the very few notices of it to be found in two such writers as Philo and Lactantius, who refer so intimately to the habits and usages of domestic life in their times.

The earliest pictorial use of coloured glass was in the tesserae of the mosaics; and it is by no means improbable that glass-coated materials and glass itself in flat sheets were used in the polychrome decoration of walls. Some of the most beautiful early examples of designs on glass are those of figures of the early Byzantine school, engraved in gold leaf inlaid between two layers of transparent glass. But the way was being fast prepared for coloured glass in windows. The use of tesserae in mosaics on walls and floors was the natural suggestion for a similar use of coloured glass in windows from the first moment that a perfectly translucent quality of it was made. Figure subjects had been common in mosaics—why, then, should they not be introduced in coloured glass? Thus the art of painted glass must naturally have begun; but the earliest positive information I can find of coloured glass being used in windows is in Prudentius's notice of it in the Basilica of St. Paul, at Rome, in the fourth century. We next hear of it at a church at Lyons in the fifth century; and the coloured glass there was arranged in patterns. The next in point of time distinctly spoken of are the windows of St. Fortnatt, Bishop of Poitiers, in the sixth century; and in the same century we hear of the introduction of it in a church at Tours by St. Gregory. So that by that time the use of painted glass in windows had spread commonly and to a great distance. But in England we had not been so fortunate. St. Wilfrid, in the seventh century, laments that makers of coloured glass were not then found in England—so he went to France in search of them. In the next century, the eighth, we find Pope Leo the Third filling the apse window of the Lateran church with coloured glass in the year 795. But up to this time we hear nothing definitely of painting upon glass.

After all the pains which antiquarians have bestowed in the research, it does not appear that any account of figure subjects can be traced with any reliable authority earlier than the middle of the eleventh century; and the example cited is the subject of the mystery of St. Paschasius in a window of a church at Dijon, mentioned by the historian of the monastery of St. Benigne, A.D. 1052. The French King Charles le Chauve was the first great patron of glass-painters. Soon after his time he became universal. The treatise of Theophilus, of about that period, describes almost every process necessary for a complete window, with the whole detail of its design and colouring of patterns, figures, and draperies. So that it is impossible not to infer that an art so complete as he describes it, must, to have attained such completeness, have been practised long before, although we can find no written account of it. All that actually remains to us is in small pieces coloured separately and inlaid, as in vitreous enamels, mosaics, and encrusted ornaments, or bits of glass in imitation of gems, on book-bindings, church vessels, rings, and so forth. At about this time (the twelfth and thirteenth centuries), glass painting became a very distinguished profession. Its professors were honoured by privileges and dignities at Venice, and in Normandy by the semi-noble distinction of a title, that of "gentlemen glaziers." In those misnamed "dark ages," those "benighted" Gothic times, when Christian art first sprang forth in all its freshness and beauty, schools of art were established in religious communities, and the artists of those times, trained in the whole range of education then open to them, appear to have practised all the arts of design connected with architecture, so that wall painting, designs for sculpture, illumination, and glass were followed equally by the same persons. In the earlier styles, the artistic composition of picture subjects was made effective, and the groups of figures relieved from each other by contrast of colour, rather than (as in more recent work) by opposing and contrasted forms.

Their shadows consisted of little else than lines, so that the glass was honoured throughout, and the right principle of a window was maintained as a thing of light. But as time progressed, and the arts of mural painting and illumination became more realistic, glass-painting followed in the same strain.

Translucent glass-painting for the purpose of windows has been entirely confined to Christian use. I instance Pompeii and Wroxeter for their evidence of the use of glass used in windows of Pagan times; but they were not coloured. Coloured glass has from early times been used by Mahomedans, but it was not painted. Painted coloured glass is therefore solely Christian. In Mahomedan mosques the ornamental glass was used on the principle of transparent mosaic. The design was cut out of their plates of alabaster or stone, or moulded in plaster, and the glass, most beautiful in colours, was let into them, as gems would be set in jewelry, in patterns of flowers, foliage, or any other conventional design of geometrical ornament. The effect was exceedingly rich. Specimens of these works are still to be found in Constantinople, in the mosque of Hebron, and in other Oriental buildings. That is glass mosaic, not glass painting.

The improvements in the Christian arts of painting during the fifteenth century were very rapid. Those improvements of the oil painter and the fresco painter were, however, the first poison drops which ultimately ruined the art applied to glass.

About the middle of the fifteenth century the treatment of pictures in glass became more and more relaxed. The artists had hitherto been guided by the safe principle of deference to the architecture of which their work formed a part. After that time the architect's design seemed to be beneath the notice of the glass-painter, who spread his picture over the whole window-space regardless of all obstacles. A little later in date than this a magnificent style of glass-painting was developed in Italy. Glass was treated pictorially indeed; but, like most genuine artists, as they were, the Italian designers of those pictures felt intuitively that the compositions and resources of other styles of painting were unsuitable for glass. So they went in for light and colour like men, and designed for breadth of contrast and vigour of effect, figures, architecture, fruit, flowers, animals, and then led them all together, regardless of atmospheric effects, without much care for perspective, and with an equality of colour throughout and relief in the detail just enough to save all the objects from confusion. The effect was the most powerful that glass could produce: it was flat, architectural, and grand in the extreme. The success of those windows consisted in this, that their designers were first of all consummate artists themselves, and then that they had the genius and wit to seize the true and complete idea of the materials they had to work with. Theirs was the last blaze of that fine art for many a long year. Their ancestors adopted a new system by painting upon glass with enamel colours. The result was the rapid decline of the art. They would paint. The art of glass, therefore, was no more. It had throughout borne witness to the fact that architecture was the master art. The harmony which had ever existed between the various styles of glass-painting and architecture arose, not only from the painters employing the same general character of ornamentation, but far more from the deep current of a mutual sentiment which pervaded all the contemporaneous arts of the Middle Ages. When the purity of feeling declined in one, it declined *per se* in the others; and it was but natural that it should do so, because art is only the reflection of the hearts and minds of men, and it rises and falls with them. Such was the fate of glass-painting south of the Alps. In the north much the same result occurred. Religious and political troubles far and wide completed its ruin. But here and there, and more particularly in Holland and Flanders, the old vigour of the art was revived. But the taste of the times was coarse, and the idea of art was too realistic to be attained in glass, without straining it beyond its proper functions. Some grand effects were, however, produced by combining the inlaid system of the best times with the enamel painting of the worst. The inferior artists revelled, as usual, in the vulgarity of violent effects. The public taste of their day was low, and was growing lower. There was no demand for good art; so there was no supply. And thus the art dwindled away, till it fell, as I described at the

beginning of this address, into the hands of the plumbers!

After this sketchy review of the progress and decline of the art, the subject which remains to us seems to divide itself into two parts, relating to its practice, viz.,—1st, the treatment of ornamentation; and 2ndly, the treatment of figure compositions. Of the first of these a great deal is to be said; but as the second would be more interesting to you and more profitable for our present purpose and limited time, I will not delay on the subject of ornament, but pass on to that of figure subjects, or what might be called "pictures in glass." It might, however, make what I have hereafter to say more clear, and be of use to those whom I address who are not well acquainted with the processes of this art, if I make a short digression to say a few words on the nature and use of the materials. This art is very little practised by amateurs. It is, perhaps, more admired than understood. When glass-painting is spoken of you should know that it does not imply the use of colours in any way similar to that of other arts. The artist makes no colours, but purchases them in the coloured glass supplied by the manufacturing glass-stainer. The process by which he produces a painted window is this. The subjects are first designed on paper (called from its size "a cartoon") in black and white. The colours for the various parts of it are determined, and glass of the colours required is chosen for them. The design is then laid out on a table, and upon each part of it, as for fleeces, draperies, background, ornaments, &c., the pieces of glass, already chosen for them, are cut out and laid. The glass being transparent allows the drawing and shading of the design beneath to be seen, and these are traced and drawn upon it with a brush, as any one would trace upon tracing paper. The material used in the brush is a powdered oxide of iron and copper of a uniform colour, much like sepia, which is mixed with gum and water, and this is eventually fused into the surface of the glass by the heat of a furnace. Golden tints and ornaments are usually produced in a different manner; they are commonly added subsequently by the transparent yellow stain of oxide of silver fused upon the opposite side of the glass. And thus the work is done, so far as the artist is concerned. Each piece is then leaded together into its place, and the window is completed. All this sounds a very simple process, and, indeed, it is so; but the same might be said of the mere processes of any other art. The really great difficulty is proved by the rarity of success.

THE LATE SIR WILLIAM SNOW HARRIS.

It is with deep regret that we have to announce the death, on the 22nd ult., of Sir William Snow Harris, one of our most distinguished scientific experimentalists. He was born at Plymouth, in the county of Devon, in the year 1792, and was consequently in the 75th year of his age. He was educated in the Grammar School of his native town, and thence he proceeded to the University of Edinburgh to study for the medical profession, which he practised for several years with great success; but his whole heart and soul being in the physical sciences, he soon abandoned his practice in order to devote his attention to the study of the elementary laws of electricity and magnetism. In 1820, he made a valuable invention for the protection of ships from lightning, which he submitted, together with an interesting account of his invention, to the consideration of the council of the Royal Society, of which Sir Humphrey Davy was the then president. After much investigation on the subject, the Council of the Society warmly approved of his invention, and communicated with the Admiralty urging its immediate adoption in the Royal Navy. In 1831, he was admitted a Fellow of the Royal Society; and in 1835 the Society awarded him the Copley medal, one of the highest honours in its gift.

The value of the invention will be readily appreciated when we state that loss or damage in the Royal Navy from lightning has ever since that time been absolutely unknown, while previously the material damage alone had been estimated at 10,000l. per annum. In 1847, her Majesty, in recognition of his valuable services, had conferred on him the honour of knighthood, and he had on several occasions been honourably mentioned in both Houses

of Parliament. In 1860, he was appointed scientific referee to the Government in all matters connected with electricity; and in this capacity he had to superintend the fitting of the conductors of the Houses of Parliament, the powder magazines, Buckingham Palace, Windsor Castle, and the Royal Mansions at Frogmore, in which are deposited the remains of the late Prince Albert. He was also the inventor of an improved mariner's compass, and the unit jar for measuring out definite quantities of electricity.

Sir William was one of the original members of the Philosophical Club of the Royal Society, and had been a valuable contributor to the "Transactions of the Society," and to the *Edinburgh Philosophical Journal*.

THE ART-UNION OF LONDON.

"PRY" is the title of the plate provided by the council of this association for every subscriber of the current year. The original picture, by Mr. Le Jeune, A.R.A., represents, with much feeling, three young girls, who have found a wounded robin in the snow, and are endeavouring to coax it to them. The subject is not of the high and grand character possessed by some of the other works now in progress for the Art-Union, such as Armitage's "Parents of Christ seeking Him," or Macleise's noble wall-paintings in Westminster Palace; but there is pathos about it, and the touching expression in the girls' faces will find many admirers. An institution whose aims should be catholic in matters of art, must vary the character of its productions. Mr. Lemon has engraved the plate with great delicacy in the pure line manner; and in these days when publishers demand the rapidity and cheapness of production afforded by the chalk or mixed or mezzotint process, it is to be observed that the Art-Union of London almost alone gives encouragement to the higher class of pure line work; just as in the production of high-class bronze works and medal-die engraving, it represents almost exclusively the amount of art extended in England to these branches of art.

Apocryph of these matters, we may remark that the English commissioners have gladly accepted an offer of the council to lend some of the society's bronzes for the Paris Exhibition. Some of their later engravings, also, will be found on the walls of the English Court.

A model, reduced by Mr. Birch from his statue of the "Wood-Nymph," for which he received the society's premium of 600l., has been placed in the hands of Messrs. Brown, Westhead, & Co., for production in parian.

THE NEW MARKET HALL, SHERWSBURY.

THE chief stone of this new hall has been laid. The edifice will be in the Italian style of architecture, and will be built of black, blue, red, and white brick, with Grinshill stone dressings. Its total length will be 322 ft., and its greatest breadth 148 ft. On the basement will be twenty-eight vaults for the storing of goods, with two inclined roads leading thereto. One of these approaches will be 10 ft. wide at the entrance, and in the centre about 24 ft., so as to allow a cart to turn. Both lead into Claremont-street. On this floor there will also be seven shops, and a large fish-market, with ice-house, and heating apparatus. The whole building is to be warmed by hot air. The ground-floor will consist chiefly of the general market. There will be six entrances to this portion of the building. The principal entrance will be at the Mardol end of the building, and will consist of an arcade, 17 ft. wide, with rows of shops on either side. On this floor there will also be a butcher's market, fruit market, the hall-keeper's office, water-closets, and other conveniences. On the first-floor, over the fruit-market, will be the corn-exchange, a room 89 ft. long by 45 ft. wide. Over the shops will be a gallery, suitable for the sale of light market goods. In Claremont-street a covered cartway will be erected for the landing and unloading of goods in wet weather, and the roof of the building will be covered with Bangor slate. The windows and doorways are all circular-headed, and the doors will be made to slide in a groove in preference to hinges. The front on the Shoplatch side will be 88 ft. in height, and that of the tower which rises near it, 151 ft. The latter will be surrounded with an ornamental

iron vane. This front will stand some feet further back than the line of the old buildings. The other side of the building in Claremont-street will resemble the one in Shoplatch.

The plans were prepared by Mr. R. Griffiths, of Stafford; and the contract is being carried out by Mr. Barlow, Stoke-upon-Trent.

SANITARY CONDITION OF MERCHANT VESSELS.

It is satisfactory to find sanitary reforms to the necessity for which we have long been calling attention now urged on all sides. The *Lancet* has brought its reports on the Present Sanitary Condition of the Mercantile Marine to a conclusion. The third and fourth reports deal with the accommodation provided for the men on board, their clothing and personal hygiene, and the further improvements necessary to ameliorate the condition of the men. The old forecables and top-gallant forecables, which in a large proportion of ships are still maintained, are rightly condemned. "Imagine a small triangular space in the bows of a ship, the maximum dimensions of which required by law are 74 cubic feet for each individual, flooded by the waves, and practically uninhabitable if above deck; filthy, dark, damp, and unventilated if below: no pains being taken to provide such simple contrivances as managers, law-pipes, ventilating funnels, rain-awnings, and furniture, which might exclude water, admit fresh air and light, and somewhat mitigate their comfortless condition. Compared with such abodes the worst workhouse ward or Irish cabin is almost palatial." True, in fine weather, the crew may sleep and eat in the open air; but, in bad weather or in harbour, the forecable is the home of all: at no time is there any other refuge for the sick, whose condition is, therefore, most deplorable. Years ago we pointed out this, and the evils of the sleeping-places generally. See, too, our sketch, "A Berth that brings Death," reproduced in "Another Blow for Life," p. 104.

THE MONT CENIS TUNNEL.

THE *Turin Opinions Nationales* gives the following return of the state of this work on the 31st December, 1866:—On the Bardonnèche side 3,940 metres had been completed, and on the Modena side the work had advanced to a distance of 2,434 metres, making a total of 6,374 metres, of which 1,025 metres were excavated during the year 1866. The entire length of the tunnel is 12,220 metres, so that it is now more than half completed. Supporting the present rate of progress to be maintained, nearly six years will be required before the line is finished. It is expected, however, that this year's returns will show an increase, inasmuch as the boring on one side during the past year was rendered more difficult by a bed of quartzose rock, the position of which was predicted by the geologists, from a careful survey of the dip of the surrounding strata, within a hundred feet or so of the place where it was actually met with.

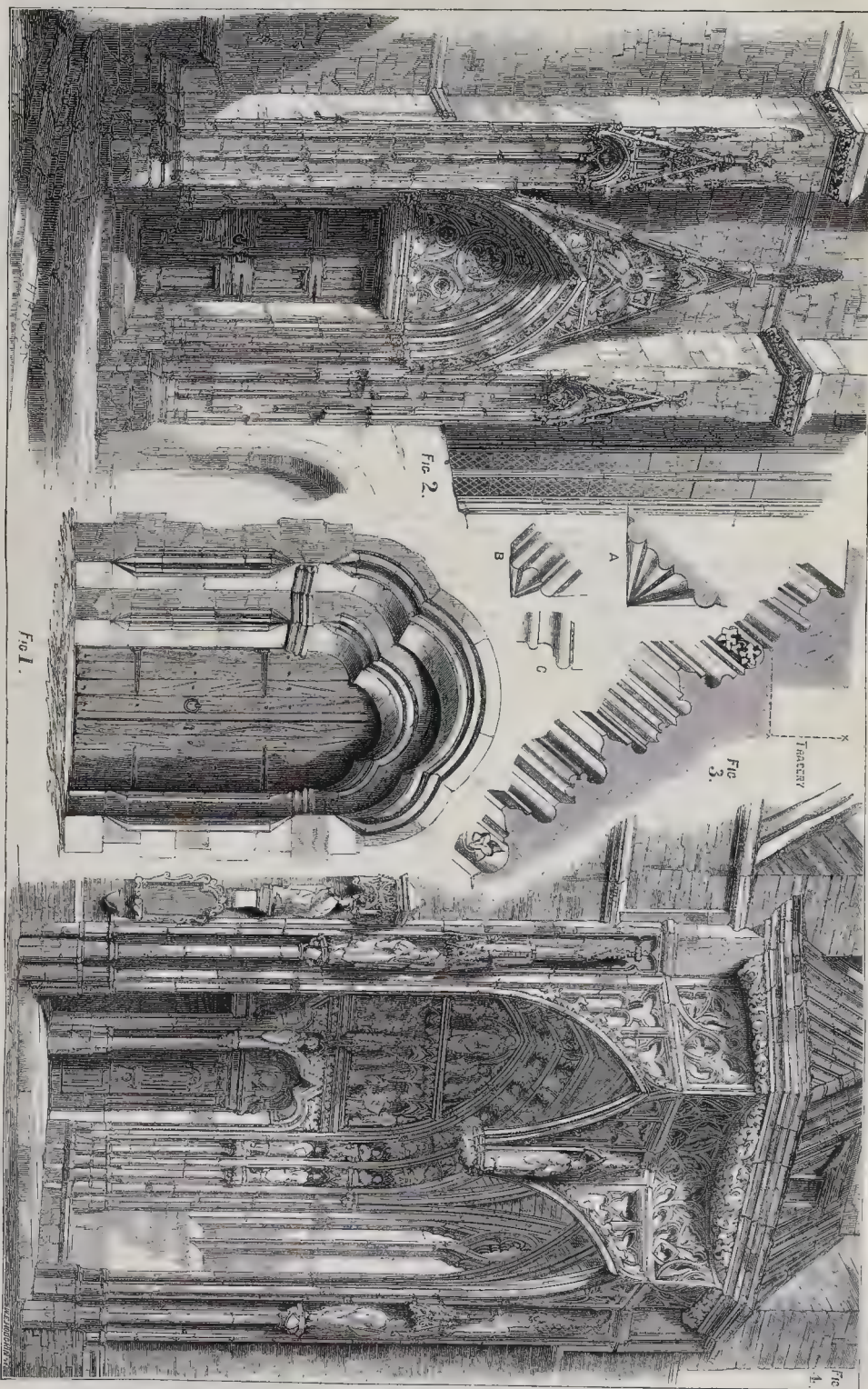
CORK WAREHOUSE, LANT STREET, SOUTHWARK.

UNDER the direction of Mr. Joseph S. Moye, architect, Hertford-street, May Fair, a cork warehouse of considerable size and good appearance, has recently been erected in Lant-street, Borough, for Mr. Thomas Peet. The building is faced with white Suffolk bricks, jointed in black mortar, red and black bricks being introduced in the bands and arches. The cornice is also executed in white moulded bricks. The whole of the facings were supplied from the Woolpit kilns, by Mr. C. Stutter.

The warehouse has a frontage in Lant-street, of 45 ft., with a depth of 65 ft. The goods entrance is situated in Vine-yard. The total height of the building from the basement floor is 71 ft. 6 in., and 60 ft. from the pavement level. The floors are carried on girders, 12 in. deep, supported by two tiers of 8 in. cast-iron columns, bolted together, and running the entire height of the building. Internally the warehouse is fitted with every convenience to suit the requirements of the trade. The contract was taken by Mr. Walton, of Museum-street, and the total cost was about 4,000l.



CORK WAREHOUSE, LANT STREET, SOUTHWARK.—MR. JOSEPH S. MOYE, ARCHITECT.



GERMAN CHURCH DOORWAYS.

EVEN the most enthusiastic admirers of English Gothic architecture must admit that there is one point in which we were far behind our Continental neighbours in the Middle Ages, and that is the treatment of church doorways. Those who have stood before the fronts of Wells and York, and have in thought compared them with Notre Dame, Paris, or Ratisbon Cathedral, cannot help being struck with the fact that the Continental fronts owe much of their superiority to the great dignity and importance given to the doorways. At Ratisbon this is singularly the case, for the great doorway is perhaps the only really well-designed feature of the whole front; and yet who can help being struck by the grand and dignified effect of the whole?

The German architects do not seem to have turned their attention to this feature so early as the French; but when they did they made up for lost time by making the doorways the chief feature in their buildings.

The Romanesque churches in Germany have generally plain doorways with a tympanum, which is sometimes ornamented with carving; but is more commonly left quite plain. A very fine and rich example is to be found at the Scotch Benedictine Church at Ratisbon. In Transitional and First Pointed doorways the trefoil arch is frequently used generally, without the tympanum. Fig. 1 is a good specimen from the cathedral at Würzburg. The detail is singular. It is not until the fourteenth century that we find the double doorway; and even then they are never so common in Germany as in France; however, at this period the doorways are generally very lofty, and of very noble design. Fig. 2 is a remarkably elegant specimen from a deserted church at Würzburg. The doorway in the south tower of Cologne Cathedral is about the same date. The doorways to the transepts at Ratisbon and Erfurth cathedrals are double, and are noble examples. Later in the style double doorways become much more common, and they are generally very highly adorned with sculpture and foliage. Fine examples exist at Nuremberg, Augsburg, Ulm, and Münster cathedrals; St. Mary's, Würzburg; Thein Church, Prague; Ochsenfurth, &c., &c. Third pointed doorways are generally double if of large size, and are very frequently protected by a kind of projecting canopy or suspended porch. The finest example is the western portal of Ratisbon Cathedral, where the porch projects in a triangular form from the wall of the church, and is supported at the angle by a pier profusely ornamented with statues, carving, &c. At St. Ulrich's, Augsburg, the porch is semihexagonal, and is supported upon two slender piers. At St. Martin's, Landshut, is a doorway, the porch over which forms two triangles in plan (see Fig. 1), and is supported by either pier or shaft: the part forming the junction of the two triangles hangs down and forms a pendant. The detail of this doorway is very rich and beautiful. The church to which this doorway belongs contains four others almost equally elaborate, although the building itself is very plain and simple. After the fifteenth century, the Germans appear to have given up large doorways. The late Gothic specimens are generally small, single, devoid of sculpture or carving, and simply ornamented with interpenetrating moldings. Sometimes the heads of these late doorways are most singular and eccentric in form, and are nearly always very ugly. This kind of doorways continued in use until the revival of Classical architecture at the end of the sixteenth century. The drawings we give have been made on the spot for us by Mr. H. W. Brewer.

REFERENCES.

1. Doorway, Würzburg Cathedral.
2. Moulding as to jamb.
3. Moulding as to arch.
4. Impost.
5. Doorway of deserted church at Würzburg.
6. Arch-mould of the same.
7. Doorway, St. Martin's Church, Landshut.

THE TRADES MOVEMENT.

Illegality of Trades Unions.—At a numerously-attended meeting of trades society delegates, held at the Sussex Hotel, Bowdrie-street, Fleet-street, in relation to the late Trades Reform Demonstration, at the conclusion of the regular business, Mr. G. Potter, the chairman, brought before the delegates the subject of the recent decision given in the Court of Queen's Bench, by which trades unions were held to have no

power to recover by law any sums of money that might be embezzled from their funds by any officer or member of the society. After some discussion, a delegate from the plasterers moved, and a delegate from the carpenters seconded, the following resolution:—"That the Working Men's Association be and is hereby empowered by this meeting to convene a meeting of delegates from the trades societies of the metropolis, for the purpose of taking into consideration the position in which trades unions are placed by the recent decision in the Court of Queen's Bench in the case of the Boiler-makers' Society, and to determine the course to be adopted thereon." The resolution was unanimously adopted.

Coventry.—The members of the Operative Bricklayers' Society have given three months' notice to the masters, dated January 1, that they will discontinue working under the present rules. They require the second rule to be expunged, and ask for a slight alteration in their wages. The secretary to the Coventry Builders' Association, replying to this demand, states in effect that the masters see no cause for any alteration in the rules, but are willing to submit the matter in dispute to arbitration, under Rule No. 1.

The Potteries.—The carpenters and joiners of the Staffordshire Potteries have given notice to their employers of a demand for an advance of 6d. a day in their wages, raising them to 30s. a week, and a reduction of the hours of labour to the extent of two and a half hours a week, the change to come into operation on the 1st of May. The builders, in reply, have offered the men 6d. an hour, making the wages 29s. a week, but they decline to reduce the hours of labour below fifty-eight hours a week. The difficulty with the bricklayers, which has been pending since May last, and has ever since prostrated the building trade of the district, has only just been removed by a reference of the dispute to arbitration.

Stafford.—Professor Levi has been giving his lecture on the condition of the working classes, from which we quoted last week, in the Shire-hall, Stafford. The Earl of Harrowby occupied the chair.

Plymouth.—In reference to the trades movement here, a local paper, referring more especially to a threatened strike of the masons, says,—

"There is abundant evidence daily produced by the press to show that the state of trade in almost every part of the country is in a lamentable condition of depression; there are thousands of men out of work; and the distress consequent upon that, as much as upon the recent severe weather, has been so great everywhere, that the benevolence of all classes who can help have united in one great endeavour to relieve it, and prevent wholesale starvation. The privation and suffering found to exist in this neighbourhood as well as elsewhere, through want of food and clothing, has been starting. Money has, therefore, been readily given in large sums to provide the necessities of life: soup, bread, and blanket societies have been opened, and have daily distributed their needed benevolence. In the midst of all this, it does sound disgusting to hear of a 'strike' by men amongst whose class this suffering exists, and to relieve whom this profuse benevolence has been granted. For the sum of 6d. a day extra—which they have yet to prove they are fairly entitled to—they will stubbornly throw themselves out of work at this critical period! The course those operative masons propose to pursue in this particular is certainly very short-sighted on the part of themselves, and inconsiderate and ungrateful to the public to say the least of it. It has especially annoyed those workmen who see solicitude for the success and reputation of trades unions in general, and who are most anxious to disabuse the public mind of an impression which is widely entertained, namely, that trades unions, as a whole, are but a means through which one class of workmen seek selfishly to promote their own interests at the expense of all other classes of workmen."

Blackburn.—The wages agitation in the iron trades has extended to Blackburn. The whole of the Amalgamated Engineers—comprising engineers, smiths, mechanics, dressers, joiners, &c., and the iron-moulders employed in Blackburn and its immediate vicinity, with the exception of those employed by Messrs. Yates, Canal Foundry, and Messrs. Clayton & Goodfellow, Park-road, have received notice that on and after the 2nd and 4th of February next those earning 25s. per week will have their wages reduced 1s. per week. The earnings of the rest will not be for the present interfered with. A meeting of the Amalgamated Engineers has been held on the whole question. Eventually a resolution was agreed to, to the effect that if the employers persisted in making the reduction proposed, the operatives would as a body refuse to work more than four days per week so long as that reduction was kept in operation. The iron-moulders also met, and passed a similar resolution. It is calculated that there are from 4,000 to 4,500 men engaged in the iron trades of Blackburn and district,

whose average earnings are about 28s. per week, though a majority of the artisans get 32s.

Limerick.—The frequent strikes of the dock labourers in Limerick and their demands, it is thought, will have the effect of diverting the import trade of that port to other localities, as serious injury has already been inflicted on the trade of the port. The men have demanded 10s. a day on some occasions, and have now organised a society to maintain them in these demands.

New York.—In speaking of the distress in New York arising from strikes and other causes, a local paper says,—

"The Poor Association state that there are hundreds and thousands of good mechanics, artisans, and labourers in New York who formerly had permanent situations but are now left to the precarious subsistence afforded by occasional jobs, and who are in the most infamous position and the sufferings of their families to the system of strikes which has become so fatal a habit with certain classes of labouring men. In New York and Brooklyn there has been a perfect mania on the subject of strikes. The painters, the harnessmakers, musicians, lightermen, 'longshoremen,' carpenters, masons, plasterers, plumbers, all sorts and conditions of men, followed the example of the car-drivers, and generally attained the same measure of ill-luck for themselves and their wives and children. The community would be startled if they knew the vast numbers of unemployed men, the sick-hearted women, the hungry, shivering children that are at this time in the city of New York."

THE TRADES MOVEMENT IN SYDNEY.

DELEGATES from the joiners', painters', bricklayers', and labourers' societies in Sydney have sent a memorial to "The Amalgamated Society of the United Kingdom," a copy of which has also been forwarded to us. The chief object of the memorial appears to be to disabuse English workmen of the idea that wages are high and work abundant in the colony or city of Sydney. On the contrary, they declare, a great deal of distress exists; work is, and has long been, scarce; and wages, though apparently high, are really inadequate, from the high price of provisions, clothing, rents, &c. 8s. to 10s. a day seem to be the average wage in the building trades, while rents are something like 10s. to 20s. a week; bread 10d. a 4-lb. loaf; cabbages 8d. a-piece; milk 8d. a quart; bacon and cheese 1s. 6d. a lb., and so on. Beef and mutton, however, do not seem to be so dear, being only 5d. per lb. It is remarkable that, while our own workmen not only complain of masters taking more than a certain very small number of apprentices, but absolutely restrict them from doing it, compelling them, by threats of strike, to reduce the number of apprentices to the minimum; one of the causes of complaint urged in this memorial as being "of a very serious nature," is that "there is not the slightest inclination on the part of employers to take as apprentices any of the thousands of young Arabs, as they are colonially called; and the consequences are that they are entirely dependent on their parents."

EQUALIZATION OF THE METROPOLITAN POOR-RATES.

A DEPUTATION to the President of the Poor-law Board, composed of the representatives of various ratepayers' associations, boards of guardians, and other bodies connected with the East of London, waited upon Mr. Gathorne Hardy, at the offices of the Board, Whitehall, on the subject of the equalization of the poor-rates in the metropolis. The deputation included Mr. Locke, M.P., Mr. Ayrton, M.P., Mr. Buxton, M.P., Sir G. Bright, M.P., Mr. Hanbury, M.P., and Mr. Alderman Salomons, M.P. Mr. Earle, M.P., the Secretary of the Poor-law Board, was present. The deputation were introduced by Mr. Ayrton, M.P., and Mr. Alderman Salomons, M.P. The important subject in question was ably urged by various speakers, and especially by the Rev. Mr. McGill, rector of St. George's-in-the-East, who presented a memorial from his district setting forth the facts of the case, which were really appalling. In the large district of Shoreditch half the men are now out of employment, and the consequence is a rating of the poor is made higher and more difficult to collect. In some of the parishes in the West-end the poor-rate is six pence in the pound, while in Bethnal-green and the surrounding parishes it is 3s., 4s., 5s., and in some cases, 5s. 6d. The memorial urged the justice and expediency of having an equalised rate on the whole metropolis, which would amount to a uniform sum of

but by the use of large squares we have regained the original convenience, with the most complete protection from weather and other sources of injury. The front, as we ordinarily see it, being a necessity of trade, it is useless to exclaim against it on artistic grounds; the whole elevation of the building should take its character from this, which is its most important part. There are two parts of a shop front. First, the structural arrangement of piers, columns, and bressummer, or arches which carry the superstructure—equivalent to the whole construction of ancient fronts; and, secondly, the more modern sash and its framework, which is merely a fitting of no permanent character. In construction, the bressummer is to be preferred to the arch, which requires abutment, for each building should be able to support itself without the aid of adjoining houses. Very wide spans are unnecessary, for the size to which plate-glass can be obtained at moderate cost is limited, and sash-bars are necessary. These, however small, disturb the eye, and should be dispensed with to a great extent, so that the sheets of glass may be joined only at the columns which help to support the bressummer. Columns may then be more numerous, for one of 6 in. diameter will interrupt the view less than two sash-bars of 1½ in. each. It is an error, in fronts of importance, to put the glass out to the utmost limit allowed by law. It is often better to place it behind the columns.

The increasing value of the basement has an important effect on the arrangement of shop-fronts, for it requires to be well lighted and ventilated, and therefore the stall-board should not be made too low. It is useless to place small objects so low that they cannot be closely examined without stooping, and larger objects can be so placed that a stall-board of 2 ft. in height is not too high for them. There should be a narrow glazed grating over the area, and a window of rough glass to the basement. There should be no step at the door. Glass shelves are to be preferred. Silvered glass should never be so placed in a front that it reflects the figure of the observer or objects in the street: its office is to enhance the appearance of the wares. The window-fittings should be designed by the architect with reference to the particular trade. As to gas-lighting, generally a large quantity of light reflected from white surfaces, or coming through ground glass, is favourable to the appearance of goods in respect of their colour and texture; but when their beauty depends upon their glistening appearance, light from naked flame is best. Inscriptions are intended to be read and should be as clear as possible, and not in queer characters which give trouble to those who are searching for a particular house. Signs speak all languages. No man has a right to make his shop difficult to find, inconvenient to examine, or awkward to enter; trivial things keep away hesitating customers, and their entry is essential to the proper and reasonable objects of the tradesman.

Mr. Blashill treated at length of plans, sections, fittings, and minor details, which however trivial in appearance have great influence on the success of that portion of the tradesman's premises which is often his sole means of introduction to the public by whose custom he must live.

A member observed that he quite agreed with Mr. Blashill in recommending that shop fronts should be set back two or three feet if possible, and referred to some cases in Throgmorton-street, where the plan had been carried out with the best effect. He also called attention to a new shop-front which had been put into a baker's house in New Bond-street. The proprietor had stoutly resisted the innovation of plate-glass, mahogany, or metal sash-bars and other improvements for more than half a century, but had at length conformed to the spirit of the age; and the result was a very handsome front, with not only plate-glass, but also coloured marble pillars, and some exceedingly tasteful metal work.

The chairman (Mr. J. D. Mathews) thought the first thing an architect ought to do in designing a shop-front was to take his client's opinion, who, in all probability, had thought much over the matter, and had studied the effect of other fronts in his neighbourhood. For his own part, he (the chairman) did not admire a front composed of one large sheet of glass. Such a sheet of glass was, in the first place, very expensive; the risk of putting it up was considerable, and the cost of insuring it was also a consideration. Moreover, he thought the sash-bars were an improvement in this sense, that

they relieved the eye, and at the same time enabled the shop-keeper to arrange his goods in a more convenient manner. With regard to steps up to shops, he deprecated them to the full as much as Mr. Blashill, and experience showed that the public did not like them.

Mr. Ware (an American professor of architecture now in London) observed, that for some years past the custom had prevailed in New York and other cities of the States, to do away with shuttersaltogether, especially in buildings containing valuable property, such as banks, jewellers' stores, &c. When business was brought to an end for the day, the curtains were drawn up, the gas was lighted, and there was nothing between the street and the interior but the plate-glass. The consequence was, that no one ever thought of breaking in by the front, while if any one were to get in from behind, the police would at once detect him. This principle had been tried with the greatest success, and robberies were very uncommon.

After a short discussion, a vote of thanks was passed to Mr. Blashill.

A member brought under notice the propriety of discussing the manner in which the Peabody Trust had been administered. He understood that the subject had been discussed at the Institute, but with what result he did not know; but it seemed to him that the benevolent intentions of the donor had not been carried out, and that the funds had been diverted from the purpose for which they were originally intended. The object which Mr. Peabody had in view was to provide decent dwellings for the very poorest workers; yet this was the very class which was virtually excluded from all participation in the fund. Indeed, so patent was this fact that he doubted whether a Court of Equity might not be induced to interfere, in order that the intentions of the founder might be carried out.

Mr. Edwards said the subject was one of great interest, and expressed a hope that it might be discussed by the Association.

The Chairman said that Mr. Darbishire, the architect of the Peabody buildings, had attended at the Institute, and had made explanations which were deemed to be satisfactory. The question now mooted had been incidentally raised in the paper read by Professor Kerr at the Institute; but as the trustees of the fund appeared to be satisfied with its application, he feared no good would result from the discussion of the subject by the Association.

FROM SCOTLAND.

Ayton (Berwickshire).—The new parish church has been opened for divine service. It is now more than three years since it was considered that, owing to the dilapidation of the old parish church at Ayton, it was desirable that steps should be taken for having a new one erected. The heritors of the parish had several meetings, and Mr. Wardrop, of the firm of Brown & Wardrop, architects, Edinburgh, was appointed to report, and in consequence of his report it was determined that a new church should be immediately erected. The necessary steps were taken, and the foundation-stone was laid on September 8, 1864, by Mrs. Mitchell Innes, of Ayton Castle. The locality selected for the erection of the church is a piece of ground near the toll-house, at Ayton, given by the lord of the manor. The style adopted is the Early English of the fourteenth century, and the edifice consists of a nave, with south transept and side aisle. The exterior is built with free dressed stone, and the principal entrance, which is at the south-west angle, is surmounted with a *broached* spire, 120 ft. high. On the north-east side is the vestry. The gallery is at the west end of the church. The roof is open, and the church is heated with double rows of hot water pipes, laid along the aisles. At the east end of the chancel there are three twin-light windows, all with tracery, and representing the Six Acts of Mercy. The south transept window consists of four upright lights and tracery. The subject is "The Adoration of the Magi and the Shepherds" who are represented offering their gifts to the infant Saviour. The north transept window consists of three upright lights and tracery. The subject is Christ's Sermon on the Mount. There is a large wheel-window at the west end of the church, which is filled with geometric and foliated glass. The other windows in the church are filled with cathedral glass in quarries, with coloured bor-

ders. The windows are from the manufactory of Messrs. Ballantine & Son, of Edinburgh. The contractors for the different works in connexion with the church were:—For the mason-work, Mr. James Berry, Ayton; joiner-work, Messrs. Turnbull & Son, Stow; slater and plaster work, Mr. George Whitlaw, Ayton; plumber-work, Mr. R. Sidey, Berwick. The architects were Messrs. Brown and Wardrop, Edinburgh; and the clerk of the works Mr. Taylor, Edinburgh. Mr. Mitchell Innes has been at the entire expense of the windows, besides incurring a great deal of other expenditure. It is estimated that the total expense of the church will be 10,000l.

DUBLIN.

An extensive building, designed partly for hotel purposes and partly as a commercial establishment, is in course of completion at the junction of Lower Sheriff and Gaid streets, Dublin. The frontages to the above-named streets are respectively 40 ft. and 60 ft., and the height to ridge about 55 ft. On the exterior of the ground floor is a series of French rusticated piers, separating the window and door openings, and surmounted by an ornamental entablature in cement, with vases over each pier; and above rise two other stories, in a superstructure composed of red bricks, with Ferguslie white brick quoins, dressings, &c. A belting course of granite, encaustic tiles, and white brick separates the first from the second floor; and a deeply moulded and bracketed cornice, with steep cantilever roof, ornamented with scolloped slating and metal crests and finials (from the Sun Foundry, Glasgow), and displaying a series of dormers to light an attic story, crowns the whole. The angle is bevilled off and surmounted by a clock structure, with encaustic tile panelling. Ten of Clark's patent self-coiling steel shutters inclose the openings on the ground floor. Mr. Lyons is the architect; Mr. Stephen Breen is contractor for the brick and stone work; and Mr. Kearney for the plastering. Mr. Connolly is foreman of the works.

RENDERING THE FACE OF FLUES.

METROPOLITAN BUILDING ACT.

On the 15th ult. Messrs. Worne & Co. were summoned before Mr. Flowers, at Bow-street Police Court, for not having complied with the requisitions of a notice served by the district surveyor of St. Giles's.

It appeared that the work complained of was in a building erected by defendants in Gate-street, Lincoln's-inn-fields, for the use of the company, Messrs. Day & Sons. The brickwork internally was not plastered, and the district surveyor required that the portion forming the outside of the flues should be rendered, according to sec. 20, rule 4, of the Act.

For the defendant it was contended that the rendering of the outside was not required by the rule in question, which was worded in such a confused manner as to be unintelligible. The District Surveyor admitted the meaning of the rule was obscure, but contended that it must have some meaning, which he must leave for the decision of the magistrate.

On the 22nd instant, Mr. Flowers having taken time to consider the matter, gave his judgment:—"That the inside of every flue must be pargecoated, or lined with fireproof piping, and the back or outside (unless forming part of the outer face of an external wall), must be rendered."

THE "OVER-HEATED FLUE" MISERY.

The great importance of the subject makes me think that the following little budget of experiences may not be unacceptable:—On a small scale they are, perhaps, a history of "how these things are done" on a large one. I have for some eight years past had my house partially warmed by hot water. There were concerned in doing the work, or advising upon it, a presumed "expert" who had dabbled in a patent for a stove, a practical worker in metals, and a bricklayer; besides this the employer, who had some experience in architecture, had heard what was to be said upon the subject by other persons willing to be employed, but rejected on the score of expense or otherwise.

One result of our united wisdom was the erection of a flue to our furnace, composed of glazed drain-pipes, which, curving over near the boiler, runs some 10 ft. nearly horizontally. This had not been in use very long before a conspicuous crack made its appearance in that length of pipe which formed the bend.

Without removing anything, I had the whole horizontal flue "jacketed" with bricks and tiles laid in fire-clay. I think the workmen mixed fine ashes with the clay. All has hitherto gone on without accident. There have been, however, conspicuous cracks in the outer surface of the fine clay, where it is used as a compo over the bricks. I dissected some of the work a few days ago, where some cracks were very obvious, facing upwards towards the wooden floor which stands overhead. It seemed to me that the fire-clay, where inclosed in the tiles, was not nearly so hard as on the outer surface where applied as a compo. Neither did it adhere well, for I easily scraped down to the drain-pipe within, which was bright and fresh. I draw the conclusion that the pipes are tolerably trustworthy when used for flues, provided that, while heated within, they are well shielded from the contact of cold air without. Further than this, I suggest as a subject for experiment, whether the cements, &c., found to resist the most intense heat, when used for fire-work on temporary occasions, as Stourbridge clay, founders' loam, do not habitually deteriorate with continual use in course of years in a flue.

With regard to the steps an architect should take in arranging with a contractor for heating apparatus, I suggest that the road to safety lies in this direction, namely, allow so much room for the flues and their surroundings, that a mass of earth may be placed sufficient by falling in over a cracked flue utterly to smother, choke, and extinguish the flame; furthermore to insist that such earth shall be applied by the cart-load, if needed; for I apprehend the following sources of opposition to the means of safety:—The person who makes up a fire likes to see a speedy result to his work; he has, therefore, a motive to prefer thin flues, that shall easily transmit the heat and diffuse speedy warmth. There may be no real economy in this, for a large mass of solid matter retaining its heat a long time, even after the fire has gone out, may be exceedingly useful; but the fire-maker cannot in this case perceive a quick result to his work, nor point out, "You see how soon this stove operates."

G. M.

P.S.—I take the opportunity of bearing testimony to the exceeding benefit, in point of health and comfort, of my hot-water pipes. Not to feel continually impelled to desert one's writing or drawing table, in order to shiver over a fire, and not to be thoroughly chilled in a cold bedroom, after leaving the warm fireside of a sitting-room, are a couple of negatives well worth some expense and trouble.

HOMES FOR THE MIDDLE CLASSES.

I PERFECTLY agree with your correspondent "W. A." (January 5th), and am delighted to see the subject of "Homes for the Middle Classes" taken up with such earnest discrimination. If home enterprising capitalist, and some sensible and able architect, will follow out "W. A.'s" suggestion, and erect handsome and spacious *Familistères* in the various quarters of London, they will not only do much to free this town from the reproach of being the ugliest and most inconvenient capital in Europe, but will confer an inestimable boon on thousands of persons holding a certain position in society, but whose limited though independent incomes make the choice of a suitable home a problem next to impossible to solve.

This class includes small annuitants, half-pay officers, rising or retired professional men with small families, or married couples with no family, to whom may be added daily governesses and other female teachers, obliged to live in expensive neighbourhoods,—all persons who neither acquire a whole house of ten rooms, nor are satisfied in incurring such an expense; yet, who, by education, connexions, and habits, are entitled to a more refined style of living than is within their reach under the present paltry English "Every-man-his-own-house" system of building, which has made of London a huge martian overgrown Hanoverian village.

They are, therefore, reduced to the uncomfortable expedient of taking upon themselves the responsibilities of a house beyond their wants,

and their means, and letting a part of it to strangers; or of renting part of a house, subject to perpetual annoyances, as well as to the dread of seeing their furniture and personal property seized for their immediate landlord's rent and taxes,—and, in either case, abdicating that home-independence which is one of those conventional myths that most Englishmen still believe in; but which is, in reality, only enjoyed by persons of good incomes—the upper one hundred thousand—as the number of small bills in parlour windows sufficiently prove.

Now "W. A.'s" proposal answers to this want in every respect; it is therefore earnestly to be hoped that it will not fall a dead letter. A few *Familistères*, the outward decorations of which will admit of every variety of style, while the inward arrangements will afford comfort and privacy to thousands such as the monotonous rows of little ill-built "self-contained" band-boxes called houses never can,—with the supplement of *restaurant*, baths, laundry, infant and preparatory schools, and other necessities which can only be brought within every one's reach by means of a large and comprehensive scheme,—such convenient buildings, I say, would secure at once their full complement of tenants; for in my circle, also, many "would rush to secure a chance of such homes."

But as one fact is better than a bushel of arguments, allow me to add that in our second visit to the *Familistère* last September, our well-considered enthusiasm for this palace of labour only increased. The suite of apartments M. Godin-Lemaire courteously placed at our disposal were, in respect of dimensions, light, air, closets, stoves, &c., the counterpart of those which are inhabited by the least of his work-people; the only difference consisted in the papering, decorations, furniture, and so forth; and we may safely say that could we obtain six such rooms on one floor in London, we should think them cheap at 90l. or 100l. a year. We were in nowise inconvenienced by our neighbours, as the thickness of the walls and ceilings effectually prevented any sounds from reaching us, which is not often the case in London houses.

As all social reforms must ultimately fall into the hands of architects, to whom can we look for assistance but to you, sir, whose ably-conducted journal forms so essential a portion of their several professional libraries?

TITO PAGLIARDINI.

P.S.—I should be most happy to give financial details concerning the *Familistère* of Guise to any architect or capitalist interested in the subject.

EDUCATED PLUMBERS.

A CORRESPONDENT, "P. T." complains, and with reason, of the assumption of the term plumber by men not duly qualified. He thinks the present would be a good time to test some of the whims exhibited by inventors of "closets." "Some say," he goes on, "that strength of work is the decay of trade. I believe it causes a great deal more trade to be done: it should be said bad work will create a new whim. It is economy to employ every man in his own capacity. Our class should understand the effect of temperature, atmospheric pressure with all the allowances, affinities in metals, rates of expansion, and all other technics necessary to make any building dry, and give plenty of water in frosty weather."

THE LIGHTING OF CHURCHES.

SIR,—I am glad to see the subject of lighting churches opened out in your columns, and hope that it may be taken up by able pen than mine. The subject may naturally be divided into the consideration of the treatment of ancient and of modern churches.

The lighting of ancient churches is in itself rather a wide subject,—a subject that can only be generalised about, as each particular church may require a different treatment. Ancient churches were not designed to be lighted, at least in the manner we are now considering; for decorative effect on great festivals they were probably illuminated, but generally the old religion rather affected a gloom, that dim religious light we so often hear spoken of. Light was not required to enable the congregation to follow the service, and where light was required there it was concentrated; such as in the reading of

the epistle and gospel, when lighted tapers were held for the officiating priest. Again, at the high altar many lights were constantly burned, partly for their symbolical signification, and partly for their use during service.

From this we may infer that to light an ancient church, the object would in olden days have been to have centralised most light in the chancel, and there, where the service is mainly conducted, will be found our most effective point for our most brilliant light, due provision being made, I need hardly add, that the practical use of our light is first effected, that of affording light to the congregation.

"J. E." in his letter speaks of a church as of various compartments, each one to be lighted as brilliantly as the other; and instances the lighting of a room of any size as a problem easily solved. But if that room be of irregular shape, or, as in a hall of justice, requiring peculiar duties to be transacted at a particular part of it, the simplicity of that problem is lost, and we find it necessary to light the room up,—lead up the light, as it were,—to one more prominent part; and so in a church, our object will be best effected by lighting up to one given point, and that, as before stated, the chancel or entrance to it. We may also infer that in brilliancy the various parts should be subservient, the nave to the chancel, the aisles to the nave. I think we may all agree that we should, if possible, make our light a handmaiden to our architecture, to bring it out and more clearly define its most salient points. To speak more definitely depends so much on the exact form of the church itself that one cannot say much. If the church is very lofty, with well-marked clerestory, the string-course of that clerestory seems fittest for the light: this has been effectively done in the choir of York Minster. If, on the other hand, the church is low and straggling, the nave piers suggest themselves as a basis for our lights. If, again, our nave is lofty and open, almost a preaching nave and without clerestory, coronas seem best fitted to give that broad effect of light.

A string-course of light has always appeared to me the most effective method of lighting the chancel, if the string-course is of sufficient height; if the roof is vaulted, a corona. If neither can be had, I prefer standards. I have not mentioned standards for the nave, for the other methods suggested seem to answer the purpose better. Standards in this position intercept the view, give out great heat, and are too low to afford light, except to such as are very near.

Of the lighting of modern churches I have little to say, as the arrangement is always best effected in the design and construction of the church. I instance two as very effectively lighted—that of St. Martin's-on-the-Hill, Scarborough, and of St. Peter's, Vauxhall-road, London; the latter lighted in the nave by coronas, suspended between the nave arches.

C. J. F.

KINGSTON-ON-THAMES SURVEYORSHIP.

SIR,—Will you permit me to announce, through your columns, that the office of surveyor of this borough was, on January 24th, filled up by the Council, by the election of Mr. Charles Slagg, C.E., of Manchester. I ask you to do this partially because the advertisement for the office was inserted in your columns, and more especially because most of the applicants for the office are no doubt subscribers to your journal.

In making this announcement it is scarcely necessary that I should notice the statement which appeared in your columns, signed "One of the Gentlemen." Whoever your anonymous correspondent may be, he appears to have been most egregiously hoaxed.

WALTER M. WILKINSON, Town Clerk.

* * As we received letters from two correspondents to the same effect, the "hoax" was not confined to "one of the gentlemen."

HIGH-PRESSURE BOILERS FOR BATHS.

IN reply to your correspondent "Beta," I beg to describe a safe substitute for the high-pressure boiler with which he now heats his bath.

Let him fix in his boiler a coil of iron pipe, to which attach the two pipes which supply the bath. Then make a hole in the top of the boiler, and fit in it a lid, like a tea-kettle lid.

Such an apparatus would be perfectly effective and safe, for if the pipes were to freeze up, the coil would not burst, as it would be surrounded by boiling water only; while the boiler having an opening in the top, and covered with a loose lid, might be heated with impunity, although frozen up solid.

It is surprising that builders and ironmongers will continue to fix high-pressure boilers for such purposes, when it is so easy to apply so simple an apparatus, which is not dangerous.

A. M. PEBKINS.

"Beta" should use one of the "patent fumble-plugs." If fixed rightly he need fear no explosion of his kitchen boiler. The plugs fuse and fall to pieces at a heat somewhat greater than boiling-water, so that should the pipes become stopped by frost or any other cause, the plugs melt, and thereby forms an outlet for the steam and hot-water before any portion of the boiler could yield, unless it be a very bad one. The boiler of "Beta's" apparatus is of course of wrought iron, and the pipes should be those known as "lap-welded steam-pipes."

W. H. COLLINGSFORD.

In reply to inquiries respecting the bursting of high-pressure kitchen boilers by the freezing of the pipes, I think where the pipes are left exposed, a branch pipe close to the boiler should have a weighted or spring valve, which can be made water-tight at a moderate cost; then there would be no danger from bursting. As a second substitute, I would recommend a draw-off cock fixed in the inlet or outlet pipe; then the servant should be instructed to draw off one gallon of water from this cock (which is the content of a pipe 1 in. diameter, and 30 ft. high). The cock should be fixed just above the range. If either of these plans were adopted, no accident from the bursting of boilers could happen.

J. EDWARDS, Hot-water Engineer.

TO TEST BLUE LIAS.

Sir,—I shall be obliged if any of your readers will inform me whether there are any simple means of testing blue lias or other limes, similar to the test employed by the Metropolitan Board of Works to test Portland cement.

L. E.

THE WIDOWS OF CLERKS OF WORKS IN THE CIVIL SERVICE.

Sir,—I trust that in bagging your kind insertion of this letter, you will not consider that I am unduly trespassing on your valuable space, by referring to a subject which may not seem of sufficiently general interest to warrant it. It has recently come to my knowledge, by means of the public press, that a movement is on foot amongst the clerks of works in the Royal Engineer Department, to solicit Government for an increase of pay, and also for pensions for their widows. It has been truly urged that while these gentlemen hold the relative rank of officers in the army, they are at the same time debared from many of their privileges. Requiring an education, in one branch, at least, of a much higher order than necessary in the army, they receive salaries quite inadequate to the position they are entitled to occupy, and, consequently, are often unable to make suitable provision for their families. Liable at any time to be sent, on short notice, to any station, no matter how remote nor how unhealthy the climate, they are put to considerable inconvenience and expense, in the removal of their families, and in foreign service often fall victims to the climate. As the daughter of one who for many years held the position of clerk of works in the Royal Engineer Department, I can testify to the truth of what I have stated.

My father entered the service about the year 1830, some time after a measure had been passed debarring officers from certain privileges which they had heretofore enjoyed. At that time one of the regulations was, that each person should contribute a certain proportion of his salary—5 per cent.—to a fund, from which, in time of old age or hopeless ill-health, the members were to receive a pension. Subscription to this fund was compulsory: after many years it was abolished. After being upwards of twenty years in the service, eleven of which were spent in a tropical country, and during the whole of which time he discharged his duties with unremitting assiduity, the continual strain on his mental and physical powers brought on an illness, from which he died, leaving a widow and child. Application was made by the widow for a pension, but in vain. A considerable sum of money had been paid into the superannuation fund; but neither he who paid it nor his family ever received anything from it. I ask, is it fair that such should be the state of things? Is it right that the widows of those who have paid money into a Government fund, from which they never received anything, should thus be set aside? Is it right that the widows and orphans of those who perish in their country's service, whether that service be civil or military, should be unprotected? Is it just, that while the widows of military officers are pensioned off, whether the husband falls on the battle-field or dies at his own home in peace, the widows of civil officers, whose whole service has been one of arduous toil, amidst ever-increasing anxieties, should be uncared for? Would it not be well if some effort, at least, were made to remedy these anomalies? Would it not be well if the widows of such officers would unite in seeking that a clause be inserted, in their favour, in the petition about to be presented, that if it please Government to grant the request of the petitioners, they may not be excluded from participating in the benefits which those who may hereafter become widows shall receive.

A DAUGHTER.

THE "ORANGE-PEEL" PAYMENT DANGER.

A CORRESPONDENT writes:—Able observations have appeared lately in the *Builder* and elsewhere on the dangerous state of the pavements, but not exactly touching at the moment a "chronic" abuse.

I sincerely trust there is not another capital in Europe where there is such unchecked daily injury to pedestrians from throwing a dangerous substance on the pavements. It is actually

amazing to see either the great ignorance or want of principle in those who do this, when the least of better consideration would prompt them to throw it on the "road."

The number of accidents which occur, though not so specified, from this, can, I feel sure, be appreciated by medical men. A respectable paper said, some time back, in half jest, there might be some "conspiracy" of evil-minded persons to so injure the community; but had there been any such arrangement, the evil, which appears increasing every year, could hardly have been greater.

THREE THOUSAND POUND CHURCHES.

Sir,—In your issue of the 5th Jan., there is a notice of a new church now being built at Birkenhead, to seat 700 persons for 2,400. As the Ecclesiastical Commissioners are willing to provide the endowment for new district churches, with a population of 4,500, the desirability of giving to the public good and substantial designs of churches to seat 700, within a cost of 3,000 (exclusive of the site and fence walls), will be evident to all your professional subscribers. It generally happens that when an architect is applied to for such a design, he prepares one far too elaborate and costly for the promoters. The result is, the committee is discouraged, and time is wasted. New plans have also to be prepared, or the architect changed. If the architect of the Birkenhead church, and a few others, would enable you from time to time to give the public sketches of the elevation and ground plan of such new churches built by them, at a cost not exceeding 3,000, to seat 700 persons, as now might think for great help would be afforded to those who are anxious but afraid to begin the work on their places.

A SUBSCRIBER OF FIFTEEN YEARS.

"RATES, TAXES, AND IMPOSITIONS" PAYABLE BY TENANT.

In the Court of Common Pleas at Westminster, on January 22, before the Lord Chief Justice Bovill, and Justices Willes, Keating, and Montagu Smith, the case of *Ideswell v. Whitworth* was decided. This was an action on the covenant in a lease of a new street in Manchester, whereby the defendant, the tenant, covenanted to pay "all rates, taxes, and impositions whatsoever, except the property and income-tax, which should become payable and respect of the said demised premises, and to pay the clear yearly rent of 90l. for the same." By the Manchester Improvement Act, if any street or part of a street should not be sufficiently paved, levelled, and sewered, the Council can order the owner of the premises to pave, level, flag, or sewer it; and if he refused or neglected to do it, then the Council might do it, and all charges must be paid by the owner, and might be levied upon the occupier to an amount not exceeding the rent due by him. In this case the plaintiff, as owner of the premises, had paid charges for levelling and sewerage the street in front of his house, amounting to 225l., and in the present action sought to recover that amount from his tenant under the covenant of his lease, as a charge and imposition payable by the tenant beyond his rent under his covenant. A verdict having been obtained for the plaintiff at the trial, with leave to the defendant to move to set it aside and enter it for the defendant, a rule was accordingly obtained.

The Chief Justice said, it was manifest that the Legislature intended that the burden of these payments should be thrown on the landlord. The tenant was not to be called upon to pay more than his rent, and was not to be made to pay more than he ought to pay. The other judges concurred.

Mr. Justice Stirling said, the word "imposition" was placed with rates and taxes in the covenant, and he thought the intention was, that it should mean charges of the nature of rates and taxes only. He was not at all sorry, in the present case, to be able to arrive at that decision. Rule absolute, to enter verdict for defendant.

THE CHURCH OF ST. MARY-LE-TOWER, IPSWICH.

SINCE 1863, the work of restoration has been going on in this church. The lofty tower and spire are now approaching completion. The tower is 94 ft. high, and the spire 82 ft., making a total of 176 ft. from the base. They are in the Decorated style of architecture of Edward III.'s reign, and built of Bath stone. There is an open parapet, with shields containing emblems of the Twelve Apostles, carved in stone, and below are carved, as hood-mould stops to the belfry windows, the heads of the Twelve Apostles. At four angles are emblems of the Four Evangelists, namely, the Man, the Lion, the Ox, and the Eagle. These figures are 4 ft. 6 in. in length. The parapet is pierced entirely through, so that the base of the spire is seen between the openings. At each angle are carved crocketed finials. Inlaid flint panelling is introduced in bands round the tower, above the door, and under the belfry windows, dividing the structure into stages. The top stage is relieved with chequered flint and stone work.

The spire is crocketed on each angle. The spire lights are filled in with ornamental tracery, and the upper part is relieved with stone tracery. The whole of the stone-work, both in spire and tower, as it is being cleaned off, is

washed down with a strong mixture of soap and water, with the view of hardening and preserving it from the action of the air.

The niche in the old tower has been restored and re-fixed in the new one, above the south door; and in pulling down the old brick porch, the remains of the stone carved figure of the Virgin, that stood originally in this niche, was discovered. This figure, we understand, will be restored and replaced; the work of restoration having been intrusted to a London sculptor.

The entrance below will be grained in stone supported by strong clustered shafts, with carved capitals, and the deeply-moulded outer and inner doors will also have their capitals carved with emblematical figures. The two small single-light windows at the entrance will be filled with stained glass.

The ringers' floor is reached by a circular stone staircase, 5 ft. in diameter, and the belfry windows will be filled with slate louvers. Orders have been given for two more bells so that there may be a peal of twelve, instead of ten as in the old tower; and the funds to defray the cost are nearly subscribed. The cost of changing the peal from ten to twelve will be something like 700l.; and the entire value of the peal, when complete, will be about 1,600l. The weight of the tenor bell will be 31 cwt. The enlarging and re-hanging of the peal have been undertaken by Messrs. Warner & Sons.

The entrance-doors will be of oak, covered with wrought-iron hinges, and the floor of the tower will be laid with Minton's encaustic tiles.

The designs for the work were provided by Mr. R. M. Phipson, of Ipswich and Norwich, architect, under whose sole direction, this, as well as the entire work of restoration, has been carried out. Mr. J. Stanley, of Norwich, was the contractor for masons' work, and the stone-carvings were done by Mr. Barritt, sculptor, of Norwich. Mr. Miller was the clerk of the works.

A further contract has just been entered into for the completion of the south aisle and the nave. Much also remains to be done in the interior of the church in benching, heating, paving, and carving, and the entire restoration of the chancel, with new vestry, and many other works necessary to render the building complete. The cost of the tower and spire is about 4,000l., and the total outlay, we believe, up to the present time, amounts to 11,000l. or 12,000l.

AGREEMENTS.

PEEL T. MATTHEWS.

THE plaintiff in this case (in Vice-Chancellor's Court, before Sir W. P. Wood), had sold in lots some land for building purposes, and had required the purchasers to execute a common deed for the purpose of preventing them from building upon land marked in front of streets which was intended to be laid out. The plaintiff alleged that defendant had broken the covenant, and the bill asked for an injunction against him.

Mr. Amphlett and Mr. Douglas were for the plaintiff, and Mr. Carey for the defendant.

The Vice-Chancellor said the plaintiff, by allowing the covenant to be broken in respect of part of the land, had forfeited his right to ask for a performance of the covenant with regard to any other part of the land. The Court could not decree specific performance of part of an agreement. The plaintiff had a remedy at law for damages, but his bill for an injunction must be dismissed.

PUBLIC INSTRUCTION ABROAD.

THE report presented by the Prefect of the Seine to the Municipal Council of Paris gives the following statistical details as to public instruction in the department of the Seine. The sum allowed in the budget for 1867 for primary instruction amounts to 237,013l., including the expenses of the Chaplains College, which amount to 30,746l. This will be sufficient for the maintenance not only of the existing schools directly or indirectly at the charge of the town, but any new communal schools or asylums that may be required to be provided for in 1867. The teaching of design, which the municipal authorities are so anxious to promote amongst the working classes, so as to preserve for Paris its superiority in works of elegance and taste, can be extended to 122 communal schools for boys and girls, and 32 for adults of both sexes. If to this sum of 237,013l. we add 6,820l. for maintenance, repairs, and furniture of the schools, and 1,034l. as an assistance fund for ancient teachers, of both sexes, we shall have 244,867l., as the sum to be expended in 1867. Comparing this with the

preceding years we have the following items:—In 1862, the number of schools, asylums, adult class-rooms, work-rooms, and special schools, amounted to 403. Now, there are 522, an increase of 119 in four years.

The *Correspondance Russe* gives very interesting statistical details as to the establishments of public instruction in the town of Moscow in 1865. This town, which contains 365,000 inhabitants, possesses no less than 167 schools, 69 for boys and 58 for girls, and 40 mixed. The number of pupils is 11,866 boys, and 4,950 girls; and there are 1,521 masters or professors, and 70 female teachers. The higher branches of education are given in a single establishment,—the university. Besides this, there is an academy of agriculture, and a recently-founded *conservatoire*. The secondary education is given in five high schools for boys, the number of pupils being 1,719; three military schools, with 1,426 pupils; and six institutes for young women, with 2,263 pupils. Moreover, a hundred private establishments give primary and secondary instruction. There are only 66 primary schools, with 4,786 pupils, a very small number relatively to the population of the inferior classes which is 72 per cent. of the total population. The establishments, kept up by the State, by the town, or by charitable societies, require an annual expenditure of 560,000 roubles. In this sum the university figures for 426,000 roubles, and the school of professors for 130,000 roubles.

PRIZES TO ART-WORKMEN BY THE SOCIETY OF ARTS.

The following is a list of the competitors to whom prizes have been awarded:—

*Works generally executed from prescribed designs.**

CARVING IN STONE.

1. Panel, after chimney piece by *Donatello*, by *J. Davidson, jun.*, 4, Edward-street, Vauxhall Bridge-road, S. Price 8*l.*—(2nd prize of 7*l.* 10*s.*)
2. Gothic bracket, by *E. J.* Price 5*l.*—(Prize of 4*l.*)
3. Ditto, by *John Edward Daly*, 33, Medway-street, Westminster, S.W. Price 15*l.*—(Prize of 8*l.*)
4. Ditto, by *John Barker*, 4, John-street, Marlborough-road, Chelsea, S.W. Price 12*l.*—(Prize of 6*l.*)
5. Flowers carved in Caen stone, by *W. H. Holmes*, 101, Dean-street, Soho, W. Price 5*l.*—(Prize of 5*l.*)
6. Carving in marble, by *Owen Thomas*, Carmood-street, Camden Town.—(Prize of 5*l.*)

CARVING AND GILDING.

- * 14a. A glass frame, designed and carved by *W. M. Holmes*, principal part of the flowers by *Donatt* (deceased), gilt in double mat and furnished by Messrs. *Buchholts, Venning, Chowne, & Co.*, Eversham, Cornhill, and *Allen*; exhibited by *H. Wyatt*, 101, Dean-street, W. Price 230*l.*—(Prize of 10*l.*)

REPOUSSÉ WORK IN METAL.

15. Executed in iron, after the Martelli bronze mirror case at South Kensington, by *G. Page*, 39, Fuglas-street, Northampton-road, Clerkenwell, L.C. Price 20*l.*—(1st prize of 10*l.*; also, North London Exhibition prize.)
18. "Raffaello's Three Graces," in silver, by *Joseph Hakouski*, 59, Frith-street, Soho-square, W. Price 20*l.* Copies at 15*l.*—(Prize of 2*l.*)
20. "Three Graces," in copper, by *Alexander Balfour*, 86, Cleveland-street, Fitzroy-square, W. Price 11*l.*—(Prize of 4*l.*)
- * 22. Portrait of the late Viscount Palmerston, by *W. Holliday*, 14, Nailour-street, Islington, N. Sold.—(Prize of 4*l.*)

HAMMERED WORK IN BRASS.

26. Adapted for use as a bracket, by *Albert Edward Millward*, 13, New Compton-street, Soho, W.—(Prize of 6*l.*)

HAMMERED WORK IN IRON.

27. Adapted for use as a bracket, by *Alfred Millward*, 35, Little Clarendon-street, Somerset-town, N.W.—(Prize of 8*l.*)

* Those marked with an asterisk (*) are not after the prescribed designs.

† This prize consists of the interest of 18*l.* 7*s.* 3*d.* Conferred in the name of the Society of Arts, to be awarded by the Council "for the best specimen of skilled workmanship" at the Society's Exhibition.

28. Ditto, by *G. H.* Price 5*l.* 10*s.*—(Prize of 2*l.*)
29. Ditto, by *James Gwillim*, 19, Sidney-square, Mile-end, E. Price 15*l.*—(Prize of 2*l.*)
- 30a. Panel for a screen, by *W. Lethers*, Lansdown Iron Works, Cheltenham. Price 20*l.*—(Prize of 10*l.*)
- * 32. Bread-basket, designed by *Mr. A. W. Blomfield*, architect, for East Sheen Church; executed by *T. Winstanley*, 7, Stanhope-street, Clare-market, W.C. Price 12*l.*—(Prize of 2*l.*)

CHASING IN BRONZE.

35. Bust of "Clytie," produced for Art-Union of London, by *H. R. Bachelor, Jun.*, 149, St. John-street-road, E.C. Price 14*l.*—(Prize of 4*l.*)
36. Ditto, by *T. Nichols*, 4, Everilda-street, Hemingford-road, Islington, N. Price 15*l.*—(Prize of 6*l.*)
37. Ornament, after *Goutier*, by *R. Reynolds*, 15, Oak-village, Kentish-town, N.W. Price 15*l.*—(Prize of 2*l.*)
38. Ornament, after *Goutier*, by *G.*—(Prize of 2*l.*)
39. Ornament, after *Goutier*, by *H. J. Hatfield*, 16, Alfred-street, Tottenham-court-road, W.C. Price 15*l.*—(Prize of 4*l.*)
- * 40. Group, "Jacob Wrestling with the Angel," by the above.—(Prize of 3*l.*)
- * 42. Statue of "Caractacus," by *H. Hatfield*, sen., 46, Bolsover-street, N.W. Produced for the Art-Union of London.—(Prize of 5*l.*)
43. Engraving on metal, after arabesques, by *G. S. B.* Price 3*l.* 10*s.*—(Prize of 2*l.*)
44. Ditto, by *G. Berry*, 31, Brewer-street, Golden-square, W. Price 4*l.* 4*s.*—(Prize of 5*l.*)
- * 49. Ditto, on silver cup, by *Gilles McKenzie*, Tudor-street, Sheffield.—(Prize of 2*l.*)

ENAMEL PAINTING ON COPPER.

- * 51. "Bey and Doves," after *Raffaello*, by *Walter J. W. Nunn*, 10, Gardour-street, Bromhead-street, Commercial-road, E. Price 5*l.*—(Prize of 3*l.*)

PAINTING ON PORCELAIN.

53. "Two Children," painted on a vase, by *W. J. W. Nunn*, Messrs. Battam & Son, Gough-square, E.C.—(Prize of 2*l.*)
57. "Two Children," by *William H. Slater*, Oak-hill Cottages, Stoke-upon-Trent. Price 5*l.* 10*s.*—(Prize of 2*l.*)
59. Ornament, by *Alexander Fisher*, 5, Clyde-street, Stoke-upon-Trent.—(Prize of 3*l.*)
60. Ornament, plateau in blue, after design by *Maestro Ludovico*, by the above.—(Prize of 3*l.*)
61. Pair of door finger-plates, majolica style, by *Miss L. Leila Hawkins*. Price 5*l.* 5*s.*—(Prize of 2*l.*)
- * 62 & 63. Circular-plates, subjects from the "Signature" ceiling, by *W. P. Rhodes*, School of Arts, Stoke-upon-Trent.—(Prize of 2*l.*)

DECORATIVE PAINTING.

64. Ornament, by *John Slater*, Field-place, Stoke-upon-Trent. Price 3*l.* 8*s.*—(Prize of 4*l.*)
66. Ornament, by *Charles Pfänder*, 28, Bayham-street, Camden-town, N.W. Price 6*l.* 5*s.*—(Prize of 2*l.*)
67. Ornament, after a picture-frame in the South Kensington Museum, by the above. Price 13*l.* 10*s.*—(Prize of 4*l.*)

DIE SINKING.

71. By *Albert Heness*, 3, Egbert-street, St. George's-road, N.W. Price 10*l.* 10*s.*—(Prize of 2*l.*)

GLASS BLOWING.

72. Exhibited by *Dr. Salvati*, 431, Oxford-street, W. Produced by *Marco Soyoso*, of Murano.—(Highly commended, but ineligible for a prize, not having been produced in this country.)

BOOKBINDING.

73. After an Italian specimen, "Quintus Curtius," by *John Jeffrey*, 23, Upper Marylebone-street, W. Price 7*l.*—(Highly commended, but ineligible for a prize this year, the producer having taken the 1st prize last year.)
74. Early Florentine style, "Histoire de la Porcelaine," by *Louis Genthi*, 30, Brydges-street, Covent-garden, W.C. Price 35*l.*—(Prize of 5*l.*)
76. Case specimen of Mosaic, by *Louis Genthi*, 30, Brydges-street, Covent-garden, W.C. Price 10*l.* 10*s.*—(Prize of 3*l.*)

ILLUMINATIONS.

77. Specimen by *Charles Pfänder*, 28, Bayham-street, Camden-town, N.W. Price 5*l.* 10*s.*—(Prize of 4*l.*)

Works executed without prescribed designs.

WOOD CARVING.

- (a.) Human figure in the round, in alto, or in bas relief. Animals or natural foliage may be used as accessories.
 81. "Autumn," female head in satin wood, by *G. F. Bridge*, 3, Vincent-square, S.W. Price 5*l.* 10*s.*—(Prize of 5*l.*)
 - 83a. Panel, in Ebony, "Boy and Moth," by *R. Flipping*, 67, Charrington-street, Oakley-square, N.W.—(Prize of 2*l.*)
- (b.) Animal or still-life. Fruit, flowers, or natural foliage may be used as accessories.
 85. Panel. "Bird and Flowers," by *E. Du-jardin*, 46, Camberwell-grove, S. Price 10*l.*—(Prize of 2*l.*)
- (c.) Natural foliage, fruit, or flowers, or conventional ornament, in which grotesque figures or animals may form accessories, preference being given where the work is of an applied character for ordinary decorative purposes, as representing commercial value.
 86. Panel in Lime Wood, by *J. S. Booth*, 19, Malden-road, Kentish-town, N.W. Price 10*l.* 10*s.*—(Prize of 4*l.*)
 - 88a. Panel of Flowers, exhibited by Messrs. Gillows & Co., carved by *R. A. Brangan*, 54, Foley-street, W.—(Prize of 3*l.*)

Works Executed and Finished by Machine.

- Exhibited by *Charles J. Hill*, 6, Albany-street, Regent's-park, N.W.:
- 96-98. Three Groups in Ivory. Price 15*l.*
 99. "Head of H.M. the Queen," in Ivory. Price 5*l.*
 100. "Greek Head," in Steel. Price 8*l.*
 101. Ditto, in Malachite. Price 5*l.*
 102. Case with Two Proofs from Engravings on Steel for Surface Printing, and two "Medusa's Heads." Engravings and dies in hand. Price 4*l.* each.
- (The above are highly commended, but ineligible for these prizes.)
- A meeting of the competitors was held at the Society of Arts on Wednesday evening last, but we must defer report of the proceedings.

CHURCH-BUILDING NEWS.

Gelligaer.—The nave of the parish church of Gelligaer, Glamorganshire, after being closed for sixteen weeks for the purpose of restoration, has been re-opened by the bishop of Llandaff. Two work has been undertaken as an instalment only, the chancel still remaining to be done, the total cost being 1,200*l.* The church, which is an ancient one, is supposed to have been built by Maenarch, Earl of Hereford, in memory of Mabon, an old Welsh saint, whose niche, still partly coloured, has been found on the side of the chancel-arch. There is an entirely new roof of Memel timber. The walls have been strengthened by means of buttresses. The floor has been lowered to its original level, that is about 15 in. During the excavations, which were necessary for this purpose and inserting the heating apparatus, the bones of fully 200 people were found. Around the wrists of some wreaths of box still perfect were discovered. The chancel-arch, which is a peculiarly narrow one, has been entirely rebuilt. On either side it is supposed an altar once stood, as in the old north wall the old piscina, still perfect, has been found, and in the south wall, immediately opposite, the opening for the other, exactly corresponding in dimensions, &c., has been discovered. The cavity for the stoop on the south side by the porch has also been discovered, but the stoop itself has disappeared, along with the second piscina. The doorway to the rood-loft has also been found on the north side of the chancel-arch. All these old relics have been preserved and exposed to view. In this church, and also in the Church of St. Tyfaelvy, Pontllyn, within the parish, erected in 1863, there are baptisteries, which are used by the people. The architect of the restoration was Mr. Charles Buckridge, of Oxford. The east window is of stained glass, by Clayton & Bell. During the past four years a new church, three chapel schools, and one school-room have been erected in this parish, and, including this present work, at an outlay of 5,050*l.*, of which 550*l.* still remain to be collected.

Hasleton.—The parish church of Hasleton, on the Cotswold Hills, has been re-opened, after a general restoration and the addition of an aisle. Prior to the restoration the edifice was in a very mean state, and its accommodation was alto-

gether insufficient. A north aisle has been added; a new roof has been put to the whole—panelled in the chancel, and open in the other parts; and open seats have taken the place of the old high pews. There is a new pulpit of Painswick stone, and the floor is laid throughout with Messrs. Godwin's tiles. Messrs. Medland, Maberly, & Medland were the architects, and the work was carried out by Messrs. Earle & Sons, of Northleach, carpenters, and Mr. Barnfield, mason, of Shipton, the adjoining parish. The east window, which is of Norman character, is filled with stained glass representing the Crucifixion; and a small window near the font has been filled with painted glass representing Our Lord's Baptism. This window was the gift of the architects. The glass was prepared by Messrs. Heaton, Butler, & Bayne. There are several specimens of ironwork in the church—among them the altar-rails, door furniture, and font lid, which are by Messrs. Chew, of Stroud.

*Briton Ferry (South Wales).—*The Church of St. Clement has been consecrated. The new edifice has been erected upon a convenient site presented by the Dowager Countess of Jersey, who, in addition, contributed the donation of £1,200, supplemented by a contribution of £100, from her ladyship's grandson, the present Earl of Jersey. The church has been erected from a design by Mr. John Pritchard, the diocesan architect; the builder being Mr. R. Roderick, of Margam. The edifice consists of a nave, with north and south aisles, south porch, and north and south transepts. The chancel is apsidal, and has on its north side a sacristy and chapel for organ and choristers on either side. The nave is 62 ft. 9 in. long by 38 ft. wide, including the aisles, which are 9 ft. wide. The transepts are 17 ft. 3 in. by 13 ft. The chancel is 36 ft. 6 in. long, by 18 ft. wide. The whole affords accommodation for 468 persons. The style is First Pointed, slightly partaking of the Early French feeling, and extremely plain and simple. There is a double bell-gable over the chancel arch. The whole of the seats are entirely free and unappropriated.

Newcastle-upon-Tyne.—St. Andrew's Church has been re-opened for public worship, after having been closed for several months, during which period it has undergone an extensive restoration. Mr. T. Oliver, architect, Newcastle, was employed for the work; and Messrs. John Burnup & Sons were engaged as the contractors. The floor of the church has been lowered to its original level, and, with the exception of the modern sittings in the south transept and in the chancel, the church has been re-seated throughout with open benches. There is now a free circulation of air underneath the flooring; and a solid layer of concrete has been laid upon the immediate surface within the entire area of the walls of the church. The benches are similar in design to those in the south transept, but more commodious, and having sloping backs. A considerable number of these have been retained as free sittings. By the removal of the organ gallery, the tower archway is exposed to view, and seats are placed in the tower. The pulpit is of Caen stone, with grey polished granite enrichments. It is after a design by Mr. Pugin, and the sculptors were Messrs. Potts & Moat, of this town. The ancient windows have been almost altogether restored, the original size and detail being adhered to, and their mode of construction reproduced. The last window is entirely new, and consists of three large bays separated by stone mullions and three compartments caused by their intersections under the arch, the new window having been built upon the same lines as that which it has replaced. The entire window has been filled with stained glass, the subject selected being "The Ascension." In the upper part of the central light is the figure of Our Lord, surrounded with bands of conventional cloud and rays of light; the lower portion of the same compartment being occupied by a kneeling figure of St. Andrew, the patron saint of the church. The lateral bays contain each a group of the apostles and scriptural women, numbering thirteen figures in all. The subject is elevated upon a base of foliage and surrounded by similar canopied work in the tops of the arches. The tracery openings have, at the apex, the *Agnus Dei* as the emblem of our Lord's victory over death, and two angels bearing the legend in scroll-work,—"In my Father's house are many mansions. I go to prepare a place for you." The side chancel window, also consisting of three lights, but without tracery, has likewise been filled with figure-glass. The entire light represents "The Resurrection," the figure of

Our Lord, surrounded by a halo of light, rising from the sepulchre, occupying the upper portion, and the affrighted Roman soldiers the space below. On the right are depicted the two figures of Peter and John coming to the sepulchre, and on the left two of the holy women coming with ointment and spices to embalm the body. The windows have been executed by Mr. Wailes, of this town. The nave arches and piers, the tower arch and piers, and the Norman arch leading into the chancel, have had the paint and whitewash removed from their surfaces, and the stonework exposed to view. The works have been carried out by Messrs. John Burnup & Sons, for the masons', joiners', and general work; by Messrs. Mills & Sons, for the gasfitting work; and by Messrs. W. H. Walker & Son, for the heating.

DISSENTING CHURCH-BUILDING NEWS.

Liverpool.—The foundation-stone of a Welsh Independent Chapel has been laid at the corner of Park-road and Northumberland-street, Toxteth Park. From the designs of the architect it would appear that the style of the chapel will be an adaptation of the Early Pointed period of architecture, with plate tracery, crisped and lancet windows, and circular windows in the gables. The front staircase will form features at each side of the principal gable, and the back staircase will terminate by a square tower with pointed roof. The main roof will be surmounted by a spirelet rising to the height of nearly 100 ft. above the street level, and whilst acting as a ventilator, will give effect to the building, and be one of the prominent features of the neighbourhood. The walls will be built of Yorkshire parpinto or shoddies, with all the angles, door and window jambs, arches, and other dressings, of Stourton stone. The building will be arranged as follows:—Chapel, 41 ft. wide, and extreme length 70 ft., with room for 700 people. School-room, behind same, with two vestries, water-closet, &c., on ground-floor, and large school-rooms above, together with boiler-room and gas boiler apparatus complete. The interior of the chapel will be divided into nave and aisles by light iron columns, from which will spring the main timbers of the roof, all of which will be deeply cut and moulded,—those over the nave circular, and circular or arched timbers will also run from column to column, dividing the nave and aisles. The pulpit or rostrum is to be at the west end, and will have in front of it a large raised dais or deacons' pew, with stalls on each side and a table in the centre, a screen forming a front to the choir; and a circular window in the recess behind and above, will complete the effect of this end of the chapel. Mr. C. O. Ellison is the architect, and Messrs. Nicholson & Ayre are the contractors. The cost of the building, including the site and other expenses, will be about £5,000, of which £1,000 have already been subscribed. It is expected that £1,800, will be realised by the sale of the old chapel.

STAINED GLASS.

Wolverhampton Collegiate Church.—A memorial stained-glass window has been placed in the chancel of this church by the family of the late Mr. Joseph Underhill, of this town. The window is situated on the south side, and is in memory of Mr. and Mrs. Underhill. The arrangements of design and spaces are effected so as to agree generally in levels, &c., with the "Campbell" window: at the same time all the details are varied, and differ from what was previously done. The main figures of the "Underhill" window are,—Abraham, Sarah, (in the centre), and Barzillai. These figures are surmounted by canopies of foliage, the feature of which is the poppy flower and leaf. Below are three groups, viz.,—first, Abraham buried by his sons, Isaac and Ishmael; second, Jacob setting the pillar upon Rachel's grave; third, Jacob blessing his children before his death. The tracery of the window is treated symbolically, as there was not room for figures. A meaning and subject are given to this portion by emblems having reference to the Resurrection, the scenes below portraying death; thus, in the upper portion of the centre main light is shown the Greek monogram Alpha, Omega; and in the centre of the tracery an idea of the New Jerusalem, the Lamb on the Altar, and the Four Beasts worshipping. The artists were

Messrs. O'Connor, of London, who carried out the "Parke" and "Campbell" memorial windows, and are now engaged upon the "Nesbitt" stained glass for the same church.

Pilton Church, near Oundle.—A stained-glass memorial east window has just been fixed in the chancel of this church. It is in remembrance of Mr. F. B. Hodgson, of Withington, in the county of Lancaster, father of the Rev. B. Hodgson, the present rector of Pilton, and is the work of Messrs. John Hardman & Son, of Birmingham. It comprises a story of twelve subjects: eight are from Old Testament history, commencing with the creation of Adam, and four from that of the New Testament, which are the Nativity, the healing of the daughter of Jairus, the Crucifixion, and the Ascension of our Lord.

Books Received.

The Science of Moderation; or, the Quantitative Theory of the Good and the Beautiful: Formative Ethics. By W. CAYE THOMAS. London: Smith, Elder, & Co. 1867.

Mr. Thomas has now collected his essays on "The Golden Mean," with most of which our readers are already acquainted, into a volume, under the title here given; and whatever objections may suggest themselves to the persners of this volume, its thoughtful pages cannot but be read with interest by every reflective mind. Though Mr. Thomas's theory has been developed by degrees in the *Builder* itself, we confess we do not always follow him with conviction of its truthfulness; and we have already expressed some of our ideas on the subject in a review of a previous volume of Mr. Thomas's, entitled, "The Conformation of the Material by the Spiritual; to Imperfection by the Spirit of Error; to Perfection and Beauty by the Spirit of Truth: Christian Idealism." Since our strictures were written, Mr. Thomas inclines rather to speak of "scientific idealism" than "Christian idealism," and he now insists rather upon the power and influence of the "moral" mean to develop physical beauty and perfection in man, than on the power and influence of "the awakening of a holy spirit in the soul of man" to do so. In this we think Mr. Thomas is quite right; inasmuch as he evidently did not mean the Holy Spirit or Holy Ghost (who is the "Lord for the body," which body is the temple of that lord and master), when he spoke of the awakening of a "holy spirit"—"a spirit of rectitude" or "righteousness"—in man, as the means of bringing the human body to the perfection of physical beauty: it was simply to the cultivation or exercise of moral principle, not to the infusion of the Holy Ghost, the comforter and refresher, he alluded. And there it was we differed from Mr. Thomas. But into that branch of the subject we need not again enter.

There is another phase of the author's theory, however, of which we may here take some slight note. In speaking of vitality in positive and negative aspects, he regards the two extremes which flank what he considers to be the grand mean, or moral force, the one as being "positive or uncontrolled energy," and the other "negative or inert." But the negative is not necessarily inert, unless it be proved that there is but one species of energy; and we will venture to predict that this will not be proved of life principles; and one species of energy may be the negative of another, and yet be in itself anything but inert. In this view the awakening of the Holy Spirit in the soul of man is the infusion of another species of energy altogether from that of the soul of man himself; and although each be negative to the other, each is equally an energy, and neither is inert. If neither suffice to overpower its fellow, that is much like inertia in the core of Mr. Thomas's very "mean" itself than anything else. So is it with physical forces: the negative electricity is no more inert than the positive. But the mean,—the neutralization of the one by the other,—is inert! So is it even with mechanical force and motion: take a pendulum, for example. The swing to one side is negatived by the swing to the other; but neither of these two extremes is inert: it is the grand mean between the two which is inert! The mean, in short, in this view is like a dead death than life either single or dual. We can conceive a mean, however, of another description altogether, in the diurnal alternation (as in

* See "On Christian Idealism," in *Builder* of August 16th, 1862.

waking and sleep) of two opposites or extremes that would, indeed, be "a golden mean" consistent with life and energy, both human and divine, although enjoyable only by a daily death.

How is it,—if mere "moral" perfection or self-righteousness,—and not the transcendental and transmutative "righteousness of God," who "is our (transcendental) righteousness," or rectifier of a lost balance transcending selfhood,—be the sufficient and effective cause of physical beauty and perfection,—and not in itself the mere "fruits of the Spirit,"—that the grand exemplar of this very moral perfection is said to have had "no beauty in him that we should desire him,"—"no form nor comeliness,"—"his face marred more than any man, and his form than the sons of men?" Is this then what the highest moral perfection will bring us to? Ah! Mr. Thomas, there is a mystery here the depths of which your mere "moral" plummet of "righteousness" cannot fathom.

This mystery, nevertheless, the principles inculcated in our strictures on Mr. Thomas's Christian Idealism are capable of fathoming in perfect consistency with the idea that physical and moral perfection are simultaneously attainable, both of them merely as fruits, or effects, by "the awakening of the Holy Spirit in the Soul of man"—that Holy Spirit's Servant; and in the Body of man—that Holy Spirit's Temple.

Recent Excavations in Rome.—By ALEXANDER THOMSON, of Banchochy. Issued by the Architectural Institute of Scotland. 1866.

Mr. Thomson's papers on excavations in Rome, to which we have before now referred, having interested the members of the Scottish Institute, the Council suspended the usual issue of lithographs, and have given to each member a copy of the last paper read by Mr. Thomson. It is illustrated with thirteen lithographs, several of them showing restorations on the Via Appia, as proposed by Canina, and makes a very interesting little volume. Mr. Thomson gives a view and account of the old tomb of Eurypass, the baker, at the Porta Maggiore. The second story of the monument is formed of the mortars which he used for kneading his dough. Placed on their sides, they look very like siege mortars. On the frieze above were represented the various works of a baker,—grinding the corn, making the dough, baking, and so forth. On the south front, a sarcophagus, in the form of a bread-basket, held the ashes of the baker's wife!

VARIORUM.

"Glimpses at the Origin, Mission, and Destiny of Man; with Miscellaneous Papers. By Mr. Lawrence Heyworth. Williams & Norgate, Covent Garden." The miscellaneous papers alluded to in the title of this volume compose the greater portion of it, and relate to taxation, peace, war, the Sabbath, intoxicants, &c.; and are intended to show that "unwise fiscal legislation is the great impediment of our day to universal commerce, to social amelioration, and to intellectual advancement: customs duties are human barriers, fearfully erected every where, across the Heaven-designed channels of humanizing commerce."—"Analogy of the Laws of Musical Temperament to the Natural Dissonance of Creation. By M. Vernon. London: Whittingham, Firth-street, Solo." We candidly confess that we have not devoted sufficient time to a perusal of this little volume to enable us to pass an opinion on its merits, but it seems to be of great thought, and will doubtless prove interesting to those who happen at one and the same time to be amateurs in melodic and harmonic acoustics, geology, astronomy, and the music of the spheres.—"A Shilling Arithmetic, for Elementary Schools. By J. W. Colenso, D.D., Bishop of Natal" (Longmans, publishers), needs no recommendation from us: all we need do is to announce this cheap re-issue of a standard work.

Miscellaneous.

THE LATE MR. PARKIN JEFFCOCK.—We go a little out of our usual course to mention that late Rev. J. T. Jeffcock, of St. Saviour's, Hoxton, is preparing a Memoir of his late brother, Mr. Parkin Jeffcock, civil and mining engineer, of Derby, who lost his life with an exploring party at the Oaks Colliery after the terrible accident there last December.

A NEW CHURCH FOR POPLAR.—Mr. Henry Green, the shipbuilder, has given 6,000*l.* towards the building and endowment fund of a new church at Poplar, to be dedicated to St. Stephen. The ladies of the new district have presented a stained-glass window for the chancel, at an expense of 200 guineas. The seats in the church are all free.

GLASGOW ARCHITECTURAL (ASSISTANTS') ASSOCIATION.—The usual fortnightly meeting of this Association was held on Monday evening, the 28th ult., at the Architectural Society's Rooms, 138, Bath-street. Mr. Myles, the president, in the chair. Mr. James M. Monro read a paper entitled "Symbolism in Churches." A lively discussion followed, as to the propriety of introducing symbolism in designing churches of the present day. At the close, a vote of thanks was accorded to Mr. Monro for his paper.

THE SUBURBAN VILLAGES AND GENERAL DWELLINGS COMPANY (LIMITED).—The first general meeting of shareholders has been held at the offices of the company, No. 1, Westminster-chambers. The company have held back in their operations, not having been able to procure a desirable estate to commence upon, and in consequence of the extreme deadness in the money market. They had been offered an estate situated near to four railway stations, and desirable in all other respects, from the Ecclesiastical Commissioners, upon very advantageous terms, and had accepted the offer. The sanguine expectation of the directors was, that so soon as the public saw efforts being made to carry out the objects contemplated by the company, they would have a large increase in the number of their shareholders.

THE LEAMINGTON SEWAGE CASE.—The case of Heath v. Wallington has been before the Vice-Chancellor's Court upon several occasions during the last two years, and the operation of the injunction has been from time to time postponed in order to give time for filtering or deodorising the sewage before pouring it into the river, where it was decided to be a nuisance to the complainant. The Vice-Chancellor (Sir W. P. Wood) has now granted a sequestration against the Leamington Local Board of Health, in the terms of that awarded against the Banbury Local Board in January, 1866, observing, that if the defendants were unable to discharge the sewage of Leamington into the river without creating a nuisance, they could not be allowed to pour it in at all, as they had no more right to discharge it into the river to the injury of the plaintiff and his property than into his drawing-room.

THE BARKING SEWAGE EXPERIMENTS.—Mr. Hope, as manager of the Metropolis Sewage Company, has addressed a letter to the *Morning Herald*, a writer in which paper had stated, in referring to the experiments on the sea-sand at Barking, that the depth of sand was only 1 ft. Mr. Hope says,—

"In reality the sand is 2 ft. deep, and was purposely laid 2 ft. deep in order to prevent the possibility of any one attributing the growth of the grass to the influence of the soil beneath. Of the 10 acres of land at Barking reservoir irrigated with sewage only one is covered with sand, the other nine remaining in their natural condition. I am, therefore, able to answer your question of 'how much less sewage would have produced the same result on rough, uncultivated ground?' And I am happy to inform you that the result on the sand was decidedly superior to that on the 9 acres. As you allude to my old controversy with Baron Liebig, and suggest that perhaps the Baron would point out that there was a difference between sand *in situ* and sand 'transferred,' I must ask you to refer back to Baron Liebig's letters to the Lord Mayor that we heard so much of about two years ago. He there complained that I had never made an experiment even with a flower-pot filled with sand and watered with sewage, showing that he himself did not regard it as important whether the sand was *in situ*, or whether it was 'transferred.' Moreover, he entered into a long dissertation to show that he meant by the word 'sand' and further committed himself to the following very distinct and definite statements:—First, that it 'would be necessary to form a superstratum, 1 in. in thickness, of dry above the sand before anything could grow upon it; secondly, that 'we know with almost mathematical certainty that there must be something besides to make a plant grow in sand manured with sewage, and that an acre of sand, even with the largest dressing on it, would not produce a hundredweight of hay'; thirdly, that 'no land plant can grow of itself in a medium of sand to which the nourishing elements are applied in a state of solution.' Nothing can be more clear and distinct than these three statements; nevertheless, off an acre of sand at Barking we have in some plots at a single cutting obtained a weight of grass at the rate of 10 tons to the acre, and we have brought various other land plants to maturity under the same circumstances mangel wurtzel, celery, radishes, carrots, &c., and a rape seed which was accidentally dropped in it and grew into a perfect bush. I am happy also to be able to inform you that nothing can be more satisfactory than the progress of the company's larger experiments at the Lodge Farm, a short distance beyond Barking."

DANGEROUS STATE OF A RAILWAY BRIDGE.—The bridge at Dukinfield spanning the river Tame, about 100 yards below the station, was discovered by an engine-driver, while passing with his train, to be in an unsafe condition. He told the station master, who found that it had given way, and at once gave instructions to stop all traffic.

REMOVAL OF FIRE-DAMP FROM MINES.—A Mr. Williams, from Blairfin, Wales, has been illustrating, at Barnsley gas works, a scheme, by which, he states, coal mines may be cleared of fire-damp. The desired result is proposed to be obtained by the use of a very simple apparatus, consisting of an inverted syphon, to which is connected a pipe from the mouth of the shaft. The short end of the syphon is inserted in the place containing inflammable gas, and the pipe from the top is attached to the other end. The air first being extracted from the pipe, the gas, which is lighter than the atmosphere, will rise to the top. The experiments were, it is said, successful, and were witnessed by several mining engineers.

WASHED THROUGH A SEWER.—A singular occurrence, which well-nigh proved fatal to two men, has taken place at Birkenhead. A mason and a labourer were working on a raft in a large sewer, connected with the great docks of Birkenhead. Suddenly the water from one of the graving-docks was let into the sewer, and the raft was swept away by the current. The mason managed to get off the raft and stay himself near the Duke-street Bridge, where he was got out, after an interval of some five hours, in a very exhausted state. The labourer was, however, swept away on the raft through two miles and a half of sewer, and at length reached the Morpeth Dock Basin, where the raft was fortunately stopped by a half-open flood-gate; otherwise it would have floated into the river. He was rescued by means of a rope.

OPENING OF THE NEW AGRICULTURAL HALL AT BRIDGNORTH.—A public dinner in the new Agricultural Hall, Bridgnorth, inaugurated the opening of the building. The Hall is situated in High-street, and adjoins the Crown Hotel, and has been erected by Messrs. Nevett, Brothers, of Ironbridge, from plans prepared by Mr. R. Griffiths. The hall is entered from the street by a lobby and vestibule. On each side of the lobby are shops and ticket-taker's office, with a large market-room over to front the street. At the south end of the hall is a settling room, a convenience long needed by the farmers. Over the settling-room, approached by a private entrance, is a billiard-room. The underground vaults are three in front and two beneath the hall. The buildings are Gothic in style. The front next the street is built with red bricks and white stone dressings. The exterior side walls are built with white and blue bricks. The roofs are covered with Bangor slates. The interior of the hall is lined with white bricks, relieved with red brick piers and arches. The hall is heated by hot water, with a double row of pipes running on all sides, covered with iron trellis-work at floor level. The room is chiefly lighted by a lantern light, running the full length of the building.

THE LEEDS AND YORKSHIRE LAND, BUILDING, AND INVESTMENT COMPANY (LIMITED).—The first general meeting of the shareholders of this company has been held. The report stated that the directors had resolved to recommend that out of available profits, amounting to 1,513*l.* 19*s.* 9*d.*, they should pay a dividend at the rate of 10 per cent. per annum, which would absorb 334*l.* 5*s.* 8*d.*; to carry to the reserve fund 750*l.*; and to carry the balance 429*l.* 14*s.* 1*d.*, to next year's profits. Out of 25,000 shares of 10*l.* each, which constituted the capital of the company, it is proposed that only 10,000 shall be issued at par, and of these about 8,000 are already taken up. Two estates had been purchased, one in Meadow-lane, and another at New Witley. The former had been sold at a fair profit, and the latter, which consisted of buildings and thirteen acres of land, was rapidly being taken up, the whole of the buildings had been sold, and land in addition for the erection of about eighty houses, a number of which were already built and tenanted, and others were in course of erection. Advances had been made on mortgage securities to the extent of 9,648*l.* 17*s.*, of which 1,489*l.* 13*s.* 10*d.* had been repaid, and the balance was repayable at short dates or by monthly instalments. The report and balance sheet were unanimously adopted.

ASCOV GASWORKS.—We are asked to state at the company's works were designed and executed by Mr. J. M. van der Made, C.E.

THE "GOLDEN SERIES" OF PHOTOGRAPHS.—Under this title Mr. Holyoake is publishing from the Alexandra Studio in Great Cornam-street, an interesting series of portraits on a gold mount, which gives a novel and agreeable effect. The specimens we have seen, chiefly of actors, actresses, and dramatic writers, are faithful as likenesses and excellent as photographs. The studio has additional claim as being formed to afford employment to women.

MISS GLYN'S READINGS.—These readings, as we expected and they deserved, have increased in attractiveness as they proceeded. "Hamlet," given on the 25th of January, was attended by a very large audience, who went away delighted. Miss Glyn shows a power and versatility which only a few of her hearers were aware she possessed. Every character has its proper weight, and the effect left on the mind of the auditor is that of completeness. On this Friday evening, the 31st of January, the reading of "Antony and Cleopatra," will be repeated, and will conclude the present course.

METROPOLITAN BOARD OF WORKS.—At the last ordinary weekly meeting of this Board, the Works and General Purposes Committee recommended that the request of Messrs. Doulton and Stiff that the Board would approve the formation of dock entrances under the roadway of the Thames Embankment (south), opposite their premises, in lieu of the subways agreed to be constructed by the Board, be not complied with; and that the engineer be instructed to carry out the work in accordance with the terms of the original agreement, which was agreed to; they also recommended that a double 10-foot way be formed under the roadway of the Thames Embankment (south), at White Hart Dock, with a headway increased to 8 ft., as proposed by the vestry at Lambeth, in lieu of the Ferry-street entrance, as authorized by the Act, which was adopted. They also submitted a plan of an approach to the steamboat pier at Lambeth, and recommended that the same be approved, and that the Vestry of Lambeth be informed accordingly, which was agreed to.

CO-OPERATION IN COAL: THE JOINT-STOCK COAL COMPANY (LIMITED).—This company, at its formation, in 1854, commenced with a small capital, upon the expectation of paying a good dividend to its shareholders as investors, and also special advantages to its shareholding purchasers by way of a bonus upon their coal consumed. As the result of its first year's operations the company paid a dividend of 10 per cent., and returned to its consuming shareholders 2s. 6d. upon each ton of coal they had purchased. The advantages thus obtained will be best seen by the following illustration:—A B has ten shares in the company, upon which he has paid 5l., and on the shares he would receive 10s. dividend, but, supposing he has also consumed 12 tons of coal during the year, upon these he would receive a bonus of 30s., so that in reality he obtains 40s. dividend upon his 5l. investment. The close of the second year's working shows results equally satisfactory. The first capital of 50,000 shares was quickly subscribed, and the second 50,000 shares are being rapidly allotted.

MAIDSTONE COTTAGE IMPROVEMENT SOCIETY.—From the directors' annual report, it appears that the company now possess forty-seven cottages; and that the subscribed capital amounts to 3,715l., shares to the amount of 720l. having been subscribed for during the past year. The rents, after deducting rates and taxes and 5 per cent. for collection, amounted during the year to 236l. 10s. 10d., of which 5 per cent. dividend, clear of income-tax, has been paid. This leaves a balance of 38l. 13s. 8d. to be added to the reserve fund, which would thus reach the sum of 126l. 3s. 6d. The amount spent for repairs, in cementing damp walls, &c., was 52l. 4s. Four years' working, adds the report, has shown that the company offered a sure investment, and had improved some of the worst parts of the town; but very many cottages still urgently needed improvements such as would never be made by the generality of private owners. All the subscribed capital of the company had been invested, and the directors therefore asked the shareholders and the public at large to take more shares, so as to enable the company to extend its operations.

ASSISTANT SURVEYORSHIP, MAIDSTONE.—The local Board of Health have appointed Mr. James Harrison to be their assistant surveyor, at a salary of 70l. a year.

THE NORWICH DRAINAGE.—We are glad to observe that after considering a report by their surveyor, Mr. Alfred W. Morant, to their Sanitary Committee as to the dry-earth closet system which it was proposed to adopt instead of a system of drainage, the Norwich Board of Health have resolved, with one dissentient, "that the system of earth closets is not applicable to this corporate district."

THE CANTERBURY DRAINAGE AND WATER SUPPLY.—Mr. Filbrow's conclusions with reference to the proposed new drainage and water supply for Canterbury have been published. He estimates the cost of drainage at 18,000l. It is not intended, it is said, to erect new water works, but to induce the existing company to so perfect their property that it may be made available for the future supply of the city.

SALE OF A RAILWAY COMPANY'S PLANT.—A "great sale of rolling stock" has taken place at the George Hotel, Shrewsbury. The stock was the property of the Bishop's Castle Railway Company, whose line, running from Craven Arms to Bishop's Castle, with a projected continuation to Montgomery, was lately seized by the sheriff, and the company being unable to satisfy the claims of the suing creditors, their available property was ordered to be sold by auction. The total sum realised was 3,522l. A gentleman from Birmingham, stated to be the representative of the Midland Wagon Company, was the principal purchaser.

THE PROPOSED MACCLESFIELD NEW INFIRMARY. The sub-committee appointed to visit various infirmaries, and report to the general committee as to the plan it might be advisable to adopt for the proposed Macclesfield Infirmary have visited those of Leeds, Birkenhead, Chorlton, and Ashton, and reported in favour of the pavilion plan of the architect, Mr. Stevens, with minor alterations suggested by medical men. The general committee have approved the plans as presented, and resolved to lay them before a general meeting of the subscribers. The probable cost of the building is estimated at 12,000l. It is proposed to lease or purchase additional ground from the Free Grammar School authorities, on whose ground the proposed site stands, or rather from the Charity Commissioners.

ANOTHER KITCHEN BOILER EXPLOSION IN THE NORTH.—One of these accidents, attended with fatal results, has occurred near Broochin. Towards evening, a female servant had lighted a fire in the kitchen range. The boiler had been empty, and owing to the late frosts the water in the feeding-pipe was frozen, so that no water got into the boiler until that was red hot, and then when it did reach there an explosion took place. The whole of the range was torn out, the roof of the kitchen was blown off, and the doors and windows of the wing were destroyed. The poor woman was severely injured, and thrown back on the floor. Then her clothes caught fire, but she managed to get to the snow at the door and roll amongst it, so as to extinguish the flames. She died, however, next day.

THE PROPOSED ASSIZE COURTS FOR SHEFFIELD. The Improvement Committee of the town council have unanimously resolved to recommend the council to proceed with the Bill which is now in the hands of the Parliamentary agents, the words "town council of the borough of Sheffield" being substituted for "Justices of the West Riding of the county of York." This alteration is proposed to be made in consequence of the threatened opposition of the West Riding to the Bill. If passed, as contemplated, the "Sheffield Assize Courts Act, 1867," will include the following among other leading provisions:—The council will be empowered to provide, in or near the borough, "commodious courts, lodgings of her Majesty's judges, officers, lock-ups, and all other accommodations that may be necessary or convenient." The expenses are to be defrayed out of a special rate. A plan is generally approved by the committee which will entail an outlay of from 20,000l. to 25,000l. This plan is to buy up the lease of the Black Rock, the premises immediately adjoining the old townhall, and to build new premises on the site of both structures. As there are now police-offices contiguous, it is thought that the contemplated site will furnish space enough for all the necessary courts and offices. The judges' lodgings would be elsewhere.

TENDERS

For alterations at 164, Finch-hill-street, for Mr. Kinn, Messrs. Young & Son, architects. Quantities supplied:—
Ellis £1,323 0 0
Brass 1,337 0 0
Lark 1,234 0 0
Webb 1,208 0 0
Cluesum 1,165 0 0
Henshaw 1,094 0 0
Newman & Mann 760 0 0

For the erection of two villa residences, Stoke Newington, for Mrs. Burdett. Mr. T. Hill, architect:—
Nash £2,897 0 0
Patman & Fotheringham 2,575 0 0
Carter & Sons 2,630 0 0
Longmead 2,447 0 0
King & Sons (accepted) 2,300 0 0
Macichlan 2,152 0 0

For farm buildings, Elmbridge Court, near Gloucester, Messrs. John Money & Son, architects:—
Farm Buildings. Water Supply.
Tegue £1,468 0 0 £134 0 0
Jones & Sons 1,376 0 0 134 0 0
Clutterbuck 1,176 0 0 112 0 0

For Bristol City Hotel, Messrs. Foster & Wood, architects. Quantities supplied by Mr. J. A. Clark:—
Kirk £40,100 0 0
Jackson & Shaw 46,250 0 0
Brass 47,820 0 0
Ripby 46,488 0 0
Baker 45,944 0 0
Call & Pethick 44,454 0 0
Warburton, Brothers 45,725 0 0

For alterations and additions to 533, Oxford-street, for Professor Holloway. Mr. J. Dale, architect:—
Carter & Sons £1,080 0 0
King & Sons 618 0 0
Parsons (accepted) 760 0 0
Strudger 652 0 0

For the erection of new factory, Hill-street, for Messrs. Waterlow & Sons. Messrs. Lee & Beck, architects:—
Allen £3,814 0 0
Ashby & Sons 12,194 0 0
Webb & Sons 12,125 0 0
Welman 11,086 0 0
Conder 11,466 0 0
Perry & Co. 11,180 0 0
Browne & Robinson 11,096 0 0

For additional works at the House of Correction, Cold-bath-fields, Mr. F. H. Pownall, architect:—
Sawyer £11,149 0 0
Loyatt 11,071 0 0
Gibson, Brothers 10,580 0 0
Manfield & Price 10,843 0 0
Webb & Sons 10,778 0 0
Eaton & Chapman 10,490 0 0
Mann 9,765 0 0
Henshaw 9,263 0 0

For sundry alterations to premises in Gooch-street and Charlotte-court, for Messrs. Winter & Co. Mr. W. A. Baker, architect. Quantities supplied by Messrs. Richardson & Waghorn:—
Scrivenner & White £1,232 0 0
Manley & Rogers 1,145 0 0
Kelley & Co. 957 0 0
Tracy & Co. 825 0 0
Moultre 888 0 0

For sundry alterations to the Crown public-house, Clive-street, for Mr. Makepeace. Messrs. Lyves & Rivett, architects:—
Richards £610 0 0
Ellis 566 0 0
Macintosh 552 0 0
Lawrence & Haug 548 0 0
Harland 473 0 0

For rebuilding Nos. 2 and 3, and alterations to No. 4, Finch-hill, City, for Mr. Alfred Pussell. Mr. Herbert Watkins, architect. Quantities supplied by Mr. C. Reilly:—
Turner & Sons £3,299 0 0
Barclay & Sons 3,180 0 0
Ashby & Horner 2,890 0 0
Ashby & Sons 2,899 0 0
Conder 2,721 0 0
Newman & Mann (accepted) 2,537 0 0

TO CORRESPONDENTS.

G. W. F. (we have no particular grudge. The servants should be made to do as they are told).—E. W. B. (communicate with Editor of the *Daily Express*).—H. (in type).—R. A. L. P. J. A. K.—An Od. Sub-scriber.—G. C. E.—W. T. C.—W. M. E.—W. T. J. G.—W. M. B. A.—C. J. B.—W. H. S.—J. T. L.—W. S.—W. W. & Son.—S. C. H.—R. S.—D. C. T. G.—J. A. C.—R. P. M.—S. M.—G. F. C.—T. J. S.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessary for publication.

Note. The responsibility of signed articles and papers read at public meetings, rests, of course, with the authors.

Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m., on THURSDAY.**

The Publisher cannot be responsible for ORIGINAL TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

The Builder.

VOL. XXV.—No. 1253.

Designs for the
Proposed Law
Courts.*

EW of the competitors seem to have managed the accesses and the retention in convenient places of the sight-seeing or idling visitors to the Palace of Justice so well as Mr. E. M. Barry. This is his strong point, and will count for much when the weighing of merits comes. The chief points, say the Commissioners, to be kept constantly in view, and to be treated as superseding, so far as they may conflict, all considerations of architectural effect, are the accommodation to be provided and the arrangements to be adopted so as in the greatest degree

to facilitate the despatch and the accurate transaction of the law business of the country; and in carrying out this design the first object should be to provide ample uninterrupted communication and accommodation for those who have legitimate business in the new building."

They further point out that the accesses to the courts for mere public spectators should be entirely distinct from all the other accesses, and as far as possible from each other, and should enter directly from the street, and never cross on a level or communicate with the accesses and passages used by the profession, the witnesses, jurors, and others engaged in the business of the courts; so that while spectators may be readily admitted to each court separately, they should not, for the purposes of mere sight-seeing, be tempted to pass from one court to the others, and to make the round of them.

Some of the competitors have overlooked altogether this determination on the part of the Commission, and have not remembered either that while the utmost facilities of communication should be afforded to departments which are associated together in the conduct of public business, it is not desirable that those facilities of communication should be a source of disturbance to other suites of offices.

In Mr. Barry's design a Central Hall, not so large as might be desired, serves as vestibule or entrance-hall to all the courts, with which it communicates by a corridor. The floor-level of the courts is 36 ft. above the Strand, as prescribed. This height appears to us regrettable, but it is said that it was well considered, and that the required number of rooms and offices could not have been otherwise obtained on the site.

The courts are parallelograms, with the corners cut off in some cases. Their widths vary from 30 ft. to 32 ft. The bench is entered from the judges' rooms behind, on a level. Separate access and stairs are provided for witnesses from their waiting-rooms under the court. Similar separate access and stairs are allotted to the jury. The jury retiring-room is placed on the floor above, and is approached from the jury-box by a private staircase. The public are altogether excluded from the court floor, which is strictly reserved for those who have business to transact. Each court is furnished with a gallery round three sides. The end gallery is for the public; that on the left of the judge is for the jury, as has been already described, and the opposite gallery is for the grand jury, magistrates, or distinguished visitors. The access to the public galleries is by separate and distinct staircases, entered directly from the street without any communication with any other part of the building. The staircases are circular on plan, and Mr. Barry describes them as arranged like the great circular staircase at the Château of Chambord. "This plan may be described as a screw with two threads, each thread being quite distinct and never joining the other. By this design two separate public staircases are obtained in each circular space. There are four of these circular staircases, each containing two separate sets of stairs." We must confess to no liking for circular stairs in public buildings. Private staircases are also provided for the Appellate and Spare Court, so that there are ten staircases for the exclusive use of the public for approaching their galleries in the several courts, which are arranged in groups corresponding to the number of the staircases. The approach is direct from the street, and it would be impossible for a spectator to pass from one group of courts to another without descending to the street, and ascending again by another staircase. The approach from the public staircases to the galleries on the upper level is so arranged that the public may be able to see the Central Hall and corridor, but can have no direct communication with them.

The plan includes four double and two single public staircases, six double staircases for the bar and persons engaged in business, one single staircase for a similar purpose, and six public staircases in connexion with the offices. These are exclusive of the stairs to the bridges over the Strand and Carey-street, and of numerous private staircases for the Judges, Masters, Vice-chancellors, and officials, and give a total (exclusive of the latter) of twenty-nine staircases.

The provision for the documents of the Probate Court is afforded by a dome and the central mass on which it rests. This he considers a more compact and convenient arrangement than a tower or towers, which, to afford the amount of accommodation required, must necessarily be of great height.

Mr. Barry has departed from the suggestion made by the Commissioners, that as a matter of convenience the Equity Courts should be placed on the side nearest Lincoln's-inn, and the Common-Law Courts nearest the Temple; the Chancellor and Vice-Chancellors' Courts being placed in his design at the Temple Bar and Bell-yard side.

The offices are situated, for the most part, in the building forming the outer ring of the plan: entirely distinct from the centre building and one another.

The style adopted is fourteenth-century Gothic, and the aspect of the pile is sufficiently palatial. The central dome, on a large square basement, is, of course, the principal feature externally; but smaller towers and spirelets around, and a lofty clock-tower at Temple Bar, are brought in to form the *ensemble*. Touching the cost, Mr. Barry, justly enough, is no believer in estimates by the foot cube. The cubical contents of his structure, however, are 24,751,424 ft.; and he puts these at one shilling per foot, which would

give 1,237,571l., exclusive of Temple Bar and Carey-street bridges and subways,—say 40,000l. more.

We must express our conviction that Mr. Barry has produced an excellent plan.

Mr. Raphael Brandon is one of the competitors who adopts a Central Hall, the courts being arranged round it: the judges' rooms are placed round, and open into, the courts with which they are connected; outside these a corridor or gallery is provided, by which the judges can enter their respective rooms, or communicate with each other.

The block of the building as proposed measures about 687 ft. from east to west by 445 ft. 6 in. from north to south; taken to the outer face of the external walls; from these the two Record Towers for fireproof accommodation, and the Clock Tower, stand detached. The north-eastern, north-western, and south-western angles of the plan are rounded off, and with these exceptions the building is a parallelogram in form with comparatively very small projections, so as to make all the space available, the architectural effect being produced principally by the skyline, which includes two lofty towers and spires in the west front, with the two Record Towers in front of them.

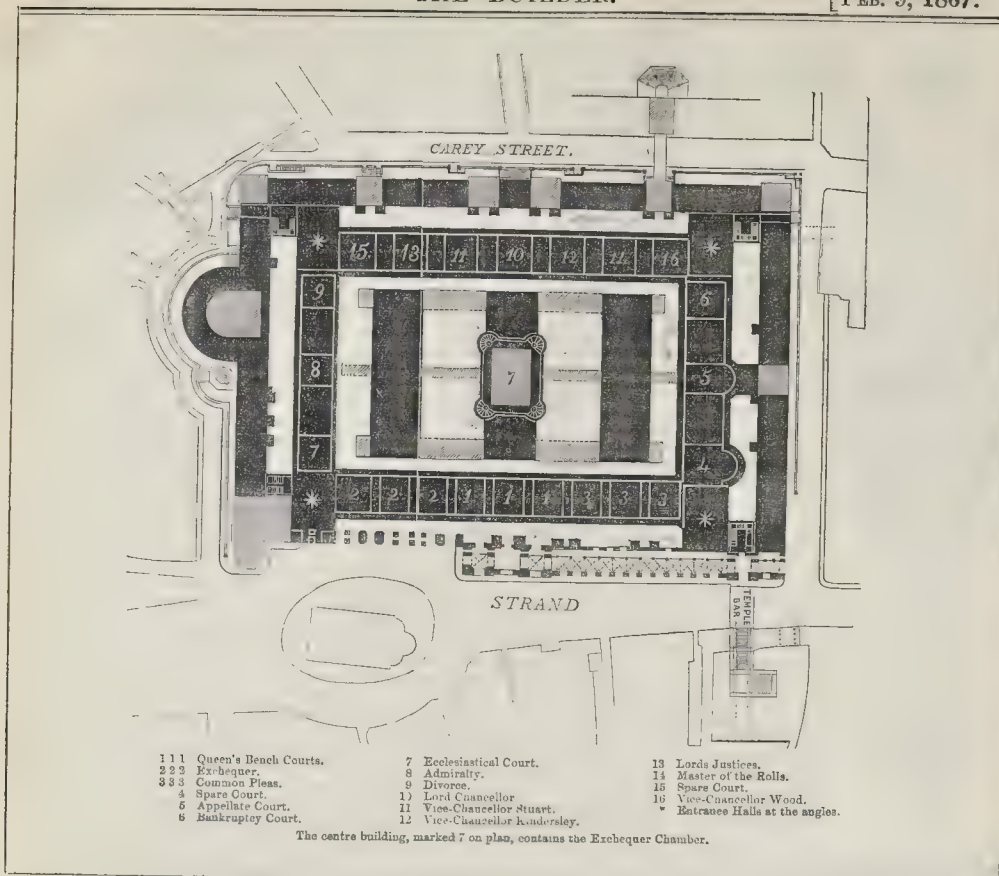
The site proposed by the Commissioners to be dealt with by the competing architects measures 510 ft. from the general Strand front northwards to Carey-street. The north front of the building is set back 15 ft. from the Carey-street line, and extends to within 33 ft. of the Strand frontage of the site, which allows the most projecting part of the building and the area walls southward to stand clear of the quadrant formed by Fickett-street on the north side of St. Clement's Church. Two large halls in this front form entrances to the Central Hall, having two other halls corresponding in position on the north or Carey-street front. Those for the public, after crossing the internal areas by means of light iron bridges, unite in a lower hall, from which a double flight of steps leads up to the large Central Hall.

The dimensions of the Central Hall may be stated as 365 ft. long by 180 ft. wide. This space he divides into a central chamber 250 ft. by 60 ft. wide; round this runs an ambulatory 17 ft. wide from the centres of shafts, and from this ambulatory the corridors between the courts are reached by lobbies 25 ft. by 17 ft.; between these lobbies areas of about 23 ft. 6 in. by 16 ft. 6 in. are formed to give light to witnesses' corridors and other accommodation below the court floor. In these areas are placed the staircases for the public spectators and all parties not engaged in the suits.

It may be objected that Mr. Brandon has adopted a thirteenth-century cathedral for his type, with the main arches dividing nave and aisles, triforium, clearstory, and groined roof. Externally, too, with its *flèche*, the Hall suggests the Paris "Sainte Chapelle" and some similar buildings. In selecting the style to be followed, he claims to have taken that which showed the greatest amount of purity, elegance, and strength, and applied it freely to the requirements of the building, "allowing [he says] no mere reproductions to creep in, but endeavouring to deal with the whole as I believe the old architects would have done if it had been built in their day, looking mainly to the wants of the several departments; and, trusting to a faithful attention to the conveniences of arrangement, clothing the whole with artistic mantles, thus producing the effects naturally, bearing always in mind the general outline and light and shade intended to be produced." Nevertheless, the details of the south or Strand front will not fail to recall Wells.

The floor of the Central Hall would be 40 ft. above the level of the Strand,—24 ft., therefore, above the level of Carey-street.

* See p. 69, ante.



As to cost, the building cubes to 35,250,000 ft., and is priced at 9½d. per foot, founded on the admeasurement and valuation of various portions of the work. This produces 1,395,313½, and with bridges and glass roofs, 1,414,913½. As in other estimates that we have given, this does not include water-supply (10,793½), hydraulic lifts (13,250½), warming and ventilating (22,680½).

Mr. Burgess, after consideration, arrives at the conclusion that a Central Hall is not desirable, and these are the reasons he gives:—

"It introduces the public, and to a certain extent public traffic, into the middle of the building, where quiet is most essential. It is also apt to place the judges' apartments and corridor on the exterior, and those of the bar and legal public in the interior, thus reversing the order of things; for the judges' apartments should obviously be placed in the interior, so as to secure quiet, and to enable them to consult with each other with facility.

A central hall is doubtless a very attractive feature, but, however much adapted to a county assize court, it appears to me that there are grave objections to it in the present instance; for, in the first place, it most materially diminishes the areas for light and air, and, should it be circular, it has the extra disadvantage of causing sundry of the open areas to assume an inconvenient shape. In the second place, it is a very serious addition to the expense, if carried out on a proper scale."

He adopts the "zone system": the outer zone containing offices. The second zone contains the courts, with connecting corridors for the use of the legal public on the outside, and a similar one for the judges on the inside.

The block-plan we print will best explain his general arrangement.

The innermost buildings form a third zone, and are devoted to the accommodation of the judges. They communicate with the judges' corridor, and consequently with the courts, by means of light iron bridges. The central space is divided into two areas by means of a block of buildings containing judges' apartments, the Exchequer chamber, and a small central hall.

The courts are 40 ft. from the Strand level, and are lighted by double-glazed windows high up in the walls.

The cost, adopting an average price per foot cube of 1s. 0½d., with an addition for cost of main tower, is called 1,409,409½; or, with heating, water-supply, sculpture, &c., 1,584,589½.

In his observations on choosing a style (strange position of our architecture that this should be necessary!) Mr. Burgess gives his reasons for arriving at the conviction that French Gothic of the thirteenth century is the best, and thinks that "the whole edifice should become one of those books in stone, telling us not only of the deeds of our ancestors, but of the wondrous progress of the nineteenth century in science and literature,"—though, as we must conclude, not in architecture.

There are some valuable points to be observed in Mr. Burgess's arrangements for the admission of the public.

Mr. Lockwood has a very lofty Central Hall, 236 ft. long and 72 ft. in width, and this is surrounded by a corridor 20 ft. wide. Between the Central Hall and the principal eastern and western entrances are secondary halls, respectively named in the plans the "Probate Hall" and the "Exchequer Hall." These halls, each 120 ft. by 60 ft., handsomely designed, give access to the courts and corridors. Along the north or Carey-street side of the great hall the seven Equity Courts are placed; to the south of the great hall, and to the right of the great corridor from the Strand, are the Queen's Bench courts and rooms; and on the left of the same entrance are the Common Pleas courts and rooms. Around the Exchequer Hall, the Exchequer courts and rooms and the Exchequer Chamber are grouped; and around the Probate Hall, the Admiralty Court, and the Spare Court are arranged.

A bolt 30 ft. in width separates the courts and rooms attached, from the outer mass of building, containing the whole of the departments in which the official business of the country is transacted.

On the one side of the judges' corridors (which are on a level with the bench) are the entrances to the courts, and on the other side are the judges' private and retiring rooms, each room or set of rooms being immediately opposite the court to which it belongs. At the opposite end of the courts to that occupied by the judges are corridors for the counsel and attorneys. They are connected with the great Central Hall by spacious lobbies, and with the Probate and Exchequer Halls by inclosed arcades.

The entrances for public spectators are distinct from all accesses, and are entered directly from the street. The spectators are admitted to each pair of courts separately; but cannot pass to other courts, or make the round of them.

On the subject of acoustics Mr. Lockwood speaks more dogmatically than the other competitors. He says,—

"There is probably no subject of higher importance in court of justice than the science of acoustics. In few courts yet erected has success been achieved. Some might be named (though it would be invidious to do so) in which the amount of failure is most serious; and in nearly all various schemes have been propounded for remedying the defect. Like the laws of all other sciences, those which regulate the transmission of sound are most simple. They depend entirely upon proportion. Given, the height of a platform or bench, to this add the height of a person sitting or standing, as his duty may require, and one-half the width of the room. These three dimensions, viz., the height of the platform, the height of the speaker, and half the width of room, being added together, should be the height from the floor to the ceiling. The voice of a person speaking from this position will strike the two side walls and the ceiling at the same moment of time. Reverberation is thus reduced to a minimum, and the result of repeated practice shows that this rule is perfectly successful, even to the extent of a room twice its width in length; in other words, a double square. This simple law has been adopted in many buildings with uniform success. When a room is as high as it is wide, the voice has to travel nearly twice the distance to the ceiling that it has to the side walls, and the consequence is that the auditory receive the second word from a speaker, in a direct line, before the reverberation of the first word has reached it from the ceiling." "In the case of a law court, the continuous rise of the platform for the counsel somewhat reduces the general height of the room, and, therefore, a little excess upon

the above rule may be permitted; but if the width of a court be restricted to 32 ft., it is recommended that the height should not exceed 27 ft., instead of being made 30 ft. as required by the instruction."

There are several points in the planning which deserve study; some, on the contrary, which would produce great inconvenience. For example, the "Spare Court," as it is called, is so placed that there would seem to be only one way in for everybody. The Centre Hall is handsome, with a roof of the Westminster Hall type.

The cubical contents of the building as designed, is called 27,435,389 cubic feet. Nearly half of this being priced at 9d. per foot, and the remainder at prices ranging from 8d. to 2s. (the great tower), we have a total of 1,235,533l., including the bridges. In support of his estimate, the designer mentions that the Inns of Court Hotel, stone fronted and in parts an expensive structure, has cost 9d. per cubic foot.

Some little misunderstanding exists as to the names of the judges of Designs, and we may as well remove it. Although the First Commissioner of Works, the Chancellor of the Exchequer, the Lord Chief Justice of England, and the Attorney General of the time were appointed, it was by name, and with the clear understanding that a change of ministry should not change the tribunal. The judges, therefore, really are the Right Hon. W. Cowper, M.P.; the Right Hon. W. E. Gladstone, M.P.; the Right Hon. Sir Alex. Cockburn, bart.; Sir Rondell Palmer, M.P.; and William Stirling, esq., M.P., with such assistance as they may think fit to take.

THE LANDSEER LIONS.

LONDON is unrivalled among the cities of Europe for its public statues. Other towns will not be anxious to dispute the peculiar supremacy of the metropolis in this respect. In no other spot on the face of the earth has so much money been spent for purposes of decoration, not only without taste, but under the influence of the most violent and rampant bad taste. When we have a good statue, we spoil it by the selection of an unsuitable site, of which latter fault the Iron Duke on the top of the gateway is the largest example in the world.

It is, however, happily impossible to deny that a great improvement in public taste, as regards decorative art, has occurred since 1851. At no period of history, and in no part of the world, have the taste and cultivation of one man done more for the artistic education of a great people than has been the case in England since the opening of the Great Exhibition. The Prince who projected that noble school of art has left for himself a monument more imperishable than brass in the improved taste of the nation. We trace this effect not only in the embellishment of domestic life,—in the glass, porcelain, and bronzes that fill the windows of the shops,—but in the nearer approach to beauty in street architecture, and in the gradual disappearance of that style of houses which owed its origin to the window-tax.

Under these circumstances every lover of art will gladly hail any approach to such an embellishment of London as he can consistently admire. The completion after so long a delay of the Nelson monument is an occasion of the kind. It is a noble work, of which any city might be proud. We do not disguise our opinion that to place an effigy on the top of a column is worse than a mistake. On this point there may yet be some hesitation among those qualified to decide, and we merely refer to it as a proof that it is possible to construct a fine monument on a questionable plan. Undoubtedly one of the reasons why Nelson looks so much less insignificant and unmeaning on the capital of his column than does his neighbour the Duke of York, is the shadow afforded by the Admiral's hat. A bare-headed statue in our streets gives a very painful sensation to the spectator three days out of four. It is unfitted for the climate, it is a blunder as a question of light and shade, and it is an unworthy representation of a great man, because it places him in an undignified, if not in an abject position. But, notwithstanding the dislike we feel to "mast-heading the Admiral," the column itself is graceful and well proportioned; the *bassi reliefs* are spirited, and harmonize with the general design; and the presence of the lions on the base gives unity to the entire monument, and has been a greater improvement to the *coup d'œil* than it was possible to foresee. Let us not forget, what our contemporaries appear to have forgotten, that to

Mr. Railton, the architect, is due the credit of the monument as a whole.

The lions have been spoken of in terms of unmingled praise. We think them objects worthy of great admiration, but to say they afford no ground for criticism is to glorify the artist at the expense of art, and to show greater power of appreciating excellence, however displayed, than knowledge of the requisites and of the power of sculpture. Sir Edwin's lions are majestic, and life-like. Their heads are slightly conventionalised, so as to produce on the mind an impression recalling (with a difference) the Sphynxes of Egyptian sculpture. This effect, which is far from undesirable, arises in part from the mode in which all sculptors have found themselves compelled to deal with the brow of the lion. The eye is the great difficulty of the sculptor. To represent the feature which is the very seat and expression of life by a dead surface is the most severe trial to which the resources of art can be exposed. Some of the very finest statues of antiquity fail in this respect. Some of the great artists in bronze attempted to overcome the difficulty by the insertion of silver pupils. Shadow from a projecting brow, or large, downcast eyelids, best converts failure into triumph. The statues on the tombs of the Medici have a wonderful vitality, or rather supernatural power, in their shadowy eyes. There is a Perseus, well known to lovers of gems as the work of Pyrgoteles, in which the down-cast dreamy eyes give the effect of life itself. The manner in which the great Florentine laboured at this feature may be realised by study of an unfinished marble in the Kensington Museum, in which the two eyes are totally dissimilar, the least effective of the pair having no doubt been destined for conversion into the more successful form. But in dealing with the eyes of animals, every sculptor knows that the difficulty attains its maximum. There is no eyelid to cut, no shadow to be thrown. Reproduce the actual form of the glassy ball in marble or in bronze, and the result is a cold, unmeaning stone. Sculptors, therefore, since *Æsop's* days, have been obliged to lend a frown to the lion which does not exist in nature, and this is visible on Sir Edwin's lions.

Another reason of the somewhat Egyptian expression of these fine statues is a want of incisive finish in the mane, and particularly in the beard. Here, again, it is hard to draw the exact line between a merit and a defect. No fault can be greater than a finical minuteness of detail in colossal sculpture. Broad massive forms, intended to throw sharp defined shadows, visible from a considerable distance, are most effective when boldly handled. Too much finish weakens the effect. But then the point of view has to be regarded. A subject treated in this manner must not be too closely approached. In the present instance the main defect in these sculptures is the evidence they present, that although the work of a great artist, and, above all, of a great master in the representation of animal life, they are not the work of a sculptor. We seem to trace the very sweep of the brush or stroke of the crayon on the mane; we miss the vigorous impact of the mallet. It could not be expected to be otherwise. We do not speak merely of the technical education of the hand, for the eight years devoted to the work would have been enough to accomplish this, in a younger artist, but in the essential difference in the style by which the painter and the sculptor seek to attain their object. You can conceive of the sculptor painting. He is then only sketching his real work; but for the painter to assume the chisel is, for the most part, a mistake. Da Vinci and Michelangelo were not merely painters—they were finished and perfect artists. In the Nelson lions we think that a sculptor would at once recognize the treatment of Landseer's animals as that of a painter.

In these remarks we by no means seek to depreciate a very noble work of art. It was a bold act on the part of the Government to entrust the execution to a painter; it was a bold act on the part of the painter to accept it. The public are the gainers. It would have been difficult, if not impossible, to place the task in abler hands. The want of the savage tangle of mane, which a great sculptor might have hewed out, and a certain unfinished and rather feeble treatment of the paws, exhausts the vials of criticism. Few in the millions who will gaze on this great monument will miss these features of artistic power. The few who do miss them may be made the wiser by the reflection. For a painter at Sir E. Landseer's time of life to have

produced such a work is a singular and a great success. Our tribute of admiration should be the more acceptable from the fact that it is not undiscriminating, and therefore, to some extent, unmeaning.

Another consideration appears to have been present to the artist. The monument is in honour of Nelson, not in honour of lions. They are subservient, not principal figures. What they might be supposed to signify, if ours were a people to care for such a question, it may not be so easy to say. In our earliest history lions stood for independent provinces. The two lions which the Norman kings first bore on their escutcheons were increased to three on the accession to their dominions of the rich dower of Eleanor of Aquitaine. But the number required by the architect is not thus attained. Emblems of naval victories would best suit the base of a monument erected in honour of a naval hero. But, then, these should have been sea lions. The name of the British lion has been so often invoked in turgid oratory as to have a tendency to raise a smile. But if we regard the creatures neither as the crest nor the bearing of our kings, neither as emblematical nor allegorical, but as reproductions of our well-known heraldic cognisance, we may reconcile the herald to the architect. Thus regarded, the subservience of the four giant guardians to the central features of the memorial, when the whole is seen at a little distance, and their effect on the bas reliefs is not visible, is happy and harmonious.

No less appropriate is the material. Setting aside a sort of throb of national pride which the idea whence that material came may awaken, the thought how fully captured cannon may be employed in founding a monument to the captor, nothing is so well suited to our variable climate, and, especially, to the sulphur-laden atmosphere of London. Marble cannot co-exist with coal smoke. Stone, if we except polished granite, appears a poor material for sculpture, until time has invested it with an archaeological interest. For durability, for plastic obedience to the artist, for the effect of colour under cloudy skies, and for facility in being cleaned without great damage, no substance is equal to bronze. None, unless it be the very purest marble, is so noble a material for sculpture. The finest sculptures in the world are bronze. The Tired Mercury in the Museo Borbonico, at Naples, is the very *chef d'œuvre* of classic art. Who can forget the Horses of the Sun at Naples and at Turin? Very few marble statues of Venus can compare with a bronze copy of the Venus di Medici, that is, or was, in the possession of Lord Clarendon. A recent triumph in bronze is the grand gorgeous head by the Countess Castiglioni, now at Kensington. When time and exposure have dealt somewhat with the Nelson lions, they will take no ignoble position among works in this royal material.

One person only, it seems to us, can feel aggrieved at the completion of the Nelson Monument. The owner of Northumberland House can hardly look on with satisfaction, and see his own glories dimmed. The Percy crest, which, falling to the spindle, has become the bearing of the heirs of Sir Hugh Smithson, was, as displayed over the gateway of the ducal residence, one of the marvels of London. Our country cousins always paid it a visit. It is now shrunken to the size of a lap-dog beside its bigger brothers. Is it not consistent with historic truth that such should be the case? What were the chiefs and heroes of Border warfare,—the defenders of Alnwick or of Berwick,—the gallant knights of Lancasterian struggles for the diadem of England?—or rather, what were those intestine feuds themselves when compared to the mighty struggle in which England fought for very life,—fought at one time almost single-handed with the world? Yet in our earlier records we can see what was the stuff out of which English soldiers and sailors have been hewn. A high place in the educational lore of our fathers must be assigned to the ballad of Chevy Chase. The Percy lion should recall the honoured name of Widdrington no less than that of Hotspur; and all who feel proud of the history or of the hopes of England, who rightly trace how the present has grown out of the past, and how it points to the future, will rejoice that, though not completed until more than sixty years after his glorious death, a monument, in the finest site in the city of Westminster, should record the undying fame, and represent the simple and manly features of the great captain who so well sustained the honour of our flag, and who fell in the arms of Victory at "fatal Trafalgar."

THE DESIGNS FOR THE NEW NATIONAL GALLERY.*

Our detailed description of these designs approaches a termination. We arrive at the drawings of Messrs. Banks & Barry. On consideration of the question of the retention of the present building, or in connexion with the construction of new galleries in the rear, Messrs. Banks & Barry came to the conclusion that this was "practically impossible with due reference to public convenience and architectural propriety." They say that a new *façade*, long "demanded by the public taste," would be imperative on the "erection of more lofty buildings" on the side of St. Martin's-place and Hemming's-row; that the principal floor-level of the present galleries, 27 ft. above the Square, is "inconveniently high as a general level for a new building" (the italics are theirs), "and would be unnecessarily so in reference to the street-levels in St. Martin's-place and Castle-street," where the ground is higher than on the south; and that the present rooms are too large for cabinet-pictures, and too small for principal galleries, especially when in connexion with galleries of 50 ft. in width and proportionate height; whilst that the expense of attempting to throw together and convert the galleries, added to that of the new *façade*, would go far towards the cost of a new structure entire, and be less satisfactory when done. They therefore suggest that the present structure should be retained only until galleries behind it are ready, and that, finally, new buildings next the Square should be erected. Nevertheless, they show in a design, "No. 1," a mode of connexion that would only entail the expense of two staircases and their accompaniments.

From all the considerations, they have, they say, preferred, in fact, only one complete design, "No. 2." It comprises not only the site of the present building and the north-eastern ground, but the site of the barracks and barrack-yard. A new street is contemplated on the west, precisely as in designs by Mr. Murray and Mr. E. M. Barry. Between these competitors and Messrs. Banks & Barry, there is also this agreement, that their designs would, none of them, alter the terrace and steps of the Square.

The principle of arrangement adopted in the plan of Messrs. Banks & Barry, is that of a large central area appropriated to all the galleries requiring top-light only,—and wherein as much plain unbroken wall as possible could be provided for pictures,—and of an outer circuit of buildings, of two or three stories, with highly decorated external fronts, and having on the upper floor, ranges of side-lighted rooms of moderate dimensions, which could be conveniently devoted to special collections such as those given to the nation, as in the case of the Sheepshanks collection, the Turner collection, and the Gibson sculptures. The lower floors would be for the official and residential accommodation. "Thus," they say, "the effect of huge buildings and plain walls, which would be painfully out of scale with all surrounding buildings and objects, is sought to be avoided." Excepting as to the northern range of building which follows the line of Hemming's-row, and excepting at the eastern end of the ground,—where the semicircle is adopted as the form on plan, for a side-lighted gallery,—all the galleries are parallel or at right angles with the line of the principal front. The Turner gallery would be to the east, on the line of diameter of the semicircular gallery, and inclosing, with the latter, a court. We are speaking of the principal floor. Just westward of the Turner gallery, and like it at right angles with the front, is one of the 50-ft. galleries,—separated only, at its end, from the main building, by a breadth of open court. On the transverse axis of the plan, or opposite the principal entrance, is another 50-ft. gallery. Each of these same transverse lines has upon it, northwards, or at the end of the 50-ft. gallery, a room of square form; moreover on the transverse axis, northwards, is a staircase and entrance next Hemming's-row. Between the two square rooms, there runs another gallery of 50-ft. width. Thus, omitting mention of a clear space that there is along the entire length of the back of the building of the Trafalgar-square front, the 50-ft. galleries may be said to inclose again a quadrangular space. This latter is divided by a line of galleries that are 35 ft. in width, and are at right angles with the line of the front. Between this central line and the lines of the 50-ft. galleries, but at right angles

with them, and parallel with the front, are on each side, three 20-ft. galleries,—leaving courts, of 15 ft. in width, or at one end more. The moderate sizes of the courts, and their distances from one another, have of course been settled with reference to the idea of appropriating the ground-story to other than exhibition-purposes. The large galleries and the small ones have the same floor-level; and both are lighted from above. In the proportions of skylight to width and height of room, and in their positions of skylight with reference to walls for pictures, they are similar to the galleries of the Exhibition Building of 1852. The principal staircase, in the middle of the front-range of building, has a central straight flight of steps, broken by landings, opposite the entrance; whilst on the second story, at the sides parallel with the line of ascent, are loggias. Each division of this staircase-hall is domed over, and lighted through the vaulting. The architects claim to have given much attention to ensuring easy access and circulation for visitors. In decorative character of details, the building would be a reproduction of the Venetian type of classical Italian architecture, or, we might say, of the manner of Sansovino, and that of Inigo Jones, welded together. The chief art of the design is in the massing of parts. A projecting centre is flanked by square pavilions rising higher; and at each angle of the building, there are two smaller pavilions, or one to each front, separated by a quadrant on plan. Each pavilion is terminated by a belvedere-story; to which, in the case of the two pavilions of each corner of the building, there are dome-cappings crowning the angles. On the pavilions of the centre-block there are domes of larger dimensions. In general features of the pavilions, the design bears resemblance to Highclere House, one of Sir Charles Barry's works,—though that building is rather Jacobean than Venetian Italian. Otherwise there is a resemblance to the character of Messrs. Banks

& Barry's design for the Foreign Office. There are three stories in the fronts. Superimposed orders, rustication to the ground-story, and arcuation in the third story, with perfectly studied details, may be said to constitute the decoration of the exterior; which has but two faults,—the one the not being as distinctively different as a building for exhibition of pictures might be, or should be, from other buildings, whether public offices, or palatial residences,—the other the fault of being deficient in the slight amount of novelty that is indispensable for art. Messrs. Banks & Barry, in making their design, felt the difficulty of observing, or understanding, the instructions as to preservation of the view of St. Martin's Church; and they offer an alternative plan, according to which each end of their *façade* the copied towers at each end of their *façade* grouped on one plane. This design they think would be more effective than the other, as also that the National Gallery should be first considered, rather than the church. We would merely express hope that under no circumstances will the present effect of the portico be interfered with. To say that the choice is between injuring the one building or the other, is surely an erroneous statement of the position: there would be ground enough, for present needs, even after giving up a great deal in front and eastward. From our previous notices it will have appeared that the whole ground, inclusive of the site of the barracks would provide for more works of art than the nation is likely to possess,—at least exclusive of sculpture. The apprehension under which architects are, as to setting-back frontages and losing ground, has its reasons: but it becomes an evil,—architectural effect alone considered.

Messrs. Banks & Barry have made a full statement of the space that each of their designs would provide, both for pictures, and on the floors of the galleries; we give it as it stands:—

	Lineal feet in the right line.	Superficial feet of wall.	Superficial feet of floor.	Assumed available height for hanging pictures.
ACCORDING TO DESIGN No. 1.—				
In the main galleries on principal floor	1,270	31,364	21,868	26 feet.
In cabinet galleries adjoining same	576	8,464	4,080	14 "
In Turner gallery and room for Turner drawings	180	3,720	4,150	20 "
In special galleries and rooms on upper floor	561	10,636	6,067	18 "
In the existing building when the rooms occupied by the Royal Academy are given up	1,900	34,400	19,100	16 "
The present accommodation for the National Gallery in Trafalgar-square	4,243	89,180	66,343	
Additional accommodation provided	950	16,200	9,550	
Additional accommodation provided	3,673	71,468	48,763	
ACCORDING TO DESIGN No. 2.—				
In new main galleries on principal floor	2,140	53,432	36,016	26 feet.
In cabinet galleries adjoining same	72	922	413	14 "
In Turner gallery and room for Turner drawings	186	3,720	4,150	20 "
In special galleries and rooms on the upper floor	1,250	23,242	14,703	18 "
The present accommodation is as above	4,317	89,658	62,491	
Additional accommodation provided	950	16,200	9,550	
Additional accommodation provided	3,367	73,458	52,941	

The estimate for "Design No. 2" would appear to be non-inclusive of the extension over the site of the barracks and barrack-yard: for, they say they would suggest that on the occasion of such extension, several of the halls, galleries, and rooms then to be erected should be appropriated on a liberal scale to sculpture. The "extension would also then provide additional space for paintings," or for about,—

2,900 feet lineal on the right line,
47,338 feet superficial of wall-space,
28,618 " " of floor-area.

They estimate that their design "No. 1" would cost about 253,650*l.*, and their "No. 2" about 459,200*l.*

The designs of Mr. G. Somers Clarke are two in number; but neither of them take any account of the existing building. They are marked respectively "A" and "B." As to one of the problems submitted to the competitors,—that involving retention of the present structure or parts of it,—Mr. Clarke felt that he could not furnish drawings that would assist the Commissioners: thus he has "refrained purposely from any positive action on this head." In giving his reasons for avoiding any "patchwork modification," as by additional galleries, he alludes to "bald and meagre character of the present *façade*" ("which "no professional tinkering could

successfully remedy"), and to the contracted height and width of the structure.

Each of his designs takes in the whole ground, inclusive of the site of the barracks; but he has not suggested any new street. In the general arrangement, the two designs have such features in common as would, he says, "render the adoption of either of the exterior elevations one of selection only." The plans are prepared with the object of providing for a great variety of works of art, and others, for exhibition. Besides providing for the pictures and drawings at present in Trafalgar-square, and for the Sheepshanks and Vernon collections which are at South Kensington, and for the National Portrait Gallery besides, he further proposes (and this he says is "the key" of his "scheme throughout") to "utilize the lower floors under the main galleries, having lateral lights only," as well as a "central sculpture-hall, which has both lateral and top lights," for "reception of the whole of the ancient sculpture and antiquities now very inadequately accommodated at the British Museum." His building, as shown in his "Design A," which is Venetian Gothic (the other design being sixteenth or seventeenth century Italian), would consist of three floors, namely a vaulted lower story, of 17 ft. 6 in. in the clear height; a second story, of 27 ft.; and the gal-

* See pp. 23, 40, 56, & 70, ante.

ry or principal floor, of 50 ft. to the horizontal light of the lanterns. In the height of 50 ft., further, there are two stories next the front. The mission of windows at the top of the building, in the case of this design, has not been compensated for by anything supplied. Such compensation we of course did not mean to say, when Mr. Owen Jones's opinions, was of no importance. Mr. Clarke shows a mass of wall, of very unlike what there is in the front of the Doge's Palace at Venice. This defective manner is very striking in his elevation for the front towards St. Martin's-street. Surely those who opy should at least select. There is plenty of evidence of art-power in Mr. Clarke's work, though this is not in his details, or in the grandiosity of one or both of his projects. Is it, for example, desirable to ascend some eighty steps to a principal floor, when the height involves inconvenience additional to that of the ascent—in this case, one of deteriorated light to lower rooms? Mr. Clarke's lower galleries in the front range of building, as may have been understood, are lighted entirely from the courts.

The entire plan consists of buildings that surround four courts, and of a projection jutting out eastward at the north-east angle, as well as of a similar projection westward, next St. Martin's-street. In other words, there are three longitudinal ranges of building,—of which one is the principal front, another follows the line of Hemming's-row, and another is intermediate; and there are three principal transverse ranges. Of these the most important, architecturally, is the central transverse line, which is almost entirely appropriated to the sculpture-hall. The remainder of the plan, on the principal or top floor, comprises galleries; which are chiefly of the 50 ft. width: but the eastward projection contains the residence, and a large hall and staircase. Here there is a very lofty square tower, which, at first, from its position, recalls the clock-tower of the Palace at Westminster. But on examination, the details are seen to be entirely different: the straight sides and the decoration of the summit, indeed, are formed on Italian Gothic models. Besides this end-tower, there is a large dome in the middle of the front-range of building: within and beneath this is a domical ceiling, which covers a square hall that forms the vestibule to the sculpture-gallery, and staircases that are right and left of the hall. The sculpture-gallery, 225 ft. by 85 ft., without the recesses, and 105 ft. in height, is carried up for the height of three stories. The length is divided into three parts by semicircular arches across, and at the ends, and by side-arches. The naunces of these arches are filled in with pendentives; and the arches and pendentives carry three domes; each of which has an "eye" at the top, for light. The three bays on each side of the hall are filled in with a balustraded gallery of communication on the level of the first-floor. This gallery is carried by pointed arches of the Italian Gothic character, which spring from columns. The spandrels of these arches are charged with sculpture of Gothic character; and around the lower portion of each domical vault there are figure-subjects, which seem intended to be sculptured also. The tympana of the end-arches, and perhaps those of the niches at the sides, would be painted in fresco. The soffits of the arches themselves are decorated with ornament of Byzantine character. It would be quite ineffective in execution. Indeed there is a general flatness in the whole decoration: though the main forms are so good, that detail that would wholly destroy effect of such a hall would have to be very bad. The building is entered in the principal front by two long flights of steps, exposed to the weather. The line of ascent of each is parallel with that of the front, and leads into a loggia which forms the lower part of the central mass of the front. This centre projects from the general line, as will have been understood; and it has six arches in front, in this lower story, with statues in them, and six openings to a loggia that is above. To these latter openings there are balconies, projecting on cantilevers. On the central mass there are angle-turrets. The openings of the lower story are continued to a loggia along the general front: those of the upper story are continued as windows, to light a narrow gallery,—one of two, on different levels, that have been already alluded to. At the ends of the front are square towers, with large windows wherein the stepped formation of staircases, that are within the tower, appears in square paneled-forms that are built in with the mullions or shafts. Only two stories of openings appear in the recessed portions of the front, or

general line,—the lowest story, excepting that there are ways through it to the courts, being blank-wall externally: the centre and ends rise higher than the general line; and the turrets are finished by elaborately-decorated pyramidal cappings. The square mass on which the dome is carried has angle-turrets. An alternative to the external dome is shown, in the form of a conical roof rising from a wall that is crowned by gables; and it is terminated by a lantern and spire-capping. The lowest floor, which is partly below ground in front, though wholly above next the courts, would be appropriated for storage, and various other purposes, and, where light from the courts would suffice, to the exhibition of the heavy sculptures and antiquities from the Museum. Next the courts, both in this story and the story above, the largest area of window-opening that could be formed and constructed, is provided. The competitor says that, similarly, openings might be introduced opposite; but he also says that "such features though diminishing the amount of dark storage, and increasing the quantity of exhibition-space, "would greatly deteriorate in an æsthetic point of view from the monumental character of the building, one that I have endeavoured in both designs to achieve." We must observe, once for all, that we have no faith in this sort of reasoning. We do not think, indeed, that fine-art character is to be obtained by mere provision for use: we rather urge consideration of the former, from the first starting with the arrangement of plan, and a movement *pari passu* in the direction of both ends. But we do not allow that the æsthetic expression of a building can be served whilst there is a diminution of convenience: such diminution is productive of dissatisfaction that checks any pleasurable emotion from the art-element, and is moreover opposed to the manifestation of the special art: it is under any point of view unnecessary; and it allows to be lost what are real opportunities of bringing forth new forms and phases of effect.

" 'Tis use alone that sanctifies expense,
" And splendour borrows all her rays from sense."

On the floor above, or second story of the building, the galleries between the courts would be lighted on both sides; and those of the front building would be lighted on one side from the court, and on the other from the arcade. The arrangement would allow of no wall-space; so that the sculpture or drawings would be placed on screens which would connect the narrow piers, between the windows, with two ranges of columns that there would be for the support of the flooring above, and dividing the bearing into three spans. The columns would be made ornamental. On the principal floor, besides the wider galleries (of 50 ft., and 45 ft. in width, with one gallery of 37 ft.), there would be within the 50 ft. height of one gallery, the two stories of galleries of 15 ft. wide, the lower of the two side-lighted from the front by windows, and the upper one top-lighted. Mr. Clarke gives a lengthy description of the internal finishings and decoration of his projected building; and he puts forth certain arguments in favour of his choice of a style, winding up with,— "In short, in my humble judgment, no style admits of such freedom from conventional trammels as the one I have adopted in this design,"—to wit, the Venetian Gothic.

In Mr. Clarke's other design B," the plan is varied as to the extent of accommodation, which is considerably less than that of "Design A." The central line of galleries parallel with the front is omitted. On the level of the principal floor, the lower, or side-lighted, narrow galleries are omitted, and open loggias take their place. Thus there are loggias on two stories in this design. Above them there is a third story in the decorative treatment. Each story has a range of arches, and columns on the piers,—the top-story having the arches filled in with walling, wherein there are, we think, niches in place of windows. The central feature has considerably more importance in this design than in the other: the square mass, with angle-turrets, carries a second stage, set in, of the same form on plan, and also terminated by angle-turrets; and upon this is a dome. There is considerable merit in some of the details of this part of the design; but the whole feature of the centre is too gigantic and costly for even a National Gallery. The *raison d'être* of such a feature is not like what there would be for some kind of elevated termination in the case of a church; and the identity between the dome here, and the *requisito* covering to a hall or rotunda, is not quite satisfactorily made out.

Mr. Clarke sets forth the amount of space that he provides in his principal design "A," thus:—

	Floor-space.	Wall and Screen Space.
	Sup. Feet.	Sup. Feet.
Ground-floor	37,260	23,050
First floor	80,885	37,000
Principal floor	73,890	119,670
Upper gallery, over loggia, south front	4,950	(wall-space,) 5,820
Totals	196,005	186,140

In the "Design B" the areas would be as under:—

	Floor-space.	Wall and Screen Space.
	Sup. Feet.	Sup. Feet.
Ground-floor	44,038	18,045
First floor	67,275	29,620
Principal floor	61,172	84,900
Totals	162,485	132,465

The cost of "Design A" he estimates at 779,000*l.*, and that of "Design B" at 788,000*l.*

Mr. Penrose's drawings have received a considerable share of the ridicule that has been so freely indulged in by those who had not the qualifications or the patience for appreciating designs of the different competitors. Such treatment Mr. Penrose seems to have got for himself, chiefly because one feature of his principal design is a circular court. One of his perspective views however is too obviously unfinished, to escape notice of those who look at drawings without realizing what these show; and another of his views might have been better appreciated had the large dog in the foreground been omitted. Looking, however, into the principal design, we find more than a first impression from the drawings might convey. Mr. Penrose shows in his drawings, and refers in his report, to what are called two designs; but in both of these, the entire removal of the present building is contemplated, at least ultimately. The buildings for the north-eastern ground are the same in both cases; and no attempt is made to "harmonize" this part of the design "in respect of style with the existing buildings." But levels and communications have been "studied so that the new galleries might be used in combination with the old until the time should arrive for completing the design."

Confining attention to the "Second Design:" the buildings on the new site are arranged "round an oval but nearly circular court," of which the longer diameter is 160 ft., and the shorter 160 ft. This court would be accessible for carriages; and Mr. Penrose suggests that there might be there a garden, with a fountain, or with groups of sculpture,—a statue of the Queen being made the central object. The principal story of this court is arranged with loggia; of which each recess is covered by an elliptical arch, springing from horizontal architraves, or lintels, that are carried in front each by a column, and at the other end of the lintel, by the rear-wall. The circuit of these loggias is broken by a staircase-block, wherein the ends of the steps are expressed decoratively. In his line of front, Mr. Penrose, alone of the competitors, has thought fit to advance the south-west angle of the building up to the line of the fronts of the houses in Pall-Mall East, whilst keeping the south-eastern angle much as that of the present building is. This, he says, whilst making use of a considerable space of ground now unoccupied, is "calculated to impart more dignity to the facade." In his ground-plan he provides a museum, to be entered from the circular court, under an open arcade occupying three arches of the periphery. Two other arcades, symmetrically placed, form the carriage entrance and exit,—the former from St. Martin's-place, and the latter to Hemming's-row. The principal entrance to the galleries of the upper story is recessed in the centre of the Trafalgar-square front, and is reached by external winding-steps. The doorway, on this upper story, leads into an octagonal hall; which has two ranges of arches, and is surmounted by a dome of the same form on plan. The gallery over the lower range of arches is accessible by a special staircase, or from the repairing-room. The octagonal hall has doors leading to the galleries in three directions. The decorative character of the design is that of late, but not "debased," Italian. With much that is not inconsistent with the purpose of the building, and with even considerable beauty and suggestiveness in many of the details, there is however a lack of monumental character, and some room for revision of details themselves, as where there are busts on brackets.

We have now noticed the whole of the designs. There are reports of an intended fresh competition, of the unlimited kind; but there is no reason to believe that this course would be more likely to procure the right kind of design than the appointment of some one of the present competitors. Objection may fairly be made to every one of the designs; but there are men amongst the ten competitors who can do much better than they have here done. Each of the competitors seems to require to further study his subject; and for this, the collection of designs now being exhibited, or about to be exhibited, affords the best opportunity. Such an exhibition should be largely used, not only by the architects who are competitors, but by the rest of the profession, and by the public. That there are a right way and a wrong way, however, of looking at architectural drawings, requires to be apprehended; as this fact is not at all recognized at present.

THE ART-WORKMANSHIP COMPETITION, SOCIETY OF ARTS.

At the meeting of Competing Art-Workmen on the 30th ult., Sir Thomas Phillips, chairman of the council, presided. A report from the judges, and the list of rewarded candidates, which we published last week, were read. The report said,—

"The most marked progress is shown in the class of hand-wrought metal work, more especially in iron. To two art-workmen in this class—Mr. G. Page, of Clerkenwell, and Mr. W. Letheren, of Cheltenham—we have without hesitation awarded your prizes of 10*l.* each; to the former for a reproduction of the celebrated Martelli bronze mirror case, in sheet iron, *repoussé*; and to the latter for an excellent panel for a screen, a specimen emulating the fine old smith's work of the fifteenth century. To the former we would also recommend should be given the special prize known as 'the North London Exhibition Prize,' he having produced the object which we consider manifests in the highest class the most skilful workmanship in the whole display. In Mr. Page's case we reward not only excellence but novelty, since we have not heretofore observed any such indication of power on the part of an English art-workman to compete with what has been hitherto almost exclusively produced in this most difficult branch of industry in France and Spain."

The secretary read a letter from Mr. Digby Wyatt, expressing his great regret that he was prevented by illness from attending the meeting that evening. A letter from three workmen was also read, stating that the piece of *repoussé* work in iron (No. 15), produced by Mr. Page, to whom the first prize had been awarded, was "not embossed from the flat, but struck in a cast die obtained from the plaster cast issued by the Society." The secretary said he had thought it right to make inquiry into the matter, and had been informed by Mr. Page that this was not the case.

After some conversation,—

Mr. Page begged to state that the parties by whom the exception had been taken were under a false impression in supposing that the work had been struck from a die; and he had no objection to let two or three of his fellow-workmen the plan on which he proceeded. In the first instance, he soldered the plate upon a piece of block tin. Having explained what he considered the advantages of this plan, Mr. Page said that, as to the work having been struck in an iron die, those who entertained that idea could have little conception of the cost of producing such a die; and it must be further considered that to strike iron into such a die would be an extremely difficult task.

It was ultimately arranged that the judges should hear the objections on the one side, and Mr. Page's explanation on the other, and decide whether, under the conditions of the competition, he was entitled to the prize or not.

The prizemen who were present having come forward, by invitation,—

The Chairman said it was gratifying to find that the appeal made by the Society had received so satisfactory a response. It appeared to him that the competitors generally, and especially those who had been successful in obtaining prizes, had creditably maintained the high character of their own class by the works they had produced,—works which, although in most cases they were merely reproductions of splendid examples of the taste and skill of former times, were, he might venture to say, scarcely inferior to them in excellence. It was certainly most gratifying to the Society of Arts, which had now for several years endeavoured to stimulate the art-workmen of England, to find that they had among them men whose taste, knowledge of colour and of form, and skill in execution, had

enabled them to produce works which had called forth the approbation of such distinguished artists as the judges in this competition. He trusted that those who now, it might be for the first time, had thus distinguished themselves, would have frequent opportunities, on future occasions, of showing their fellow-countrymen that they were resolved, as far as in them lay, that England should not be behind the rest of the world in works of industrial art. He begged to offer them his cordial congratulations, and he hoped to see them again in the same honourable position in future years. He trusted they would feel at all events, that the Society warmly sympathized with them in the struggles they must necessarily make in endeavouring to maintain and improve the position they had acquired. He would now invite the art-workmen present to intimate to the meeting any views they might have formed as to the competition which the Society had instituted. The council desired to know whether it seemed to them that any alteration in the arrangements would contribute more effectually to the objects in view in these competitions.

Mr. Ashe desired to make the following suggestions:—That in all cases the judges should have the original article placed before them at the time of awarding the prizes, as well as the copies sent in for competition; that the copy should be made in the same material as the original, or if the material is to differ from the original, that such change should be made in the following year or years; for instance, should the material be of iron, then the copy in the first year might be of iron, in the second of brass, &c.; that no specimens sent in shall be either painted, bronzed, or have any artificial coating, except transparent lacquer; that, where it is possible, the model selected be placed in the society's rooms, or in some other accessible place; with regard to the photographs published for the use of competitors, that the background should be so arranged as not to in any way confuse the outline of the object.

Mr. Holliday, Mr. Campin, and Mr. Nichols having made other suggestions,

Mr. W. Hawes said the great object which the Society had in view in establishing this competition was to bring out the individuality of the English art-workman, and thus give him a greater incentive to improvement. In foreign countries a workman had opportunities of obtaining a personal reputation which enabled him to dispose of his services at a much more valuable rate than when his name and talents were only known within the limits of the shop where he worked, and his productions were only distinguished as those of the firm who employed him. The Society was therefore anxious, without wishing in any way to disturb the community of interest which ought to exist between masters and their workmen, if possible to stimulate the workman to strive after that excellence the attainment of which would be equally beneficial to himself and to his master. The difficulties were considerable in the first instance. They had first to find out the means of making the great body of workmen in the country acquainted with the intentions of the Society. They had then to overcome many prejudices; and besides this it happened that during the last three or four years almost every art-workman was so fully employed that but little time was left him to enter into such a competition. Indeed, on the last occasion the number of works sent in was less than in the previous year, and the number of prizes awarded was less. Considerable discussion took place as to the cause of this decrease, and the impression the Council received at the time was that the conditions required some relaxation. This was done, and in the present instance they had not only given examples to be copied, but had allowed the men to send works produced from their own or other designs. The result was that they had on the present occasion a number of works made from designs other than those prescribed by the Council, and he thought it was in a great measure to that they owed the increase in the number of works sent in, which was nearly double that on the last occasion; the number of prizes awarded being also considerably greater. He could not but feel that a society like this, established for the encouragement of arts and manufactures, was undertaking a duty which was specially incumbent upon it, in endeavouring thus to benefit, not only the working men themselves, but art-workmanship generally, in this country; and if they were doing that, there could be little doubt that they were promoting the best interests

of the country at large. The works before them certainly proved that the prizes offered had stimulated men to exertion in their spare time, and had resulted in the production of a number of very beautiful works, which had called forth the warm commendation of the two gentlemen who had acted as adjudicators—than whom none were more competent for the task. He could not help hoping that in a few years this branch of the Society's operations would progress as much as its educational examinations had done, in which, from a beginning of about fifty candidates, they had now nearly 1,200. In like manner they might expect a similar increase in the number of competitors for their art-workmanship prizes. He would say a word or two with reference to the objection which had been raised against the work sent in by Mr. Page. He had distinctly told them that his work was not struck in a die, and had explained to them how he had contrived to execute it. It had, however, been suggested by a preceding speaker that nothing ought to be admitted for competition but what was done in the old-fashioned way. *Repoussé* work, they knew, was produced in a particular way, and it was argued that no specimen ought to be entitled to a prize unless it was produced in the manner in which all *repoussé* work had hitherto been produced. He thought if they imposed a limitation of that kind they would be acting in direct opposition to everything they proposed to accomplish by these prizes. They not only wished to reward the workman who had the greatest mechanical and technical skill, but also to encourage the adaptation of any improved appliances which his ingenuity might suggest for producing the required results. It had been more than once suggested that these prizes ought not to be adjudged by one or two gentlemen selected by the council, but that there should also be a jury composed of workmen and employers of labour. This, he thought, would certainly produce much delay, and would not work satisfactorily. They had had, on this occasion, two highly educated men—one much engaged personally amongst workmen, and well known as possessing special knowledge of such works; the other a gentleman whose artistic taste was of wide renown, and he thought they had thus the greatest possible security that the prizes were properly awarded, and with the most perfect good faith to the society and towards the workmen themselves.

Mr. Godwin, as a member of the committee for the selection of the examples for reproduction, was happy to be able to coincide in the opinions expressed as to the superiority of the collection of articles this year above those of previous years; still it must be remembered that not half the sum offered by the Society had been claimed; and it was to be hoped that in future years there would be a more extensive response to the munificent offers made. With regard to the piece of *repoussé* work to which reference had been made, he would state that when the design was selected by the committee they were fully aware of the great difficulty of the task, and if that by Mr. Page were a genuine piece of *repoussé* work, he accorded the greatest praise to it. At the same time he claimed that it should be found to be true *repoussé*, for he could not go with Mr. Hawes in saying that the mode of production was comparatively unimportant. For instance, by means of the electrotype a *fac-simile* might be produced without that manual skill which was required in the production of *repoussé* work. He quite accepted Mr. Page's assertion that it was a genuine work, but he felt obliged to make this observation in reference to the remarks of Mr. Hawes.* Touching the bronzes on the table, there was one figure exhibited of especial interest to him—that of Caractacus, produced for the Art-Union of London—because it reminded him that twenty-four years ago, when the Art-Union decided on producing artistic bronzes, and when Mr. Woodington executed for them a reduced copy of Sir R. Westmacott's "Nymph and Child," there were scarcely works in London in which such bronzes could be made; and so great was the difficulty in getting the castings that the artist himself erected works to produce them. They went on, however, year after year, and the late Prince Consort was so struck with the efforts that were then being made by the Art-Union in this direction, that he requested to have, and did have, at his own cost, an example of each bronze that had been produced.

* Mr. Page has since completely satisfied the judges and his fellow craftsmen as to his right to the premium.

He might point to the bronze before him as being equal to anything of the sort that could be done abroad: it was a work well entitled to the praise that had been bestowed upon it. The hammered ironwork of Mr. Letheren was also exceedingly good; as was also some of the brass work. Touching the glass exhibited by Dr. Salvati, all would be glad to see the ancient mode of making glass in Venice revived. At the same time he would enter a protest against regarding every form, because it was copied from old Venetian glass, as beautiful. He confessed he thought the specimen before them was essentially inappropriate in form. No doubt it presented great difficulties in the manufacture; but he thought Dr. Salvati could have exhibited others of greater beauty. In reviving the art of making Venetian glass, it was important that the models should be well chosen. In conclusion, he would express a hope that the art of drawing would form a part of every artisan's education to a greater extent than had been the case hitherto. He would like to see it made a part of the education of every artisan's child, from the conviction he entertained that the greatest advantages would result from it in after-life.

The Chairman, in concluding the proceedings, said he had to announce what he was sure it would be agreeable to the meeting to hear, viz., that another of the great City companies, namely, the Goldsmiths', had promised its co-operation in the efforts of the Society to encourage art-workmen, and had given a donation of 25*l.*, a portion of which was to be applied as prizes for workers in the precious metals, and the rest in furtherance of the educational examinations. Many of these great guilds owed their distinction, in former times, to the extent to which they contributed to the extension and perfection of various manufactures; and he thought in no other mode could they better contribute towards the same object than by co-operating with the Society of Arts in stimulating and encouraging industrial art. He was happy to find that several of them had already done so. On previous occasions it had been announced that the Salters', the Clothworkers', the Plasterers', and other Companies had agreed to contribute towards this object, and he was glad to find their example had been followed by the distinguished Company to which he had just alluded.

METROPOLITAN BOARD OF WORKS.

Injurious and Offensive Trades in London.—A deputation from the Metropolitan Association of Medical Officers of Health attended the Board at its last weekly meeting to present a memorial praying that in any Bill introduced into Parliament for the amendment of the Building Act a provision should be made to ensure proper sanitary arrangements in the dwellings of the poor, and to require that all offensive and injurious businesses should be removed from London. The following points were specially urged:—

"(1). Your memorialists conceive that, as a measure of public health, every street should be efficiently paved and drained before any house in it is allowed to be inhabited. (2). They desire further provision for protecting the open area adjoining to inhabited houses. They would wish absolutely to prohibit the erection of any building (even of a 'lean-to') upon the minimum area of ground reserved by sec. 90 of the proposed Bill, unless the special consent of your Board, or of the Local Board of Works, had been obtained to such erection. (3). They would wish to see sec. 38 of the Bill so modified as to prevent the piecemeal construction of new dwellings, with all the faults of those which they replace, an evasion of the intention of former enactments that they know to have been put in practice. (4). They have also experience to show that houses were never constructed for human habitation having been used as dwelling-houses without alteration and being very ill suited for that purpose. They would suggest that such change in the use of a building should not be made without the express consent of your Board or of the Local Board. (5). They would urge that the provisions of sec. 95 in the proposed Bill should be extended to require at least 8*ft.* of height in every dwelling-room; and they desire to be assured that under sec. 95 the Board purposes to take power for regulating by by-laws the size, position, and mode of construction of windows and other ventilating openings. (6). They do not observe that provision is made for placing in each dwelling-house a water-closet in the best possible situation; or for securing that the foundation of every house shall be so planned as to prevent the rise of damp. They regard these as points which it is especially desirable to direct by by-laws."

Dr. Druitt, president of the association, supported the prayer of the memorial, and it was referred for consideration to the special committee on the Building Act.

Hampstead Heath.—The Works and General Purposes Committee presented their report upon the result of the negotiations between Sir John Thwaites, the chairman of the Board, and Sir

Thomas Maryon Wilson, as to the purchase of his rights over Hampstead Heath. The report states that,—

"Sir Thomas argued that he saw no reason why he should sell his property at Hampstead for the purpose, as he alleged, of gratifying and benefiting certain parties who had for years opposed him in obtaining his rights. Upon being urged by the chairman to favour him with his views as to the value of his interest in the heath, Sir Thomas Wilson stated that, having regard to the price which he obtained for some land at Chertsey, sold by him to the South Eastern Railway Company, he was of opinion that the property on Hampstead Heath was worth from 5,000*l.* to 10,000*l.* per acre. The chairman expressed his satisfaction at the amount mentioned by Sir Thomas, in which expression of opinion your committee fully concur. Your committee, whilst they cannot but express their regret at the result of the negotiations, are of opinion that it would be advisable to refer the subject back to them to watch the proceedings now pending before the Master of the Rolls, and from time to time to report the progress of the same, together with such other particulars as they may consider desirable, and they recommend that course for adoption."

Mr. Freeman said they must all, of course, regret the way in which they had been met by Sir Thomas M. Wilson; but so long as he, the lord of the manor, considered himself as the freeholder of Hampstead Heath, it would be useless to try to negotiate any further with him. He moved that the report of the committee be approved and adopted.

The motion was seconded and carried unanimously.

THE TRADES MOVEMENT.

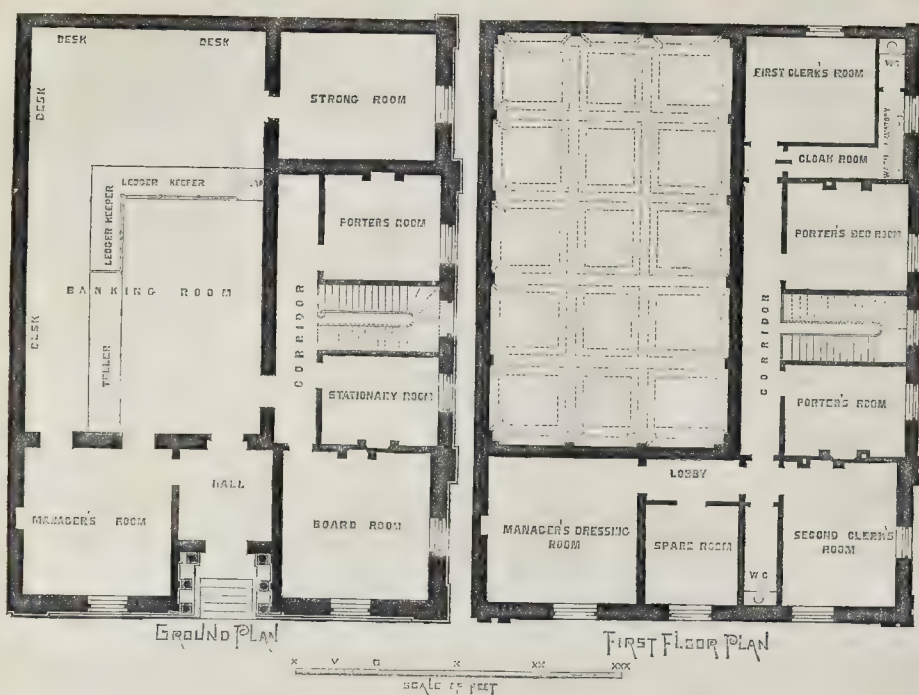
Sheffield.—A meeting of file manufacturers has taken place at the Council-hall, Sheffield, and from what transpired it appears almost certain that before long Sheffield will be visited by another disastrous strike. Two or three months ago, the file-grinders in the service of Messrs. Turton & Son, Sheffield, gave notice, and left their work in a body, because Messrs. Turton claimed the right to erect and use a file-grinding machine. The masters resolved to support Messrs. Turton, and a general lock-out would have been resorted to, but that the trades' union permitted the machine to be used, and the grinders to resume work. During the time the grinders were out, Messrs. Turton engaged a grinder named Jeffcock, who was unconnected with the trades' union, and had four apprentices, a number that is not sanctioned by the trade. When the men resumed work, Jeffcock was retained, Messrs. Turton considering that it would be unjust to turn him adrift, after assisting them in their hour of need; and also, that if they deprived him of work, the union would set their faces against him, and keep him out of employment. The union applied to Messrs. Turton to dismiss the man, and as they declined, they received notice from all the grinders that they should cease work in a fortnight. The matter was laid before the masters' association on Monday week, and it was resolved unanimously, under the exceptional circumstances of the case, to afford to Messrs. Turton the heartiest assistance. The workmen's unions, on the other hand, are, we are told, determined to have the man Jeffcock turned out of his situation.

Bradford.—Some weeks ago a notice was given by the Society of Operative Plasterers to Mr. C. Holroyd, master plasterer, in which they warned him that, if his sons—not being partners—did not become members of the society within one week, his men would strike work, and would not return thereto till their demand was yielded, and all the expenses incurred were discharged. The sons of Mr. Holroyd refused to comply with this requirement, and Mr. Holroyd's men struck work, and are at present out. The rest of the masters strongly sympathized with Mr. Holroyd on this arbitrary proceeding, and have since made efforts, but in vain, to prevail upon the society to reconsider their decision, and to induce them to permit the men to return to Mr. Holroyd's service without exacting the conditions of their notice. The consequence is that the following employers have locked out all their men who are members of the union, viz., Messrs. Benjamin Dixon & Co., Messrs. Duckworth & Son, Mr. Hargreave, Mr. William Tattersall, Mr. Samuel Sugden, and Mr. Matthew Bland. The masters, regarding the proceeding on the part of the local society as unwarranted, are about to make an appeal to the executive of the society at Liverpool. About sixteen months since, the employers and employed agreed to a code of rules for the regulation of their conduct, signed by six masters and six operatives. One of these rules distinctly stated that no alteration should be made in the rules until twelve

months' notice had been given. At the time they were ratified the operatives gave their employers twelve months' notice of a reduction of five hours and a half per week, to take place on the 1st of May next, and about seven months ago they gave them further notice of their intention to require, also, an advance of wages from the same time at which the reduction in the hours of labour is to commence. The masters made no demur to either of these notices; indeed, the first was regarded as strictly legal. But about four months ago the employers each received, through the post, a copy of new rules which had been adopted by the Operatives' Society in violation of the rules agreed upon between the masters and the men eighteen months ago, with an intimation that, if any explanation were required they could have it on application to their committee, which sat at the Oddfellows' Hall.

Blackburn.—The journeymen plasterers have sent in a three months' notice to their employers for a reduction in the hours of labour, from fifty-five hours to forty-nine hours per week, and an advance of from 2*s.* to 3*s.* per week in wages.

York.—The half-yearly general meeting of the members of the Yorkshire Association of Master Builders has been held at the North-Eastern Hotel, York. The attendance, in consequence of the importance of the business to be transacted was large, and represented the principal building firms in all parts of the county. Mr. Archibald Neill, of Bradford (the president of the Association), occupied the chair. In the circular calling the meeting a number of recommendations of the committee were given, the first and most important of which was, "That the Yorkshire Association of Master Builders join the General Builders' Association; but that we retain our present arrangement as a Yorkshire Association." A very lengthy discussion on this point was introduced by Mr. Mauld reading the rules of the General Builders' Association. The advantage of such a junction was acknowledged on all hands, and it was urged that it was only by this that reforms which were wanted could be brought about between the masters and the men, and that architects could be persuaded to furnish and guarantee the quantities, and adopt articles of agreement. During the discussion on the amalgamation of the two societies the evils of the day system of working were pointed out, and the advantages of the hour system both to man and master decried upon; and a variety of inconsistencies on the part of the workmen were also referred to. Of the latter it was stated that in some places bricks were not allowed to be manufactured by machinery, or stone dressed by the same means. These were fetters upon the building business which, along with others, must ultimately be broken, and with this end in view, a junction of the Yorkshire with the General Builders' Association was but the initiatory step. In fact, it was stated that, in certain places in the county (York included), notice had already been given to the workmen of the intention of the masters to adopt the hour system. Ultimately the full recommendation of the committee was carried. By further resolution the secretary of what had now become the Yorkshire branch of the General Builders' Association was instructed to give certain notices of strikes impending, and the names of men likely to be or already on strike were also requested to be furnished to him by employers. This was a step which, from the discussion, appeared to possess some importance, in order that men on strike might not migrate to other towns, and find employment from members of the Association. An important discussion next took place on the best means of adopting the hour system throughout the association. Mr. Mauld, whilst stating that the Birmingham association of masters had determined to try their strength with the men on this point, added that the General Builders' Association had deemed it unwise at present to take the initiative in such a matter. It was one, however, to which he thought it was most desirable the builders of the country should give their attention, in order that a uniform system might be adopted in this matter throughout the whole of the trade. It was ultimately resolved "that this Branch Association recommend to the General Association, at its annual meeting, the consideration of the desirability of giving a general notice for the adoption of improved trade rules, including the hour system, at as early a date as practicable." The subject of the best means to be used to induce architects to furnish and guarantee quantities, and to adopt



THE LONDON CHARTERED BANK OF AUSTRALIA, SYDNEY.

articles of agreement, was referred for consideration at the next meeting of the General Association of Builders, to be held at Bristol, and the Association was requested to bring the matter to a satisfactory settlement as early as possible. A sub-committee was then appointed for the purpose of watching over any bill or bills brought into Parliament affecting the trade, and also to consider any question not brought before that meeting.

Nottingham.—In the midst of bickerings and recriminations, it is pleasant to turn to a subject such as the following:—A number of framework-knitters, who have been in the employ of Mr. Samuel Morley for many years, were lately invited to the establishment in Fletcher-gate, and after having partaken of refreshments they were addressed by Mr. Morley in a kindly manner, the substance of his observations being that he felt deeply interested in their welfare, and was desirous of promoting their happiness. Acting on these feelings, he had decided upon allowing each of them a pension of 7s. 6d. per week for life. Some forty of these aged workmen had this weekly allowance granted them, independently of their earnings, and arrangements were made for its regular payment. On a subsequent occasion, about the same number of framework-knitters, employed by the firm, but rather more favourably circumstanced, met Mr. Morley, also at the warehouse in Fletcher-gate, and after being supplied with refreshments, were addressed by him in similar terms: to each of these workmen a sum of 5l. was presented. The *Nottingham Express* understands that it is the intention of Mr. Morley to continue this system of kindness, the allowance being determined by age and circumstances.

Manchester.—Professor Jevons, of Manchester, has written a letter setting forth the advantages of partnerships between employers and employed. The scheme has been somewhat freely criticised, and among those who disapprove of it are Messrs. Creed & Williams. In spite of the weight of opinion, however, the Professor is confident of

the theoretical soundness and practicability of such partnerships. The working of the plan is as follows:—

"The men have advanced to them by the capitalist such ordinary wages as are sufficient to meet current expenditure. The masters receive current interest on their capital, as is done in ordinary partnership arrangements. The capital is kept intact by a sinking fund. Efficient management and labour on the part of the masters is then compensated by an additional 5 per cent. if realised; and, lastly, the zeal and care of all concerned in the works are rewarded by a fair division of all profits exceeding 10 per cent."

The scheme has been tested in the iron trade by Messrs. Fox, Head, & Co., of Middlesbrough, and in the coal trade by Messrs. Briggs. Professor Jevons holds that this arrangement, or one similar, is the only means of securing the identity of interest between masters and men, as "it contains the great vivifying principle of political economy—that reward should be in proportion to desert."

Belgium.—The *Journal de Charleroi* of Feb. 2 contains the following:—

"Yesterday morning a strike took place almost instantaneously in all the metal works of Marbienne, including the works at Couillet. This strike is attributed to a notice which was posted throughout the various establishments, and intimated that the wages of the men would be reduced by 10 per cent. from the 1st February, owing to the depressed state of the iron trade."

Telegraphic intelligence states that a violent conflict has taken place between the military and miners in the same district, who had gutted a flour-mill, and that some lives have been lost.

THE LONDON CHARTERED BANK OF AUSTRALIA, GEORGE-STREET, SYDNEY.

The directors of the London Chartered Bank of Australia have recently erected a new Banking-house on the site of their old premises in George-street, Sydney (illustrated by our engravings). The architect was Mr. J. F. Hilly, of Sydney. The plan of the new building includes a recessed porch for the entrance to the

bank from George-street, an entrance-hall, 18 ft. by 11 ft., with a manager's room and a board-room, 18 ft. 6 in. by 18 ft. 6 in., one on each side. The banking-room, on the left, is 50 ft. by 29 ft.; it runs the whole height of the second storey, and is lighted by a circular panelled ceiling with glass panels; over this is a second roof with asbestos all round, to afford light to the panels, and also ventilation for the great room below; an arrangement of perforated beams serves this purpose. On the right of the tellers' room there is a corridor from the board-room to the strong-room (entered from the tellers' room), giving access to the porters' rooms, and a stationary-room. A private entrance in the centre of the Jamison-street front, with a staircase, leads to six rooms above, with closets, &c., and there are stairs to the roof for the porter to ascend with ease to clean the glass and attend to the ventilation. The style of the building may be called Mixed Italian. It has large arched windows with full dressings. The base course consists of very large stones, moulded; the string-courses are moulded and richly carved, with good projections. The cornice has modillions, with a carved frieze and a lofty balustrade, the piers to be surmounted by vases. The tellers' room is furnished with a Corinthian entablature all round, supported by pilasters; the floor will be of marble, and the hall will be appropriately finished.

The material used is the Sydney red sandstone, an excellent and durable building stone, as we understand, from which the greater part of the city has been constructed. The bank was established in Sydney in 1852, and possesses a paid-up capital of one million, with a reserve fund of 100,000l. The first chairman and founder of the bank was the late eminent merchant and shipowner, Mr. Duncan Dunbar, who, upon his decease, was succeeded by Mr. Fane de Salis, also one of the founders, a gentleman long engaged in Australian commerce, and distinguished as one of the originators of steam communication with Australia.



THE LONDON CHARTERED BANK OF AUSTRALIA, SYDNEY.—MR. J. F. HULLY, ARCHT.

CONDEMNATION OF THE ST. KATHERINE'S STEAM-PACKET WHARF.

RECENTLY attention has been drawn in the pages of the *Builder* to the bad condition of London wharfs. Knowing the ruinous state of some of them, we delayed to speak, hoping that steps would be taken to improve their condition. The danger to be feared at last grew so imminent that we could hesitate no longer in pronouncing an opinion,—an opinion founded on a personal inspection of the wharfs in question.

We particularly pointed out the stores and landing-stages of St. Katherine's Wharf as being in a most ruinous state, remarking that some jobbing attempts were being made to stave off the danger.

The danger was so apparent that we anticipated it would not be left to exist very long. We are glad that we were right in our conjecture. Last week the wharf was visited by the Customs' surveyors, and was at once condemned. Strict orders were given to land no more goods alongside, nor to use the stores in connexion with the company's steamers until the premises and landing-stages were reconstructed and put in a safe and proper condition for the shipment of goods.

We should be sorry that anything said in the *Builder* should lead to the injury of a company or an individual, or that any number of dependent working men should suffer thereby through lack of employment.

Such may now be the result, but the preservation of human life is paramount to the interests of a few; and a state of things fraught with considerable danger should not be allowed to exist from any false delicacy on the part of those whose duty it is to prevent it. We are glad to see the work of demolition as an advent to restoration is now going on at St. Katherine's Wharf. It is to be hoped that the improvement this time will be thorough, and not according to the "penny wise and pound foolish" policy. Our river architecture, if we may be allowed to use the word, should begin to exhibit a little taste. The frontages of our river warehouses offer a new field for a little fresh development.

The present appearance of the sides, except at very short intervals, is not in any way remarkably picturesque, as seen from a boat. It is, however, not too late. With a Thames Embankment above London Bridge, with the consequent river frontage that it will eventually develop, no reason should exist why improvement should be limited in extension to London Bridge.

Returning, we hope that the owners or lessees of other wharfs on the line of the river will look to the state of their holdings, and do in time what is necessary to be done, for their own credit's sake, and not from sheer public compulsion.

COMPETITIONS.

New Church, Worthing.—A church is to be erected at the east end of Worthing, and is to be of stone, with tower and spire, and to cost £5,000. The designs of Mr. Truesitt submitted in competition for this church have been selected by the committee.

WESTMINSTER PALACE AND THE INTENDED PUBLIC BUILDINGS.

ADMIRAL SIR AUGUSTUS CLIFFORD, dating from the Houses of Parliament, writes to us as follows:—

We are about to erect several public buildings, namely, the Courts of Law, the Public Offices in Downing-street, and the National Gallery, and to spend large sums of money upon them, and I think it a duty to point out the defects in the one in which I am now residing,—*Westminster Palace*. Whatever may be the merit of the elevation or the beauty of the public chambers, which I do not deny, nothing can be worse than the interior arrangement of the residences. The passages and corridors are dark and gloomy; the windows a their iron frames most inconvenient; when that difficult to open, and *vice versa*; and the upper diamond panes are often blown open by the wind; but above all, the ventilation,—there is scarcely a day or a week in which the rooms are not full of smoke and soot, damaging

and destroying the public furniture and the property contained in them. Instead of having built ornamental chimneys, like Burghley, Cobham, or Longleat, and many other houses in England, the smoke is attempted to be carried along a horizontal shaft to two hideous iron turrets, one over the Peers' Entrance, discreditable to those who planned and those who built them. I am sure that all I have stated would be corroborated by Lord Charles Russell, by Sir Denis Le Marchant, and all who reside in the palace. It may be now too late to remedy these defects; but it will be some consolation to endeavour to prevent their being repeated.

THE PROVISION OF HEALTHY HOUSES.

MR. McCULLAGH TORRENS has given notice in the House of Commons that on Wednesday next he will bring in a Bill to make better provision for the dwellings of mechanics and labourers in large towns.

We would urge strongly that the Social Science Association and the Committee of the Society of Arts, who have jointly framed a Bill with the same end in view, should seek, rather than press their own Bill, to co-operate with Mr. Torrens, and obtain such a measure as may best meet all views.

THE HABITATIONS OF THE POOR.

AN inquest has been held by Mr. Humphreys, at the Green Gate Tavern, City-road, relative to the death of Catherine Shay, aged two years and two months.

From the evidence of the mother of the deceased, it appeared that the family, consisting at one time of the husband (a printer) and herself, with four children, occupied for some years a wretched little room at No. 10, Frederick-place, St. Luke's, the rent of which was 1s. a week. The husband and an elder daughter died there within the last two years. She was quite unable to account for the child's death. She found her dead in bed.

Mr. R. Bruce, parish surgeon, said he had constantly been busy about the people in that house. The eldest girl died under circumstances precisely similar to those of the deceased's case. He measured the room carefully, and found that it did not contain cubical space sufficient for the breathing of one adult, much less for two adults and four children. The cause of death was blood-poisoning from want of proper space in which to live. The house in question was the one in which the first case of cholera that occurred in the parish broke out. It was altogether unhealthy.

The jury returned a verdict, "That deceased was found dead from blood-poisoning, from want of proper space wherein to live."

ARTIST-LIFE.

At the meeting of the Cirencester School of Art mentioned in a recent number, Mr. J. B. Atkinson said, in the course of his observations,—I think there has seldom been a country and seldom a time in which the art student has had more to encourage him in his labour, and more promised in return for his talent and industry. What is needed is not a great work, but an honest work, downright work;—not a hasty ambition, but slow and sure steps, so that the height may be attained possibly in the end, but not too hurriedly for fear of an overthrow. And perhaps I may be allowed to speak to you of the danger which I think frequently besets art students—the danger of ambition. I think there is frequently this danger—that the student desires to be before his time an artist, and he therefore becomes rather impatient of the intermediate steps. The very fact that reward comes soon is perhaps a snare. It is a laudable ambition that a youth should desire to support himself—that he should gain an independence; and yet, I repeat, the very fact that a youth can so soon earn money is itself a difficulty in the way of future study. For this reason I hold it to be desirable that each young man should set himself this problem—to win independence, and at the same time day by day to maintain the character of an art student. It is not altogether an easy thing to do; but I believe that men who, in art and every other intellectual pursuit, have

attained to greatness, will have been met at the outset by this difficulty, and will have found means to conquer it. The best things do not immediately pay; and depend upon it, it will be better for you if, in your art studies, you seriously consider, not so much what will pay at once, as what will pay in the long run, and what your position will be ten or twenty years hence. And therefore, as I have said before, it will be well for you to combine art study with the calling of an artisan. Let the two work in harmony, and be carried on together. But I have somewhat diverged from the point to which I just now adverted—that of ambition. Ambition is laudable, but it requires to be checked and guided. Nothing is more common than false ambition—that vain and vaunting ambition; and I think that some of the most corrupt and worst periods in art have resulted from ambition ill-directed—from a vain, showy ambition; not the desire to do that which is good and great, but a desire rather to obtain the instantaneous and hollow applause of the multitude. Now, it is well that a man should make friends with his conscience,—that ambition and conscience should join hands,—that the man should feel that it is more important to do duty than to obtain applause,—and that he should try to do, however small the work may be, a good work—a work that will last—a work that he himself can look upon in after time, and say, "This work was honest; into this work I threw much labour; it is the result of many hours, of many days, of many weeks; it expresses the aspirations of my mind,—a desire to do something worthy of myself, and that may speak as art to the world." I will suppose, as I am bound to suppose, that you are in earnest, and wish to do something good and worthy of yourselves. I will suppose that you have the power by nature (and if you have not some power by nature it is a waste of time to devote much labour upon art).—I will suppose, I say, that you have the natural power and the industry which, under the direction of your excellent and assiduous master, will enable you to obtain a knowledge of the rudiments of art. With some expenditure of time you will master those rudiments, you will obtain accuracy of eye and precision of hand, and you will gain a knowledge of perspective, of geometry, and just those things which constitute the grammar of art. And then, having obtained these powers of expression, it will remain to be seen what thoughts are in you, what ideas you have to express. Let me just speak to you a few words of nature. Nature is the great storehouse to which you will have to go. Nature is everywhere, infinite, all around you, and your eye must be open to gather the materials: for from nature you must get all that you have to put in your pictures. Let me refer to the experiences of one or two well-known men. When I have been in Rome it has been my privilege to be acquainted with the late John Gibson; and I see among your casts one of his well-known works, a bas-relief of "The Hours." I spent one evening at his house, and I need not tell you how much interested I was in looking through a series of volumes containing pencil jottings of subjects picked up during a long life. It was his habit when walking from his studio to the *caffè*, or when in the country, to mark accurately whatever he saw. I have seen him stop as a horse passed through the street, and he would observe the points of the horse, how the rider held his seat, and he would go home and make a note of what he had seen,—not in words, for he kept his journal in lines and forms. In the same way, if he saw two children grouped, he would stop, observe the lines, notice the figures, and put down the group; and so these volumes contain the journal of a long life, and subjects too numerous for his hand ever to carry out. Let me now beg your attention while I say a few words upon the conduct of life and, perhaps, even the relation of religion to art studies. The student has need of quiet, of leisure, of meditation. Late hours, dissipation, and indulgences are absolutely destructive of the artist's life. I believe that such excesses not only lead to a waste of time and the undermining of health, but that some of the most corrupt periods in art have been allied to social dissipation. I need, for instance, only refer to the state of art before the French revolution. Art then was as rotten as the body politic. As to religion, it would, perhaps, be presumption in me here to speak of it. Of course, in the general view of art, all divisions and sects go for little or nothing. I would merely remark that almost all the great art epochs the world has known have derived

their best inspiration from religion. I may also say that there is a natural religion which will give sanctity and high purpose to art, and that the more you look at nature as Providence and the workings of an all-present God, the better will be your art developments, and the higher and purer the beauty infused into your works. And if I may speak from my own limited experience, I would say that such works as Paley's "Natural Theology" and the "Bridge-water Treatises" will give to your art studies an aspect and a direction which will make your works all the better. I think you will then, in the changing aspects of the seasons, in morning and in evening, in the twilight, in sunrise and in sunset, and in the various workings of Providence, which expresses itself in these works of nature, see that which you may presume humbly to imitate and interpret through art. I see the papers of to-day tell us of the death of the French metaphysician, Victor Cousin, whose chief work was on "The True, the Beautiful, and the Good." It would scarcely fall within our province now to indulge in such speculations, but I may remark that the theory he promulgated was that there was an indissoluble oneness between beauty, truth, and goodness, and that that is the highest work which shows that triple union. It may not fall to the lot of many of you to build a church or to paint directly a sacred picture, but the more that you can connect with the smallest humblest work a sense of duty, the higher that work will become in intention and expression, and it will then become in some sort a service to God. Pursuing art in this spirit, I think it will be delivered of much of the corruption which you cannot fail in observing throughout the course of art history. It will lose the taint of evil in some great degree, and will attain to greater purity of expression. In conclusion, I would say that if you desire to acquire what is good in art, you must make yourselves good. You must live the beauty you would seek to portray. The character of your works must necessarily be in accordance with the complexion and structure of your minds; and if you succeed in making those minds honest and good, then your art as by necessity will become praiseworthy and admirable.

ACCIDENTS.

Four men at Wolverhampton have been sent to the South Staffordshire Hospital, suffering from the effects of the giving way of some scaffolding at premises that are in course of erection at the south end of Gladstone-terrace, on the North-road; and the house-surgeon fears that two of them will not recover. The building was being put up for Mr. Baker, of Dudley-street, by Mr. Ford, builder, of the North-road, and Mr. Owen, carpenter, of Montrose-street, jointly. The scaffolding came down in consequence of the breaking of the pullock, which was of pine, 5 in. wide by 3½ in. thick, and broke at about 2 in. from the wall. Upon examination it was found that it had fractured at a knot, which ran diagonally through nearly the whole width of the beam. The scaffolding was put up chiefly by the injured workmen.

At Cirencester an accident has occurred at extensive bacon-curing buildings, which are being erected at Pit-acre, reducing a considerable portion of the structure to a state of ruin. The frost having penetrated the new material, two of the arches in the cellar collapsed, and a large wall above soon after gave way, doing damage to the amount of 300l. or 400l. The supports of the arches were removed a short time before the accident. Fortunately the men had left work before the casualty occurred. Some of the walls left standing are in a very shaky and unsafe condition, and will probably have to be pulled down and re-built.

At Bristol a workman has fallen from a scaffolding while working at some houses in course of erection in Pembroke-road. The fall was 10 ft., and the man fractured his thigh, and received other injuries.

A shocking accident has occurred in one of the tunnels on the deviation line of the Cambrian Railway, between Glandouey and Aberdovey. The tunnel is on the line to Aberdovey, and is about 700 yards in length. For some time past men have been employed in carrying out certain alterations, in accordance with the directions of the Government inspector of railways. About the centre of the tunnel there is a disused shaft, which had been formed for the

purpose of drawing up materials, and on the completion of the tunnel, this shaft was filled up and arched over. A short time since this arch was observed to have given way about 15 inches, and orders were issued that the arch should be taken down and a stronger one erected. The men, ten in number, had not been at work for more than a quarter of an hour when the props which had been supporting the shaft gave way, and a mass of material, estimated at about 100 tons, fell, burying the two men and injuring several of the others.

LIVERPOOL INSTITUTION OF ENGINEERS.

This association, which was founded in October last, has issued its rules, and is getting into work. The objects of the Institution are the reading of papers and the interchange of ideas on engineering, and kindred scientific subjects. The Institution will consist of members and associates. Members must be mechanical, civil, mining engineers, or shipbuilders. Associates shall be such persons as are not eligible as members, but who are engaged or interested in scientific pursuits. Mr. Donald Pope is the honorary secretary.

THE STABILITY OF DOMES.

AMONG the papers read at the Royal Society in the course of the past year, were two that had a direct bearing upon the science of architecture. Mr. E. W. Tarn, M.A., was the author of the papers alluded to, which treat of the strength of various kinds of domical structures, built of solid materials, as stone or brick.

In the first paper the hemispherical dome of uniform thickness was discussed; and in the second paper the same principle of investigation was extended to Gothic domes of different acuteness of "pitch"; to the parabolic dome, the elliptic dome, the ogival or Moorish dome, and the hemispherical dome of varying thickness.

We propose to lay before our readers an outline of the method of investigation adopted by the author, and of the results obtained.

A thin slice or rib is supposed to be cut out of the dome by two planes, making a small angle (say 2°) with each other as the axis of the dome; this rib is then treated as an ordinary arch, by the methods adopted by modern writers on the subject. Take EF as one of the joints of the domical rib, and let N represent the horizontal thrust of one-half of the rib upon the other half, and acting at the crown or vertex; and call P the weight of the portion of the rib included between EF and the vertex, which weight acts at its centre of gravity. Then the tendency of these two forces being to produce rotation of the upper part of the rib about the inner edge E of the joint EF, the "moments" of the forces P and N taken about E will balance each other. Thus, if w is the lever-arm about E of P (acting at the centre of gravity), and y that of N, the equation of equilibrium is—

which gives

$$N \cdot y = P \cdot x,$$

$$N = \frac{P \cdot x}{y}$$

from which equation N is found when P, x , and y have been calculated.

To find P and x , it is necessary to make use of the ordinary formulae of the integral calculus for finding solidities and centres of gravity, according to the curve which forms the contour of the dome. The value of y is at once obtained by the geometry of the section. Having thus found the algebraical expression for N for any given joint EF, its arithmetical value for various positions of the joint can be calculated, until we find that at which N is greatest, or at which the dome itself is weakest. (This laborious process is necessary, as the ordinary rules for finding a maximum will not apply to these formulae.) The position of the weakest joint is that which it is of the greatest importance to discover, since the dome will, of course, have a tendency to fail at that part; and by knowing its position, the architect will be able to strengthen the dome and counteract its thrust on the "drum" by means of an iron belt placed around the structure at its weakest part. The following Table exhibits the position of

the weakest joint in domes of various forms, and also the horizontal thrust at that joint of a rib forming the 180th part of a dome 20 ft. diameter, 12 in. thick throughout, and weighing 125 lb. to the cubic foot:—

Form of Dome.	Position of Weakest Joint.	Horizontal Thrust at Weakest Joint.
1. Hemisphere	Makes angle with springing line of 21° 01'	15.
2. Gothic; the radius drawn to the vertex, making with the vertical an angle of 10°	Ditto ditto 17°	8.7 "
3. Ditto ditto 22½°	Ditto ditto 13½°	8.415 "
4. Ditto ditto 30°	Ditto ditto 11°	7.757 "
5. Parabolic; height from springing being equal to half span	At springing line	7.90 "
6. Elliptical; axis major vertical; minor to major axis as 5 : 6	One-third of length of semi-minor axis above springing line	9.967 "
7. Ogival; contour the "curve of sines"	One-sixteenth of the span above the springing line	6.5 "

In the hemispherical dome, whose thickness of springing is twice that of the vertex, the weakest joint is found to be at a height of 4-11ths of the external radius above the springing line; and the thrust of a rib forming the 180th part of such a dome, whose span is 20 ft. and thickness at springing 12 in., is equal to 55.73 lb.

The height of the pier or "drum" which supports the dome being given, the thickness requisite to resist the thrust has to be calculated. To do this the forces N and P are transposed to the point E (by the principles of mechanics), where they act in their original directions, and have the values previously calculated. We then have four forces whose tendency is to turn the pier over on its outer edge; namely, N and P, acting horizontally and vertically (respectively) at E; F, the weight of the portion of the rib below E, acting vertically at its centre of gravity; and Q, the weight of the pier itself, also acting vertically at its centre of gravity. The moments of P, F, and Q about the bottom edge of the pier will act in the opposite direction to that of N; since the moment of N about that point tends to throw the pier over outwards, and those of P, F, and Q to draw it inwards. In order to insure stability in the structure, twice the moment of N is equated to those of P, F, and Q; and the equation thus obtained is of the third degree in respect of t , the thickness of the pier; a solution of which can be easily found by Horner's well-known process.

The following are the values of t obtained for the several domes above mentioned, the height of the pier being 50 ft. and its weight 150 lb. per cubic foot:—

Hemisphere, uniform thickness throughout	$t = 2.45$ ft.
Hemisphere, springing twice thickness of crown	$t = 1.9$ ft.
Gothic, pitch 22½°	$t = 2.259$ ft.
Parabolic	$t = 2.244$ ft.
Elliptic	$t = 2.44$ ft.
Ogival	$t = 2$ ft.

No allowance is here made for the domes being strengthened by a belt at the weakest part.

Although it was necessary to use the integral calculus in finding the formulae from which these results were obtained, yet in their practical application the only mathematical knowledge required is a little algebra and trigonometry, with which any person may calculate the strength and stability of a dome of given dimensions, whose contour and proportions agree with any of those named above.

INFANT-SCHOOL, PARISH OF ST. MARY, BATTERSEA, WANDSWORTH COMMON.

This school has recently been completed, and consists of a room 38 ft. by 19 ft., with a classroom attached, 12 ft. by 10 ft. It is built of stocks, banded with red brick, the heads of the windows being filled in with herring-bone work. The roof is covered with tiles, and surmounted by a hexagonal bell-turret. The greater part of the expense of the building has been borne by Mr. P. Cazenove, of Clapham Common. Mr. Ferrey was the architect; and Mr. Jarrett, of Croydon, the contractor.

THE SANITARY CONDITION OF
SOUTHAMPTON.

The sanitary committee have prepared a long report for presentation to the local Board of Health at their next meeting. In it the reporters say,—

"The committee have to report that the last death from cholera within this borough occurred on the 11th day of October last; the first death having taken place on the 15th day of June preceding. The cholera visitation, therefore, lingered in Southampton over a period of four months, and from which cause 100 deaths occurred out of 320 cases. In its early stages nearly two out of every three persons attacked died; but during its progress, and particularly towards its close, a much smaller proportion of cases proved fatal."

"The committee regard these results as being of the most satisfactory character; and, however painful it may be to lose as many as 100 of the inhabitants by cholera, there is every reason to believe that, under Providence, the means placed by the local Board of Health at the disposal of the committee, and the energy with which they were applied, tended in a marked degree to limit the spread of this epidemic—truly to be so called—and to confine the visitation to a limited portion of the town."

"The committee call attention to the fact that the visitation in question, viewed as an epidemic, has manifested itself in the slightest possible degree. It has not traversed the town, and has not visited the neighbourhood; it has been most severe on one side of the river Itchen, it has not attacked the other; and although the west bank of the river is thickly populated, the east bank, that receives the prevailing winds that pass over Southampton was not affected; whilst portions of Portsmouth and St. Denys, lying on each side of the higher part of the river, and in the immediate vicinity of the town, which escaped. Part of Portsmouth is almost a continuation of Northam, which latter place suffered considerably, but cholera has not extended beyond it. The parts of the borough of Southampton, exclusive of Portsmouth, which have suffered, are the lower portions of the town, such as are almost exclusively occupied by the industrious and poorer classes of the community; whilst the upper and middle parts of the town, with the exception of one very defective habitation, and all the better classes, as they are generally distinctly called, have escaped."

TO TEST BLUE LIAS LIME.

In reply to your correspondent "L. E.," I beg to inform him that a direct and easy method of testing blue lias lime is the following:—Calcine two or three cubic inches of the stone into a crucible; pound the calcined lime, make it into a stiff paste with water, and form it into a ball, which immerse in a glass of water. If it is hydraulic it will set under water, so as to resist the pressure of the finger, in a time varying from twenty-five hours to a fortnight or three weeks, according to the nature of its composition, and if its quality is good, in a month it will be as hard as weak limestone. S. M.

HIGH-PRESSURE BOILER EXPLOSIONS.*

In reply to the inquiry of "Beta" as to the best mode of preventing explosions in boilers under pressure of a column operated in connexion with kitchen-ranges and hot-water supplies to baths, and for domestic purposes, I beg to submit the following efficient and inexpensive plan, which I have applied with unflinching success for the last few years.

The disastrous and fatal boiler explosions which have occurred during the late severe winters led to its application and adoption.

The danger arises in consequence of the flow and return pipes connected to the boiler becoming frozen solid, thereby preventing the expansion of water, which increases according to the temperature imparted by the fire around the boiler, and unless relieved, will certainly burst the boiler or pipes at the weakest place.

To prevent this, I attach to the flow-pipe, as near the boiler as possible, or even to the boiler itself, at any part of same most convenient, a wrought-iron tube, half an inch or 3/8ths in diameter, bent U shaped, like a siphon, which being made as many inches in length from top to bottom as the height of hot-water cistern or feed-cistern to same (if the hot-water cistern is in feed and worked under a column of water) is in feet from bottom of boiler to the top of feed-cistern, allowing three or four inches to spare.

This bent tube being half filled with mercury, will balance the column of water under pressure from the hot cistern and supply to same. A column of one inch of mercury will balance a column of one foot of water.

If any undue pressure arises in the interior of the boiler in consequence of the flow and return pipes being sealed by reason of frost or deposit of lime from very hard water, the mercury is

quietly displaced, until a vent is given and boiler relieved. If one end of the bent tube have a cast-iron cup (sufficiently large to contain the whole of the mercury), and a small bend to conduct the same into the cup, will prevent loss of mercury whenever blown out, and by unscrewing the small bend, the mercury will pass into the syphon tube for future use.

This plan is perfectly self-acting, and can never fail, there being no "sticking" of valves, which never work when required, nor leaking of fusible plugs, which I have tried without success. The mercury cannot set fast or become frozen at any temperature we experience in this climate.

This plan is equally applicable to hot-water heating apparatus for churches and other buildings, where frequently, owing to the fire not being lighted during the week in frosty weather, the pipes or the boiler itself become frozen, and explosions occur, which have proved fatal in several instances.

WM. THOS. CRUMP, Engineer.

Sir,—Your correspondent "Beta" need be under no apprehension of danger with a properly-constructed high-pressure boiler, if he will take care to have the following arrangements carried out:—

The cold-water, or pressure-pipe, should take its supply from a cistern in the roof, and not direct from the street main, as in the latter case the pressure is often irregular, and generally greater than is necessary for forcing water up to the first floor only.

An expansion pipe should be carried from the boiler up to a height of a few inches above the cistern, and thence over into it; the hot-water service can be continued upwards for this purpose if sufficiently large. This is, in fact, a safety-valve, and will allow the escape of steam or water when the pressure is too great. Care should be taken to have the cold-water pressure on only at such times as the water is likely to be required in the chamber or bath-room; at other times the boiler should be used as an ordinary kitchen boiler, and supplied by a small feed-cistern, with high-pressure ball-tap, and screw-valve for shutting off the connexion with the boiler when required.

By means of this simple arrangement the cold water can be used at pressure, or turned off and made to supply the boiler for domestic purposes in the usual manner, and there can be but little danger of the pipes rising from the boiler being frozen. B. A.

BOULEVARD.

As a good answer may always be given to a stupid question, you may perhaps not object to answer this query:—What is the real meaning of the term "boulevard," as applied to a street? I am under the impression that it means a continuous street merely: in this sense the Marylebone and City-roads are "boulevards." The general impression is, that it means a wide road, with trees in it, as this description applies to the old boulevards so well known in Paris. Rottenrow is now very generally called a boulevard—why, I do not know; and the late Sir Joseph Paxton designated the great glass arcade that he projected for the metropolis.

An enterprising friend of mine is about building some tenth-rate houses, in a tenth-rate street near Islington, and means to call the said project a "boulevard." I should like to have your opinion as to whether this is a correct designation for so magnificent an undertaking.

IGNORAMUS.

*. * Boulevard or boulevard means literally, in French military language, a bulwark or rampart. The walk formed on the site of abandoned fortifications came to be so termed.

THREE THOUSAND POUND CHURCHES.

For the information of your correspondent, I beg to state that the contract for St. John's Church, Union-road, Battersea (as advertised at the time in your columns), was 2,950*l.*, accommodating 736 persons, including a western children's gallery and space for a large organ: a few hundred pounds were afterwards spent in extra foundations, &c., &c.

This church was built to the approval of the Incorporated Society for Building Churches. And I beg to suggest that the fairest way of giving the information required would be to give a list of the churches and the names of the architects who have built them at the above cost.

It is in the details of construction that the economy is achieved, and a sketch of building would not and should not be all-sufficient for the purposes of your correspondence.

If committees require to be reassured, such a list of churches as you might give would be the best assurance they could have, and those who have solved the problem might rest the benefit.

No small sacrifice is often made by an architect in bending his mind to the design of cheap churches; although, by the study of outline and effective massing of the parts of a plain building, he is as often rewarded by the increase of his knowledge of proportion and the uses of light and shade, and so receives some compensation for the absence of those beauties of detail which especially charm his heart. A SUBSCRIBER OF SEVENTEEN YEARS.

THE POSITION OF TOWN SURVEYORS.

A SURVEYOR to a town is generally a stranger who comes from some distance, and is, at the taking up of his appointment, put to some expense and inconvenience; but in good faith he moves his family and goods to a new home. He has one thought, which gives him confidence and supports him in all his doubts and in all his embarrassments,—one thought which no other can equal; and if once lost, no other in the whole range of his mind could supply its place. It is not the fair records of his past career which helped him to success, though they are consolation; but it is the character he carries in his heart, which he knows will never deceive him as long as he never deceives himself. The inward consciousness of right exercising itself is the standard under which he fights the battle of his livelihood.

But, sir, why must a town surveyor be a target for a party to shoot at, which, in too many instances, he is? He ought to hold his office quite independent of and invulnerable to local feuds, and he wishes to do so. His desire is to do his work, and not to interfere with anybody's bickerings and petty jealousies; and, on the other hand, these party broils ought not to jeopardise the position of a town surveyor, who really has nothing to do with them. A surveyor ought not to care who are the members of the board he serves; but he is actually made to dread a change, because Mr. Somebody is coming in who intends to upset everything that was sanctioned by Mr. Somebody else who is going out, and all done, of course, for the good of the town. Well, then, Mr. Somebody else who comes in aims his blows at the surveyor, because the surveyor was elected to office by Mr. Somebody who has just gone out. If the surveyor cannot stand all this of course he can resign, pack up his things again and be off to where he came from. And then Mr. Somebody else who has just come in will have the pleasure of voting his own man to the office of town surveyor, who will be a very clever and honest surveyor indeed, until another Mr. Somebody shall arise and repeat the ruthless game.

I have laid this matter open to you because facts which are grievances must be uncovered in order to be cured. And, I believe, the evil I complain of is national and requires to be dealt with by the Legislature. For it not only affects the position of surveyors of towns, but it affects the inhabitants as well. It must be detrimental to a town to disaffect or remove its surveyor. If he is disaffected, can you expect him to feel all that interest in the welfare of the place which he would like and ought to? And if you discharge him, will another at once fill the office as efficiently? Will it not take some time to become familiar with the new situation? and will the newly-appointed man not alter many things the other did, and involve fresh expenditure? It always is so.

It also destroys confidence, and civil engineers will despise such appointments, rather than compete for them; though they ought to be posts of honour as well as of emolument.

Perhaps some of your readers will communicate their views upon the subject, and suggest some legislative measure for revising the precarious tenure upon which town surveyors hold their office. A TOWN SURVEYOR.

HEIGHT OF FURNACE CHIMNEYS.

In building furnace chimneys, can any of your correspondents inform us as to what are the considerations, or data, by which to properly determine the height they should be carried? W. M.

MASTERS AND APPRENTICES.

At the Petty Sessions held on the 28th inst., at Sunbury, J. J. Jordan, of Union-square, Islington, appeared to answer a summons taken out by his master, Mr. B. W. Maughan, grainer, of Goswell-road, "for that he, being an apprentice, did, on the 21st and 23rd of January, 1867, neglect and leave his work at Teddington." The plaintiff said, on the 21st of January I sent my apprentice to Teddington, to proceed with the graining at Mr. Climan's houses. He left for that purpose, but went to Kingston upon pleasure. On the 22nd he went to work, and on the 23rd I went, in company with Mr. C. Powell, my foreman, to Teddington, and found my apprentice absent from his duty. He did not arrive till 9-30, two hours and a quarter behind time. Mr. Taylor, painter, proved that the defendant went to Kingston on the 21st on pleasure. The foreman corroborated Mr. Maughan's statement, and proved that there was nothing whatever to prevent the apprentice being proceeded with on the 21st. That the Tuesday, when Jordan did work, was colder weather; and further said, that in the ordinary course of his duties he

* See also p. 83, ante.

visited the work on the previous Saturday, and found the defendant hiding away his time.

The defendant, in reply to the charge of going to Kingston, said he had the face-ache, and that it was too cold to work; and on the Wednesday he intended to commence his day's work at 9.30.

The Bench informed the defendant that he was liable to a month's imprisonment; that it was clearly proved that he had worked on Tuesday, a day equally cold with the Monday; and that it was quite impossible to allow him to commence his day's work at any time he pleased, contrary to his master's orders. That it was not sufficient for him to be at his work, but that he must work hard and properly. He was fined one week's wages, 16s., and 6d. costs. The Bench further remarked, that if summoned again he would receive a month's imprisonment.

POTASSIUM AND LEAD PIPES.

A QUERY.

IN your very interesting and valuable scientific journal, of September, 1863, is the following paragraph:—

"Dr. Schwartz, a chemist, of Breslau, has made a discovery that cannot be too highly esteemed in a sanitary point of view, and by passing a hot solution of the sulphide of potassium through leaden pipes, the interior face is transmuted from the metallic state to that of a sulphide in a few minutes, at a cost too insignificant to mention."

This announcement being read by so large an amount of the public as that through which your journal finds its way, must doubtless have been tested by this time, and its value pretty well ascertained; may I, therefore, be permitted to inquire, through its columns, whether any of its readers has found this simple process to answer, especially in such parts of the kingdom as, for instance, in Scotland, where the waters are naturally very free from solid constituents?

P. S.—It would be desirable that it should be stated, whether the pipes tried were quite new, or that they had been some time in use.

COMPENSATION CASE.

AT the Surrey Sessions-house the case of Price v. The South-Eastern Railway, tried before Mr. Under Sheriff Abbott and a special jury of seven members.

For the claimant there appeared Mr. Montague Chambers, Q.C. and M.P., Mr. T. Hughes, M.P., and Mr. J. O. Griffiths. For the company, Mr. Lloyd and Mr. Shiel.

In opening the case Mr. Chambers said that the house was the "Wellington Arms," in the Waterloo-road, in respect of which this claim was made. Mr. Price was now and had been for many years a licensed victualler, carrying on a business that had still eighteen years to run, at a rental of 120l. 10s. a year. When the Charing-Cross station and London Bridge Junction were commenced, the course pursued by the company was almost incredible. There were three dwelling-houses on the right-hand side of John-street. They bought the two intermediate houses adjoining the house of the claimant, pulled them down, and only left a bit of wall standing. The effect was that what was formerly an internal wall belonging to the plaintiff an external wall, a wall exposed to wind and rain, which it was never intended to stand. The company pulled down the internal walls of the two intermediate houses, and did the work in such a clumsy manner that they left bits of time and pieces of paper on the plaintiff's internal wall, which was left exposed to the elements and the weather. The result was that cracks soon made their appearance in the wall, which showed that what surveyors call structural damage had taken place. The company dug up at the foot of the wall, and put in a deep pit below the old foundation, put a lot of concrete in it, and then built their back pier over a portion of the footing of the dwelling wall. It was obvious that the greater the weight put upon the footing the farther down it must go, and the consequence was that the cracks immediately appeared. If meddled with at all, the wall should have been underpinned, or, as he would call it, self-supported by concrete, just as the company supported their own wall. There was no other proper course to adopt. The result was structural damages to the wall. Some time afterwards the company set workmen to fill up the vacant space between their wall and the wall of the "Wellington Arms," and they did so with dirt and muck of a similar character, which converted a dry cellar and kitchen into unusable places, where water continually oozed. The very carelessness and clumsiness with which the work had been done would of itself have given a claim for damages. Another ground for claiming damages was that, after a certain time, there was a right to light and air. The heads under which damages were claimed were, first, structural damage, whereby water was admitted; second, the necessity for rebuilding the wall, which had been dangerously exposed to the elements, and got cracked and dangerous; and, third, the deprivation continuously of the light and air which the premises formerly possessed.

The South-Eastern Company had since, in fact, become the landlords of the whole premises, having paid Mr. Littlejohn, Mr. Price's original landlord, 7,000l. for his interest; and they had, therefore, a right to insist upon Mr. Price keeping the premises in good and substantial repair, while by their own act they injured the whole building, rendered the basement useless, and, by shutting in the house, made the bedrooms untenable, while the walls in every direction were cracked. Mr. Price had to pay 120l. a year rent; at that price it was a profitable investment, so long as he was not interfered with; but, when the company came and knocked down his very valuable business by buying the two houses next to him, pulling them down, and then snatching their fingers at him, it was time to seek for redress. That redress had been sought ever since April, 1863, but the company had persistently declined to give any compensation.

Mr. Richard Littlejohn was called, and examined by Mr. Griffiths. He deposed that he was formerly a business as a builder at Lambeth, and took the land in question for building six houses upon originally. They were built under the superintendence of Mr. Field, the ground-landlord, very substantially. This witness corroborated counsel's statement generally, notwithstanding cross-examination.

Mr. Marsh Nelson gave detailed evidence, illustrated by reference to plans presented to the jury, as to the nature, extent, and causes of the damages to the premises. The substance of the evidence was, that the walls, the injury to the doors and windows, and generally the structural damage, which he estimated could not be made good, sound, and substantial, fit for habitable and business purposes, under 380l.; and in the mean time while the wall was being rebuilt and repairs made, which would take about six months, the value of the house would be diminished. Light and air were so much obstructed by the material which had been put in, that the houses originally stood, they were worth 300l. a year; and if the plans had been carried out for building at the back, they would have been worth 500l. a year more, instead of them in. He estimated the capitalised loss from light and air at 576l., in addition to the cost of repairs.

Mr. Nelson was subjected to a long and minute cross-examination by Mr. Shiel, and re-examined by Mr. Chambers, his evidence in chief remaining unshaken, or rather materially strengthened by the new points brought out.

Mr. William Lovejoy, examined by Mr. Hughes.—Was an auctioneer and valuer. Got experience in valuing public-house property. In consequence of the railway-bridges being built and the blocking the house up, Mr. Price's property was damaged to the extent of 100l. a year. He would sell for that much less than before. The other damage was loss of trade to the amount of 100l. a year, and the loss of profits. To capitalise that at five years' purchase would make the loss 1,000l.

Other witnesses were examined for the plaintiff.

Mr. Lloyd then addressed the jury at some length for the defendants. The true theory, he said, was that the cause of damage was in the internal alteration and construction of the house and the weakness of the walls. If any portion of damage was due to the construction of the railway they were bound to pay it, but he was not able to adduce to show that it could be done at very small expense. No doubt the house was worse off as to light and air. But what was air? No one feels the air. He contended that there was no damp or cracks caused by the railway, and it was not strange that Mr. Price should let cracks remain and deteriorate the structure of his house, when by a very slight expense it could have been prevented. It was gross negligence on his part to permit the continuance of the damp and cracks. It was his own fault and neglect, and the amount of damage caused by the railway would be very small indeed. It was not strange that Mr. Price should make such a claim as that of Mr. Lovejoy. As a matter of law Mr. Price could not claim any compensation for loss of trade profits by reason of the use of the railway.

Mr. Lovejoy would not say that any neighbour had a right to build and block in unless prescriptive right, obtained by twenty years' possession, prevented it. Neither vibration nor noise was a ground for compensation by use of the railway itself. As to "blocking up," which Mr. Lovejoy called 500l. loss, no such claim could be maintained against the company.

Mr. Robert Ritchie, surveyor, said he was in great practice, and accustomed to appear for railway companies and also for claimants (thinkers and surveyors, and not claimants). Had examined those premises, and knew what were called structural damages. The south side had not subsided at all. He saw no fracture, nor was there any crack in the wall. The cracking appeared to be what was the cause of cracks in such a building as this in one of two houses had been converted into one. He would naturally look for more cracks in such a house than in one built as a single house. The cracking appeared to be that they do not go through the wall. There was no necessity to take down the wall; 20l. would be sufficient to stop up all cracks and fill Mr. Price's cellars with concrete to keep in good repair; or perhaps 30s. more, over all 80l., would be sufficient to make good the foundation, by stopping the percolation of the water into the cellar and kitchen.

Mr. Charles Stephenson (of the firm of Messrs. Stephenson, Government surveyors), Mr. Edward Norton Clifton, architect and surveyor, and Mr. Frederick Mar- and gave evidence which substantially agreed with that of Mr. Ritchie.

Mr. Lloyd, in addressing the jury, offered to put the foundation of the wall in good order, at the cost of the company, and to agree to any compensation for the loss which had been caused by their works to the basement. He also admitted that the damage from deprivation of light and air might be taken at 20l. a year, and capitalised at ten years and a half purchase. If the plaintiff put the case to the jury, he would stand upon his strict legal rights.

Mr. Chambers, in a lengthened reply, summed up all the facts which had been proved by the witnesses for the plaintiff, and contrasted these facts with the utter breakdown of the suggested rather than stated theories of the witnesses for the defence; but, in conclusion, rather than raise any future legal question involving possible future litigation, he withdrew any claim for either increased cost for gas or loss by non-letting of the beds, and said he would be content with a lump sum for the whole damage.

The Under-Sheriff having briefly summed up,

The jury retired, and after an absence of about twenty minutes, returned into court, when they gave a unanimous verdict for the plaintiff—Damages, 750l.

PROVINCIAL.

Norman Cross.—The new Police-station and Sessions-house has been opened. The building stands flush with the turnpike road near the Norman Cross Inn, and adjoining the field where once stood Norman Cross barracks. No money has been expended on ornamental purposes. It is a plain edifice of the grey bricks made at Whitehouse, and stone dressings for the principal windows: of the ground plan an idea may be formed from the letter H, with the stroke in the lower portion. The building stands north and south, the latter or front aspect, which is of one story, having three forks. The centre fork

terminates in a bay window, which lights the sessions-rooms: on the eastern side is a flat window lighting the public room; and on the west a similar window to the magistrate's retiring-room and superintendent's office. The line across the letter H represents a two-storied part of the building which is on the floor, divided into a sitting-room on one side for the superintendent and on the other for a constable. Between these rooms runs a corridor with fire-places, and from it access is gained to two cells for prisoners. On the line with the sitting-rooms are duplicate kitchens and out-houses for the superintendent and constable; above the sitting-rooms are two bed-rooms. The ground extends all round the building, the front and sides being laid out ornamentally. The sessions-room is 7 yards long by 6 yards wide. The cells are well-ventilated and warmed from the corridor. The contractors were Messrs. Richardson, Treson, & Tyers, of Yaxley; and Mr. Hutchinson was the architect. The builders' contract was for 1,164l.

Bury.—The entire renovation of the Athenæum Lecture-hall is now nearly complete. The designs of the ceiling and cornices have been restored, and the walls coloured in the original tints. The dais under the windows and in front of the principal entrance has been removed, the orchestra taken away, and that end of the room made good, while at the same end two doors in keeping with the rest of the hall open into a lobby giving access to the street, and to two artists' rooms, the whole forming a suite, which by throwing back the folding doors will form a commodious and conveniently situated supper-room. The chandelier, purchased second-hand at a cost of 200l. many years ago, will be removed, and the Athenæum-hall will be lighted by seven glass gasaliers originally made for the room, the larger occupying the centre, with three on each side. The architects employed were Messrs. Bacon & Bell; and the contractors, Mr. Frewer and Mr. Jackman.

Wednesbury.—The Local Board of Health now occupy their new offices. These public buildings are situated in Holyhead-road, opposite the Post-office and Russell-street, a very prominent and convenient position. The style of architecture adopted is Italian. The flat surfaces of the elevations are executed with best front stock bricks. The base is of Coddall stone, ashlar drafted, and pitched in square blocks, and finished on the top with a mould of Attlebury stone, in which material the principal portion of the stone work is executed. At each angle of the front are stone quoins, rubbed on the face and chamfered in the joints. These project from the face of the brick work to form pilasters, running from the base to the whole height of the elevation, and are supplied with bases and capitals. The doorway, in the centre of the facade, forms the principal entrance, on each side of which is a brace of columns of the Roman Doric order. Above the doorway is a central window, with a pilaster on each side. The basement consists of cellars. The ground-floor contains vestibule, entrance-hall, offices for surveyor, assistant surveyor, clerk, clerks' assistants, nuisance inspector, and collector. There are also a side entrance-hall, water-closet, and lavatory, and principal staircase. The entrance-hall is laid with blue and white Bedford squares, and has a mahogany hand-rail and ornamental cast-iron banisters. The first floor contains a landing, waiting-room, stores, committee-room, and the board-room, which is 86 ft. by 24 ft. 6 in. in area, and 15 ft. in height. The fencing forming the boundary to the Holyhead-road consists of a dwarf wall, coped with Derbyshire stone, and ornamented with cast-iron palisades of ornamental design, with spaces between for three pairs of gates. The architects were Messrs. Loxton Brothers, of Wednesbury; Mr. J. Wilkes, of Birmingham, was the contractor. The cost was 1,700l.

Chester.—The Custom House in Watergate-street is about to be raised to the ground. A new erection will be raised adjoining Trinity Church, now in course of construction, the plans of Messrs. Kelly & Edwards, architects, of this city, being approved of; and Mr. Hughes, contractor, Aldford, being appointed the builder.

Dorchester.—There was a very severe storm at Dawlish, Devonshire, lately, and the sea carried away about sixty yards of the Terrace-walk, near Kennaway tunnel, with the piles which protected it.

Penance.—The borough surveyor, says the *Cornish Telegraph*, has just completed plans, and accounts of the expense, of recent improvements,

with the view of submitting the same to the Secretary of State, whose approval must be had prior to permission to borrow the money on the security of the district rates. The Alexandra-road, now open for eighteen months, has cost 2,539*l.* 17*s.* 7*d.*, viz., in works, 1,294*l.* 6*s.* 6*d.*; in land, the very heavy price of 1,187*l.* 17*s.* 11*d.*; in memorial drinking-fountain and pedestal, 57*l.* 13*s.* 3*d.*. Alverton-lane was from 13 ft. to 21 ft. wide, it has now been made a uniform width of 30 ft., with a terrace 10 ft. wide, and a sharp hill has been very much eased; this cost, in works, 86*l.* 6*s.* 5*d.*; in land, 264*l.* 15*s.* 11*d.* = 301*l.* 2*s.* 4*d.*. Parade Passage, from 4 ft. to 5 ft. wide, is to be made 10 ft. in the clear, for a length of 115 ft., at a cost of 65*l.*. The eastern Esplanade is to be lengthened 100 yards, and the carriage-road widened. This is 23½ ft. above the West Cornwall Railway, and overlooks the whole bay. A wall 26½ ft. high, 4 ft. thick, and 165 ft. long, must be built, and 300 ft. of curb laid down. This will cost about 650*l.*. 2,000*l.* have already been borrowed; 1,600*l.* more are needed, and have been lent, subject to the Secretary of State's sanction.

Shrewsbury.—The foundation-stone of the new Market-hall has been laid by the mayor, in presence of the corporation and others. The architect is Mr. R. Griffiths, of Stafford, and the contractor Mr. A. Barlow, of Stoke.

Bradford.—The chief stone of the new building for the Institution for the Blind has been laid. The site of the intended building is in a new street, to be called Cambridge-street, near Christ Church, and between North-parade and Manor-row. The edifice, the style of which will be Gothic, will be erected from the designs of Messrs. Knowles & Wilcock. The plot of land on which it is to be erected has a frontage of 60 ft. to North-parade, and of 160 ft. to the new street, which will terminate at the corner of the new Club-house, in Manor-row. The buildings will consist of large work-rooms for the blind, with a shop and offices for the sale of the goods made at the institution, besides other accommodation for the purposes of the charity. Attached to the building will be two shops and premises in North-parade, which will be let for the purpose of securing a return of rent. The works have been let to the following tradesmen:—Masons' contract, Messrs. J. Burnley & Son; joiners', Messrs. Garforth & Walsley; plumbers', Mr. John Schofield; plasterers', Mr. Thos. Cordingley; slaters', Messrs. Hill & Nelson; painters', Mr. John Lupton. The total cost will be about 6,000*l.*

STAINED GLASS.

Roman Catholic Church, Dudley.—Four memorial windows have been placed by subscription in this church, two being to the memory of the Hon. and Rev. G. Spencer, one to the memory of the Rev. Thos. A. Moore, and one to the memory of the Rev. James O'Sullivan. The windows are in the aisle, and consist of one lancet light each, and have been designed, drawn, and coloured in accordance with the period of the architecture,—the thirteenth century. The objects chosen for illustration are full-length figures of the patron saints of the memorialised, viz., St. George, St. James the Greater, St. Ignatius the Martyr, and St. Thomas; and inscriptions appear at the base of the lights, pointing out to whose memory the windows are erected. The figures are on a white grisaille ground, and the work has been executed by Messrs. Hardman & Co., of Birmingham.

DISSENTING CHURCH-BUILDING NEWS.

Huddersfield.—The large new chapel for the New Connexion Methodists, situated in the High-street, is now rapidly approaching completion; and although not quite finished, has been opened for divine service. It has been designed in the Decorated style of the fourteenth century, by Mr. William Hill, of Leeds, architect, who was selected in a limited competition of architectural designs, publicly exhibited previously to selection. It was at first thought that 5,000*l.* would be sufficient to cover the cost of the new structure. The Building Committee, however, by accepting the design which approved itself to their judgment, materially augmented their liabilities, making the estimated cost of the edifice, with the organ (which will be opened about April next), nearly 10,000*l.* The general design of the exterior of

the building—the architectural and artistic details of the *façade*—the high-pitched timber roof, together with the general finish of its several parts, have rendered the building an object of interest during its erection. The new building occupies the site of the New Connexion Methodist Chapel built in the year 1814, and stands clear of others—the four elevations being built of pitched-faced wall-stones in courses; this stone being from the Longwood-edge quarries. The ashlar and other hewing-stuff are from the contractor's quarries at Crosland-hill. The ground plan is a parallelogram, 96 ft. by 60 ft., with transepts, vestries, and staircases projecting from each side, and at the north end, making a total width of 88 ft., outside measurement, and total length 96 ft. The principal and most picturesque *façade* faces the south. The ground or floor-line is set up, or raised, 3 ft. 6 in. in the centre of the front from the causeway. Two towers flank the main or south front, and rise to a height of 84 ft. from the plinth. Above the roof, the towers are octagonal on plan, each side being ornamented with an elongated opening with paneled base and trefoil head. The whole of the woodwork is stained and varnished throughout the building. Seats are provided for upwards of 1,300 persons, allowing 20 in. for each. The gallery is lighted by six brass polished coronas, containing each twenty-four lights, suspended from the roof. A number of starlights light the ground floor. These and other gas-fittings have been furnished, under the direction of the architect, by Messrs. Hart & Son, of London. The total cost of the building will be about 9,500*l.* The contractors for the works were Messrs. Graham & Sons, for masons' work; Robert Whiteley, for joiners', carpenters', and smiths' work; H. Garton, for plumbers' work; John Brook, for painters' work; and D. Tunncliffe, for plasterers' work. Mr. William Smith has acted as clerk of works. The stone carving has been executed by Mr. S. Ruddock. The chapel has been warmed by Messrs. Haden & Son's hot-air apparatus. On each side of the organ gallery is a memorial window. The one on the right is in memory of Mr. Joseph Robinson, erected for Mrs. Robinson and her son. It was supplied by Mr. Barnett, of Newcastle. The subject is a full-length figure of Christ, with the text "Feed my lambs." That on the left side has been erected by the teachers and scholars of the Sunday school, in commemoration of the Sunday-school jubilee, held in 1866. The subject also is Christ, and the text is, "Suffer little children to come unto me."

Books Received.

The Channel Railway connecting England and France. BY JAMES CHALMERS. Second edition. London: Spon, Bachelorsbury. 1867.

In this second edition of Mr. Chalmers's scheme for a tubular railway at the bottom of the British Channel, the author states that his scheme will be illustrated by drawings covering 120 ft. of space in the Paris Exhibition this year; and in a letter to railway shareholders in England and France in the Appendix, he says,—"A model of the Channel Railway, which would not cost over 6,000*l.*, could, with the consent of the French Government, be placed in the Lake of the Bois de Boulogne. Such model, if decided on by the beginning of March, could be ready by the middle of April, when it could be submerged, and connected from shore to shore in three days; and, if only one in ten of the millions that will visit Paris next summer would pass through it at half a franc each, it would not only pay for its construction, but leave a profit of 100 per cent. As a Railway Congress in Paris during the ensuing summer could discuss the other and interesting questions with much advantage, I respectfully commend the subject to the attention of railway shareholders."

Miscellaneous.

SOCIETY OF ENGINEERS.—At the meeting of the Society of Engineers held on Monday, the 4th instant, Mr. W. H. Le Feuvre, president, in the chair, a number of gentlemen were balloted and duly elected members and associates. A paper on Safety-valves, by Mr. Thomas Balwin, was read and discussed.

ST. AUDOEN'S CHURCH, CORN-MARKET, DUBLIN. The paper on this old building, read by Mr. Thomas Drew, at a meeting of the Institute of Architects of Ireland, and to which we referred at the time, has been printed, and includes a plan. Pains have been taken to make the writing to the latter as illegible as could be desired by the warmest admirers of the fashion.

ROMAN REMAINS IN BATH.—The Bath city architect, Mr. Charles E. Davis, writes suggesting the formation of a local museum, for the preservation of all portable remains of the Romans found within the corporate bounds, the corporation appointing a competent person or officer to seek after and make drawings, or obtain possession, of all antiques discovered within these limits. Strange that such a suggestion should still be necessary!

THE "BLACK SEA," WANDSWORTH-COMMON.—This favourite spot, says a paper called the *Parochial Critic*, "is in danger of being destroyed. Hitherto a long lease has preserved it, but that protection has been removed. Can Earl Spencer legally sell the 'Black Sea?' He was checked in his contemplated appropriation of portions of Wimbledon-common. Custom and long usage are against him. The inhabitants of the locality should be up and doing. Large portions have been enclosed, others destroyed, and a village is already spreading itself over the common."

BURN YOUR OWN SMOKE.—"R. T." writes,—"Stir the fire and let the blaze mount amidst the reeking smoke, then note how the flame consumes it (buoyant particles of coal made light by heat before being arrested by Constable Combustion). I propose placing a gas detective up the chimney to entrap General Smoke, and his army of blacks. In an inverted funnel to receive the smoke, a round burner should blaze in the centre of the tube. It would increase the draught, and prevent the smoke from puffing into the room. [It has been questioned by men of science whether blacks once formed can be consumed in this way.]"

A NEW "PACIFICATOR."—An "infernal machine" for war is described by General Daulié, of the French engineers, in *La Liberté*. It is a cannon with divergent tubes to throw musket-balls. They are so arranged that at a distance of 600 metres the balls will be spread over a space of 15 metres, and at nearly equal distances from each other. The charge of powder is calculated to propel two balls at once from each tube. Thus a field-piece will be capable of holding 16 tubes and discharging 32 balls at once, which at a distance of 600 metres will strike upon a space occupied by 50 men in two ranks, those of the second rank being liable to be struck by the balls which have passed through the first.

STONE CUTTING AND POLISHING INVENTION.—Mr. E. W. Uren has obtained a patent for two machines for dressing granite and other stone. The tools, which are of the ordinary description of those used by stonemasons, are attached to a vertical ram, which acts after the same manner as a Nasmyth hammer, and can be propelled by steam, water, or other power. The tools are so arranged as to be able, it is said, to do all the work which is at present performed by manual labour, including all the varieties of clefting, scabbling, fine pick dressing, tooth-axe dressing, &c., and at less cost. For surface polishing another machine is had recourse to, having a rotary instead of a vertical motion. A number of stones can be dressed at the same time.

THE NEW FISH MARKET AT YARMOUTH.—The whole length of the quay of the new fish wharf will be 750 ft., beginning immediately contiguous to the gas-works, and extending as far as the boat-house of the Naval Asylum. Running parallel with this, and of oblong geometrical figure, the market, 750 ft. long and 40 ft. deep, will be built. It will be paved, and quite open like a shanty to the quay, which is also, or rather was to be, paved. The market on the west side will be level with the quay, that is as to its floor. At its back will run a macadamised road 60 ft. broad, and stretching as far as the paved quay. This road is to be 3 ft. below the floor of the market, in order to make the process of loading carts with herrings as easy as possible. A double line of tramway will run along a 60-ft. road at the back of the market, and a site for refreshment-rooms within 60 ft. of the building is also provided for. A look-out of good altitude is to be built.

The Builder.

VOL. XXV.—No. 1254.

Ten Shillings a Day at Sydney.

HAT is the worth of money? The reply to that simple question depends very much on the fact of who is the questioner. For, practically speaking, money means different things to different people. So much is this the case, that even intelligent and thoughtful persons are by no means agreed among themselves as to many points relating to the nature of money. A ten-pound note, on the face of it, means an order to the Bank of England to pay to the bearer something more than two ounces and a half of standard gold, certified by legislative authority as to its purity and its weight. We have at this element of certitude. What the value of gold itself may be to-day, or to-morrow, or ten years hence, legislation can no more directly fix than it can alter the value which gold had a century ago. How many pounds of flour, or hundredweight of coal, or carats of diamonds, an ounce of standard gold will purchase, depends not on legislation, but on the relative abundance, from time to time, of gold, and of flour, of coal or of diamonds. Every man has to make his own bargains. All that Government can do to help him in this respect is to provide him with a convenient and intelligible set of counters, by the aid of which he may make them the more readily. And the value, that is to say the difficulty of obtaining the material, of which these counters are made, is one great element of their perfect convenience, and of their fitness for their object.

Even this simple, intelligible, truthful view of the pound-note is disputed by many persons, who, perhaps, ought to know better, but who would feel affronted to be told that they were, in this respect, at least, simply uneducated. But leave their case out of view for a moment. A bank-note being, philosophically considered, such as we have stated, how different an object does it appear to different persons. The very rich man has no need of money. He knows little or nothing of coin or of notes. Except on occasion of going abroad, he may not require for weeks or months together to see the colour of money. Accounts, indeed, he has to do with, and so will he tell you; but his payments are made by signing his name on a printed slip of paper. Of what use are notes or gold to him? His ordinary expenditure is regulated by his house-keeper, or his steward, or his bailiff, and paid by cheque. If he fancies any purchases, they are sent home to him, and paid for by cheque. He requires no loose cash for cab-hire, for his carriage is at call. If he wants a railway-ticket, his servant takes and pays for it for him, and it goes into his weekly account. An

odd half-crown for charity is forthcoming in the same manner. To men of this mode of life—and they are not rare in England—a ten-pound note is, an object of little more regard, and of less practical utility, than a sheet of note-paper. Look at the other extremity of the scale. See the poor, cold, hungry child, to whom the corner of a silk handkerchief, carelessly peeping from the pocket of an infirm old gentleman, presents great and sore temptation. For it needs only a twitch and a run, and that handkerchief will be his own, and readily convertible into food and warmth. It will make to him, for some hours at least, the difference between keen suffering and positive enjoyment of life. What is a ten-pound note to him? Set aside the difficulty that he would have in cashing it—for respectable cashiers would be sharp in their inquiries as to how he obtained it, and his friend the dealer in silk handkerchiefs would exact a discount approaching close upon all per cent. for performing that needful office,—leave this out of the question, and let the symbol be the fair equivalent of two hundred shillings—of two thousand four hundred pence, and what a road to decency, honesty, and comfort might the possession of that sum open to the child who yet lingers on the verge of theft? It would form the difference between want and luxury to his parents for the whole bitter and murky winter.

To another class the ten-pound note is an object of even keener interest, for it is not absolutely unknown to them. It is an object that at times comes within their grasp,—though its visits are like those of angels, short in duration and far between. So much, with more or less certitude, is the annual income; so much the weekly expenditure. Unfortunately, it is the former that seems always to partake of the less, and the latter of the more. But somehow or other, by hard striving, or by hard pinching, or by more or less of both, ends are made to meet. Christmas comes round to a household out of debt, and respectability is maintained. How welcome to such a household, whether that of anxious clergyman, of maiden or widow annuitant, of young professional man living on hope, or of thousands in the like condition, is an unexpected ten-pound note. It means the counsel of the physician for the sickly wife—the turning point between hope of recovery and languishing illness or death itself; it means the extra half-year's schooling for the hope and future staff of the family; it means the certitude that the faded silk or the rusty and disreputable great-coat shall not have to run the gauntlet of the centre aisle of the church for yet another winter. It is to those who can barely subsist in respectability, and who, so to do, are often compelled to live in discomfort, that money, when it comes as a god-send, brings perhaps the keenest enjoyment.

Reflections such as these arise in the mind from the perusal of a very remarkable document which the craftsmen of Australia have lately addressed to their English fellow-workmen. An idea of how different a thing the same sum of money may be to different people comes out forcibly as we read. Ten shillings a day for wages!—what a golden land! Who would stay in the old country that can secure a passage to the new? Who need chaffer about 6d. a day more or less, when he has but to reach the antipodes in order to double his wages?

So many have thought and do think. So it is, upon paper, say those who have tried. But, first of all, wages in the new country, whatever be their amount, are more hard to be earned than in the old. There is more shifting from job to job. There is more difficulty in finding jobs at all. There are more blank days in the year, not at the order of trades-union committees, but because hands are more plentiful than work. And then work, when you get it, is harder to be performed, because there is an absence of the numerous appliances and aids to

labour which the stored-up labour of centuries has created in this country. There are no well-lighted, well-aired, well-warmed shops for carpenters; no lofty smithies, with the obedient slavery of the steam-engine urging the blast for the smiths and turning the lathes for the fitters, and doing all the drudgery for all sorts and conditions of craftsmen. In England the skilled and able workman can (if he set up no tyrants of his own manufacture), as a rule, command steady work, and perform it under circumstances of great comfort. In Australia he has to scramble for work, and to execute it, when he obtains it, out in the air, as best he may. What is a wet day to a London carpenter? It involves the expense of an umbrella. Six shillings thus laid out will serve him for two or three years. What is the result to an Australian carpenter? The loss of his day. A wet day costs the one 2s. or 3s. a year; it costs the other 10s. every time it occurs. That is one item in the account.

Thus, then, stands this account. "Employment is always hard to obtain, and, when obtained, is mostly of short duration." Under this qualification, masons and bricklayers earn 10s. per day; plumbers the same. Carpenters and joiners, 9s. per day; plasterers the same. Painters, 8s. per day. Bricklayers' labourers, 8s. per day. Quarrymen, 8s. to 10s. per day. Iron trades from 5s. to 10s. per day. In qualification of the rate of earning comes the amount of employment. Masons, carpenters, and joiners, bricklayers and plasterers, about two-thirds only employed. Bricklayers' and plasterers' labourers, only about one-half; painters only about one-third; in the iron trades only about two out of ten in employment. "They are in a most deplorable condition."

Against this hardly-earned rate of wages what is the *per contra* of expenditure. For a house of four small rooms, from 14s. to 20s. per week rent. Firing and lights, 4s. per week all the year round. Vegetables 250 per cent. more than in England; 8d., for instance, for a small cabbage. Bread and meat are cheaper: 5d. for the 2 lb. loaf; 5d. per pound for beef and mutton; pork and veal, 7d.; bacon and cheese, 1s. 6d.; milk, 8d. per quart; groceries about the same as in England, only very inferior; boots and clothes about the same, but so much less durable as to cost some 120 per cent. more than in the old country. No apprentices taken by employers; and no occupation for the young. Such is the account of their condition which the Carpenters' and Joiners' Society of Sydney have furnished to the Amalgamated Society of the United Kingdom.

At a time when the relations between the producers and the employers of labour are in so unsettled a state, it is a service to both parties to call attention to the prospect of the labour market in other countries. An accurate acquaintance with the condition of the foreign or of the colonial workmen is of no little importance to him who remains at home. Emigration is looked to as a powerful means of enforcing demands which are obstinately contested on either side. That capital can emigrate, and that readily, we all know. No less certain is it that labour can do the same. The question for the labourer to consider is, what becomes of the emigrant? Does he better his condition, or the reverse? It is in this respect that information is of value; and it will prove more reliable the more fully the facts that are reported coincide with the natural operation of any ascertained principles of social life.

There is no room to doubt that when a virgin and fertile country, possessed of a favourable climate, and unburdened with political restrictions, offers its acres, at an almost nominal price, to the tillage of emigrant labour, the benefit that may be secured by emigrants of a certain class is very great. For the man who can use the axe, the hammer, and the spade, who has youth

and health, who can put his hand to any requisite work, who can build his log-house, and clear and till his garden and his fields, and rear a teeming family with a healthy and active help-mate, emigration from the crowded courts of a great European city is almost tantamount to translation to a better world. But how few reared among such courts have the arm, or the pluck, or the wit, to snatch a homestead from the verge of the forest. Very rapidly do the outskirts of colonisation become affected with some of the worst evils of the old civilisation left behind, and that without the counterpoise that existed at home. And the moment you have to deal with occupations other than agricultural, the question becomes altered. The joiner, the bricklayer, the plumber, cannot do more work at the antipodes, provided he can get it to do, than he can do at home. On the contrary, he cannot do so much. In every craft in our own country that stored up labour of past years which we call capital has been long applied to facilitate the manual labour of the craftsman. Convenient shops, warmth, light and shelter, the greatest facility in procuring material, the best and the cheapest tools; and, above all, the ever-present, never-tiring service of the steam-engine, that most efficient of slaves,—all these are at the command of the workman in the old country,—all these are generally absent in the new. Therefore the amount of work that the craftsman can, with comfort to himself, turn out of hand in ten hours in England, will take him twelve, fourteen, sixteen, or even more hours, to execute in discomfort in a new country. The silent presence of capital, and the benefits it returns to the workman, begin to be appreciated, like so many of our blessings, most fully when their absence makes itself felt.

Look at the iron trades. Some of these workmen in our own country are more than independent. Few persons will argue that the quantity of ale consumed by the moulders, for instance, and the number of hours for which they may be relied on to work, are such as to be the most conducive to the welfare of either themselves or their families—to say nothing of their employers. Look at the perfect independence of a good foreman smith at Birmingham or at Wolverhampton. Look at the position taken by the puddlers. Now these men, able and skilled workmen as they may be, looking only to the labour of their own good right hands for a comfortable maintenance, are too apt to forget how far, in very truth, they are served and aided by capital. What has reared the lofty smithy, built the cupolas, brought the precious minerals to the door, and urged the incessant blast through the tuyeres? The labour of the past—that is to say, the capital of the employer. In Sydney this does not exist,—what is the result to the emigrant iron-worker? Employment two days out of ten,—such is their own account. English labour, served by English capital, can, and ever must, so far beat English labour deprived of English capital, that it is far cheaper to manufacture goods at Birmingham and ship them to Sydney, than it is to manufacture them by English hands at Sydney itself.

There is another consideration which will be readily understood by the English workman. In this country he has the choice of a market. The tools he uses, the clothes he wears, the provisions he consumes, may not be the very best of their kind, but he has his choice, and, within certain limits, is sure of his money's worth. But what is the case when a six-months' voyage lies between the producer and the consumer? What is likely to be the character of shop-goods when the purchasers are reduced to "Hobson's choice?" If in our own country we hear constant complaints of dishonesty in the manufacture and in the sale of goods, what is likely to be the case with goods that are manufactured for sale at the antipodes? If the Canadian emigrant finds that the best axe which he can purchase in London will not stand against the timber he encounters, what will be the quality of the axes shipped from London for sale at Sydney? At home, notwithstanding that the general race is for profit rather than for excellence, a wholesome competition is apt from time to time to restrain the delinquencies of the too greedy manufacturer. The pint-bottle may have shrunk to a most profitable capacity; the web of broadcloth may have contracted to the most economical number of inches; the purchaser may have been reduced insensibly to the very minimum of return for his cash, when up starts some new competitor for custom, and advertises imperial pints, or cloth of a warranted width.

Interpose an Australian voyage between supply and demand, and the tendency to make goods, not to use, but to sell, will lose its most wholesome check. Such, it is natural to expect, will be the case, and the complaints of the Sydney operatives do justice to the expectation.

What may be the state of affairs in other portions of the world to which the stream of emigration has been directed, we shall rather wait for the workmen themselves to inform us than describe from other sources of information. We know how heavy is the burden of taxation that a fierce war has imposed on the industry of the United States. The expenditure of that country for 1866, if divided among the population ascertained by the last census, amounts to no less than 27 dollars per head, which, compared to the present rate of expenditure in the United Kingdom, of 2l. 5s. per head, is about twice and a half as much! We know that conditions similar to those complained of at Sydney must be more or less present at all the great centres to which emigrants flock. In each instance, no doubt, there are peculiar features. At Sydney we see that bread and meat are cheaper than at home, while all the other requisites of life are far dearer. The disproportion between meat and vegetables is remarkable, and, in the absence of further information, not readily intelligible. It would seem as if there had been an absence of market-gardeners from the lists of emigrants. Still more surely do we trace one pernicious effect of the rapid growth of our great manufacturing towns. Thirty years ago, even in London, a garden was not out of the reach of the occupant of many an humble abode. The journeyman found time to tend his favourite flowers, or to raise many valuable vegetables, and some of the choicest favourites of the horticulturist have been first reared in the poor man's garden. As building has covered all available space, not only has this healthful and elevating occupation been denied to the workman, but his children have grown up almost in ignorance of the existence of garden flowers. Thus among those numerous young people who have no occupation at Sydney, the natural and healthful employment that may be derived from the cultivation of the merest patch of ground seems unknown. If this were not the case, we should hardly find that a small cabbage—a plant which requires so very little for its production—is not to be purchased for less than eightpence. A strong proof is thus afforded of the difference between emigrants and settlers.

Thus, then, again comes the question, what is the worth of money? The reply is of the utmost importance to the intending emigrant. Ten shillings a day in Australia is not the same thing as ten shillings a day in Middlesex. You take more counters for your day's work, but you have to pay away more counters for your day's living. And, as your earning is one, and your expenditure is manifold, the balance is likely to be very much against you. What has produced this difference in the worth of money is another question, and one into which we have not now space to enter. It is a difference that is felt more or less all over the world, and it is partly real and partly only apparent. To that subject we may hereafter recur, our present object is to call attention to the important fact that the nominal rate of wages is only one out of many circumstances that regulate the welfare of the workman.

It must be noticed that anonymous criticism has questioned the accuracy of the statement of the Sydney workmen. We can only give their figures. Right or wrong, they have brought them formally under the notice of their fellow workmen in England, and they have set their names to their statement. There may, or may not, be more or less of bias in their motives, but the very imputation thrown on the accuracy of their statement should form a fresh reason for the intending emigrant to weigh well his decision, and to sift with jealous care the information with which he is supplied.

THE LIVERPOOL TRAMWAYS.—The general good feeling entertained in respect to the laying down of street railways in this town is evinced by the fact that within a few days no fewer than 14,000 of the inhabitants have affixed their signatures to petitions to both Houses of Parliament, praying that the standing orders may be dispensed with in their favour, and that the bill authorising their construction may be at once proceeded with.

THE SANITARY CONDITION OF THE NEW TOWN OF EDINBURGH.*

In Edinburgh at the present day there is nothing to prevent (and it frequently occurs) a whole district being built upon, and drains laid down of the most defective description, without the plans being submitted to any competent authority on a matter of such vital interest, while the public officials are powerless to interfere until the new houses are inhabited, and a special complaint lodged by their neighbours.

Water-closets have been introduced into the houses in all the streets in the New Town, with certain notable exceptions, which we shall advert to presently; but from the insufficient mode in which they have been erected and the objectionable places they have been made to occupy, so as to ventilate now into the kitchen, then into one of the sleeping apartments, it has been doubted by competent authorities, such as Dr. Stark, whether they have not done more harm than good in a sanitary point of view. Few of them are air-tight, and the consequence is that the foul gases which are generated escape into the other parts of the house. The nuisance is bad enough in self-contained houses; but it is still worse in those entering from common stairs. In the latter all but invariably,—it would almost seem to be out of *malice prepense* on the part of the architect,—the water-closets are made to ventilate by a small window into the common stair, and there being six or eight to each stair the pollution of the atmosphere may be more readily imagined than described. The staircase skylights (where such exist), instead of having holes to permit the exit of foul gases, are almost invariably closed, and the inhabitants themselves increase the evil by persistently keeping the stair windows closed down. Accordingly, whenever the street-door is opened the fresh air thus admitted forces the impure back into the houses. So offensive is this state of things that many persons living in flats,—especially in the upper ones,—cannot inhale the air at their own doors without experiencing nausea and sickness. Let not our English readers fancy that we are romancing. It is an "over true tale," as evidenced by Dr. Littlejohn (Report, pp. 105, 106). It is even yet more extraordinary that in the most recently-built streets the architects persist in ignoring the best-known laws of sanitary science, and placing the water-closet in the very worst possible part of the house for the purpose. While it should be in a situation of easy access, it should in every case be against an external wall, and have full means of constant ventilation to the open air. Something, however, might be done to prevent the escape of foul gas into water-closets. Charcoal filters would at any rate alleviate, if not entirely remove this nuisance. As recommended by Professor Stirling, a little below the valve of the closet a subsidiary pipe should branch off from the main pipe, and be carried a few feet above the closet seat. The extremity of the pipe, across which should be stretched a few wires, should penetrate to the extent of two or three inches into a charcoal bed or filter six or eight inches thick.

Many of the streets of the New Town are totally destitute of "closets," more particularly the by-streets, such as Rose, Thistle, Jamaica, Cumberland, and William Streets, and nearly all those in the populous and over-crowded quarter of Stockbridge. These localities are principally inhabited by artisans and small shopkeepers. Each family usually occupies but two apartments (sometimes only one); or, if more, one of them is in the ordinary case let to a lodger. In some cases, a water-cistern and soil-pipe are furnished to each family; in others, they are common to all who live on the same floor: but there is no convenience. The death-rate in these by-streets rises far above that of those streets in the same locality in which they have been introduced. Thus in the year 1863 (and we take that year as the latest the sanitary statistics of which are at our command), while the cases of death in the upper New Town district were 17.35 per 1,000 for the population, in the side streets, Rose and Thistle Streets, situated between Prince's, George, and Queen Streets, the deaths rose to 20.49; so, too, in the same year, the death-rate for 1,000 persons in Jamaica-street and Cumberland-street was 22, while in the other streets of the lower New Town district it was no more than 17.38. So, also, while the death-

* See p. 33, ante.

rate of the upper Water of Leith district was only 19 per 1,000, that of one portion of it, namely, the triangular area bounded by India-place, Saunders-street, and Kerr-street, which is all but totally destitute of water-closets, was 26.86, while that of children beneath five years of age, rose to 106.67. Again, in the district of the lower Water of Leith, the total death-rate was 17 per 1,000, while in certain streets of it, such as Dean-street, Mary-place, Allan-street, Cheyne-street, Bedford-street, Hermitage-place, &c., all unprovided with conveniences, it rose to 25.02, and the infant mortality as high as 69.07. It is right to remember that in the second last instance the locality is intersected by an open mill-lade full of all abominations, and that the inhabitants are crowded in the proportion of 516.7 to the acre, and that in the last instance the density of the population is 336.9 to the acre. Making due allowance for the bad effects of overcrowding, these figures show the urgent necessity of the immediate introduction of water-closets into every house in the New Town.

And this leads us to observe that the New Town is miserably deficient in the number of public "closets" and conveniences for the outdoor male and female population. In a city like Edinburgh, which attracts so many visitors from all quarters, the duty of making such provision is all the more incumbent. For the whole of the New Town with a population (in 1861) of 64,956, there are but eight public conveniences which can accommodate fifty-seven persons only. None of these are set apart for females. In the whole of the three districts of the Upper New Town, the Lower New Town, and the West-end, which together have a population of 37,702, and which are so much visited by tourists and excursionists, there are but one water-closet range of eight compartments and four urinals, and those hidden away out of sight, and not to be come at except by the initiated. This is not as it ought to be; but both the municipal authorities and the inhabitants of the Modern Athens are fastidiously thin-skinned on this subject; and something very like a howl of indignation, if not of execration, is raised against the indecent innovator, who urges upon them the recognition and supply of such wants. The offenders against good taste are not those who point such requirements out, but rather they who object to comply with them. Let that be done, however, and there will be no need ever to mention the unsavory subject.

We are not nearly done with our account of the nuisances of the New Town. One other is that which results from the faulty construction of the rain-water pipes, which convey it from the house-roofs to the drain. Where they are not properly trapped, they act as a shaft for the conveyance of the sewage gases, which, escaping at the top, enter in at the dormer and attic windows in the roof, and so find their way into the whole house. Numerous cases of typhoid fever and other diseases have been traced to this source. It is a most noteworthy circumstance, for which Dr. Stark vouches,* that on the second visitation of cholera to Edinburgh all the fatal cases—and, indeed, almost all the cases—occurred in two parts only of the tenements, namely, on the lowest and highest floors. While Dr. Stark ascribed the presence of the disease on the ground floor to the sewage gases, the dampness, and want of cleanliness on the part of the residents, he accounted for its appearance, after skipping the intermediate flats, in the attics to their low roofs, the smallness of the skylights, and the confined area. We have little doubt, however, that its occurrence in the topmost stories was due to the gaseous emanations from the mouths of the rain-pipes.

Yet another and frequent source of disease is the filthy and unwholesome condition of the water-cisterns and their connexion with the drains. Unless the overflow pipe, which communicates directly with the house-drain, is properly trapped, and it rarely is so, it affords a means of ingress to the sewage gases, and the water becomes perilously tainted. The cisterns, besides, are so often left uncovered, and exposed to the pollution caused by dust, rats, and mice; while, owing principally to the frequent change of tenancy, they are often left uncleared for years. It is by no means a pleasant thought that the water you are drinking has been taken from an open lead cistern, situated in the water-closet above the seat, but that is a common occurrence in Edinburgh. There is no more

fertile source of illness than contaminated water, many eminent medical men ascribing to its use mainly all cases of cholera attacks. "No more frequent cause than this," says Dr. Littlejohn, speaking of untrapped overflow pipes, "has come under my notice in the upper stories of large tenements, which from their elevation appeared to be far removed from all possible effluvia from drainage."

On entering an Edinburgh kitchen or scullery, the olfactory nerves are apt to be assailed by an offensive smell emanating from the sink, which is sometimes made of lead, but more frequently of stone. In either case the stench arises from the chemical action of the water upon the sink. The remedy, it is well to know, is the substitution for the stone or lead, as the case may be, of slate or of glazed stoneware. This is not so unimportant a matter, as some people are inclined to think it, for the gases so generated diffuse themselves over the dwelling, and besides being disagreeable to the nose, exercise a powerful and deadly influence when the state of the atmosphere is favourable to cholera and other zymotic diseases.

We have already alluded to the leakage from badly constructed cesspools and box drains, as causing dampness of the basement floors. There is yet another very frequent cause, namely, the neglect properly to drain the back garden, which is attached to almost every house. Especially in the back gardens of those houses, which are built against the slope of the ground to the north and south of George-street, the rainfall is left to seek the lowest level, which is that of the foundation. The consequence is that the ground-floors are rendered damp and musty, the joists and flooring decay, while the *débris* of shavings and other vegetable matter, which are allowed to lie among the foundation, are speedily decomposed and putrefy. It cannot be too strongly impressed upon people that damp dwellings are productive of rheumatic affections, dysentery, and fever, together with mental depression, and a disposition towards, nay, an almost irresistible desire for, intoxicating liquors. In every case the soil of the back-yard should be properly relieved of the rainfall, either by laying down tile drains, or by paving the entire area. The water may then be conducted into the main drain of the dwelling, which it would assist in flushing and keeping wholesome.

Fortunately both for its cleanliness and general health, the New Town has few manufactories, and we should consequently expect to find it exempt from smoke pollution. Eleven glass, two chemical, and thirty-one metal works may be said, with the exception of the printing establishments, to be the only works which pollute the atmosphere with smoke or steam. There are no fewer than twenty-five printing establishments, and these in defiance of the Smoke Nuisance Abatement Act, and the Local Police Act are continually belching forth volumes of steam and smoke. Perhaps it is only indirectly that this occasions detriment to health; but people resident in their neighbourhood are fain, if they would preserve their furniture, to keep their windows closed, and in this way free ventilation of their dwellings is impeded. We are not, however, surprised that this nuisance is allowed to exist, when we find that three different officials are empowered by the Police Act to prosecute offenders of this description, namely, the Procurators-fiscal in the Police and Dean of Guild's Courts, and the superintendent of streets and buildings, instead of its being the imperative duty of one of them.

One other nuisance is the condition of the many byres which exist in the New Town, or rather of the old out-houses or stables, which are used as such. Between 800 and 900 cows are housed in these, or, at least, were immediately prior to the outbreak of the rinderpest. The medical officer of health complains—and our own observation enables us to say that he complains justly—that these byres are too often kept in a constant state of dampness and filth. From the want of proper flagging and drainage the liquid refuse and byre washings saturate the court or lane, and at the same time there is a constant fermentation of the manure in the middens going on. The effluvia arising in this way, and from the animals themselves, and the preparation of their food, are highly offensive, more especially in dry weather. What are used as byres have rarely been built for the purpose, while the cows are overcrowded, and light and ventilation all but excluded. From the situation of the byres and stables, and their adjuncts, the middens, it results that many windows, which should be

opened for ventilation, are kept close to exclude the disagreeable and noxious fumes.

One decided source of discomfort, if not of disease, prevails to a great extent, and even in some of the most fashionable streets. On the walls of the butchers' and feshers' shops, which are ordinarily placed in the most prominent positions at the street corners, may be seen exposed the carcasses of oxen, sheep, and pigs, together with their skins and offal. These are not only eyesores, destroying the amenity of the neighbourhood, but they taint the surrounding atmosphere with a strong effluvia. We are glad to see in the Provisional Order, which we hope soon to see law, that such offensive exposure will be made a police offence, punishable by fine, and in default by imprisonment. The Edinburgh butchers' and fishmongers' shops, having in few instances been specially built for the purpose, are very deficient in the requisite sanitary safeguards.

There is still one other nuisance to be adverted to, which is all the more vexatious that it is of recent creation. A little to the west of the Haymarket Station of the North British Railway stands the Caledonian Distillery, the largest work of the kind in Great Britain. This distillery, without taking any steps to render its offensive and dangerous refuse innocuous, throws it into the Lochrin Burn, an uncoloured drain, which irrigates about ninety acres of meadow ground, and travels westward a distance of 300 yards or so, until it debouches into the Water of Leith, tainting and polluting the atmosphere of the whole neighbourhood, and consequently deteriorating the value of the streets and villas which have been recently erected there. It is to be regretted that the authorities do not possess, as they do in France, the power of preventing the erection of manufactories in towns, until a committee of eminent scientific men have reported that the site is a suitable one, and that no injury will accrue to human health. In Edinburgh, the only remedy available to the sufferers by such a nuisance is the tedious, expensive, and hazardous ordeal of a trial by jury.

We have probably not noticed all that is deserving of condemnation in regard to the hygiene of the New Town;* but we do feel more at ease now that our invidious task is over, and that we have come to the last count in our indictment. It is with real satisfaction to ourselves that we have now to invite attention to the arrangements made by the Edinburgh authorities for the daily collection and removal of the filth and solid refuse of the city. In no other city or town, we believe, is such removal so efficiently and economically, or rather, lucratively carried out. It puts a large sum into the civic treasury, thereby saving the inhabitants as much as 3d. per pound in the rate of assessment for general police purposes, at the same time that it supplies the farmers in the vicinity with a cheap and valuable manure. During the twenty years preceding Whit-Sunday, 1859 (as appears from a report in connexion with the cleaning department, read in the town council), the solid refuse collected from the streets of the city amounted to 830,000 tons, which were sold for 158,000*l.* This gives a yearly average of nearly 8,000*l.*, which are thus saved to the city. For the year ending 15th May last the sum realised by the sale of manure was 8,072*l.*

It cannot but be interesting to know how this is brought about. The Edinburgh Police Act requires that all offensive matters shall daily be taken in pails or buckets, or other suitable vessels, to the street, there to be emptied into the dust-carts by the scavengers or carters. Failure to comply with this requirement of the statute is punishable by a fine not exceeding forty shillings for each offence. Sixty-five dust-wagons are daily employed in this service. A large ball attached to one of the trams announces their approach. They visit the Old Town and the poorer quarters of the New Town, both morning and evening; but a morning visit alone is found sufficient for the greater portion of the New Town. There is a staff of 135 scavengers employed, and 147 in winter, under the superintendence of the inspector of cleaning, assisted by eight overseers or district inspectors. The scavengers, each of whom has an allotted beat, begin work

* We have barely hinted at the overcrowding, which exists in too many localities. To give a single example, the house, 23, St. James's-street, although as originally erected with good-sized airy rooms, has been so subdivided as to give, two years ago, accommodation (is the word admissible here?) to 220 human beings. 240 human creatures in a single house, in which there were but eleven sinks and one water-closet! We had almost forgotten to say that the lowest story is occupied by shops.

Inquiry into some points of the sanitary state of Edinburgh, by James Stark, M.D.

at five a.m. during the summer months, and at six a.m. in winter, and, with an hour's interval, continue at it till four p.m. On first going on duty, the scavengers prepare the ashes and refuse so as to be the more rapidly transferred to the dust-wagons, which is effected in the New Town between six and seven o'clock, and in the Old Town between seven and eight. After the dust-wagons have passed, the scavengers go over their beats again, and sweep up whatever may have been left. The staff thus swept up they convey in their wheelbarrows to covered dust-bins, which are placed in various parts of the city, and which are cleaned out once a day. These dust-bins, which are usually about 8 feet long by 4 feet broad and 6 feet high, are kept locked. The refuse thus removed from the houses and streets is taken to depôts in the suburbs if it is not carted direct to the different railways, which it usually is, as the demand for it for some years past has more than exceeded the supply. Consisting principally of ashes, bones, and decaying vegetable and animal matter, it makes an admirable manure, well adapted for soil of a cold clayey description.

The contract to remove this refuse is exposed to public competition, and the successful competitor is required to find security that he will conduct the removal within a given time to the satisfaction of the inspector of cleaning, who is directly responsible to the Town Council. Further, the contractor must possess a capital of 3,000*l.* to enable him to provide the requisite men, horses, and tools. The cleaning plant is made and repaired in central public workshops, situated near the King's Stables, which were erected at a cost of 8,000*l.* by the authorities. The horses are stabled here, and the dust-wagons and carts put up. From a paper by Mr. Macpherson, C.E., superintendent of streets and buildings, read a week or so ago, it appears that about 1,342 wagon-loads of mud from paved streets, called "sludge," which is largely mixed with horse droppings, is collected and removed to the depôts; and after lying some time is sold at a cheap rate as a manure. There are also about 4,937 wagon-loads of mud collected and removed from the macadamized roads annually, which are carted away to any place of deposit suitable and convenient at the time; no use as yet having been found for it. Such is a short account of the manner in which in Edinburgh the solid refuse is removed and utilised. Those interested in this subject will find it more fully explained and discussed in a paper read in 1863 before the Social Science Association by Dr. Henry D. Littlejohn.

The charge of lighting the city is also entrusted to the inspector of cleaning. The Edinburgh gas enjoys, it is said, the reputation of being the very best in the kingdom, and being moderate in price; not only are all the streets lighted with it, but it is introduced into every shop and private dwelling-house. So pure is it, that it is used without any bad effects in all the jewellers', silversmiths', and bookellers' places of business. There are two rival gas companies, the Edinburgh Gas Company and the Edinburgh and Leith Gas Company, both of which supply the whole of the city with gas at a cost of four shillings and tenpence per 1,000 cubic feet. Excellent, however, as is the quality of the gas, Edinburgh is but badly lighted after all. The street-lamps are much too few and far between. Owing to this circumstance, and to the early closing of the shops, even the principal thoroughfares, on a moonless winter's night, are but dismal promenades. The street-lamps, although of simple design, are not deficient in elegance.

The rates for watching, cleaning, and lighting the city, and maintaining the fire brigade (why is it that they have not a fire-escape?), it may be mentioned, are a halfpenny per pound on four-fifths of the rent on houses of ten pounds and upwards, and eightpence on four-fifths in the case of houses below ten pounds. They may be taken as equal respectively to elevenpence farthing and sixpence halfpenny on the gross rent.*

* A correspondent, with reference to the observation in the description of the water-supply and drainage of the New Town of Edinburgh in our pages, that "within the last twelve months the Army and Medical Commission have condemned Fierhill Barracks as the most unhealthy in Scotland," says:—"I have ascertained that the Secretary of State for War" is not aware "that the barracks at Fierhill has been condemned. What is the ground for that statement in the *Builder*? I inquire because many are anxious to ascertain what effect the application of sewage to land has on the health of human beings?" The statement in question appeared in the local papers, and was the subject of much conversation in all circles, civil

DESIGNS FOR THE PROPOSED LAW COURTS.*

To make clearer the description we have given of Mr. E. M. Barry's project, we annex a key plan,† showing the general arrangement, the appropriation of the various portions of the building, and the mode of access to the public galleries by separate staircases, entered directly from the street without communication with any other part of the building.

Those conducting the business of the courts would in no case have to pass through or across the part in which business is transacted. Judges, jurors, witnesses, counsel, all have their separate entrances, and would have no necessity to move about the court or intrude on each other.

A general corridor has not been thought a convenient arrangement, for the reasons stated in the instructions. The offices are as far as possible distinct from each other, and separated into blocks by the interposition of the courts, party walls, or fireproof halls and staircases. By this arrangement the building is divided into many fireproof compartments, any one of which could be shut up on cessation of business, or during its vacation, without interfering with the access to the others.

The form of the plan would separate the traffic to the courts from the general and ordinary traffic of the streets. The inner street round the central block containing the courts would be closed towards the Strand by lodges and gates, and would thus be kept private for the sole use of those having business in the building. Bridges not shown in the plan connect the central block with the offices around.

Mr. Barry, and in this we agree with him, considers skylights for the courts very objectionable. He has, therefore, designed them with high side windows, and has provided that these shall open. The heating would be by hot-water pipes, and fresh air would pass into the court from a chamber under the public corridor.

"The ceiling is designed on a similar principle to that which has been found successful for acoustics, lighting, and ventilation in the present House of Commons. The centre of the ceiling is perforated, and a vitiated-air-chamber is formed above it. This chamber communicates with powerful air-shafts situated over the public staircases. Gas burners are placed above the roof, and when lighted aid the ventilation very effectually, while all heat and products of combustion are prevented from entering the court, and are carried off at once by means of the vitiated-air-chamber to the air-shaft. The architect has so arranged his plan that the boiler-fires from the basement pass up the newel in the centre of the staircase. The upper part of these flues would be formed of iron pipes, the heat of which passing through the vitiated-air-shaft would create a strong upward current. As some of these boilers would be in constant use for the hydraulic machinery of the lifts and for other purposes, the system would be self-acting; but in case of the temporary disuse of the boilers by accident or otherwise, provision would be made in the upper part of the flues for the use of a fire of coke to assist the draught, as is now done at the House of Commons."

To the elegant (Gothic) detail of some of Mr. T. N. Deane's external work we have already referred. The clock-tower, at Temple-bar, is remarkably well designed. His plan is also noteworthy for the extent of open space afforded by areas throughout the building, an important consideration with reference to both light and air. The corridor by which the public gain access to the several courts is approached by four main staircases, separate from the business staircases; the first in Carey-street, the second in Bell-yard, the third in Clement's-inn, the fourth being the main staircase in the Great Hall. Mr. Deane claims that—"The public, having thus reached the court corridor, cannot possibly obstruct any one employed or having business in the courts, inasmuch as the corridor to be used by such persons is on a different floor of the building." The Central Hall is somewhat small, and heavily filled up. The weak part of the plan is its straggling character, and the want of that concentration which is being aimed at.

The cost Mr. Deane puts at 1,074,278*l.*, produced by 25,554,959 cubic feet, at 10*d.* per foot.

Mr. Street's design includes a Central Hall, 190 ft. in length and 57 ft. wide (with stone vaulted roof), round which a certain number of the courts are ranged; on the north, the Courts of Equity; on the south and east, the Common Law Courts; and on the west, the Divorce,

Admiralty, and Ecclesiastical Courts; and all these are approached as much as possible from the north and south only. On the outer boundary of the site are the offices connected with the courts; and to avoid the creation of noise these are to be entered from the outer side.

A key-plan, however, will explain with fewer words the general arrangements, and the architect shall describe it himself.*

The courts are separated by areas, which serve to light the rooms under the courts.

In his arrangements as to the admission of the general public Mr. Street seems to come a little into collision with the Commissioners' views, to which we referred in our last. He appreciates the objection there is to the way in which, in every court of justice in this country, the general public is mixed up and interferes with the work of those who have business to conduct in them. There can be no necessity, he says, for admitting any large number of curious visitors to any court. All that is required is that there shall be just so much accommodation for them as shall make the proceedings of the courts public, and, at the same time, that they shall be so isolated from those who use the business parts of the courts as to make it unnecessary that the two classes should ever come near each other. In his plan, the public have two entrances, on the south, and two on the north. These are by staircases at the northern and southern ends of the public corridors, which run north and south at each end of the public hall. All these staircases are for the use of the public only, and lead to the Central Hall and public corridors; and out of these are doors leading directly to the upper part of the galleries in every one of the courts. The public corridors command each a certain number of courts, as may be seen on the plan, where also is shown the position of the grilles to keep the general public in their way to the gallery of four of the courts from spreading over the Central Hall. One of the courts (4 on the plan) would have no means of access for the public but by the Central Hall.

Now, as to checking the circulation of the general public, the Commissioners go farther than Mr. Street. He says in his explanation:—

"I observe, in the instructions to architects, a request that the gallery of each court should be separately reached from the street. This appears to me to be an impossible arrangement without vast loss of space and great expense, and therefore an impossible arrangement in so restricted a site as that with which we are dealing. With ordinary care, there is no reason whatever why any inconvenience should be felt according to my arrangement. When the public gallery seats are all full, it will be the duty of the policeman in charge of the door to refuse admittance altogether till there is a vacant seat. So that it will never be likely to happen that people will be taken round, as they now are, to all the courts in succession to see what is going on, in satisfaction of the idler's curiosity."

That the arrangement desired is not actually "impossible," is shown conclusively by more than one of the competitors; and should the Commissioners not be led to attach less importance to the requirement than they originally did, both Mr. Street and Mr. Scott will probably find this part of their plan counted against them.

Mr. Street gives two good open areas within the pile—one east, the other west. One object kept in view has been to prevent any part of the building being made use of as a passage-way from the Strand to Lincoln's-inn, or from east to west by persons who have no business in the building. For this reason he has provided no carriage exit from the inner quadrangle on the east side, so as to discourage the entrance of vehicles.

The great tower for the records, which he has placed on the triangular projection on the western, or Clement's-inn, side of the site, is well designed, and forms an effective feature. The interior of the building, including fittings, furniture of courts, warming and ventilating, lighting with gas, exclusive of subways and bridges beyond the site, is put at 1,314,360*l.*; and the additional cost of bridges and subways outside of site, viz., across Carey-street, Strand, and Bell-yard, 16,150*l.* These estimates include warming and ventilating, also gas and water. The cubical contents of the entire building are 26,485,713 ft., and are priced, after measurement and valuation of several sections of the building, at 9*d.*, 1*s.*, and 1*s.* 3*d.* per foot cube, according to position.

Mr. Abraham cubes his design to 23,500,000 ft., and prices these at 10*d.* a foot as an average. Adding certain sums for the eastern tower, the

and military—the townspeople regretting the threatened loss of one of the military bands they had been accustomed to. The writer concluded that the statement, if unfounded, would have been contradicted at the time.

* See pp. 68 and 69, *ante*. † See p. 112.

* See p. 112.

central tower, concrete, enclosure walls, and bridges, he makes the total 1,234,166l.

Mr. Seddon brings the cost of his design to a much higher figure. Thus to the main building he gives—

Feet.		s.	d.	£.
9,698,981	cube blocks of buildings in	0	10	404,097
27,540,772	inner courts	1	2	1,606,545
2,614,302	main blocks of buildings	1	2	1,606,545
	towers commencing at			
	about 120 ft. above			
	Strand level	1	6	196,082
				£2,200,714
781,500	Corridors and Approaches			
	glazed covered way and			
	terrace	0	4	13,025
3,186,147	corridors and entrance			
	gateway, &c., &c.	1	0	150,307
	Making a total cost of			£2,379,046

Mr. Seddon's plan may be described as a complete parallelogram, of 670 ft. in length by 430 ft. in width, and consists, firstly, of an outer range of building, 50 ft. wide, surrounding this area, and containing the several chambers and offices. Secondly, in the space comprised within this outer range, a central building, bisecting it centrally in the direction from west to east, parallel with the Strand, and containing a general hall, refreshment-rooms, and libraries; another, of less width, intersecting it in the centre, like a transept, containing the principal entrances and staircases; and lastly, within the four smaller areas left between these buildings are the various courts and their appropriate rooms, which are considerably less in height.

The upper floor of the offices looks over the roofs of the courts, and the lower floors into areas 22 ft. in width.

The courts are in two ranges, running east and west, one on each side of the Suitsors' Hall.

In this arrangement of the Law Courts, within the four internal areas of the buildings, the nature of the site prevents the spaces between them from being of greater width than 12 ft.; the courts themselves are lighted from the top, as well as from clearstory windows; and the rooms which are necessarily placed below them are those which are appropriated as witnesses' waiting-rooms and jury-rooms.

The author says, "The general public can enter the Great Hall by the four principal entrances in the centre of the four sides of the building, and to the recesses in front of each court to the space allotted to the public under the gallery in the court." The public, we fear, would be able to do, in short, exactly what the Commissioners have shown it must not be allowed to do, namely, range from court to court at its own sweet will.

We might fairly praise Mr. Seddon for the cleverness with which he has given an archaic aspect to his elevations, and the ability shown in some of his drawings; and it is for the purpose of storing the wills; that the windows are arranged, as desired by the Probate department, extending from top to bottom of each floor, and close enough to each other to throw light between each range of shelves; and that it seemed to him desirable to explain externally this practical character, rather than to design a tower having more the look of a belfry without bells. But as we are disposed to think that the plan can scarcely go into comparison with some of the others submitted, this would after all be useless.

Nor, with the best feeling, and much admiration for artistic ability displayed, can we arrive at any other opinion with reference to Mr. Garling's design. The whole ground is too closely covered; there is a want of simplicity in the arrangement; and there is no striking central feature. Mr. Garling objects to a Central Hall, and effects communication by wide corridors, one 30 ft. wide and 380 ft. long. The public, however, if we understand the plan rightly, can get access only to a gallery raised above the business portion, and communicating solely with a staircase descending at once to the basement. There appear to be some good arrangements to get under and across the courts. He objects to top-lighting, especially where the sides of the opening in the ceiling are lofty, as unfavourable to sound. A central tower, with low spire and two short towers at each end, with truncated roof, a series of close buttresses, and ranges of pointed-headed windows, are the principal features of the Strand front.

Mr. Garling estimates the cost of his building at 1,090,061l., making the cubical contents 28,832,790 ft., and pricing these at sums varying from 3d. (foundations), to 1s. 6d. (central tower)

per foot: the bulk of the work being put at 11d. Touching these prices, he says,—

"I have always been in the habit of ascertaining the price per cubic foot of any buildings of which it was possible to get the price accurately calculated, and I have found that, executed by the best London builders—
Offices in the City, most substantially built, and with ornamental stone fronts, cost per cubic foot 8d. to 10d.
Churches of the medium expense of decoration 6d.
Ordinary substantially built well-finished dwelling-house, with moderate external decoration 7½d. to 8d. or 9d.
Nobleman's mansion or club-house, with decorated stone front, and finished handsomely 1s. to 1s. 2d."

The Royal Exchange and the Bible Society's premises, with an expensive stone front, cost 11d. per foot.

Mr. Garling is the only competitor who has sent an alternative design of Italian character. It appears to have been understood from the beginning that the Law Courts were to be in the Gothic style, and Gothic they, doubtless, will be. Probably, indeed, such has been the course of study in England, we shall thus get a more agreeable building, for the time, than might have been the case had another style been worked on; but we should believe often-expressed opinions if we admitted that it is thus that the century is likely to arrive at the possession of a noble vernacular architecture of its own. The erection in the midst of the City of a large pile of Gothic architecture, pure and simple, would have the effect of driving off for a further time the wished-for advent. Let us hope that the Gothic adopted may be such as will best admit of the developments suggested by modern views, modern requirements, modern materials, and modern modes of construction.

THE BUSINESS OF GLASS-PAINTING, AND THE ART.*

To go to the second part of the subject, it is evident that the greatest difficulty lies in the treatment of pictures in glass. You have seen in the slight sketch of the art how as the other arts advanced the glass-painter was tempted to push his also forward, not only from an ambition to rival them, but that his eyes having become habituated to a more artificial and academic system, he followed onward with the stream of his contemporaries. But he found at last, as many other reformers have found, that advance is not always synonymous with improvement. In his time (I mean that of the end of the fifteenth and beginning of the sixteenth century) perspective had become a science. Theories of composition, of the balance of lines, and of the balance of colour, were taught as axioms of art. Pictures were no longer suggestions or reminiscences, but actual representations, with all the natural effects of sun and shadow, night and day. And why was not all this to be effected on glass as well as on canvas or on a wall? The glass-painter of that period, with his eyes confounded by the dazzle of other arts, seems to have gone on asking himself this question. And now in our time people are asking it again. They are demanding pictures for their windows—family legends and local traditions figured in painted glass for their halls, sacred subjects for their churches. How is the modern glass-painter to proceed? He certainly stands on the vantage ground of experience. The successes and failures of past days are all before him. He has, with few exceptions, the whole array of materials for an equal success; he has himself only to blame for equal failures. His difficulties are the difficulties of abundance rather than of poverty. Style after style is open to his choice. Science is at his bidding. Galleries and museums are open to him everywhere. And the skill of the modern artisan sets him at ease about matters of technicality. But it is just in all this that his trouble lies. He is impelled by all around him to the idea of advance. The notion of accepting the principles which were brought to perfection in a less educated age is to him a notion of retrogression. And there are other rocks than these also for him to wreck upon. There is the preoccupation of everybody around him in all the absorbing objects of this busy age, which unfits them for the quiet atmosphere of art, and greatly disqualifies their judgment. Then there is the unsettled state of architectural taste, which keeps all the arts associated with it

in the same unhappy condition. Then there is that most fatal commercial element to contend with—to which, indeed, be all honour and respect paid within the broad limits of its proper action for individual and national enterprise. But when commerce invades the realm of the arts, and presses one of the finest of them, as it now does glass-painting, into its service—no loose stone in a foundation, no poison in the food, no worm in the bud, could be an element of more certain ruin than it. I know that here I touch on a very delicate subject. I know that the artist must live by his art. I know, too, that it will be replied to my objection that the artist is under great obligation to the man of commercial energy for giving him the means of constant employment. So far so good; we are quite agreed so far. The evil is not here. The evil does not lie in the man of commerce supplying the artist with the means of constant employment, but in the simple reversing of those words, viz., that it is the artist who is pressed to supply the commercial man with the constant employment of his means. That is the evil, and a serious one. The very energy of the employer is the ruin of the artist he employs—ruin I mean of his art. He may fill his pockets perhaps, but he empties his talents. His talents are overpressed; the fertility of his invention overtaken; orders pour in, customers become impatient, work must be completed, or, in its commercial sense, "turned out," in a specified time. The result is repetition, inferiority, and routine. But a still worse state of the case is this, and a common one, that the contract price keeps down the quality of the work—and quality in a commercial view is a matter of time, and time is money; and thus a man's genius and higher feeling are fettered and crushed because one breath of it more, one step of it further would not pay. Its rich stream of genius must be diluted down to the necessities of trade. Genius is become an article of commerce, to be sold by the pound, or to be measured at so much per foot, as we see every day in glass-painting. I assert that this is utter degradation of art. No art can live long in such an atmosphere, nor come to perfection under such a pressure. Thus far indeed it might rise. And for such a purpose the lower powers of art are not improperly applied. There are, for instance, very many things, objects of universal use and trade, of which the value is very legitimately enhanced by a certain amount of artistic excellence. For such purposes let such a system prevail,—such as for carpets, curtains, silks, and ribbons, tables, embroidery, earthenware, clocks, and ten thousand other things, in which dealers must deal, and which manufacturers must supply. The more they civilise and cheapen their wares the better. But there are occasions also here, where a rather high character of art is sometimes applied; as, for instance, in the painting of the finest porcelain. But I never heard of even that being degraded as our glass is. I never yet heard of a Sèvres vase, or a Dresden group, or a Chelsea bowl, being sold by the measure of their surfaces, or by any other test of value but that of their artistic excellence. I know that the glass-painter must live by the work of his hands. The greatest men before him have done the same. The greatest architects have built for money, the greatest sculptors have modelled, the greatest painters have painted for money; but where was ever one such as they found who would yield for one moment to the bondage of the money for which they worked, or who would not, with poor old Palissy, have rather burnt the last leg of his last chair, and the last rail of his garden fence, than bear to fail in the full excellence of his work? If glass-painting in our day is to be submitted to such pressure as would have crushed the genius of a Raffaele, it has small chance of vitality, and none of perfection. But I must not be misunderstood. I desire by no means to pass a sweeping censure against the combination of the commercial man and the artist. Our whole social state is changed since the days of those peaceful contemplative poets of art who began their work with prayer, and mingled their colours with devotion, making religion as much a medium of art as art a medium of religion—men who worked the live-long day, maturing their thoughts in the quiet of the cloister, and refreshing their spirits and their eyes on the tranquil scenery around them. But do you reply, "Yes; but those men often undertook great works on contract, and at a fixed price and fixed time, too." Yes, they did; but who made the contract? Who fixed the time? Not any commercial business partner who

* By Mr. T. Gambier Parry. See p. 75, ante.

had to make money out of the artist's brains. No; for no art can reach excellence, the complement of a man's full power can never be attained, but in the freedom of undisturbed thought. If there is any vital element in art, it is that which is akin to poetry. It is a strange mixture in itself of delicacy and power, qualities which, in the execution of its work, maintain and modulate each other. Delicacy would otherwise degenerate to weakness, and power would swell into vulgarity. Art cannot live as a slave to commerce, but it can live as the friend of commerce, to share its wealth, and raise its sentiment. When Perugino grew avaricious he prostituted his art. It was lucky for the arts and for his reputation that in his younger days he had said his prayers. In those days he had acquired a power of refinement and expression of the most exalted character, for which all afterwards have venerated his memory. He had been a poet,—he had, indeed, been a poet; but when his studio was lowered to a manufactory, the volume of his glory closed. I must repeat most explicitly that I by no means object to the combination of the man of business and the artist in an establishment for glass-painting. On the contrary, I think it would be one of the greatest service. I only demand that the two men should be in their proper places.

But I must come now to the practice of the art. If there be one error greater than another that an artist can commit, it is in transgressing the nature of his materials. The more evident, the more distinct that nature is, the greater is his offence. Now, if there be any material at his disposal, of which the qualities and resources are more clearly marked than any other, it certainly is glass. If in oil colour, the characteristic qualities are those of depth and power; if of water-colour, delicacy; if of fresco, sobriety. Of glass they are pre-eminently those of light. I by no means infer from this, what I might be mistaken to mean, a garish gaudy use of the raw material. But I certainly do mean that the degradation of so beautiful a material as glass into the condition of cardboard, as is done too often by the Germans, or into oiled calico, as is done by the Italians, or into a very bad style of whity-brown paper, as is frequently done by the English and French, is an insult and an abuse. As I said before, glass is a thing of light and colour, which calico, cardboard, and brown paper most certainly are not. The abuse, as we have seen, arose at the time (the fifteenth century) when glass was manufactured thinner and more clear than before. The painters at that time, and now, too often stipple it over with brown enamel to hide its poverty. Glass is wanted for all varieties of effect, and, rightly used, it can be gorgeous without being gaudy, and solemn without being dull. The first step to its improvement for art purposes must be the work of the manufacturer. The ruby, the green, and the white, would be better made thick, the blues and more grey, the whites very various in hues, and a more refractive and translucent rather than transparent glass made for them all. Some manufacturers, especially Messrs. Powell, of Whitefriars, have already taken much pains in this direction, and with great success. The next step, the artist's, is not so easy to describe. If he has the right kind of glass, which certainly can now be got, there will be little need of veiling it at all, to enrich its poverty or to tone its garishness, beyond the broad lines of the drawing, the lightest possible indication of shadows, and so on. Such, indeed, I feel should be the law of the glass-painter. But now, having progressed so far, comes the great question: how is the glass-painter to treat his pictures? There can be no real difficulty in this except in the practice of humility and self-denial. The first thing for the artist under such circumstances is to make up his mind that he is in truth and indeed "a glass-painter." If only he is quite sure of that, half his difficulties are over.

Now let us for a moment compare the characteristics of a picture on canvas and a picture on glass; and the conclusion will be obvious. In the first place, then, the element of form is common to them both, and equally within their reach. Their *chiaroscuro*, the whole law of which runs in the simple sequence of "high light, half-tint, shade, reflected light, and cast shade," is also equally within the reach of both—for glass can be blackened as black as night, and high lights filed out as bright as the sun: I say they can be, I don't say they should be. Then "colour"—that is common to them both. Where, then, is the difference? I answer mainly in this, that although all things

may be possible, all things are not expeditious. But now look at the opposite view of the case. Take two subjects only,—those of "roundness" and "atmospheric perspective." The way in which an artist produces the effect of roundness is by modification of colour and by loss of outline. These are among the most powerful means in the hand of a painter to produce to the eyes of others the effects of nature, and among the most favourite resources of his art. But these two, the primary essentials to the painters of pictures, are simply and entirely impossible in glass-painting, because in glass the outlines must be marked by lines of lead, and the colours can only be tempered by the common expedients of mere light and shade. There can be no modulation of colour in glass. I must not be mistaken. Of course, the surface of glass may be ground into semi-opaque white, with the texture of cardboard, whity-brown paper, and calico, I mentioned just now, and painted on in many ways with water and oil colours modulated as you please; but that is not glass-painting in what is (without any quibble about words) really meant by it. It can also be effected by enamels; but that is glass-enamelling, not genuine glass-painting, and very objectionable it is. So then, truly, there can be no modulation of colours on glass. How, for instance, can the painter get the grey between the light and the purpled shadow of a ruby-coloured drapery? How can he get the thousand-and-one tints of sky and earth into its reflected light? How can he soften off its edge? Then consider for a moment the effects of "atmospheric perspective." These are mainly producible by the same processes of modulation. Things in nature are cleared from each other not by any means so much by their colours as by the air between them. There is nothing more delicate to be produced than this in all painting. But these are unattainable by the glass-painter. He can only approach them by the ingenious use of forms, and by suggesting (however truly in a realistic point of view) the idea of proximity by strong colours, and distance by the more delicate. In spite of all these limitations to which he is subjected, I do not feel that his art is lowered. For art does not depend on perfection of representation. Such perfection would at once be the loss of all its poetry. It would only affect the spectator's knowledge, not his imagination. I believe that each art has its distinctive genius and capabilities—that there is a something which each can do the best, and that failing that, the fault lies rather with the artist than with his materials. Michelangelo would be as great in terra cotta as in the finest marble. What, then, is the glass-painter to do? I am confident that the secret of his success lies in this;—that his designs must be made entirely with reference to the powers and limits of his peculiar materials; that the designs of Michelangelo himself would be utter failures unless made unreservedly upon such a principle. An idea is prevalent that copies may be made for windows from great old pictures, or that designs may be obtained, with great advantage, from the leading artists of the day. But I am confident that it would be an injury rather than an advantage that artists, however great in figures, landscape, or genre, should be so employed unless they do so with a thorough knowledge of the peculiar qualities and limitations of the materials in which their designs are to be executed. That in their pictures they may revel in the poetry of shadow, but that in glass they must design for the effects of light. That their canvases may be a broad open space to work for; but their design for glass, on the contrary, must be cut up into many small pieces, and bound together by the harsh outlines of lead. In a word, the composition for a picture in painting must of necessity be totally different from that of a picture in glass; indeed, if anything, the principles of glass design for figure subjects are even grander and more powerful than those in picture painting, because the very nature of the materials of glass-painting forces the design to be broad, large, simple, and consequently sculptural. I can easily imagine any one remonstrate on hearing this, and ask, why then do we generally see such wretched things in windows? I can simply answer, "Because the persons who design them have no knowledge of what they are pretending to do; that they are manufacturers, not artists; that the demand has induced them to start, not in art, for they never had any to start with, but in business, because they had plenty of capital, and the general public engaged in the various work of life have had but little knowledge or

discrimination in such matters to keep those workers of atrocities in check." *Hinc illa lacryma!* But what, then, unreservedly, are these powers, and what are the limitations of the glass-painter? His powers! He has the whole beauty of the rainbow and the whole power of the sun at his disposal. What are his limitations! They resolve themselves into two; first, the impossibility of colour-gradation, because the colour is unchangeably burnt into the glass before he touches it; and secondly, the rigid obligation of severely-marked outlines in the use of his leads. The result, therefore, is that his works are characterised by a certain flatness of effect, more in the character of sculptural relief than of the atmosphere of a picture. This peculiarity is by no means confined to the essentially Christian and Gothic art of glass-painting. At a period of classic art in Greece, perhaps unequalled by any other for severe and refined purity of design, wall-painting was constantly executed in this manner. Figures and even groups of figures were often thus painted with hardly more than a mere faint line to stand upon, and without any accessories of background. It is impossible to imagine the science of design put to a severer trial, or a more perfect and pure ideal than that which such a system affords of painting in connexion with architecture. I suspect that sculptors would mostly design far better for glass than painters. It was so with those great Florentine sculptors, Ghiberti and Donatello, who delighted in designing for glass. I adjure the glass-painter not to disguise this essential peculiarity of his art, and so to falsify it. It would be as unreasonable for a musical composer to complain that his single instrument had not the powers of an orchestra, or for a sculptor that his marble was debarr'd from the accessories of atmosphere and perspective possible to canvas, as it would be for a glass-painter to complain of the limitations of his glass. In respect to the variety of styles,—the Classic, Gothic, Renaissance, and Modern, which is most intimately connected with the subject of glass-painting,—there can be no doubt of this, that to reduce everything to the mere dead level of modernism would be to deprive the world of that invaluable means for expressing the many phases of beauty which depend entirely upon the characteristics of particular styles;—that they are, in fact, the expression of the widest range of human feeling; for, excepting literature, all that remains to earth of the hearts and souls of the best men is in their arts. The objection is made,—“But why copy them? Why bind down your wider knowledge to the limits of their comparative imperfections?” I can only ask in reply, “Who, in his senses, would ever, or what man with a spark of genius ever could, advocate such a course?” The objection is one of those bugbears which gentlemen of certain opinions are constantly raising—gentlemen whose indignation seems to be good deal affected by tawdry, and still more by prejudice. The imperfections of old art are most evident, and followed only by those who know and are capable of no better. But I hold it, there is a living poetry beneath the cloak of those imperfections that such gentlemen have failed to perceive;—that the works of those early artists exhibit a vigour and delicacy, an earnest purpose and a poetic sense, an adaptation of their designs to the materials they worked upon, with an utter absence of personal conceit in themselves, which it is impossible to overrate. I grieve at the discredit that has been brought upon old art by the atrocities committed by incompetent imitators. To such persons the mere archaisms and exaggerations of expressions have appeared to be the sole characteristics of those earlier arts. They have missed the latent beauty, and have made bad copies of the crust. Those artists of old days felt beauty as we do, though they had no academical rules for its display; they felt all the poetry of human sympathy and passion as we do, though they had no axioms for its embodiment in art; and under their exceeding disadvantages, with no rules to guide, no experience of the past to enlighten them, it is less their fault that they expressed their strong feelings faintly, than it is ours that we are so blind—eye blind and heart blind—to misunderstand and misappreciate them. Neither do I perceive at all that the modified flatness of representation necessary to glass deprives it of the means of aiming at and of attaining a very high order of art. For what is high art? Surely the greatest art is that which expresses the greatest idea. And as I believe that this great result overrides all technicalities of material, I

see no reason why its attainment is not as possible for the glass-painter as for them who find expression for the yearnings of a big heart in the other poor and weak resources of stone or marble, of metal, or of paint. And I would that the glass-painter would lay such an ideal before him—that even if it were possible glass-painters could form themselves into a guild, and exclude those unworthy pretenders who do but poison public taste, and dishonour the credit of a noble profession.

But such a happy result would be disallowed by the axioms of modern liberty. The only other hope for the elevation of this beautiful art lies in this,—that those who have power should refrain from its abuse; that in all the honourableness of self-discipline they should put quality before quantity; and then work for the high aim in their art rather than for high balances in their ledger. With such sentiments, then, as these, would I close this address to all the artists and amateurs interested in this beautiful art. Let the glass-painter do honour to his glass! Let there be no hesitation about it, no wretched condescension to mislead those who gaze upon it,—let it be glass without mistake; parading nothing, pretending nothing; but honoured even in its weakness, and treated with justice even to its defects. Why envy the qualities or even the excellences of other arts? or why dread the genuine light of day, the open sun and passing clouds (which are as death and destruction to the oil-painter and the fresco-painter)?

If I were addressing glass-painters in this room, I would say, Have you not gems to play with—a very flood of gems to toss about and to let your thoughts revel in? Do you fear their gayness and vivacity? What if the diamond, ruby, and emerald, have a fire which no art can equal, except yours alone, have you not the mellow richness of the jacinth, the softness of the chrysope, and the tenderness of the pearl? If you fear them, leave them! If you use them, do use them and glory in them; but use them within the limits of an educated sense—treat them with that mingled modesty and confidence which have ever been and ever must be the characteristics of disciplined genius. You have entered the temple of the arts with the most precious jewels in your hands. Ignorance and self-conceit are sacrilege here—sordid notions are sacrilege here. It might have been well for the great men of former days to have played with their art, confident in their own principles, and modest in themselves. But glass-painting is no easy and light matter. The mere material itself is so beautiful that the eyes of the vulgar are dazzled and deceived by it; but it needs the utmost tact in its management, and genius and labour long and hard for its success. Let then no wilful, no untrained hand meddle with it; let no conceited spirit of self-taught genius intrude upon it; for such a one who thus violates the sanctity of the art will cut the throat of all his hopes and reputation as certainly as the glass will cut his fingers.

THE CRYSTAL PALACE.

A COMMITTEE is being formed, on the suggestion of Mr. Francis Fuller, for the collection of subscriptions for the restoration of the Fine Art Courts of the Palace; and Mr. Scott Russell has been promoting the objects of the movement by delivering a lecture on the Crystal Palace at the Royal Institution. At the close of this lecture, Mr. Russell said,—

"Surely such a building ought not to be allowed to go down. If the company are not rich enough to do it, if the insurance companies will not pay the full insurance, the public ought somehow to help them. In other countries a great educational institution like this would be helped by the Government. In England, in such a matter as this, the people are the Government. Let them, therefore, help both the directors and themselves to restore and maintain so grand a temple of art, education, and refinement; for to do so is a matter affecting the national reputation."

Much as we wish that the movement may be successful, we fear that a commercial company like that of the Crystal Palace are not likely to be aided in their object by public subscription to a sufficient extent, and we feel that it would be almost useless for us to urge the public to do it. Towards the restoration of the Library, however, public aid, by contributions of books, is a much more hopeful prospect. The Crystal Palace Library, which was completely destroyed, comprised upwards of 5,000 volumes, composed exclusively of presentation works.

HENRI DEUX WARE.

MR. CHAFFERS is delivering at the Society of Arts a valuable series of lectures on Pottery and Porcelain, under the Cantor foundation. In the third of them, delivered on the 4th inst., the lecturer described the very peculiar ware (of which we have before now made special reference), manufactured at Oiron, near Thouars, from 1520 to about 1550, coeval with the best period of Italian majolica, called Henri II. ware, which is of a distinct character and ornamentation to every other class of pottery. After briefly quoting the opinions of writers on the subject during the last thirty years, he alluded to the discoveries of M. Fillon, who solved the problem and cleared up the mystery as to the origin of this ware. Two artists assisted in the work, a potter, named François Charpentier, and Jean Bernard, librarian and secretary of Hélène de Haugest Genlis. While in her service the latter had furnished numerous designs for ornamental book-bindings. After her death they entered the service of her son, Claude Gouffier, whose arms are found on a plateau in the South Kensington Museum.

Mr. Chaffers next described the monograms, which are those of the Dauphin Henri, Anne of Montmorency, and of Claude Gouffier—the arms, emblems, and devices which are found upon the pottery of Oiron. He then spoke of the distinguishing characteristics of this curious ware, the body of which is a creamy white pipe-clay, very compact and of fine texture, so that it does not, like ordinary fayence, require an opaque white enamel, but merely a transparent glaze. Instead of being painted with enamel colours over the surface, it is actually inlaid with coloured pastes, in the same manner as the champlevé enamels or niello work on metal. The lecturer continued,—I will endeavour to give some idea of the complicated process of constructing a piece of this ware, from a very careful examination of a fractured specimen in the Stèves museum. The foundation of the vase being first modelled into the required form by hand—quite plain and hatched all over with crossed lines, that the outer crust might the better adhere to it—one or more thin plaques or bands of moist clay were then laid on a flat board, corresponding in size to the portion of the vase to be covered. These plaques were stamped by the bookbinders' tools into various patterns. The string borders of frets, guilloches, foliated scrolls, rosettes, &c., were accomplished by swivel-stamps, held in the hand, and rolled from one end to the other; the interlaced arabesques and diapered grounds were produced by means of metal stamps, such as were used for gliding the leather surfaces of books. These cavities or incised patterns were then filled in with different coloured clay, the superfluous portions being removed by a sharp chisel, and the bands were applied to the shaped foundation, and pressed closely to it. The next process was the application of ornaments in relief, such as brackets, masks, shells, terminal figures, &c.; these were either modelled by hand or pressed into moulds, and stuck on to the vase, together with the handles, and placed in the kiln for the first baking. The piece was then removed, and dipped into a thin, transparent lead glaze, with here and there some enamel tints of purple, blue, green, and yellow, sparingly applied, and again subjected to a less degree of heat in the muffle-kiln, sufficient to melt the glaze. From the manner in which the incrustated pattern was applied round the exterior of the vase, it would be next to impossible to make it correspond exactly at the junction of the two ends. This trifling irregularity has given rise to the supposition that the ornamentation was merely a printed design, transferred to the surface of the ware. This, to a superficial observer, appears very feasible; but if we look beneath the surface, and examine the section of the fractured vase at Stèves, it is clear that the coloured pastes were inlaid, the sharp angles of the grooves or furrows presenting too regular an appearance to have been caused by the mere absorption of any colouring matter, either by surface transfer or with a brush. It will also be observed, that the furrows in which the coloured pastes have been inserted are slightly depressed, from shrinkage in the kiln, thus essentially differing from painted earthenware, which would rather produce a low relief. The number of pieces of this ware known to be in existence is fifty-three. They are equally divided between France and England, each possessing twenty-six. The odd one belongs to Russia.

THE CAB QUESTION.

A DISCUSSION on the metropolitan cab question, introduced by remarks from Mr. Henry Cole, C.B., took place at the Society of Arts on Wednesday in last week. Mr. Cole considered our cabs to be a disgrace to the metropolis. The sixpenny mileage fare he held to be the chief cause; not being sufficiently remunerative for a good cab and a good horse. There is much truth in Mr. Cole's views. Sir Cassak Roney said he did not think the London cab-drivers were much worse specimens of humanity than others. He had often found, too, in his railway experience, that every line of railway was the worst managed in the kingdom in the eyes of passengers by that line. Fixed fares were essential, and existed in every city. Mr. Charles Hill said Mr. Cole had shut out every other consideration except that of fares, the point objected to being their limitation by law. In most Continental cities, and in the principal towns (and especially the watering-places) of England, a municipal regulation of the cab fares existed. If the cab business in London was unremunerative, they ought to endeavour to see how it could be made more remunerative. He thought that would not necessarily follow from increasing the fares. The question was how they could create a larger demand for cabs on the part of the public. At present, from some cause or other, there was a disinclination to use cabs, and he mentioned cases in which people arriving at a railway terminus preferred walking to their destination, even in wet weather, rather than take a cab. He believed this repugnance to cabs arose, in the first place—especially in the case of ladies—from the frequent disputes that took place about fares. A remedy for this, to a great extent, would be found by some instrument being attached to the cab, by which the distance travelled would be indicated; and he thought it was quite within the province of this Society to endeavour to obtain such an instrument and get it adopted.

It is to be hoped we shall not have to return to the intolerable state of matters which existed before the late legislation on the subject. Cabmen not seldom, even now, would as soon think of voluntarily returning change as giving thanks for an extra sixpence; but, in general, avoidance of abuse is thus insured; and were the extra sixpence put upon the first mile, the minimum fare being thus 1s., perhaps the present regulations might otherwise be left as they are, and the result be not only a less unpleasant intercourse between the public and the cabmen, but improved cabs, from more profitable returns and their more general employment. That cabs should be taxed to the extent of 15s. per annum, or only 1s. less than omnibuses, is iniquitous, and ought to be amended. So ought the power of the cab-owner to imprison his cabman for being short of his day's proceeds. There are sometimes no fewer than twenty of these poor fellows in prison at one time, it is said, on this account.

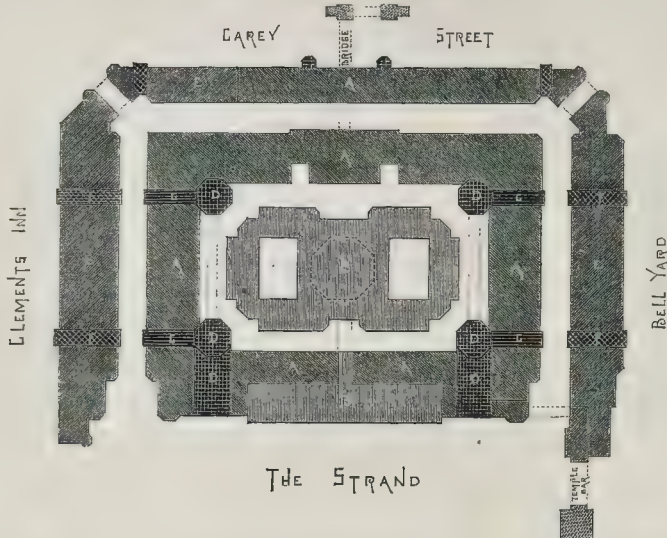
In the discussion several gentlemen spoke of the Hansom cab as being better than the four-wheeler. This we cannot see. They do go a little faster, but there their superiority, we think, ends. We have seen, on several occasions, both passengers and cabmen pitched head-foremost out of their seats, by the sudden stumbling of the horse, and we think it must be a curious "safety cab" which does that. An improved four-wheeler is what is wanted. The Hansom is not only dangerous, but uncomfortable and draughty. First and second class cabs were suggested in course of the discussion.

Mr. Alderman Lawrence, M.P., who took part in this discussion, asked the Home Secretary, in the House of Commons afterwards, whether he will be prepared to introduce a measure during the present session to consolidate the various Acts relating to metropolitan hackney carriages; to revise the tariff, with a view of enabling the public to have the option of obtaining a superior class of hackney-carriage at an increased fare; to take away the power at present possessed by the cab owners of imprisoning their drivers in Whitecross-street Prison in the event of their failing to pay the daily hiring; and other questions bearing on the same subject.

The Home Secretary, in reply, said that a Bill in the House of Lords relating to the street traffic would contain clauses which it was hoped would improve the hackney-carriages, but he had no intention to introduce any special measure on the subject.

PLANS FOR THE PROPOSED LAW COURTS.*

Mr. E. M. Barry's Key Plan.

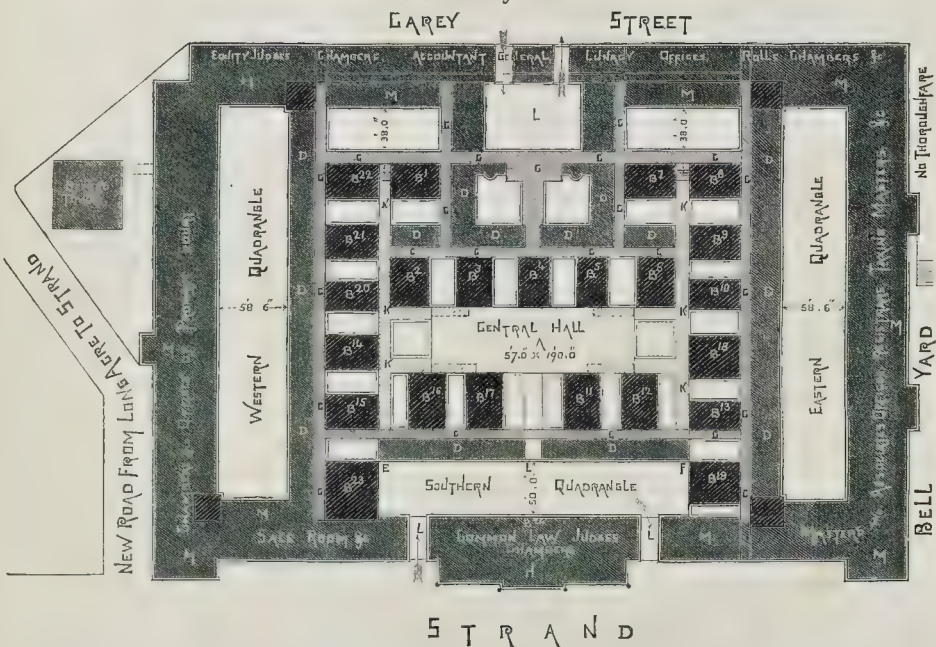


A Courts of Law.
B. Bar Attorneys and Professional Public.

C. Jurors' and Witnesses' Stairs.
D. Public Entrance and Stairs to Galleries in Courts.

E. Offices of Courts of Law and Equity.
F. Public Stairs and Waiting Halls in Offices.

Mr. Street's Key Plan.



a. All the rooms for the Bar are under Central Hall, close to all the courts. The Bar requires the inner line of communication, having to practise in all the courts. There is a continuous passage for Bar through all the courts at the end nearest bar-rooms, under public galleries.
b 1 to b 23. The courts. All on the same level. b 1 to b 7, Equity Courts. b 8 to b 10, Courts of Queen's Bench. b 11 to b 13, Courts of Common Pleas. b 14 to b 16, Courts of Exchequer. b 17, Exchequer Chamber. b 18, Spare court. b 19, Extra court. b 20, Probate and Divorce Court. b 21, Admiralty Court. b 22, Ecclesiastical Court. b 23, Appellate Court. b 24, Bankruptcy Court and offices.

c c c. The judges' corridors, continuous throughout, and accessible only to judges.
d d. Judges' rooms. Level with bench in all the courts. Each set opposite its own court.
e f g. Principal entrances for judges.
h. Entrances in Strand for jurors, witnesses, and parties to suits. Principal stairs here lead to a second hall on first floor, and from thence by a bridge and flight of stairs to Central Hall. There are separate entrances and stairs for witnesses and jurors who wish to go at once to their rooms without ascending to Central Hall.
k k. Corridors for general public (each 175 ft. by 16 ft.), reached by four public staircases. From these access is gained to the lobbies behind the galleries in courts. The Central

Hall is not used by the general public, but it and these corridors are level, and persons can pass by permission from one to the other by means of doors in the iron screens which separate them.
l l. Carriage quadrangles, with arched entrances from Strand and Carey-street. These are for the judges' access to their porches.
Below c c c is a corridor for the use of the Bar and attorneys only. It opens to the consultation-rooms, which are under d d all round.
Below this is another corridor for jurors and witnesses only. The jury-rooms are under the consultation-rooms (d d), and the witness-rooms are all under the courts.
m m m. Enclosing block of law offices.

N.B.—The Scale of the Plans is different.

* See p. 108, ante.

CLOCK TOWER OF THE RATH-HAUS, PRAGUE.



A. Detail of Arcade.

B. Detail of Portion of Clock Face.

BELL AND CLOCK TOWERS.

No one who has been in the habit of looking over old views of cities and towns as they appeared two or three centuries ago can help being struck with the fact, that although these same towns may have gained in size and importance, their general aspect has, in nearly every instance, decreased in grandeur and dignity. This is of course more the case in England than on the Continent. Oxford and Durham are nearly the only towns in this country that present a grand and magnificent outline when seen from a distance; whereas all modern English towns, such as Liverpool, Manchester, and Birmingham, when seen from a distance, appear like a collection of dirty villages. Some people will be inclined to lay the blame on the tall factory chimneys; but suppose the chimneys removed, and what have we? a long, dull, dismal, flat, and unbroken sky-line; look, for instance, at Brighton; what can be more thoroughly uninteresting than the view of that immense and fashionable town from the sea? One is really inclined to wish that there were a few tall chimneys, or in fact anything to break the dreary monotony of that everlasting horizontal sky-line. Those who have seen Prague and Würzburg from a distance, or have gazed upon the even more glorious panoramas presented by Rome, Venice, or Verona, cannot help being struck with the squalid and beggarly appearance of our large towns when the first glimpses of them strike the eye. Now why should this be so? What is it that we miss when looking upon modern towns? It is simply this,—we see no towers. And why have we no towers? Of course we no longer require them for purposes of defence, but we still make use of bells and clocks of large size, both of which seem to suggest that we have not yet overcome the requirement for towers. And how many fine examples of towers, applied to these purposes, are to be found in the ancient cities of Germany, Italy, and Belgium. The great "belfries" in the last-named country are celebrated, but in Germany nearly every little town has its watch-tower or bell-tower. Prague possesses very many examples, the finest of which is represented in our engraving. It is attached to the Rathhaus, and is a fine specimen of fourteenth-century architecture. The clocks, for there are two,—occupy the basement and the top story of the tower; the upper one has four faces. It is much to be regretted that they have all been modernized, but the face of the lower clock is wonderfully interesting. There are two dials, one chronological, the other astronomical; both, together with the framework which surrounds them, are of stone, beautifully and delicately carved, and retaining vestiges of coloured decoration.

A tower of very similar arrangement and design is to be found at Würzburg. Here the clock is in the highest story but one; the dial is ancient—fifteenth-century work,—and there is a very interesting wooden canopy over it. The basement portion of this tower is Romanesque work, and there is a singular arrangement of shafts supporting a trefoil-headed arch, which looks uncommonly as if it had formed part of a clock-face in a similar position to the one described at Prague.

At Ratisbon is a lofty clock-tower attached to the Rathhaus; the clock is in the top story. This tower is capped with a low pyramidal roof; the story below the clock is occupied by large three-light windows. It is a work of the latter part of the fourteenth century.

The clock-tower adjoining the Rathhaus at Cologne is a magnificent structure. It is in plan octagonal, with four large and four small sides. The whole tower is covered with niches and panelling, and lighted with two-light Pointed windows in each story. This tower is capped with a tall octagonal spire of slate, at the base of which is an open balcony; half-way up the spire is another balcony and open spaces, through which the bells are visible. The clock-face is in the top story, and is partly ancient. The tower of the Rathhaus in the New Stadt at Prague is very similar in general arrangement to the one already described in that city; it has, however, no clock-face at the basement, and is inferior in design, and later in date than the one we have illustrated. At Swaaburg, in Bavaria, is a very picturesque example, very similar to the Prague ones. At Kitzingen, near Würzburg, the clock-tower is circular in plan, and quite isolated from the Rathhaus: it is capped with a tall slate spire. At Rothenburg,

in Bavaria, is a very original and pretty example: it grows out of the gable of the Rathhaus, and is square in plan for two stories; it is then broadened into an octagon, with four statues standing on the "braches;" at the top is a projecting cornice supporting a light iron parapet railing; the whole is capped with a bulbous spire of two orders.* At Augsburg is a very tall tower, over 300 ft. high, detached from the Rathhaus. It has been rather modernized, and is not earlier than the beginning of the seventeenth century; it is, however, very good in outline. It is square three-fourths of the way up; the remaining portion of the tower forming an octagonal lantern, crowned with an ogee dome. The tower of the Rathhaus at Gotha is probably of the same date; it is attached to the building, and is neither very lofty nor beautiful. At Oberwesel, one of the towers of the fortifications has been converted into a clock-tower at a late period. The clock-face is placed in a kind of large dormer: the effect is very picturesque. The same arrangement occurs in one of the towers of the castle at Wertheim.

During the seventeenth and eighteenth centuries building towers for these purposes was discontinued, and the modern pepper-box was used in their place. Great praise is due to the late Sir Charles Barry for his bold revival of this noble feature in his new "Palace of Westminster."

THE NATIONAL GALLERY DESIGNS.

The rumour gains ground that it is intended to throw all the competitors overboard wholesale, without making any selection. This would be a clear breach of faith, as Mr. Cowper gave them distinctly to understand that one of them would be employed.

It would make the having been invited to compete a serious professional injury to each one of the competitors. If one be selected, the rest cannot complain; but if no one be chosen, all will have a right to complain, as they will thereby be stigmatized as ignorant and incompetent.

The Chief Commissioner personally is incapable of an act of injustice, but our information is good, and we fear the matter has not been fully explained to him. We trust it may not be too late to obtain re-consideration.

A NEW FARMSTEAD.

A LARGE farm-steading, arranged for a system of feeding cattle entirely under cover, and carrying on all indoor farming operations under the same roof, has just been completed at Grinkle Park, Yorkshire, for Mr. Charles M. Palmer. The building may be described as forming a hollow square, covering nearly half an acre of ground, the centre of the square being occupied by the feeding-boxes, twenty in number, each 10 ft. square, and sunk 3 ft. below the surface; the roof rises high over this portion, and is supported by thirty metal columns. Around this centre are arranged the following departments:—Commencing on the north side with the barn and the thrashing machinery (supplied and fitted up by Mr. William Trotter, of Stocksfield), with engine-house, smith's shop, spacious straw-house, implement-house, cart-sheds, &c. On the west side is a range of ten stalls for the farm horses, with harness compartments for each horse, and behind these, again, ranges of loose-boxes for brood mares, with hay-house and corn-stores, &c. On the south side are a large fold-yard for the store cattle (open by archways to the south), pig-house, bull-house, &c. On the east side is provided accommodation for the milk cows, and calf-pens, with boiling-house, oil-cake store, turnip-house, &c. The patent metal fittings in the stable, loose-boxes, byre and cattle-boxes, have been procured from Messrs. Musgrave & Co., Belfast, each animal having a separate trough for water, supplied through a system of pipes, and of which there is a never-failing supply (of pure spring water) at a high pressure. The system of cemented passages throughout the building, in connexion with storehouses, and the use of small rolling wagons for the purpose of carrying the food, enable the feeding operations to be carried on with the most economical employment of labour. The lighting and ventilation of the building, which are mostly effected in

the roof, are quite successful, as well as the system adopted for collecting and saving the manure, both solid and liquid. The stackyard stands to the north of the buildings, adjoining the barn. At the west side, at a short distance from the building, a semi-Gothic house has been built for the farm-bailiff, to which is attached a roomy garden; and on the east side are six new cottages of four rooms each, with gardens in front. The architect is Mr. Archibald M. Dunn, of Newcastle-upon-Tyne; and the buildings, including machinery, have cost about 4,600*l*. The contractor for the whole of the works is Mr. Thomas Linfoot, of Whitby; and Mr. John Dixon acted as clerk of the works.

FROM IRELAND.

Dublin.—In Stephen's Green an enormous pile of building is almost finished. This is the new Shelbourne Hotel, erected by Mr. William Jury, of Dublin and Belfast; Mr. Charles Cotton, of Cork; and Mr. Goodman, late manager of the Killarney Railway Hotel. The front to Stephen's Green, overlooking the grounds, seems to be about 170 ft., while that along Kildare-street is as much more, presenting a square of 170 ft. The edifice overtops the mansion of the borough member, hitherto considered one of the finest on the north side of the Green, by two stories. A telegraph office, lift for guests from story to story, several exits, with fire escapes, baths, and all modern improvements, have been provided. Besides the gentlemen's coffee-room and public dining-rooms, there is a ladies' coffee-room furnished, and a newsroom equal to that of the Reform Club. The kitchen is detached from the main building, so that there is no smell from the culinary department. In a separate wing are smoking and billiard rooms. The whole cost will be over 80,000*l*.

GIFT OF THE MAYER MUSEUM TO LIVERPOOL.

THE celebrated Mayer collection of antiquities has been presented by Mr. Joseph Mayer to the town of Liverpool, and will form "The Mayer Collection," under the superintendence of the Library and Museum Committee. This collection, as is well known, is a very valuable one, in many respects unique, and has cost many thousands of pounds, and taken many years to form. In one department—the illustrations of Wedgwood—as remarked by Mr. Picton in announcing the gift, there is no collection in existence which at all equals it; and in gems and in Mediaeval works of gold and silver, and works of that class, it is also exceedingly rich, as it is in Egyptian antiquities. The celebrated Fawcett collection of Anglo-Saxon antiquities is included in it, with many other valuable and beautiful works. Altogether, the gift is a very noble one, and entitles Mr. Mayer to the gratitude of more than his townsmen.

ACCIDENTS.

London.—In boring a tunnel from a building in the northern or South Hackney enclosure of Victoria Park to the main sewer for the insertion of drains, the excavation fell in while four men and a boy were at work, burying all but the boy. Two were got out alive, but the other two were dead when dug out. There is said to have been some neglect in the securing of the sides by planks and cross struts.

Chatham.—An accident has occurred at the drill-shed now in course of completion at the rear of the Royal Marine Barracks. While a number of painters were engaged in painting the inside of the roof, one of them overbalanced himself, and fell a distance of 30 ft. with fearful violence, striking against a block of stone. His head was badly cut and his thigh broken.

Bedford.—A bricklayer in the employ of Mr. Mercer, whilst at work on the third story of new buildings now in course of erection on the east side of St. Mary's-street, was in the act of pulling up a bucket of mortar, when the rope broke, and the sudden jerk throwing the man off his balance, he was precipitated head foremost to the basement, and was seriously injured.

Kirkdale.—Just now there is in course of erection an additional wing to the gaol premises

* We will give a sketch of this on another occasion.

at Kirkdale, and a large number of men are employed at the work. There is a shed supported by two arches at the north-west corner of the gaol. About forty men had assembled in this place at dinner-time, when suddenly, without warning, some twenty-two or twenty-three of them were precipitated into the cellar below, and partially buried in bricks and mortar. Unfortunately some of the men were seriously injured.

Brighton.—At the new Brighton West Pier an accident has happened to the structure. The hull and a large portion of the framework of a brig stranded near Shoreham drifted along the coast, struck the pier near its shore-end, and smashed through the iron piling by which it is supported. Seven of the piles, with all the intermediate stages and bracing, were carried away, and the pier was thereby rendered unsafe for public use.

Hastings.—The drainage works on the beach have been damaged by the sea during a gale. A hoarding and piles were carried away, and the trench filled up to the original level of the ground, so that the work is all to do over again.

THE DRAINAGE OF KIDDERMINSTER.

A scheme for the drainage and water-supply of the town of Kidderminster was submitted to the Sanitary Committee on the 30th ult., by Mr. Curley, C.E., of Hereford. He proposes to filter and clarify the sewage in filtering tanks, near the point where the Hoo Brook joins the river Stour, and to convey the filtered water into the river below the dam at the Wilden Iron Works. The total area to be drained is 450 acres, for which Mr. Curley considers that a main outlet sewer 3 ft. in diameter is sufficient. The total length of main sewers, as laid down in the plans, is 15 miles; and the estimated cost, including gullies, flushing wells, overflow chambers, filtering and deodorising tanks, is 20,000*l.* He also submits a scheme for water-supply,—a water-lower 56 ft. high, and surmounted with a wrought-iron cistern capable of holding half a million gallons, is to be erected near the site for the filtering-tanks. The water is to be pumped from the Hoo Brook, the stream which supplies the motive power for the Wilden Ironworks, and which is said to be of very good quality, by two 25-horse engines. The rates proposed to be levied are,—one penny per week for cottages of 5*l.* per annum, twopenny per week for 10*l.* houses, threepenny per week for 20*l.* houses, fourpenny for 30*l.* houses, and so on. There are about 4,000 houses in the borough, the population, according to the last census, being about 18,000. The total annual revenue from the waterworks is estimated at 2,131*l.*, and the cost of construction at 20,000*l.*

DWELLING-HOUSES FOR THE WORKING CLASSES.

A DEPUTATION from the Metropolitan Building Society waited on the Earl of Derby on Saturday last, by appointment, at his official residence in Downing-street, with the object of obtaining a loan of 500,000*l.* for building extensive ranges of workmen's houses in the metropolis.

The prospectus of the company, which had been previously sent to Lord Derby, states that the want of workmen's houses was so great and pressing that it would require at least 500,000*l.* per annum to be expended for the next five years to mitigate the evil in any sensible degree. That outlay would supply house accommodation for 100,000 persons. Without Government assistance, nothing like that accommodation could be had, as it pays much better to invest capital in high-class houses, showing the absolute necessity of Government interference, if the evil is to be remedied.

Lord Derby called the attention of the deputation to the Workmen's Houses Act of May, 1866, and read several extracts from it, showing that any company might obtain loans under that Act to the extent of one-half the cost of the buildings, at 4 per cent. interest. Mr. Alison stated that that Act was passed when the interest of money was 10 per cent., and then it offered great inducements to the public to act upon it by obtaining money at 4 per cent. But now it offered no inducements, as the interest of money is 3 per cent., and loans to the extent of one-half can now readily be obtained from private

sources. If that Act was amended, so as to give three-fourths instead of one-half, the company would avail itself of it, but not otherwise.

Lord Derby said that although the Act of last year had not yet been acted on, he fully expected that it would. Should, however, the Act remain inoperative, the question of amending it might then be considered; in the meantime he was not prepared to advise Parliament on the subject.

On Tuesday evening Mr. McCullagh Torrens obtained leave to introduce a Bill to provide better dwellings in towns for artisans and labourers. He introduced a similar Bill last session, and it was referred to a select committee, who reported, and the Bill he now proposed was, on that report, the same as the House and committee left it. All the information he had received since last session led him to the conclusion that matters were getting worse rather than better, for the amount of misery and overcrowding far exceeded any supply of their remedy which voluntary enterprise could afford, notwithstanding that many good people, from benevolence, had endeavoured to supply the want. They, no doubt, improved certain parts of the town, but nothing had been done adequate to what was really required by the metropolis.

Mr. Walpole expressed his approval of the Bill, but, of course, he would endeavour to carefully guard the property of private individuals. The Bill was read a first time.

SITE FOR MANCHESTER TOWN-HALL.

THE Manchester City Council on Wednesday last came to a decision regarding the proposal to enlarge the site of the Town-hall about to be erected, and to make a square instead of a triangular building. The latter is estimated to cost about 500,000*l.*, and it was asserted that the adoption of the new proposal would add about 300,000*l.* to the amount. The Council decided to keep to their original site. Surely the shape of the site might be improved without necessarily spending such a large additional sum as that named. The shape of the original site is very awkward. We must applaud Alderman King for his endeavours to get it improved.

IMPERILLING HOUSES.

THE METROPOLITAN BUILDING ACT.

At the Wandsworth Police Court, on the 6th inst., Messrs. Mulliner & Cooper, builders, of Wandsworth, were summoned for neglecting to give notice to the district surveyor, under the Building Act.

Mr. Hiscocks, the district surveyor, said the defendants had dug out and formed a cellar under the ground-floor, below the foundations of the walls of a dwelling-house and shop, in the High-street, Wandsworth, within or less than 3 ft. of the footings of the walls, and for a length of 60 ft., thus forming an embankment, thereby imperilling the safety of the house.

The Magistrate (Mr. Ingham) said he could not find anything in the Metropolitan Building Act relating to digging below the house for a cellar.

The District Surveyor said he could only refer to the general rules laid down (1st Schedule, Preliminary), as to walls being built on solid ground, and this could scarcely be called solid ground; and to Part I., rules 1 and 2, determining the thicknesses, lengths, and heights of walls; and he submitted that, although he could not point to any rule that required walls to be underpinned, yet sec. 9, he considered, taken with the context, was intended to embrace all that was necessary for the due security of the walls.

The Magistrate said it was a very proper case to bring before him, but there was a defect in the Act; and he would be pleased if Mr. Hiscocks would take it to a higher Court, and get their decision. He therefore dismissed the summons.

The District Surveyor said he did not wish to press the case against the defendants, as it was this particular point only that he wished decided; and stated that a Bill would be introduced this session for the amendment of the Act. The Magistrate hoped this case would be mentioned.

“* We are forced to differ from Mr. Ingham. The Act is perfectly sufficient to prevent the dangerous irregularity complained of. “First Schedule: Preliminary,” says,—“Every building shall be inclosed with walls constructed of brick, stone, or other hard and incombustible substances,” whereas the lowest story of the building in question is now inclosed merely with earth,—no walls at all. If the district surveyor did not point this out to the magistrate, he should obtain another summons at once. If he did do so, the magistrate might find himself in an awkward position should an accident occur.—Ed.

THE TRADES MOVEMENT.

Courts of Conciliation.—In the House of Lords, Lord St. Leonards has laid upon the table a Bill for the establishment of courts of conciliation and arbitration. He explained that the Bill was similar to the one which he had introduced last session, and its object was to provide for the settlement of disputes between masters and workmen. Courts of conciliation already existed in France, and had been found to work satisfactorily. He believed that the establishment of similar institutions in this country would tend greatly to put a stop to strikes. The Bill was read a first time.

Sheffield.—A meeting of the members of the File Manufacturers' Association has been held in reference to an attempt on the part of the trade unions to compel Messrs. Turton & Sons, Sheaf Works, to require a file-grinder in their employment to conform to the rules of the union. Messrs. Turton refusing to do so, their file-grinders and smiths have given a month's notice. The file manufacturers, after hearing the circumstances of the case, resolved:—“That the File Manufacturers' Association claim the right to employ such workmen as they please, and will not submit to unreasonable dictation on the part of the trade unions.” This resolution is understood to apply not only to the case of Messrs. Turton & Sons, but to all attempts on the part of the unionists to compel manufacturers to employ union men or pay the contributions of men who get in arrears with their payments to the unions.

Retford.—The bricklayers are out on strike at Retford. It appears to be principally directed against Mr. Thomas Hopkinson, builder, who is engaged in erecting the new town-hall, shambles, and corn and butter markets. Mr. Hopkinson has kept on his men at full wages during the short days of the winter months, and now that “fall time” is approaching the men want their time reduced and their wages advanced.

GAS.

The Ramsey Gas Company have declared a dividend of 7½ per cent. for the last year, besides adding to their reserve fund.—The Wyomondham Gas Company have declared a dividend of 8 per cent. for the past year.—The Frodsham Gas Company have declared a dividend of 7½ per cent. and a reduction of price to 5*s.* 10*d.* Mr. Edwards, in advocating “an increased dividend and a reduction in the price of gas,” gave a statistical account of the progress of the company since its formation in 1857. The price then charged for gas was 8*s.* 4*d.* per 1,000 ft. He had succeeded in persuading them to reduce the price on three previous occasions, and the result had been remarkable. When the higher price was charged the company paid 1½ per cent. dividend, but when it was reduced to 7*s.* 6*d.*, 6*s.* 8*d.*, and lastly to 6*s.* 3*d.*, the consumption doubled, and the dividend rose to 5 per cent. He strongly advocated a reduction in price as a true principle in commercial economy. Mr. James Rigby stated that when Mr. Edwards proposed the last reduction in price he opposed him, but he was glad that he was wrong and Mr. Edwards right, and he now supported the further reduction.—The new gasometer at Yarmouth, capable of holding 100,000 cubic feet of gas, was almost destroyed in a great gale early in December last. Since then the contractors have undertaken to restore the works at their own expense. The cost will be about 1,000*l.*

THE METROPOLITAN WORKHOUSE INFIRMARIES.

The medical officers of the metropolitan workhouses have had a number of questions submitted to them in a circular from the Poor Law Board, with respect to the condition of the infirmaries; and their answers, given in a Parliamentary paper, show the shortcomings a very little time since.

Mr. Simmonds, the medical officer of St. Mary's, Newington, states that accommodation should be made for 250 patients, epidemics not existing; that the existing accommodation would properly admit 135, including insane, itch, and another class of diseases, and that on a specified day there were 233 cases in the wards. He had no exact experience as to the cubical space;

but he could say, "At night our wards stink overpoweringly." The remedies he proposed for the many evils he knew to exist are very suggestive, and point to a shocking condition of things.

The deficiencies of Bermondsey workhouse infirmary were described by Mr. Coclahan, the medical officer. The space was insufficient in all the day and night wards, and he believed recovery from illness was retarded in diseases of the lungs through deficiency of space and consequent overcrowding and irregularity of ventilation arising from the efforts made to compensate for deficiency of space. He considered there was room only for 51 sick, while provision should be made for 94. The cubical space he recommended was 1,000 ft., and 80 or 90 superficial feet for floor space for each patient.

Bethel-green infirmary was described by Mr. Smart, the medical officer, as having accommodation for 318 sick, while accommodation was needed for 600. The beds were too close and crowded. Recovery from illness, he said, was retarded by the overcrowded state of the wards: more space, better ventilation, and increased supervision, both by medical help and by nurses, were needed.

Of Clerkenwell workhouse infirmary, which is considered by the authorities very defective, a few of the defects, and not by any means the worst, are given in the answers of Mr. H. J. Brown, the medical officer. He states that by the existing accommodation from 100 to 125 should be properly admitted, but that room should be provided for 250. The space, ventilation, light, and air, nursing and attention to the sick, are all marked as "deficient." Recovery from illness was retarded in the house, but the causes were not specified. The remedies suggested were "day rooms for the insane and other patients able to leave their beds, increased space in the wards, exercising grounds, paid nurses to each sick ward (not paupers) both for day and night, improved system of ventilation, and water-closets."

These illustrations of workhouse infirmary management are taken haphazard from the official papers.

In the House of Commons, Mr. Hardy, the president of the Poor Law Board, has brought in a Bill for the establishment in the metropolis of asylums for the sick, insane, and other classes of the poor; and of dispensaries, and for the distribution over the metropolis of portions of the charge for poor relief, and for other purposes relating to poor relief in the metropolis.

OPENING OF SHEEPSCAR IRON CHURCH.

THE first of the temporary iron churches now in course of erection under the auspices of the Leeds Church Extension Society, was opened at Sheepscar on the 30th ult., and the long and much-experienced want of additional church accommodation for New Leeds and its now populous and fast-increasing neighbourhood, happily no longer exists. Although a temporary church, the building of which we now speak is by no means flimsy and unsubstantial.

The edifice has been erected in an open space on the Chapeltown-road, fronting Bedford-terrace. It is in this space also where the permanent stone church will be erected, the foundations of which have been commenced. The total cost of this church has been 490l., in addition to which 25l. have been expended in gas and warming apparatuses, and 10l. in the formation of roads and approaches to the several entrances. The principal entrance is placed at the west end of the church, and at the north-east and south-west corners a special entrance is contrived for the vestry and the choristers. The seats in the body of the church are arranged to accommodate 300 persons, and, like the side walls, are composed of polished deal. Three large windows on each side, and one still larger at each end, serve to dispel all signs of gloominess, and the whole has a very cheerful aspect. In respect to the lighting and warming of the place due consideration has been observed for the comfort of the congregation.

The erection of the church was entrusted to Messrs. Francis Morton & Co. (Limited), of Liverpool, engineers and contractors. Two other temporary churches are now in course of erection by the Leeds Church Extension Society, one at Woodhouse Moor, and the other at Hunslet. A fourth is also under contemplation.

THE LATE MR. WILLIAM DARGAN.

IRELAND has lost a benefactor under very sad circumstances. Mr. William Dargan expired on the 7th inst., in Fitzwilliam-square, Dublin, after a prolonged and painful illness.

Mr. Dargan was an Irishman and a self-made man. He was the contractor for the first line of railway in Ireland, and then but little known. In the execution of the extensive works carried out under his direction there was observable a marked improvement in the condition of the labourer, in striking contrast to the demoralising influence which the public works in other districts but too often exercised; so that it may be said that Mr. Dargan really did more to elevate the character of the labourer of his country than perhaps any individual of his time. One of the first occasions upon which he occupied a prominent position in connexion with those public works with which he was subsequently so closely identified, was in the construction of the great Holyhead road designed by Telford. When this was completed he returned to his native country, and the experience he had gained in England pointed him out as the person best fitted to construct the then proposed line between Dublin and Howth. The line of railway from Dublin to Kingstown was the first and, for several years, the only one in Ireland. Considering the locality through which it passes, its construction must have been then attended with considerable difficulties. There was, however, no hesitation on the part of the directors in confiding the execution of it to Mr. Dargan, and, taking everything into account, this line must be considered a triumph of engineering skill and ability. On being asked, at the outset, how much he thought the line would cost, he made some calculations in pencil on the back of a used envelope, and announced the result. On being told that not much dependence could be placed on such an estimate, he at once offered to construct the line on that estimate, and he did so, to the entire satisfaction of the directors.

After the completion of the Kingstown Railway many years elapsed before much progress was made in extension of the system in Ireland. The tender given by Mr. Dargan for the construction of the Ulster Canal was accepted, and the work completed within the specified time. The manner in which the great work was executed increased his already established reputation, and the formation of the Ulster, the Dublin and Drogheda, the Great Southern and Western lines of Irish railway followed in rapid succession, in all of which the services of Mr. Dargan were invaluable in effecting an extension of the system. The Great Southern and Western, and the Midland and Great Western Railways of Ireland are, however, his great works. To enumerate all his works of this class would be to give a list of the railways, there being but one or two exceptions, and these of comparative insignificance. In connexion with the development of the railway system in Ireland, Mr. Dargan rendered much more important services to the Irish railways than the mere construction of lines. At the time, railway enterprise in Ireland was at a fearful discount: even for the completion of the smallest lines funds were with difficulty made available. It was in vain calls were made upon shareholders; and the Government refused to advance any subsidy until certain portions of the capital had been paid up by the shareholders. These were the circumstances under which Mr. Dargan was found to render indispensable services. He came for ward, and invariably contributed out of his private purse until the undertaking was completed.

The next memorable work with which Mr. Dargan identified himself was the great Industrial Exhibition of 1853, in Dublin, of which he may be said to have been the originator and founder. This was undertaken with the patriotic view of developing the resources of his native country, and giving an impulse to native enterprise. For this purpose he placed 30,000l. in the hands of a committee consisting of the leading citizens, empowering them to erect a building, and to defray all the expenses connected therewith. He undertook, moreover, to guarantee whatever additional sums might be required to carry the enterprise to a successful issue. In fact, before the Exhibition opened on May 12, 1853, his advances were said to amount to nearly 100,000l. It had been arranged that if at the close of the Exhibition the profits were sufficient, Mr. Dargan was to be repaid his advances, with 5 per cent. interest: if insufficient the loss was

to be entirely his own. Mr. Dargan experienced a loss on the transaction of some 20,000l.

When the present National Gallery in Dublin was erected, a bronze statue of Mr. Dargan, subscribed for by his fellow citizens, was placed in front of the building. Her Majesty offered him the honour of knighthood, which however he declined. His subsequent career, though not of such a prominent character, was associated with every great work promoted in this country.

About a year ago, Mr. Dargan had a fall from his horse, by which his system was so shaken that his recovery was for some time doubtful. Since that he had had another fall, but not so serious. Probably the ill state of his health brought on a confusion in his affairs which recently resulted in his stopping payment, and in an arrangement with his creditors; though his assets, it is confidently said, will pay much more than 20s. in the pound. His embarrassments, however, seem to have deeply affected his health and habits, and brought on a disease which his powerful constitution failed to withstand. We should blink the truth, nevertheless, if we omitted to say it was aggravated by a personal failing.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of members was held on Friday evening (the 1st instant), at the House, in Conduit-street.

The chair was occupied by Mr. R. W. Edis.

The following gentlemen were elected members of the Association:—Mr. A. W. Hand, Mr. Humphries, and Mr. A. Webb.

The Chairman announced that the annual *soirée* would be held on the 1st of next month, and expressed a hope that, as its object was to bring the members into friendly association with each other, as many as possible would attend, and also contribute drawings and suitable works of art.

Mr. Turner called attention to the library, and to the increasing demand for the books. He suggested that a special appeal should be made for donations of books and money.

The Chairman observed upon the importance to architectural students of good books of reference, and remarked, that it means could be taken to bring the wants of the Association more directly under the notice of the members of the profession, many persons having duplicate copies of books might be willing to present them to the library.

Mr. J. P. Seddon then read a paper on "Oysterculture architecturally considered."

In the course of a short discussion which ensued,

Mr. E. W. Godwin observed that the main question opened up by the paper just read was, what was the pure, healthy, educated style from which the young architect should start? His own experience led him to believe that thirteenth-century art was not sufficient, for it was as full of variation and of bad architecture as that of any other age. He did not know any Perpendicular or Renaissance building which could be inferior to certain modern specimens of thirteenth-century art. Then with regard to the "thoroughness," or rather want of thoroughness, of the works, he was bound to say he was often disappointed and disgusted at the absence of that quality in Gothic buildings. The outside was Gothic enough, but the inside presented the appearance of the ordinary vernacular building of the age. Where, he asked, was the Gothic roof or the Gothic wall? There was a large building in the west of England to which he would not further refer save as an illustration of want of thoroughness. His recommendation, therefore, was that whether the building be Classic or Gothic, it was always desirable to keep "thoroughness" in view, because there could be no good architecture without it. Then there were the Rationalists and the Conventional styles, and if they wanted to see good examples of them, let them study the Assyrian work in the British Museum.

Mr. Burgess having been called upon, said that having promised to read a paper on "Our Architectural Future" (May 24th), he would reserve his defence, merely observing that he intended to treat the subject as a very serious one indeed.

Mr. P. Edwards commented upon the extraordinary want of unanimity that appeared to exist among architects, which he thought was more marked and striking than even that which characterized the members of the medical profession. As an illustration, he stated that he had on one occasion submitted the same design to the criticism of three architects, and that all three had expressed different opinions upon its merits.

Professor Ware (of Boston) remarked that he quite agreed with what had been said as to the necessity of thoroughness in work, whatever might be the style. It should, however, he thought, be borne in mind that the interior of a building should be founded upon the needs and requirements of those who were to use it. This might always be accomplished, while at the same time harmony might be observed between the exterior and the interior.

Mr. L. V. Ridge denied that architects of particular schools differed upon the principles which governed their art, although they might not agree upon details. In his opinion, the true principle to keep in mind, when designing a building, was to combine utility with beauty.

A vote of thanks having been proposed,

The Chairman, in putting it, observed that the paper of Mr. Seddon was useful, as calculated to remove falacies on the one hand, and as an incentive on the other to cast aside the prejudice of the schools, in order to produce

works exhibiting earnestness, truth, and study. Those who were acquainted with what might be termed the inner life of the Architectural Association, were aware of the exertions which its members were making to obtain that knowledge of true principles which could alone guide the architect to just conclusions, and enable him to produce thoroughness in his works. The majority of the Association was composed of young men who were at work, for many hours each day, in the offices of their employers; but, notwithstanding, they found time to devote three or four evenings a week to study in classes, and to obtain that practical knowledge of their profession unobtainable in the ordinary routine of business. While schemes for architectural education were still in *nubibus* in other directions, the Architectural Association had put its shoulder to the wheel, and had provided for itself a life school, a class of design, a class for practical subjects, and other aids and appliances, which proved that whatever short-comings might exist elsewhere, they were at least earnest in their work, and deserved sympathy and encouragement, instead of apathy, and possibly sneers. There was no doubt a great deal of frivolity in the art-work of the last two or three centuries, and anything like perpetuating it in modern times was to be deprecated. It was not, however, to be supposed that the influence of bad examples could be obliterated in a moment, nor was it to be supposed that the architect of the present day could do just what he pleased. He might desire to avoid the reproduction of old works, and to carry out something altogether original, but he was frequently controlled by clients, who, as a general rule, objected to art-work on the score of expense.

At the next meeting of the Association, Mr. T. Wells will read a paper on the influence of Eastern and Western Art.

WESTMINSTER PALACE.

MR. E. M. BARRY writes to us as follows:—I have seen the letter of Sir Augustus Clifford, which was copied into other papers from your columns, and in which he complains of the inconvenience he suffers from smoky chimneys. I join with Sir Augustus Clifford in hoping that what has happened at the Westminster Palace may be remembered as a warning by those now in power. Perhaps he is not aware that a general system of dispensing with chimneys was forced upon my late father after his design was matured, and in spite of his earnest protest. After this system had been pronounced against, the building, which had been constructed in accordance therewith, was consigned again to the architect to deal with as he could. Under these circumstances I am only surprised that the evils of which Sir Augustus complains are not far worse, as indeed they would have been had not my father's foresight provided extra fines and other arrangements, so as to provide, as far as he was able, against the failure he foresaw, but was powerless to avert.

"THE ORANGE-PEEL PAVEMENT DANGER."

I was much struck lately at Florence by the perfectly clean state of the streets, and the entire absence of orange-peel. I found that orange-peel is not allowed to be thrown into the streets—the act is punishable. The perambulating vendors of the fruit carry on their trucks baskets to receive the peel—a convenience for those who wish at once to devour their purchases. And why should we not have a similar law in London, and get rid of what is certainly a most fruitful cause of accidents? P. E. M.

STAIRCASES.

SIR,—I saw whilst in Florence a geometrical stone staircase totally free from any wall support, with a central stone shaft crowned by a statue of Ceres or Flora. It was in the building just being appropriated by the Government from the Convent of Santa Maria Novella. I thought it one of the most beautiful objects in modern architecture. Can any of your readers kindly direct me to any similar object in or near London, and thus oblige one who is

No ARCHITECT.

TRAFALGAR SQUARE.

SIR,—I believe the *Builder*, with reference to the Nelson column, early pointed out the absurdity of putting up the statue of a man so high in the air that it is impossible to see his face. Now that the guardian lions are round him, this is even, if possible, more provoking than ever; and poor Nelson, for whom the whole square was built, is completely lost sight of, and it is to be feared, well-nigh forgotten: for his sake, therefore, will you allow me to offer a suggestion?

I would propose to take Nelson down from his present uncomfortable perch and place him on a worthy pedestal, between the two fountains; to take off the capital from the column and raise it some hundred feet or more by a bronze shaft, terminating in a gilt crown, and thus to convert it, the column, into a colossal flag-staff, from which a Union Jack should always float. This would be a novel and perpetually commemorative idea, and would always remind people of the meaning and intention of the monument. Nelson facing it would make it still more intelligible and significant. He stood by his flag in life, why not now he is dead, in idea at least, and as reminding all that he did so? This, too, would give some little significance to the lions, as supporting and guarding; now they mean nothing. You know the three flag-staffs in the square of Venice; pray let us have one worthy of London! C. B. ALLEN.

"ARCHITECTS AND DEALERS IN PROVISIONS."

SIR,—Permit me to direct your attention to the enclosed circular of a new firm in Liverpool, where (as it would appear) the profession is so numerous, and that it is requisite to couple with it a trade in provisions, &c. You have frequently pointed out the incongruity of a person being an architect and builder; is not this more incongruous? And it may lead to worse, for, if the issuers of the circular succeed in business, they will have imitators, one of whom will probably astonish the world as an ARCHITECT AND PROVISION DEALER.

* * The advertisers in question do so positively set forth with all gravity that they are building surveyors, and are thoroughly competent to prepare plans, take out quantities, and value property; and that, having a connexion in the provision trade, they can dispense every kind of American and home produce to undoubted parties, on the very best terms!

"HIGH-PRESSURE BOILERS FOR BATHS."

SIR,—I observe your correspondent, "Beta," is afraid of his bath-boiler exploding during frost. If the work is properly done, and he uses in connexion with his boiler a hot-water circulating system containing from fifty to eighty gallons, it is an impossibility for his boiler to burst, if the range is in use every day; for as the water continues to circulate as long as there is an unequal temperature between the hot-water cistern and boiler, there is not time between 11 o'clock p.m. and 7 a.m. (being about the time the fire would be out) for the entire quantity of water to get down to freezing point.

If the cold-water supply ceases, and through evaporation the boiler becomes empty (which would be a very serious process), and then if the cold water is suddenly introduced into the almost red-hot boiler, an explosion must be the result; but such an accident could only arise from gross carelessness, as the want of water would be felt for several days previously. The boiler should always be full of water, and consequently cannot contain any steam. There should never be more than two holes drilled in the boiler, viz., for the flow and return pipes: a draw-off cock from side or bottom of boiler should always be avoided.

STRENGTH OF PIPES.

Will one of your readers inform me if 12-in. diameter fauset jointed fire-clay pipes, ordinary thickness, jointed in cement, and laid in puddle, are capable of bearing 50 ft. head of water, and if they have been successfully used as mains?

P. E. M.

GRINDING MONEY.

At Clerkenwell, Mr. William Langmead, builder, Gray's Inn-road, was summoned before Mr. Barker by Frederick Wiffen, a carpenter, lately in his employ, to show cause why he did not pay him for six hours' work which he alleged he had done while he was in the employ of the defendant, and by his orders. Mr. Bannister, solicitor, attended for the defence; Mr. Ricketts, solicitor, watched the case for a society that was interested in the matter. The complainant stated that he was engaged in the employ of the defendant in the erection of a public-house on Clerkenwell-green, and on the day named in the summons he was told to leave that job, and to take his tools to the establishment in the Gray's Inn-road. When he did so he told the foreman that his tools required grinding, and the foreman told him that he had better grind them, and sent a man to assist him to do so. When he had finished, the foreman told him that he did not require his services any longer, and discharged him, and when he applied for payment of the money he had earned while grinding his tools he was refused payment, and since the present proceedings. It was a rule of the trade that the men should be paid for the time they were occupied in grinding their tools, and every shop in London paid the men, and he was surprised that the defendant refused. Mr. Bannister submitted that this was not a case in which the magistrate had jurisdiction, and he was surprised to find that the process of the court had been issued. He supposed the facts had been kept from the knowledge of the learned magistrate. Mr. Barker said he told the complainant at the time he asked for the summons that he was only on the question of grinding that he had better not take the summons, but the complainant then said that he wanted the summons for actual work and labour always examined a man's basket or chest when he commenced work, and that was why a man before he left a job was allowed time to put his tools in order. Besides,

part of the time which he claimed for was occupied in going from one place to another at the request of the defendant's foreman. Mr. Barker said that this summons would be dismissed, and if the complainant had a remedy was not at this court. The work for which he had power to make an order to pay in case of the default of the master to pay was clearly laid down in the statute, and the work here sought to be paid for was not such work. The summons was then dismissed.

"192, Gray's Inn-road, Feb. 5, 1867."

SIR,—Concerning the above, as we had not an opportunity to give evidence, we shall feel extremely obliged if you will allow us to trespass on your valuable space with the following statement of facts.

The plaintiff, F. Wiffen, was discharged from an outdoor job, and received from the foreman of the works a ticket for the number of hours he had worked, as well as an additional half-hour to enable him to collect his tools. This ticket he produced at our office, and received money equivalent to the number of hours stated thereon, even before the time expired. After receiving the same he demanded grinding-money. A reply was refused; but at the same time he was informed that the yard grinding-stone was at his service, of which he availed himself, and also of the assistance of the yard labourers.

The value of the time thus occupied was the cause of the summons to appear before the magistrate, who immediately dismissed it; and we now hope the plaintiff will give us an opportunity of having a re-*véu* question settled by a decision in the County Court.

W. LANGMEAD & WAX.

Books Received.

A Dictionary of Photography. Edited by THOMAS SURTON, B.A., editor of "Photographic Notes;" and GEORGE DAWSON, M.A., Lecturer on Photography, King's College, London. Sampson Low & Co., Ludgate-hill, 1867.

The first edition of this work has been for some years out of print. The present editors have remodelled, condensed, and improved the work, adding new matter, and deleting obsolete and inferior processes. Many of the articles have been rewritten in a spirit more consonant with the present comparatively advanced state of the art, and a description given of the preparation and properties of the various chemicals, and of the theory and construction of the different optical instruments in use. It would have been well, in condensing the matter, had such a reputation as that given under the heads "Lead, Protoxide of, or Litharge," and "Litharge; Massicot," been avoided: the articles are nearly word for word the same throughout. The volume, however, is a valuable one to photographers.

Notes for a History of Sanitary Legislation. By EDWIN LANKESTER, M.D., F.R.S. London: Chapman & Hall, Piccadilly, 1867.

THESE notes are an extension of the paper on Sanitary Science written by Drs. Lankester and Letheby for the "Encyclopædia Metropolitana," and were to have appeared in their extended form in the *Journal of Social Science*, had not that journal ceased to be published. The pamphlet contains an interesting review of sanitary progress so far as regards legislation, and the additions made to the original notes bring the subject up to a recent date, the whole forming a useful refresher to the minds of sanitary reformers as to what has been done for the science by legislation, with suggestions for further legislation which is still requisite.

We may quote a passage from the conclusion of the pamphlet:—

"In spite of all this activity and spread of sanitary knowledge in various directions, there is still a want of a sound in the place of the laws of life manifest in all classes of society. The deficiency in teaching the natural sciences in the Universities of Oxford and Cambridge acts most unfavourably on the whole educational system of the country. Our legislators enter Parliament utterly unprepared to discuss sanitary questions on a scientific basis, and pre-eminently, with whom so large a power of instruction and guiding people in sanitary matters throughout the country, frequently pass from our universities without the slightest knowledge of the structure or functions of the human body. In fact, our lawyers are alike uneducated; and it is not unfrequent that our distinguished magistrates and judges have to decide upon cases concerning public health, the facts of which, for want of any training in natural science, they are unable to comprehend. If amongst those who are the natural leaders of society this knowledge is not appreciated, it is not to be wondered at that those who are in the social scale should neglect to cultivate it. There is, in fact, no systematic attempt made to teach in any of our educational establishments the great laws by which the health of the body is maintained, and preventable disease and death avoided: the consequence is, that the mortality of the large towns of England is in many instances augmented, and in proportion as the nation gets wealthier, and the means of indulgence increase, the population becomes more subject to epidemic disease and early death. This ought not to be. Increasing intelligence and wealth ought to be powerful aids to health, and they would do so, provided the minds of the people were turned to the causes of a avoidable diseases and untimely death."

Miscellanea.

POST-OFFICE SAVINGS BANKS FOR FRANCE.—M. Rouher, it is said, in addition to a Public Works Loan, means to import into France our system of Post-office Savings Banks.

RESIDENT ENGINEER FOR THE MONTROSE COMMISSIONERS.—The Police Commissioners of Montrose have appointed Mr. Charles Tebbutt, C.E., of Loughborough, to be their resident engineer, in order to carry out, under his personal superintendence, the works of the proposed drainage scheme for the burgh. The engineer's salary will be 250*l.* per annum.

THE METROPOLITAN WATER SUPPLY COMMISSION.—A meeting of the Water Supply Commissioners has been held at 6, Adelphi-terrace, Charing-cross. There were present—The Duke of Richmond, Sir Benjamin Phillips, Colonel Harness, R.E., Mr. Joseph Prestwich, F.R.S., Mr. Thomas Harrison, C.E., Sir John Thwaites, and Mr. Arthur Lennox, secretary of the commission.

THE RENEWED OUTBREAK OF CATTLE PLAGUE IN ISLINGTON.—Dr. Ballard attributes the outbreak of cattle plague in the exact spot (Mrs. Nicholl's dairy, Liverpool-road), where it before broke out, to the use of old bricks for repaving, taken from a shed used at the last outbreak as a hospital shed. Whether this be the case or not, one can only wonder at the carelessness of the act.

THE AGE OF BRONZE.—M. Delmille, a Belgian advocate, has just found in the Lake of Virelles, belonging to the Prince de Chimay, the remains of a lacustrine station similar to those explored for many years past in the lakes of Geneva, Constance, and Neuchâtel. The drag has brought to the surface of the water remains of all kinds, the nature of which authorises the assumption that the locality was inhabited in the pre-historic period called the age of bronze.

THE BRECHIN BOILER EXPLOSION.—A Brechin professional correspondent informs us that in this case the boiler was full of water, as also all the pipes in connexion with the same, and all frozen up when the fire was lighted. The consequence was—first, the frozen water in the boiler expanded, and there being no room for steam, and no escape while the pipe was frozen, the boiler was overcharged with steam before the pipes got thawed and clear of ice, which was the cause of the accident.

THE HYDE PARK RAILINGS.—Mr. Nicol asked (in the House of Commons) when the present barricade around Hyde Park was likely to be removed, and what description of fence was to be erected in place of it. Lord J. Manners said the Park-lane section was under contract to be finished by the 15th of October next—(laughter)—and the other parts by the 15th of July in next year. (Renewed laughter.) The character of the fences would be, he believed, substantial, and, he hoped, to a certain extent ornamental.

ROUND TOWER OF ARDMORE.—The pointed stone forming the apex of that venerable relic of antiquity, the Round Tower of Ardmore, in the county of Waterford, which had withstood the storms of many centuries, was hurled from its position by a terrific storm last week. Being a remarkable object in the neighbourhood, the stone was missed from its old place. It was at once sought for, and found embedded deep in the earth at the foot of the tower. The rector of the parish had the stone removed to a chamber in the building, where it now remains for the inspection of the curious. The stone stands 2 ft. 6 in. in height.

INQUIRY AS TO TRADES UNIONS.—The Commons have allowed the Home Secretary to bring in a Bill for facilitating, in certain cases, the proceedings of commissioners appointed to make inquiry respecting trades unions and other associations of employers or workmen. The trades outrages at Sheffield are to form a special branch of the general inquiry, which has been agreed to at the request both of trades unionists and masters. The president of the commission will be Sir William Erie, late Lord Chief Justice of the Common Pleas; and the other commissioners will be Mr. Thomas Hughes, Mr. Roebuck, Lord Elich, Sir D. Gooch, Mr. James Booth, and Mr. Herman Morville to represent the Board of Trade; and Mr. W. Mathews and Mr. F. Harrison as members in whom the trades unionists have special confidence.

INSTITUTE OF PAINTERS IN WATER-COLOURS, LONDON.—At a meeting of this society, held on the 4th ult., Mr. Edward Hargitt was elected an associate by twenty-four out of twenty-seven votes recorded. There were above a dozen candidates.

HONOUR TO ART.—Her Majesty has signified her intention to confer the honour of knighthood on Mr. George Harvey, president of the Royal Scottish Academy of Painting, Sculpture, and Architecture; and on Mr. J. Noel Paton, R.S.A., her Majesty's Limner for Scotland.

PROPOSED FEVER HOSPITAL FOR BRADFORD.—Mr. Alfred Harris has given 3,800*l.* for the purpose of founding a fever hospital, the principal to be expended on the erection of a suitable building whenever that shall be held desirable, and the interest to be applied till then to the payment of rent for convenient premises.

CHESTER ARCHEOLOGICAL SOCIETY.—The fourth monthly meeting of this session has been held at the Society's Room, St. Peter's church-yard, with a good attendance of members and friends. The Rev. Canon Blomfield took the chair, and introduced Mr. Thomas Rigby, the lecturer of the evening, as a gentleman well known among the agriculturists of the county as an able writer and speaker. Mr. Rigby then read a paper "On Delamere Forest and some of its Associations; with a short Account of the ancient City of Edisbury."

NOTING LOCALITIES.—We are glad to be able to say that the Society of Arts has commenced the work of publicly marking localities interesting for their connexion with notable men or historical events. A tablet noting the place where Byron was born has just been attached to the house No. 24, Holles-street, Cavendish-square, by permission of the occupiers, Messrs. Boosey & Co. It is intended to follow up this with others from time to time, as permission can be obtained from the owners of houses. The tablet is of terra-cotta, with a deep-blue face, the inscription being in white letters upon it.

PRINCESS'S THEATRE.—The new drama, "Shadow Tree Shaft," written by the author of the very excellent play called "Ours," has many elements that go to ensure success: it includes a number of good parts, two or three situations of remarkable power and interest, and some most effectively painted and built-up scenes. Although very well played throughout, it is, with the exception of the parts sustained, admirably, by Mr. Vining, M. J. G. Shore, Miss Katherine Rodgers, and perhaps Mr. H. Forrester, underacted. Sir Walter Kenyon and Richard Darkyn are capital parts. Mr. Neville in one, and Mr. Belmore, for example, in the other, would make a sensation. We mention this not in disparagement of what is done, but as showing what the play is capable of. Mr. F. Lloyd has evidently studied his Mine on the spot. The descent is very cleverly arranged, and the view of the Black Country, when the spectator rises from the mine, as it were, and finds himself on the surface, is admirably painted. The fir coppice covered with snow is another realistic creation of remarkable merit.

GOVERNMENT INQUIRY AT SLOUGH.—Mr. Robert Morgan, an inspector under the Local Government Act, has held an inquiry at Slough, by direction of the Home Secretary, to whom the local government Board had presented a petition, praying him to authorise the Board to put in force the powers of the Lands Clauses Consolidation Act 1845, with respect to the purchase and taking otherwise than by agreement, of two pieces of land,—viz., a site for the water tower and well for flushing purposes, proposed to be constructed in a field adjacent to the place at which the Windsor branch of the Great Western Railway crosses the Bath-road, and a site for the sewerage outlet and deodorizing tanks, which the Board propose to erect upon a piece of land in the Slough and Datchet road, immediately contiguous to Upton Park. Mr. Sawyer, instructed by Mr. C. T. Phillips, appeared as counsel for the local Board; Mr. Darvill appeared, by order of the Court of Chancery, for the owners of Upton Park, and also for the trustees under the will of the late Mr. John Pocock, whose property adjoins the park; and Mr. F. Charsley, the registrar of Eton College, appeared on behalf of the provost and fellows, who had dissented from the project that their land should be taken as a site for the water-tower. Evidence was taken *pro* and *con.*, and the inspector will report the result to the Home Secretary.

METROPOLITAN LOCAL GOVERNMENT.—The following is a list of the Select Committee on Metropolitan Local Government, &c.:—Mr. Ayrton, Mr. Tito, Mr. Bazley, Mr. Looke, Mr. Alderman Lawrence, Mr. Knatchbull-Iggesen, Mr. Mill, Mr. Hanbury, Lord J. Manners, Mr. Bescroft, Mr. Turner, Sir W. Galloway, Mr. Bentinck, Mr. Sandford, and Mr. Kekewich.

SANITARY STATE OF CHESTER.—The town council have agreed to a proposal for publishing regularly the registrar's returns of births and deaths in Chester, and the first week's return has been issued. The death-rate was 25: the week before it was higher, and this time last year it was 42. The general average for last quarter was 36½, including 27 cholera cases, and even without these it was 28.

ART GALLERY, BIRMINGHAM.—At a meeting held in the Town-hall under the Mayor's auspices, it has been resolved, "That it is desirable to form an association, having for its object the acquisition of works of art for presentation to the Corporation Art Gallery, and that a committee be appointed to consider the best means of accomplishing that object." Accordingly a committee was appointed at the meeting.

MONEY SPENT ON LONDON WORKHOUSES.—A Parliamentary return states that since the passing of the Poor Law Amendment Act of 1834, sums amounting to 1,069,489*l.* have been by the Poor Law Board authorized to be expended in building, altering, or enlarging workhouses in the metropolitan district; about three-fourths of the amount in building, and one-fourth in altering or enlarging. This is exclusive of the value of workhouses provided before 1834, many of which are still in use, and the value of them very great.

THE SPREAD OF FEVER IN CHORLTON, MANCHESTER.—Mr. Greaves is following up his investigations as to the way in which fever is propagated in Chorlton. He has traced it in a way to prove that there is a total want of efficient preventive measures, or of sanitary police. Goods taken from infected houses are allowed to be sold and scattered about, and new tenants to take possession of the houses without proper disinfection. Persons ill of fever are allowed to change their residence, and infect others, without any attempt being made to prevent it. Details of such matters have been published by Mr. Greaves in the local papers, and it is to be hoped that his important and useful exposures will show the necessity for better sanitary supervision by the local authorities.

THE HOARE MEMORIAL.—At a meeting of the representatives of the Church Institution, the Convocation Society, and the Churchwardens' Association, convened to consider the best mode of commemorating the labours of Mr. Henry Hoare, lately deceased, it was resolved, having regard to the essentially practical character of Mr. Hoare, and to the fact that an attempt is now about to be made, in accordance with the suggestions of the Queen's Advocate, to provide for a great want, by building upon frehold ground a church house, that in the opinion of this meeting a chapel or hall for the said house would be a most appropriate memorial, and that a copy of this resolution be forwarded to the Bishop of Oxford (who had previously expressed his personal approval of the scheme), with a respectful request that his lordship would communicate the same to the committee of convocation upon the subject.

FIRST SANITARY REPORT ON NEW YORK.—In March, 1866, the Metropolitan Board of Health created by the Legislature of the State of New York began its operations, and the first report is more a bill of indictment than a record of improvement. It describes the mortality of New York as much exceeding that of London, and attributes this partly to the annual arrival of large numbers of immigrants. In New York and Brooklyn the Board found 260 slaughter-houses, the sewers leading from them being often obstructed, and the refuse making its way under the floors of buildings. The tenement-houses of New York, more than 4,000 in number, were found crowded, ill-ventilated, ill-drained, and in a filthy state. The Board are setting to their work in earnest, and have already made more than 25,000 peremptory orders for the abatement of nuisances. The deficient drainage, except in first-class houses, is a constant source of disease, although about 60,000 loads of night-soil are removed from New York every year in carts.

THE NATIONAL GALLERY DESIGNS.—We are requested to state that the public will be admitted to view the designs for the New National Gallery on Wednesday, Thursday, Friday, and Saturday, from ten to four o'clock, until the 16th of March.

ASSISTANT BUILDING SURVEYOR TO BIRKENHEAD COMMISSIONERS.—Mr. John M'Neil has been appointed as assistant building surveyor to the Birkenhead Commissioners on the recommendation of their Health Committee, at a salary of 120*l.* a year; and Mr. William Halsall, as assistant inspector of nuisances, at 30*l.* a week.

HEALTH IN THE YEAR 1866.—In the United Kingdom 1,013,070 births and 665,859 deaths were registered in the twelve months, thus making the natural increase 347,211, or at the rate of 951 daily. The recorded number of emigrants was 204,882, or 561 daily. The difference between the emigrants and the registered natural increase was 390 daily. The birth-rate per 1,000 of the year was 35.47, the death-rate 23.03, for the United Kingdom, after a correction for the defective registration of Ireland. The birth-rate per 1,000 of England proper was 35.51, the death-rate 23.62, the numbers for the previous year, 1865, are 35.63 and 23.41; the shade of excess in the death-rate of 1866 being due to cholera, for the mortality is lower in all the divisions except those in which cholera prevailed. The eleven divisions may be thus arranged in the order of annual mortality.—The deaths per 1,000 were, in the South-Eastern Counties, 19; Eastern Counties, 20; South Midland Counties, 20; South-Western Counties, 20; North Midland Counties, 21; West Midland Counties, 23; Monmouthshire and Wales, 23; Northern Counties, 24; Yorkshire, 26; London, 26; North-western Counties (Lancashire and Cheshire), 29.

BREAKING OF A WIRE BRIDGE AND CURIOUS ELECTRICAL PHENOMENON.—During the late intense frost, the small river which waters the valley of Glouglow was, like others, covered with ice varying from 6 in. to 8 in. in thickness. This, when partially dissolved by the thaw, was broken up into large plates, and rapidly carried to the sea, except where it met with obstacles. One of these consisted of a slight wire foot-bridge, which formed a communication between two parts of the minister's glebe, which the river divides. This bridge was supported by four pairs of wooden posts, standing in the bed of the stream, and against these a great quantity of the ice had been collected, until the water, obstructed by it, rose several feet above its natural level. The whole structure was at last carried away, some of the wires being broken, and the others torn from their fastenings. A vivid flash of coloured light accompanied every fracture of the wires. This appearance was observed by several persons, one of whom had just crossed the bridge. The phenomenon was probably caused by the wires being strongly charged with electricity, developed by the breaking up of the ice and the friction of the detached masses,—separation of parts and friction being both known sources of electric action.

THE NEW DOCKS AT THE ISLE OF DOGS.—Enormous excavations for these docks have now been made, by 3,000 men, who have of late been at work on them, and the outline of docks, wharfs, and warehouses can now be traced. The freehold property purchased by the company comprises an area of 200 acres, having a circumference of about 2½ miles. Thirty-five acres and a half have been excavated for the purposes of a floating dock, having two basins, one of 25 acres in extent, the remaining 10½ acres being occupied by the other. The depth of water in each will be about 23 ft. or 29 ft. All the materials excavated have been available for making embankments and a roadway. Every foot of excavation has added 3 ft. to the depth of the projected dock, for the sand and mud dug out have been thrown up on the embankment, so that in some places the surface has been raised as much as 10½ ft. A large graving dock is being constructed. This dock is 420 ft. by 86 ft., and will have an entrance 65 ft. wide. The docks will have a frontage of 7,700 ft., which is to be occupied as wharfs or sites for warehouses and manufactories, while the other parts of the land will be hereafter made available for dwelling-houses. The portion that has been quayed has been formed to a level of 4 ft. above high-water mark. All the gates, bridges, warping capstans, and other machinery are intended to be worked by hydraulic power. The contract, according to its terms, ought to be completed on the 1st of September.

TENDERS

For two houses at Wimbledon. Mr. Henry W. Broadbridge, architect:—
 Surridge.....£987 0 0
 Sawyer.....983 0 0
 Kemp.....983 0 0
 Wilkinson & Co.....899 0 0
 Collier.....820 0 0

For house at Fairfield, for Captain Pearson. Mr. John Newton, architect:—
 Field.....£5,220 0 0
 Keeble.....4,600 0 0
 Bracher & Son.....4,402 0 0
 Piper.....4,485 0 0
 Wilson.....4,272 0 0
 Dove.....4,265 0 0
 Tilt.....3,719 0 0

For constructing brick sewer in old Brompton-road, for the Kensington vestry. Mr. J. Broadbridge, surveyor:—
 Williams.....£2,363 0 0
 Goodair.....2,372 0 0
 Thirsk.....2,218 0 0
 Whittick.....2,068 0 0
 Wignore (accepted).....1,988 10 0
 Moxon & Mutton.....1,950 0 0

For warehouse, Brunswick-road, Poplar, for Mr. Cole. R. W. R. Knappe, arc. hitec:—
 Heiser.....£1,776 0 0
 Finch.....1,650 0 0
 Kilby.....1,430 0 0
 Curtis.....1,425 0 0
 Harris.....1,415 0 0
 Watts.....1,301 0 0
 Tennant.....1,279 0 0
 Sheffield.....1,239 0 0
 J. Sheffield.....1,229 0 0
 Golding.....1,150 0 0

For alterations, &c., to Deacon's Coffee House, Walbrook. Mr. Wm. Nunn, architect:—
 Mavor & Reed.....£1,890 0 0
 Thorpe.....1,776 0 0
 Carter & Sons.....1,758 0 0
 Perkins.....1,640 0 0
 Sellick.....1,519 0 0
 Willis.....1,479 0 0
 King & Sons.....1,330 0 0
 Hammond.....1,079 0 0

Accepted for National Schools, Treadmouth, for the Rev. Thomas Procter. Mr. F. R. Wilson, architect:—
 Mason's Work.....£410 0 0

Joiner and Carpenter's Work.
 Richardson.....234 0 0
 Turner.....70 0 0
 Weatherston.....39 0 0
 Plumber and Glazier's Work.
 Sidey.....45 2 5
 Painting.
 Pattison.....30 5 0

For the erection of a villa residence on the banks of the Thames at Taplow, Bucks, for Mr. C. Venables, jun. Mr. C. Cooper, architect:—
 Silver & Son.....£1,045 0 0
 Mickleby.....964 0 0
 Vickery.....976 0 0
 Rutland.....829 0 0

For altering Albion House, St. Paul's-road, into a public-house (exclusive of site, plate glass, and fittings), for Mr. Esay. Mr. Arthur Harrison, architect:—
 Hearle.....£395 0 0
 Kilby.....368 0 0
 Curtis.....355 0 0
 Brown.....333 0 0
 Lunn.....345 0 0
 Allen.....325 0 0
 Clements (accepted).....295 0 0

For co-operative stores, Brunswick-road, Gloucester. Mr. H. James, architect. Quantities supplied:—
 Jones & Sons.....£1,883 0 0
 W. Freeman & Son.....1,760 0 0
 Cullis.....1,738 0 0
 W. Freeman.....1,670 0 0
 Clutterbuck.....1,670 0 0
 Hayes.....1,648 12 0
 Meredith (accepted).....1,667 0 0

For works proposed to be done at Nos. 397, 398, and 399, Oxford-street, for Mr. Noott. Mr. Marks, architect:—
 Less Credit Bill for Old materials.
 Myers.....£830 0 0
 Stephens & Watson.....815 0 0
 Foxley.....787 15 0

For the erection of St. John's National Schools, St. George's-in-the-East. Messrs. F. & H. Francis, architect. Quantities by Mr. Robson:—
 Myers.....£2,736 0 0
 Colls & Son.....2,700 0 0
 Rivett.....2,693 0 0
 Fish.....2,675 0 0
 Keyes & Head.....2,599 0 0
 Hill & Sons.....2,540 0 0
 King & Sons.....2,440 0 0

For the erection of a warehouse in Southwark-street. Mr. Ernest Bates, architect:—
 Lambie.....£3,667 0 0
 Hunt.....3,478 0 0
 Doyer.....3,390 0 0
 Eborall.....2,219 0 0
 Johnson.....3,150 0 0
 Thackeray.....3,100 0 0
 Bennett.....2,993 0 0
 Perry.....2,832 0 0
 Mason.....2,928 0 0
 Myers & Sons.....2,814 0 0
 Nightingale.....2,855 0 0
 Hart (accepted).....2,740 0 0

For the Preadhoe Convalescent Home, to be erected at Whitely, Northumberland, exclusive of engineering works, gate-lodges, fence-walling, drainage, &c. Mr. Thomas Oliver, architect. Quantities supplied by the architect:—

Gibson	£16,400 0 0
Simpson	14,522 0 0
Wellon	14,440 0 0
Jackson	14,300 0 0
Howard	13,857 0 0
Hadspitt	13,683 16 0
Robson	13,440 0 0
Scott	13,433 0 0
Elliott	13,137 14 4
Robinson	13,363 0 0
N. & R. Reed	12,989 0 0
Brewis	12,918 0 0
Kyle (accepted)	12,746 0 0

For eleven cottages proposed to be built in the village of Clewer, Berks, for Sir Daniel Gooch, Bart., M.P. Mr. William Sim, architect:—

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VOL. XXV.—No. 1255.

The Grosvenor-place and Picnic Improvements of the Marquis of Westminster.



For the shade of Sir Charles Grandison, or "Sir Plume's conceited Ghost," could see the many changes wrought in the aspect of London since he handed ambrosial toast to ladies who rejoiced in black patches on their cheek and black pages behind their chairs, it would be, perhaps, most astounded at those now progressing on the Grosvenor estate in that last-century region of which Tattersall's may be said to have been the heart and Ranelagh the head, or vice versa. Could his Sedan-chair be summoned to carry him down Grosvenor-place, his chairmen would lose their way before they passed the first turning. The irregular belt of brick houses, sloping down

hill, and built or fitted with various contrivances for obtaining good views into the Green-park before them, is gone. The buildings whence patched and painted dowagers watched the gay doings of "hot blood" when George III. was newly seated on his grandfather's throne, have vanished. And not only these but those in the rear of them, for many a valuable acre, and those facing them, after the boundary of the Green Park is passed, and those departing to the right and to the left of them in brown, dingy streets, have been razed to the ground; in a word, the site of hundreds of houses occupied by the wealth and fashion of a former age now lies as bare as the bottom of a gravel-pit. Nowhere else, too, could Sir Plume's shade gain a more impressive realization of the progress in social life and sanitary requirements made since his day than that which would be afforded it from an examination of the scheme which supplants the former disposal of the site and of the details of the mansion of which it is comprised. The cramped, low, many-paned plain brick houses which Clarissa, Belinda, and Pamela filled with chintz, china, mirrors, cabinets, and card-tables, appear seedy and unattractive to the last degree by the side of the lofty, airy, ornamented dwellings for which their descendants have created a demand. This magical clearance of a neighbourhood so famous in the chronicles of fashion, most of our readers will be aware, is the result of the determination of the Marquis of Westminster to remodel his estate on the expiration of the leases granted by his predecessors. The large tract of land we have mentioned, with the substantial crop of houses upon it, comes into his hands, at the present day, as an expired lease on a large scale; and he has set about improving this accession of property in a correspondingly grand manner. A magnificent scheme has been laid down, and time, money, and space have been given to carry it out. Unfettered, to any considerable extent, by the tedious and sometimes inconsiderate claims, or requisitions, of owners of intermediate prop-

erties, Lord Westminster has been able to make new roads, leave garden spaces, or build mansions, exactly on the positions recommended to him by his architect, Mr. T. Cundy, jun., the destination of these being governed only by the exigencies of existing public thoroughfares. Thus the new district is the well-considered and comprehensive scheme of a trained mind, instead of the thwarted, curtailed vexations which too many improvers' plans become through such opposition. There was, indeed, one unexpired lease, in the occupation of an ironmonger, upon an important corner site which appeared, at one time, likely to be a blemish of an ugly kind upon the improvements for forty years to come; but this has now been purchased for 4,000*l.* by the National Bank, whose directors will proceed to remove the weazen metal mart, and replace it with a structure more in accordance with the new neighbourhood that is rising around it. And, again, there are instances in which the new district will be extended, probably before the whole of that now proposed will be brought to completion, by the falling in of more leases of adjoining areas which have ten years longer to run. This is the case concerning the large site occupied by Mr. Goding, near the present gateway through Barrack-yard, into Knightsbridge, which will be covered with convenient stables at the expiration of that period. Large ground landlords would do well to observe the imperative necessity of granting all leases of adjoining properties for periods of duration which will bring the ground into his hands, or those of his descendants, intact or nearly so. A neighbourhood, where only street by street, or house by house, can be treated, will never be able to rise in importance as this will now do. But the Marquis's scheme ceases with the planning of the site and furnishing the exterior designs for the mansions. The actual building operations are in the hands of various building firms, who have obtained leases of the newly set-out sites from him. The several blocks appear, however, to remain in as many hands, each builder undertaking a separate one. We proceed to more exact details.

First, as to the roads. What we may call a main artery is to be made from Hyde Park-corner to the Grosvenor Hotel. It is to be a wide, straight road of grand houses running as straight as may be from Piccadilly to the open space in the Chelsea-road, on which stands the great hotel. After passing the wall of the Royal gardens, where it is intersected by Lower Grosvenor-place and Grosvenor-street West, this main artery runs through the centre of a St. Andrew's Cross formed by four additional roads. The four limbs of this cross are formed by Ranelagh-street, running from the south across the main artery to the north; and by Upper and Lower Grosvenor-gardens, which cross the main road nearly due east and west. These roads are not, it must be understood, uniformly bounded by houses on each side of them, as we shall presently describe. The Ranelagh-street arms of the cross give spacious access from Lower Grosvenor-place to Belgrave-street South and Lower Belgrave-street, and so on into the heart of Belgravia. The Upper and Lower Grosvenor-gardens arms of the cross stretch from Grosvenor-street West to the point in the Chelsea-road which opens into Vauxhall Bridge-road.

Starting from St. George's Hospital down the gently declining hill, we come upon continuations of a new crescent, to be called Grosvenor-crescent, which is to turn out of Grosvenor-place towards Belgravia, immediately upon the boundary of the site of this institution. This new feature, opening out the *cul de sac*, will be an immense boon to the public, and will add a third frontage to the noble, and certainly fortunate, charity. The odd corners which will result from the sweep of this curved road will be probably planted as gardens, and will give the

approaches a pleasant leafy freshness. We might call this crescent the phoenix that is about to arise out of the ashes of Tattersall's, if it were not for the fact that the horsey institution in question is by no means consumed, but, on the contrary, re-organized and removed westward, where it is flourishing with unimpaired vigour, and to the great annoyance of the neighbourhood, especially on Mondays. Londoners, however, will be long before they forget to point out that it was hereabouts that the head-quarters of the turf once existed. No formidable commencement has been made here towards the new works, save the wonderful clearance of the site and erection of sheds, as extensions of the hospital are in contemplation, and the nature of these will in great measure depend upon the arrangement made with Lord Westminster as to the ground, and this accommodation will in its turn have to be considered in reference to the prospects of the crescent. Passing the entrance into the proposed crescent, Grosvenor-place follows its former route for some little distance. A handsome block of houses will occupy the frontage between it and Halkin-street, consisting of five mansions, the fifth, which is at the corner of the street mentioned, being destined for a magnificent town mansion for the occupation of the heir of the Marquis of Westminster, Lord Grosvenor. This is undertaken by Messrs. Smith & Taylor. In the rear of this block will run Pembroke-mews North, which will open into Halkin-street, at the termination of the return frontage of Lord Grosvenor's house. His lordship's stables, on the west side of these mews, are expected to be the most complete in London. Grosvenor-place proceeds thence in another fine range of houses, eleven in number, bounded by Halkin-street on the north, and Chapel-street on the south, Pembroke-mews stretching in the rear between these two streets. It may be as well here to state, that each block of new buildings is arranged as a distinct feature of the whole scheme. Every block is treated separately, and has a centre or double centre, with well-marked terminal distinctions. The width of each house in the block is varied according to its position or the composition, and thus the vain repetitions which produce the effect of being manufactured by dozens at a time are not perpetrated. Every block looks like what it is,—a palazzo divided into separate dwellings. Besides the contractors we have mentioned as having undertaken Lord Grosvenor's house, Messrs. Jackson & Shaw and Messrs. Piper & Wheeler are at work in this field.

It is, however, when we come to the large clearance to be intersected by the roads in the form of St. Andrew's cross that we are most struck with the gigantic nature of the scheme. Two of the triangular spaces between the central main road and those intersecting it transversely are to be left open as gardens—one to the right, and the other to the left some distance beyond; and the rest are marked out as plots. And here considerable progress has been made. Already, vast piles have reached their full height, and are roofed in. These we shall presently describe, but we must first remark upon the absence of a church in the scheme. In many of our new districts new churches have formed leading features in the first disposition of the site; but the Marquis, though sacrificing space for gardens, and lending an open hand to St. George's Hospital, has not appropriated space for a church. We must not omit to add that the poor he has not forgotten. Besides the snug houses occupied by the wealthy in this fashionable quarter, there were mews, and small dark streets of small smelly houses, in which dwelt the industrious poor who ministered to their rich neighbours, in the shape of small tradesmen, workmen, and work-women, laundresses, &c., as well as stables for horses, and dwellings for coachmen. These have

shared the fate of more important structures, and have been swept off the face of Pimlico. Their inhabitants, however, have not been uncaared for. With the present demolition of the mews, the coachmen found their occupation removed, if not gone; there was, therefore, no necessity to provide for these; and the small shops, too, could scarcely be required in a region now bare to a desert; but the working classes who found homes in the locality have been provided for by the erection of two model lodging-houses in the Commercial-road, Pimlico, out of means lent for the purpose by the Marquis.

After the roads, before we give details of the buildings, we must mention the great boon to the neighbourhood afforded by the proposed underground railway. One of the plots into which the estate is divided has been apportioned for a station for this subterranean roadway. By means of this communication the inhabitants of the superb mansions will be placed within a few minutes' distance of the Houses of Parliament, and in connexion with all the railways that depart from London. As Londoners are gradually ceasing to talk of miles in favour of reckoning distances by minutes, it is, perhaps, of the first consideration that the builders of these mansions should be able to state that they are within four or five minutes' distance of the heart of Westminster. The Victoria Station already places them in direct communication with Paris, and thence with all the civilized parts of the globe.

As a specimen of the character of the houses we will first take one of the mansions in plot No. 1, now in course of construction by Mr. Waller, and approaching completion, premising that plots 1 and 2 are grouped into one composition, consisting of a fine frontage, overlooking one of the triangular garden-plots, which has two central towers covered with Mansard roofs, and large double houses at each end. Ten of the northernmost houses are undertaken by Messrs. Waller & Son, of Lyall-street, Belgrave-square; the remainder by Messrs. R. Watts & Sons. The new offices of Mr. Cundy, with a flat over them, at present occupy a portion of the site immediately in the rear of the latter. This gentleman's staff includes six clerks of works,—one for the estate generally, and five for various plots in progress.

The designs of all the frontages are from the pencil of Mr. Cundy; and beyond the necessity of seeing that these are faithfully carried out, there are various clauses in the leases which are necessary to be observed and enforced. The interior arrangements are left to the discretion of the builders, or the convenience of purchasers, and are to some extent dependent upon the size of the houses, as these are not uniform. Thus the fittings of the houses in this block, built by Messrs. Watts, are slightly different from those erected by Messrs. Waller; and again, both vary them to meet diversified requirements. The frontage of this magnificent block of houses shows five stories above the basement. It is built of the best brown Portland stone, from Wait bed, with bands and panels of red Mansfield stone and terra cotta, and roofed with slate placed in red and green bands, ornamented with Vieille Montagne zinc. Four lofty mansards break the sky-line, one at each end of the block, and two in the centre. Each house has a portico, the columns of which are made of polished red granite, or serpentine. The fenestration and the ornamentation of the whole facade, from the ruddy columned portico to the very lofty chimney tops, in Portland stone and Mansfield bands, may be called Renaissance of the Château Henri Quatre type, for the sake of conveying some idea of it. The windows of the dining-room and drawing-room floors are square-headed; those of the two principal bedroom floors are round-headed; the third bedroom floor lights are dormers, of a French character. The balconies are stone, and balustraded at the first-floor and porticoes, and richly and boldly ornamented in iron for the other stories.

We will examine No. 10, of plot 1, or Upper Grosvenor-gardens, as a sample of the houses Messrs. Waller are now finishing. The value of the ground is made evident at the first step into it, in the economy with which every inch of it is used. Not only do the domestic offices exceed the bounds of the site by spreading underground in front of the house, but the space generally left at the back of houses for a yard is covered in for a kitchen, and the scullery is actually thrown out underground below the coach-house, till the uttermost limits are gained at the back of the house; and the coaches on the way to

their places must be wheeled over the window that gives part light to necessary offices. The basement within the walls of the main house is occupied by a housekeeper's room, with closets, cellars, and a servants' hall; projecting beyond this, and lighted from the area, are the footman's room and pantries, and projecting behind it is a large kitchen, lighted and ventilated by skylights, the larders, and the scullery spoken of as extending below the coach-house into the mews beyond. There are also two W.C.s in the basement. The lighting has involved some skilful management; and the ventilation on so closely covered a space has not been without its difficulties; but it is supposed that the long passage-way extending from the scullery in the rear to the latter; and gas must, if needs be, be brought to the assistance of the former. The footman's room is fitted with slate sink and slate filter, and the housekeeper's room has a slate sink in front of the window, with a convenient locker on either side of it. In her room, too, we perceive the contrivance that is one of the special features of the interior economy. This consists of six metal plates in the wall, which open into as many flues, and enable a man to sweep all the chimneys in the house from the basement floor. A second set of metal plates rearwards, which open much in the same way as so many oven doors, provides access to all the flues of the back rooms of the house. No sweep need ascend a single stair in the house, and the defeacement of furniture, the great discomfort and labour attendant upon the necessary cleansing operation in question, when chimneys are swept in the best rooms, are nearly done away with. As the broom ascends the flues, it closes the double-action register-door belonging to the grate of the room it passes in its passage upwards to the top of the chimney-stack. There is a clause in the lease which prohibits the erection of the multi-form pipes which disfigure so many of our buildings for the purpose of curing smoky chimneys. To meet this prohibition extra precautions have been taken to provide against the perpetration of a misfortune for which external remedies are thus out off, by the insertion of ventilating flues, and tubes below the floors to bring a draught of outer air immediately in front of each grate. We hope it may answer. It does not always do so. Leaving the basement, we find the floor, slightly raised above the level of the road, to consist of an entrance passage-way divided into two parts, so as to form a lobby, and three rooms. The dining-room occupies the frontage. Behind this is a breakfast-room, which looks, through ground glass, out upon the glass skylight of the kitchen, occupying the adjoining space below. At the end of the passage, beyond the back as well as front staircase, which are both built of stone, is a third chamber, which has a bow window also abutting upon the skylights of the basement floor. Upon nearly the same level, are the fire-stalled stable, the loose-box, and coach-house, which are entered from the mews. Some houses built upon the estate have internal communication with the stables by means of a light iron bridge and stair; but this has not. We may as well mention here that over the stable there is a loft with a shaft down which to throw the corn, &c.; and over the coach-house is a dwelling-room fitted with a kitchen grate, and two bedrooms for the use of the coachman and his family. Part of the light for one of the bedrooms is gained through the shaft mentioned. The ascent is made by means of a steep straight staircase between the coach-house and stable.

The drawing-room floor contains but three rooms,—two drawing-rooms opening into one at will by the withdrawal of sliding-doors, and a bow-windowed boudoir over the third room below. The front drawing-room measures 23 ft. 6 in. by 23 ft. 6 in., and is 13 ft. 10 in. high. Out of the back drawing-room opens a conservatory, which overhangs the buildings on the basement. This can be also approached from the boudoir. The first bed-room floor is divided into four rooms; the next into three. The one above this, and counting from the basement we are now on the sixth flat, is quartered; and the roof contains six small rooms without fireplaces. Along the whole length of the block of houses on the outside of the roofs is a passage-way by which to escape from fire.

The ceilings of the principal rooms are delicately panelled, with flat cinque-cento ornaments in low relief, and have cornices and brackets. They are of different degrees of richness, the richest being apportioned to the front drawing-room. In like elegance the chimney-

pieces of the chief apartments are of white marble. It is expected that the selling price of houses in this class will be from 10,000l. to 12,000l., and they seem to find purchasers as fast as they are built.

Plot No. 3, which also looks upon the triangular garden faced by plots Nos. 1 and 2, only from the opposite point of view, is also well advanced. This is a block of first-class mansions in the hands of Messrs. Trollope. Plot No. 4 is situated in the rear of this, forming what we have heard called a flat-iron, between Ranelagh-street and Lower Grosvenor-place, and it provides for the inevitable exigencies of life in the form of a block of first-class shops. These are also the speculation of the Messrs. Trollope. The fifth plot is not yet commenced, but it is destined to receive a group of first-class mansions, to be erected by Messrs. Holland & Hannen. This is in the form of a triangle, bounded by Belgrave-street South, Ranelagh-street, and the direct or main road through the estate. The sixth plot, close to Victoria-square, will be covered with a large coach manufactory, erected expressly for the well-known carriage-builder, Mr. Thorne, by the Messrs. Trollope. This will be surmounted by handsome ranges of dwellings in flats. The seventh plot is allotted to the Belgrave Mansions Company (Limited), for the erection of a series of *Hôtels meublés*, or first-class furnished lodgings. These are now nearly completed, and require further description at our hands. One of the triangular garden-spaces we have mentioned lies in front of them, and beyond this the view in front will be bounded by the handsome mansions we have mentioned as being about to be erected by Messrs. Holland & Hannen. One side is bounded by Ranelagh-street, and the other returns into the Chelsea-road, just where it takes the name of Victoria-road.

The Belgrave mansions are built of pink brick, with white stone ornamentation, and with their carved *couronnements* to windows and doors, their oval, carved trussed and pedimented *lucarnes*, their *profil de l'entablement*, consisting of massive Portland stone cornice, and their casements, *mobiles* and *dormants*, present an appearance as thoroughly French as the Tribunal de Commerce, on the Boulevard du Palais. First-class shops will exhibit their attractive stores on the street level. Over them, to the vivid realization of their French character, is an *entresol*. And above rise the suites of ready-furnished apartments, suitable for the occupation of the wealthiest classes, which have hitherto been unattainable nearer than Paris. The central shop is apportioned as another French feature, a first-class restaurant, from which the lodgers can procure any dish they choose to order, at a fixed price. The proprietor is bound to provide a handsome coffee-room, into which the lodgers may descend to take their meals as at a French hotel, but they are equally at liberty to be served in their private apartments. Every kind of facility for extraordinary attention to the wants of the residents has been provided. A wine and beer merchant's office has been organised; laundresses and tradesmen of every kind appointed to call daily for orders, whom the residents may employ or not as it suits their convenience. Gas, fire, baths,—sponge, hot and cold,—and attendance, are to be found by the company, and charged for in weekly rent-bills. In fine, it will be possible to enjoy in these mansions the Parisian mode of life. We will now describe the plan of the apartments. The length of the frontage of the block of apartments is 282 ft. Midway down the breadth of the principal floor runs a corridor, out of which open doors giving admittance to the various suites of rooms on either hand, the more costly lodgings, of course, occupying the front of the block, and the less so the rear. The back front is not a plain surface, but consists of a series of receding wings, with a small open court between each, a suite of rooms occupying, for the most part, each wing. Three ample staircases give access to the corridor from the street, one at the centre, and the others at each extremity. Besides the apartments there are offices on this as on every floor, consisting of a still-room, which is the head quarters of all the service of the mansions, porters' and waiters' rooms, servants' hall, besides lifts, speaking-tubes, and bath, &c.

We will now enter a mansion built by Messrs. Trollope, and now ready for occupation, in plot 3. It is at the corner of Upper Grosvenor-gardens and Lower Grosvenor-place, one of the most magnificent sites in London, as far as prospect is concerned, for there is a view from

it of Grosvenor-place and into the gardens of Buckingham Palace, and into the maze of flower-beds that will occupy the triangular enclosure at the side of it, called Grosvenor-gardens. It contains about thirty-five rooms, has taken only two years to build, and is worth about 20,000*l.* It is five floors high above the basement, and has another flat of rooms in the high Mansard roof, and is altogether one of the finest mansions on the site. As this is a corner house, it is larger than those in the composition forming the rest of this group, except that which will balance it at the other extremity, which is the National Bank about to be built on the ironmonger's long-withheld site. The design for the façade is perhaps a trifle bolder than that of plots 1 and 2, and that it is equally pleasing is seen in the fact of the immediate purchase and occupation of the first two of them that are completed. The plan, too, differs from those on the plots mentioned. On the basement-floor, the Grosvenor-gardens frontage is occupied by the servants' hall and footmen's room, and beyond these by the butler's room and strong room. The frontage round the corner looking towards the Royal Gardens contains the housekeeper's room, larders, cook's room, scullery, and kitchen, in the order we have mentioned them. To make the last of these offices shapely, in consequence of the retreating line of site, it has been necessary to excavate under the footway for more space, and the scullery is vaulted in that position. There is the same contrivance for sweeping the chimneys from the basement used here as in the house previously described.

The principal entrance from the street, through a richly carved and decorated stone portico, with red granite columns, gives access to a spacious entrance-way, 10 ft. wide, which extends from the Lower Grosvenor-place front to the main wall which divides the Upper Grosvenor-gardens frontage from the next house. In the centre of it, on the right-hand side a door opens into a noble dining-room, 33 ft. square and 15 ft. high, and on the left hand another, opposite to this, gives access to a bay-windowed library, 21 ft. 6 in. by 15 ft., and of the same height as the dining-room. A corridor in the rear of the library conducts to a cloak-room, a gentleman's room, and bath, the two latter being built over the kitchen, which is not kept down in height, as in the house first described. A staircase, 10 ft. wide from wall to wall, rising from the entrance-way opposite the street-door, carries us to the drawing-room floor. This possesses two handsome salons de reception, extending over dining-room, entrance, and library, being thrown open into one of 65 ft. in length, 16 ft. high, and lighted with six windows and a spacious bay over that in the library. There is also a boudoir on this floor, with a dressing-room. The ceiling of the front drawing-room and that of the dining-room are both divided into nine coffered panels, elaborately enriched with cinque-cento plaster ornaments. The bedrooms, on the next floor, are 11 ft. high. A large bedroom, with dressing-room, is over the drawing-room, a dressing-room over the entrance-hall, a bedroom over the library, and a suite of bedrooms over the boudoir. A "closet" on the landing is lighted and ventilated by a shaft. The floor over this is arranged with a similar sequence; and the mansard roof contains three more rooms, which, in their turn, are surmounted by one more at its utmost height.

Stepping into the next-door house, whose only frontage looks upon Upper Grosvenor-gardens, and which is of smaller dimensions generally, though of equal magnificence as to arrangement and fittings, we find the entrance only proceeds through the house as far as the dining-room extends on the right-hand side of it, when the stone staircase, with its iron balustrade, begins to ascend, and a passage-way, turning aside, after skirting the breakfast-room, affords communication with a gentleman's room. The latter is lighted by a bay window shutting on to the skylight of the kitchen, which is treated in a similar manner to those in Mr. Walter's house, first described, being covered with a skylight, and thus affording ventilation and light-space for the rooms on the upper floors. The corner-house having two frontages was free from this necessity. Neither are the rooms of this second house so lofty as those of the spacious corner mansion. The dimensions of the dining-room scarcely exceed those of the library of its superior neighbour, being 26 ft. 6 in. by 16 ft., and 13 ft. 6 in. high. Here, however, as in other instances, special dispositions have been made to suit intending purchasers and occupiers. The drawing-rooms, in this instance, are

thrown into one large apartment, the necessary supports between the two being provided in Corinthian columns. In other cases, in the houses completed in this group, we observed similar deviations, such as provision of good nurseries. We may add that preparations are in active progress to continue the works. Foundations are being put in, scaffolding and travelling-machines are ready, and large quantities of stone are lying about the site, and being sawn by machinery on the spot. Coach-houses and stabling, with residences for coachmen and their families, form part of this group, as in the first-mentioned.

Plot 4 is separated from the corner mansion we have just mentioned by the entrance to the mews, which contains the stabling and coach-houses in rear of it, and the group of which it is so conspicuous a feature. This contains a set of first-class shops, over which are built, also in the French fashion, handsome private dwelling-houses, which have quite distinct approaches. One of these shops is already let to a confectioner, another to a picture-dealer, another to a dealer in China, and the fourth, which is a corner site, to a chemist.

We may add that the whole scheme is a wide piece of comprehension. In the first instance, mansions are built for the ultra wealthy; a smaller class of house, equal as to taste and locality, is provided for those equal in degree, though not in requirements; first-class shops are brought into the district to provide for them; their dependants are provided for; and a bank established; the result promising to be an ornament to the metropolis, and creditable and profitable alike to the Marquis, the purchasers, the speculators, the architect, the tradesmen, and the builders.

In these improvements of the Marquis of Westminster at Picnic and Grosvenor-place, the immediate sacrifices made correspond with the largeness of the projects. More than 200 houses have to be razed to the foundations, varying in rentals, from Tattersall's, at 2,000*l.* a year, and first-class residences in Grosvenor-place, at 500*l.*, to smaller dwellings at 50*l.* The total sacrifice of rent fallen in is probably not less than 12,000*l.* per annum. The improvements, however, will realize an income to a future generation of more than 100,000*l.* per annum.

CONTAGION IN BILLS.

THE fable of the goose and the golden eggs conveys a lesson not less needed in our days than in those of *Æsop*. Self-interest, according to the economical philosophy of the day, may be relied on as a safe guide to individual welfare. But in all self-acting machines a great deal of preliminary work has to be done before the automatic action commences. So it is enlightened self-interest alone on the guidance of which you can rely, and when you have to go through the previous process of enlightenment, the task is not so simple. Among those members of society who may be regarded as somewhat cannibal, living upon their fellows, subsisting for the whole year on the profit earned during two or three months of touring or holiday-making, the conviction of the folly of killing the goose has not yet made much way. Probably one reason is that the slain bird is not the only one of the species. *Les badauds*, Robert Macaire observed, *ne passent jamais*. Individual travellers may vow that they will never enter such and such a town again, but they are succeeded by others, who, in their turn, are to be fleeced and to be disgusted, and in their turn are fated to gain an experience that is but little available for the common advantage.

Perhaps, after all, the goose-stickers are in the right. We will not dwell longer on the question, as we are interested, not in their welfare, but in that of the goose. Pure skies, and golden sunlight, and glorious prospects, have such a magnetic power over those who can afford to flee the capricious inclemency of an English winter, that the hotel-keepers and lodging-house keepers of southern Europe, whatever be their delinquencies, are pretty sure of an annual supply of those on whom, or, at all events, by whom, they live. Advice from us would not be likely to reach their ears. It would certainly, if it did so, be regarded as interested and suspicious, and therefore proper only to be read backwards. But it may be an essential service to those whom the fear or the presence of pulmonary disease drives to seek an Italian winter, to call their

attention to one of the modes in which Italian housekeepers often effectually slaughter the gold-dropping bird.

Throughout Southern Italy the convenient prejudice exists that consumption is contagious. We say convenient, because the superstition on the subject is so framed, like others we might name, as to have a direct pecuniary force. It is not the living patient that is to be shunned. Such a sufferer is a good source of income, and therefore is to be welcomed and cherished as long as possible. Not a word do the anxious relatives hear of the danger incurred by the family of their well-paid host in consequence of the residence of the fading object of their solicitude. But when the end comes that comes to all, the tone of welcome is changed. The establishment is broken up; the survivors are on the wing; and as a rider to the last account comes mine host's charge. "Indemnité pour réfection des meubles et de la chambre occupée par le défunt, 100*l.* sterling." And the most curious part of the affair, that which shows how thoroughly obedient superstition is to covetousness, is, that it is the mere accident, so to speak, of death in the house, on which the charge is based. A consumptive patient may have lingered for months in a set of apartments, may have left them half an hour before death, and no charge will be made; but let him breathe his last in tranquillity in his bed, and the necessity for burning the furniture, for scraping, lime-whiting, and papering the walls, arises from that sad and simple fact. We are wrong—we should not say the necessity for so doing—but the necessity for paying for its being done. As to the application of the mulct, the hotel-keeper may settle that as best he likes between his conscience, his doctor, and his priest; and very likely, in the hurry of business, poor man, may delay consulting the two latter enlightened guides until the circumstances of the case have somewhat faded from his memory.

It does not seem that the faculty of medicine unanimously back this atrocious demand. It is true that the physicians with whom we are familiar in the pages of *Molière* are to be found in flesh and blood in many a Southern city. Were this the fit occasion, we could tell many an anecdote of the fraternity worthy to have been immortalised by the author of "*Tartuffe*." But to affix the damage with scientific precision to the moment of expiration would baffle even the acumen of those learned men who bled Count Cavour seventeen times before his hearty constitution succumbed to their insatiable lancets. So we find that in the Hospital of the Incorruptible at Naples, consumptive patients are placed with the other sick, although a separate ward exists for their accommodation. Thus, after all, the prevalent superstition on the subject can peep under the bandage with which it is blindfolded.

The important thing for English travellers to know is, that there is no legal ground for a claim that is often made just at the moment when the power of resistance is most feeble. It is not necessary for us to enter into the merits of the sanitary question. The infectious or non-infectious character of consumption is not a theme for our pages; the communication by the patient of a fatal miasma to the walls of the chamber, or to the furniture it contains, is not a subject on which English physicians have raised doubts, or English builders been called on to obviate any possible danger. Nor is it a question of moral justice to the foreign landlord; it can hardly be called a question of respect for his habitual prejudices. The manner in which the claim originates is one that seems to prevent any hesitation in forming the conclusion that the demand is purely and simply extortionate. So it is well to know that it cannot be enforced. The civil law is silent on the subject. The case can be regarded alone according to custom, and to support such a claim a previous contract explicitly or implicitly including a provision to that effect is necessary. In most cases of casual tenancy no such contract exists. Where, however, a house or an apartment is taken for longer time than a weekly tenancy a document is advisable, and is customary. In these documents a clause is very frequently inserted (as a matter of pure formality, an Italian lawyer will tell you), under which the tenant will find himself saddled with this ill-timed and distressing penalty, in case of the loss of a member of his family by pulmonary disease. The very question of the nature of the complaint, or of the cause of a death that may in no way be referable to consumption, will be discussed by greedy claimants. We can not too strongly advise any of our friends who seek a

temporary abode in the garden of Europe to refuse signature to any contract containing a clause of this nature; and, in the event of losing a friend by death in an Italian apartment, to refuse and ignore *in toto* a charge that is a scandal to the nineteenth century.

NEW ART-TREASURES AND REPRODUCTIONS AT SOUTH KENSINGTON MUSEUM.

We perceive that some valuable additions have been recently made to the art-collections at South Kensington. Great activity prevails among the officers, and several of the courts are occupied by workmen engaged in unpacking and putting together recent acquisitions. The last of these new arrivals are some full-sized plaster casts of magnificent candelabra, which are now in the process of being put together. The finest of these is a cast of the seven-branched colossal candelabrum in Milan Cathedral, that was the gift of Giovanni Battista Trivulzio, the archpriest at the cathedral in 1562. It is of sixteenth-century workmanship. The seven branches depart from a richly-ornamented stem, rising from a base of extraordinary beauty, four dolphins forming the angles of a mass of interlaced and complicated bossed and figure open scroll-work of much delicacy. It has been cast by Pietro Pierotti, Milan. A second candelabra is a cast from the bronze of Annibale Fontana, in the Certosa of Pavia. This has no branches. The four sides of the base are decorated with groups of ecclesiastical utensils in low relief, the corners representing winged male figures in high relief. Above these, four monsters support a stage having four sides, on which are represented, in low relief, the Annunciation and Presentation in the Temple, both subjects, with singular facility of design, being repeated. A third candelabrum has figures of exquisite grace to form angles to the base, and a duplicate of Faith and Charity to form a four-sided stage in the course of the height of the stem. This is also from a bronze by Annibale Fontana, in the Certosa of Pavia. They are all, at present, mere white casts, and of course, therefore, give only a fac-simile of the design, not of the effect. We may draw attention, too, to a plaster cast of a fountain in the gardens of the Royal Palace at Munich. A wide basin is supported upon an ornamented baluster-formed pedestal, out of which rises a rocky or rustic base, upon which elevation is a fine group of sculpture, representing Perseus standing on the prostrate and decapitated body of Medusa, whose head he is holding up in the air in his left hand.

A much larger and more important work, however, is the full-sized cast of the great triple western portal of the cathedral of San Jago de Compostella, known in the realms of Christian art as the Porta della Gloria. It was this superb piece of decorated architecture that Mr. Street chose as a frontispiece to his work on Spanish Gothic Architecture; and, truly, it is as noble a frontispiece for a cathedral as mortal man has yet designed, and therefore a fit preface for any description of kindred works. It consists of three semicircular-headed doorways, the centre one being 22 ft. 9 in. wide, and those on either side of it 6 ft. 4 in. in width. The central portal is divided into two by a richly-sculptured column carrying a full-sized, or more than full-sized, representation of St. James. Its jambs are supplemented with pillars also carrying figures,—Moses, Isaiah, David, Peter, Paul, Santiago, John; and from these springs an immense label, or archivolt, in which are closely seated twenty-four crowned figures, playing various musical instruments. The tympanum is still more remarkable: it is one vast group in alto-relief, showing our Lord seated in the centre, with Matthew on his right hand, John on his left; behind him and immediately below these, Mark on his left hand, and Luke on the right. On either side of this central group of five figures stand, on the ground line, three angels, the last on the right holding a large cross before it. In the background, above this noble company are rows of smaller angels, worshipping. The august subject, the starting whiteness of the material in which it is rendered, give, at first sight, an impression as of a vision of a multitude of angels, whose raiment is too bright to look upon. The theme of the whole conception seems to be praise. Our Lord blessing all; the Evangelists bearing witness; angels holding the objects that represent the Passion, with the cross erect; crowned musicians rejoicing. Some

portions of the superb portal are now lying in the north court, where it was at first thought it would be erected. But its colossal proportions would have entailed a cost of £500, to put it up, an expense which has precluded this intention from being carried into effect; and it is now being placed, temporarily, in the lobby leading to the long gallery in which architectural casts are now hung. As there is not sufficient height here to admit of its being put together, the various portions are treated as separate works, and placed apart from one another. Thus the archivolt, so densely full of seated figures, that should surmount the tympanum, is placed on an adjoining wall. The general effect will, therefore, not yet be realised, although the marvellous, powerful details may be studied.

We note, in another department, a fine copy of a gorgeously-coloured fresco from the Riccardi Palace, Florence, some 12 ft. or 13 ft. high, and about 16 ft. wide. The subject of it is a hunting procession, and the artist, Benozzo Gozzoli; date, circa 1408–1478. In the foreground are, perhaps, fifty figures in swift procession; and in the background and distance are as many more. The ripeness and intensity of colour are well reproduced by the Italian copyist, who, we understand, received £500. for his work.

In the electrotype department there are some valuable additions in Russian art. Copies of these have been made, by arrangement, by Messrs. Franchi & Son, in triplicates, for the convenience of the public. They consist chiefly of noble tankards with covers, bowls, chalices, other drinking-vessels, and salt-cellars. They may be seen in the case containing the reproductions of the gilded christening font, 3 ft. high, of Charles II., the ivory sceptre of Anne Bolyn, the altar-dish of William and Mary, and other of the glories of the regalia preserved in the Tower of London, close to the east of the grand chimney-piece for the Château de Seigneur de Villeroi. The originals of most of this gorgeously glittering store are in the possession of Mr. Moffat, M.P. They are silver gilt. One globular bowl, rising to a height of 5½ in., and spreading itself out to a diameter of 7½ in., before contracting again to receive an inscribed belt at its mouth, was a presentation from the Czar Peter the Great to a Cossack chief. It is ornamented with elliptical bosses of diaper-work, alternating with conventional foliage, in *repoussé* or beaten work. A copper-bronzed copy of this can be purchased by collectors or others, of Messrs. Franchi, for 2s., or a silver and oxidized copy for 4s., or a gilt copy for 6s., or still more highly prized, a parcel-gilt copy, such as an abbot of any of our richest monasteries would have been proud to place upon his hospitable board, for 7s. One of the noblest of the Russian tankards stands 11½ in. high, on three ball-and-claw feet. It is embossed with flowers and foliage, in *repoussé*. Like most of the other specimens, it is of eighteenth-century workmanship. Another fine tankard, 8½ in. high and 8½ in. wide, having a plain burnished drum, supported on three foliated ball feet, is considered to be of Swedish workmanship, as in the centre of its cover, within a series of rings, in *repoussé* work, is a medal of Ulrica Eleonora, Queen of Sweden, 1719 to 1741. A copy of this royal flagon, in gilt or parcel-gilt, is worth 12s. A second tankard, attributed to Swedish artists, has a medal of Gustavus Adolphus, King of Sweden, 1611 to 1633, inserted in the cover. This is scarcely so large as that of Queen Ulrica, being but 7 in. high and 6½ in. wide, but, like it, it is embossed with foliage and flowers in *repoussé* work, and is supported on three foliated ball feet. A tankard and cover, indisputably Russian, is gracefully surmounted with the figure of a swan.

The Russian salt-cellars are peculiarly interesting, as their character is so markedly different from that of familiar Italian models. The largest is about 6½ in. in height and 5 in. in diameter. It is of a cup-form on a short stem with a broad base resting on three ball feet. The base and cup are both ornamented with rude foliage and scroll pattern in *repoussé* work. A duplicate can be purchased of Messrs. Franchi for 4s., and a copy in bronze for 2s. 10s. The next salt-cellar is of a somewhat similar form, though of 2 inches less height; but the third example is a circular dish, only 14 in. high, and 2½ in. in diameter. This is chased with conventional foliage, and has two scroll and mask handles: it rests on four small ball-and-claw feet. A cup or drinking-vessel near them is worthy of note. It is of hemispherical form on a circular foot, and has a flat projecting handle. The inside is embossed with

marine monsters; the outside, with less questionable taste, is ornamented with birds and foliage. Around the cup runs a Russian inscription, of which a translation is engraved under the handle, "Cup of an honest man to drink to health and to joy." It stands but 1½ in. high: the diameter is 2½ in. That all seventeenth-century Russian drinking-cups were not of this low stature we have evidence in a chalice of the same period standing 7½ in. high, though but 3½ in. in diameter. This has no inscription, but a band of filigree work round the lip, and three scroll ornaments on the stem. Before turning from these gilded novelties, which summon up picture after picture to the mind's eye, beginning with the Beef-eaters and the Tower, and ending with El Dorado, we must enumerate among them a delicate tazza of beaten work having figures of Jupiter, Diana, and two other deities whom the authorities on such subjects hesitate to name. Sir Walter O. Trevelyan, bart., of Wallington Hall, Northumberland, is the owner of the original, which is of silver, and bears the English Hall-mark for 1683. Like the articles in the possession of Mr. Moffat, it has been triplicated by the Messrs. Franchi.

Those who take interest in Scandinavian relics will hear with pleasure of the addition of casts of the remains of the two fine crosses in the graveyard of Kirk Braddon, in the Isle of Man. They are small compared with some of the Celtic crosses. Three sides of one of them are covered with serpentine decoration, the fourth bearing an inscription in Runic, which, being translated, tells that "Thorlaf Neaki erected this cross to Froah his son, the brother's son of Iabr." There is but a portion of the shaft of the second cross. The front and back of this are also ornamented with serpentine decoration, and one side shows a Runic inscription, which has told the waves and the winds, and the seagulls, and all who have looked upon it, for more than a thousand years, that "Ottar erected this cross to his father Froika, but Thawjorn, the son . . . and here the pious record ceases."

Newly unpacked, and still lying on the ground in pieces, are two plaster casts of fifteenth-century altar-pieces, of large dimensions, which will also form valuable additions to the art-treasures already on view. The original of one of these is in the Certosa, Pavia, in marble. The subject represents, in high relief, the disciples and the holy women weeping round the dead body of Christ. In the background the various events of the Passion are presented in low relief. In the predella is the Annunciation. The pilasters are decorated with Renaissance scroll-work. The original is attributed to Giovanni Antonio Amadeo, a Milanese sculptor, circa 1480. The second is also taken from a marble altar-piece in the Certosa, Pavia. The central subject of this one is the Adoration of the Magi. The predella shows Christ in the sepulchre with groups of men and angels adoring. From amidst the Renaissance scroll-work of the pilasters project busts of the prophets in high relief. Recent copies placed upon the walls of one of the principal courts is the retables of an altar, a cast of that which was formerly in the Church of San Francisco, and is now in Campo Santo, Pisa, sculptured by Tomaso Pisano in the latter half of the fourteenth century. The centre is over-shadowed with a canopy in three compartments, and flanked on either side by three niches, with a figure in each. The Virgin with the Child stands beneath the canopy.

A fine bronzed knocker, of a circular medallion form, must be mentioned among the miscellaneous novelties as being a reproduction of one attached to one of the doors of the Castle at Lausanne, of German workmanship, in the second half of the twelfth century. From the centre of it projects a finely-marked lion's head, holding in its mouth a foliated ring. And when treating of bronzes, we may call attention to a recent purchase of a bronze bust of La Gorgone. The artist is the Duchess Castiglione-Colonna, and the price realised by her work, 105s. The beautiful determined face is wreathed with locks of snakes, and from the shoulders depends a lion's skin. It would be difficult to conceive a face that tells its own story better than this does.

Some modern Bavarian futile ivory casts and statuettes, by Schwarzhuber, produced between the years 1802 and 1818, are of new interest. And among the curiosities of modern foreign art, those who have sympathies with Oriental taste will look with pleasure at a set of circular playing-cards from Scinde, painted in gold and colours, and covered with transparent lacquer,

placed in a painted and lacquered wood-box. A Persian mirror-case and lid, too, is curious for the portraiture of a girl in European costume, in contrast to a Persian lady and her attendant, amidst embossed ornaments of birds on "strange bright wings," and flowers scarcely less uncommon.

But we have not yet exhausted the list of recent acquisitions in European art. Amidst the sparkling and jewelled collections that make each court like the sumptuous interior of a palace, we come, here and there, upon bits of the exterior world of old time, calling up rugged contrasts to the richness, luxury, gracefulness, and splendour of surrounding objects. Standing within reach of glorious items kings would prize and contend for, here expressly purchased and preserved for public instruction and delight, we may turn to treasures brought from all parts of the earth, to the simplest, quaintest curiosities which, perhaps, but a handful of clay has sufficed to produce, their sole value consisting in the skill with which they have been so formed. Here we have a tile of enamelled earthenware, faced with blue, of Moorish work, from the ancient casbah or citadel at Tunis. There is a brick, the upper surface of which is ornamented with figures in low relief, apparently representing the arrest of a prisoner in civil costume, in Flemish workmanship, though found at Walsoken, Norfolk. We need take but a few steps to see a dulcimer over which ran the fingers of a fair Signora in the sixteenth century, whose armorial shield is displayed upon its front; or an ivory diptych, carved in high relief, with the flagellation and crucifixion, by an impassioned German in the thirteenth century; or, say, a pectoral golden cross, set with diamonds upon white champlevé enamel, containing relics beneath a crystal plate, made by an inspired Spaniard in the sixteenth century; or a silver-gilt sweetmeat box, bright with enamel plaques of flowers on a white ground, into which the tips of an infant's fingers may have dipped in the seventeenth century, all of which are recent acquisitions to the Museum.

A mahogany table, presented by Ferdinand VII. of Spain to the Marques de Altamora in the latter part of the eighteenth century, ornamented with gilt metal masks and festoons, with a top of Sicilian alabaster, has been purchased in Madrid for 161. 16s. 8d. A silver-gilt cross, for processional use, of Spanish workmanship, ornamented with statuettes of saints and their emblems, amidst foliage, has been lately purchased at a cost of 210l. 10s. 5d. And two other additions from Spain have been recently made; one being an oblong, ivory group, carved in high relief, and sunk within the thickness of the task, representing St. Francis translated to Heaven, ascribed to Alonso Cano, an artist who lived in the first half of the seventeenth century; and the other, a reel, with distaff, winder, and two spindles, turned and carved in walnut wood, with box-wood collars and carved ivory stands. The former of these cost 36l. 16s. 8d.; the latter, 2l. 14s. 7d. Both were purchased in Madrid.

The long gallery, recently occupied by the Architectural Museum, now contains the fine series of pictures embodying incidents in Chevy Chase, which are destined to fill the spandrels of the arcade in the reception saloon and loggia, Wallington Hall. Mr. W. B. Scott has divided his very choice subject into four parts, the going out and the chase, the battle, and the morning after. No one can look upon these without wishing they were destined for Alnwick Castle to supersede or supplement the foreign decorations there, with a narrative in colours so closely associated with the history of that edifice and its owners. Mr. Scott also exhibits in this place cartoons for a series of wall paintings for the circular (newel) staircase, Penkill Castle, Ayrshire, illustrating the deliciously quaint and regal poem of "the King's Quair," written by James I. about 1420. We hear that this artist is to decorate one of the staircases in the museum.

Preparations are in progress to aid the proper representation of English art and industry at the Paris Exhibition. Many of the specimens are exhibited on skillfully contrived rotatory stands, out of which project frames which move to and fro upon hinges, so that one stand of frames will exhibit conveniently upwards of fifty subjects, and yet not occupy much space. The history of labour is about to be exemplified in these stands. Finished instalments are placed, temporarily, in the museum for public edification.

SHAREHOLDERS AND CUSTOMERS.

THE decision of the Vice-Chancellor's Court in the important case known by its connexion with the name of Overend, Gurney, & Co., is one that deserves more than a hasty glance or a casual comment. The question before the court was in itself of no trifling nature; but the questions incidentally raised by, or involved in, the main investigation, are yet more serious. The pecuniary interests dealt with are measured by millions sterling. Creditors from all classes of society are directly concerned, the loose cash of the millionaires and the hard-earned savings on which the age of a laborious life had depended, being alike swallowed up by a great catastrophe. Still more grave than the pecuniary questions are those affecting character. Who was responsible for a failure that shook the city of London, now nine months since, with a financial earthquake, from the terror of which it has not yet recovered? There are thousands of men now pining in enforced idleness who would have been honestly and meritoriously at work but for the results of the failure of Overend, Gurney, & Co.; and, if we could fairly test the statistics of the case, we should, no doubt, find that the evil indirectly caused by the destruction of public confidence, has been far greater than the evil directly caused by the loss of deposited money. Beyond all this there are certain questions affecting the character, and indicating somewhat of the tendency, of our social life, which it did not fall to the province of the lawyers to investigate, but the elucidation of which seems to be about the only valuable result to be gained from this national disaster.

It is true that the shareholders in the "Limited" Company who have sought to escape from the consequences of having joined it on the plea of having been fraudulently induced to do so, profess themselves dissatisfied with the decision of an Inferior Court, and promise to do what in them lies to prolong incertitude by the process of appeal. Without assuming how far the decision of the Vice-Chancellor's Court may or may not be assailable in matter of law, we may yet draw sufficient light from accepted and acknowledged facts to point a moral, if not to adorn a tale.

It is admitted on all hands that the late partners in the long-established and most lucrative business of Overend, Gurney, & Co., dissatisfied with the profit of 190,000l. per annum, which a quiet and regular course of business assured them, entered into speculative business of such a magnitude as not only to swallow up, by taking the wrong turn, this enormous income, but to place them as a house and as individuals in a position which, if squared up, was half a million worse than nothing. It has probably been thought that the fact was its own punishment, and little comment has been made on the haste evinced by these gentlemen to grow more than rich.

It is further admitted that the sudden stoppage of a house as well known as the Bank of England itself was a calamity to be deprecated no less for the public interest than for that of the partners in the house. Nor did it seem other than a sound practical view that a business commanding such an income was not, even with its large liabilities, to be sacrificed without wanton loss. The steady business over the counter would pay a handsome interest on a new capital of three millions sterling, and the idea of purchasing it for half a million, with the introduction of new owners of a new capital to replace that which had been swallowed up, was in itself sound and just.

The hitch lay here. The aid of the public was wanted to find this new capital. But this aid would not be obtained if the facts of the case were known. So it became—we cannot say necessary, but it was resolved—to obtain the support of the public by telling them only so much of the facts as would induce them to come in. That the new directors, who did this, were sanguine of a great success, and themselves largely invested in anticipation of this success, is, no doubt, true. Let them have the merit of this error of judgment, if error it was; but that can in no way alter the fact that they drew together a large proprietary and raised a large capital by the *suppression veri*.

From active participation in this, which legally is termed a fraud, and which moralists of the old school would have called by quite as unqualified a name, every one seems anxious to exonerate the old partners, who have paid, it is thought, penalty enough for their unsound business. There is something to be said on both

sides in this part of the case. It may be urged that, the new directors having made their bargain, the old partners were *functi officio*, and had no business to prejudice the property of other people by any late qualms of conscience. On the other hand, it must be remembered that the fact of the double deed implied, to some extent, double-dealing; that the private and the public documents were as much the act of the old proprietors as of the new; and that the intent of hoodwinking the public (for their advantage, may be, but none the less hoodwinking), must have been that of both parties at the time of executing the two deeds. Perhaps this part of the question would have received less scrutiny but for the position of the persons in question as members of a sect professing straighter morality than their neighbours, and assuming by broad marks of dress and speech the motto, "I am holier than thou." The lesson that those who would excel the men among whom they dwell in religion, should be in the first instance doubly careful not to fall behind in the decent principles of morals, is perhaps the most certain inference from the story of the double deed.

We are not about to complain that certain of the new proprietors, on finding how they had become thus qualified, endeavoured to escape the consequences of their leap into the well. For the entire new proprietary to have agreed on one definite course of action would, no doubt, have been far more respectable for all parties. But such is not our English way, and it often happens that the obstinate creditor or the unreasonable jurymen, who refuses to make things pleasant by going with the rest, does, indirectly, good service to the state. Small thanks, perhaps, are due to him for so doing. His motives may be questionable, or purely selfish,—his breeding may be detestable; but he stands out till the full breath of complete investigation sweeps through every hole and corner of the case, and thus the public are the gainers, after all.

The point that comes out most clearly at this stage is, that whatever be the amount of fraud and concealment between the projector and his flock, third parties are not to be endangered by it. Whether this be law or not, it will be for the Court of Appeal to say. That it is justice, no one can doubt who takes the trouble to state the case plainly to himself. A, B, and C enter into partnership, and trade with D, who trusts to their joint responsibility. After a time the business turns out amiss; B and C turn round upon A, and say, "You have misled us. You induced us to think that we should gain money, and instead thereof we have lost." Now if they go on to say, "Therefore refund to us our venture," they have a certain degree of right on their side; but if they go on to say, "Therefore we will not pay D what we unitedly owe him," they endeavour to redress one wrong by perpetrating another. The whole gist and practice of social equity in such a case is the decision,—first pay D his just claim, and then get your revenge out of A. It is lucky for the directors of the "limited" company that the recalcitrant shareholders have been more discontented than logical.

There remains the investigation of those questions to which we have referred as touching the state and development of our social relations,—questions of confidence between man and man in the conduct of the daily business of life. The point to which we more especially refer is this: How far is each man responsible for taking care of his own interest, and how far is he to look to the law, or to the public code of morals, to do this for him? There has been, since the earliest dawn of civilization, a great disposition to place private interest under the safeguard of the public officer. The whole ancient law relating to debt testifies to this disposition. The prison of the Mamertine at Rome was an early instance of this mode of legislation. Forasmuch as he had nothing to pay, the unfortunate debtor was condemned to be sold. In our own time we take it for a happy augury that the tendency of legislation is in the opposite direction. The importunate creditor is told that he should have better heeded whom he trusted. It is a less paying speculation to lure the young collegian into debt, with the good hope of making his ill-used father pay the piper, than some of us can remember to have been the case. It is obvious that public morality is the gainer by the change. Credit, enforced by law, is a pernicious and demoralizing form of speculation. Credit, based on confidence in known uprightness of charac-

ter, is one of the most ennobling bonds of society. The less law can interfere in any cases but such as are criminal, the better for the tone of society. Empty prisons are a sign of improved morality among tradesmen. The movement of the day is to place moral responsibility in the place of artificial responsibility enforced by law.

Now in this respect the result of the great Overend case is, we think, matter of congratulation. It is a further warning to us all to see to our own business. It is the want of this old-fashioned principle that underlies all the financial trouble of 1866. People who knew nothing of banking, of trading, or of manufacturing, thought that they should at once become rich as bankers, tradesmen, or manufacturers, by the simple process of taking shares in a new company. "I am a director of so and so," says Colonel A.: "rather a good thing." So the good colonel, who would have shown any one the door who proposed to him a sound *bond fide* trading partnership, takes his shares, and his seat at the board, and his guinea or two for attendance, and is much disgusted when his natural unacquaintance with the details of his new business, joined to the equal ignorance of many of his coadjutors, produces its natural result. Now here we have a fresh proof that this haste to gain the tradesman's profit without the tradesman's education is dangerous. If the shareholders in Overend's Company could have backed out of a loss because they had been misled, it would have been an encouragement for the incautions, and therefore for the designing. The reality of business has been lost sight of. People have thought they would have all the sweet, and none of the bitter. By gigantic combination of capital the humble tradesman was to be extinguished, and his means of livelihood were to be made over to the limited shareholders. We have another rude, but not untimely, lesson that this plan will not succeed. We must mind our own business; and if we go to the Law to complain that we have not done so, the Law tells us, from the bench of the Vice-Chancellor,—"That, gentlemen, is your own fault, and your own misfortune."*

REFLECTIONS ON THE POSITION AND PROSPECTS OF ARCHITECTURE.

In offering a few remarks on this subject, I feel that I may not unreasonably be accused of taking too much upon me, in putting forward my immature ideas on a topic so important, the adequate treatment of which might furnish scope for the abilities of the most learned and experienced among us. But if it be thought that "age should speak, and multitude of years should teach wisdom," it may be pleaded, on the other hand, that it is to the younger among us—to those just about to commence the practice of their profession—that the subject is most personally interesting. The older architect, the man of long standing in the profession, has in most cases settled into his groove; he has long since chosen the particular style of art which commended itself to his fancy or his judgment, and pursued it with that steadiness of purpose without which no success in life can be attained; but with the younger man, pausing to choose his path amid the multifarious styles of the present day, the case is different; and if he be one determined to carry on his profession with a fixed aim, and not as a series of per-centage jobs, his position is not a little perplexing. Like the lady in Milton's "Comus," he seems to be surrounded by—

"Calling shapes and beckoning shadows dire."

On the one side he sees vistas of columned porticoes and long vanishing lines of cornice, flanked by the neat respectability of engaged columns and pedimented window-heads; on the other hand, he is courted by every variety of style which the use of the pointed arch is supposed to comprise under the general term "Gothic," from the direct reproductions of feudal architecture which now stand somewhat modestly in the background, to the last new freak of coloured brickwork which glares pertinaciously in the foreground in all its fantastic ugliness, the varieties of which succeed each other as rapidly as the fashions of dress, and with apparently no better reason than that furnished

by the tailor, who, if you inquire concerning the change in the cut of a coat, replies, with a bland smile, "We're making them so now, sir!" What wonder, then, if the beginner, in the midst of this chaos of styles, is sometimes fain to sit down bewildered, and to wish that he had chosen a profession where at least the path to be followed was clear and unmistakable.

There is a remark made by Coleridge, in the course of a poetical criticism (in the *Biographia Literaria*), which seems to throw some light upon the path before us. He says,—"To admire on principle, is the only way to imitate without loss of originality." Leslie, transferring this maxim to his own art, has placed it on the title-page of his "Handbook for Painters." We, in turn may surely, with equal propriety, adopt it; for is it not evident that architectural history for the past fifty years is simply a succession of failures, the result of imitations adopted from fashion and the desire of change, independent of any principle of selection? Had there been the slightest approximation to such a principle, could two styles so utterly opposed to each other as pure Greek and pure Gothic have been successively adopted as the one thing needful, and successively dropped, during that short period?

This state of things, however, should not surprise us, if we consider how few there are who have leisure or inclination to take that comprehensive view of past and present by which alone our actual position and requirements can be correctly estimated. For broad principles in art, as in other things, result from the application of former precedents to present conditions: and as the soldier engaged in actual fight knows less of the battle than the spectator who from an eminence takes in the whole field, so the man who never lets his thoughts travel beyond the practical routine of his profession is in no position to judge of the real tendency or value of the movements going on around him. It may be worth while, then, to place ourselves in imagination at a distance from the scene of action,—to take a rapid survey of the field, and arrive, if possible, at some definite conclusion with regard to our present position, whereto to base our principles for the future.

Glancing at the past history of our art, to read what lessons it may have to give us, we are naturally attracted to the two points at which alone there have arisen, out of the medley of immature and uncompleted national architectures, two styles perfectly complete in their artistic expression, and consistent in all their parts. And it is remarkable that not only are these two styles (as before observed) totally opposed to each other in character, but that the institutions of the countries and periods in which they flourished—the Hellenic Greece of the third century B.C. and the Teutonic Europe of the fourteenth century A.D.—exhibit the same definite consistency and the same sharp contrasts. In politics we see in Greece the spirit of federalism, in Mediæval Europe that of feudalism—in religion the Pantheism of the one is opposed to the Asceticism of the other—while the art of the two countries represents, in its most complete and un-alloyed form, the antagonism of the two great schools now known as the Classical and the Romantic. This definite and complete character, then, of these two periods, renders them in some degree typical positions, in which we may with more than ordinary advantage note the relations between architectural styles and their surrounding circumstances.

What then were the conditions under which Greek art arose? In a country remarkable for the clearness and purity of its atmosphere, and of a character of scenery which we may call elegantly picturesque (being equally removed both from tame flatness and rugged sublimity), and possessing a climate warm but temperate—in such a country we find a people ardent, vivacious, and quicksighted; with a keen perception of sensuous beauty, an inquiring intellect, and a high critical faculty; of no very high standard of morals, little given to deep thought, but characterized rather by a certain childlike buoyancy of spirits which is only found in the early history of a nation; and naturally, under these circumstances, practising a religious form which appealed much more to the intellect and the senses than to the moral faculty. What style of architecture a people so conditioned might have evolved, had they been entirely unbiased, we can only conjecture; for the Greeks were not, more than any subsequent people, independent of those who preceded them. In the background loomed the dark recesses, the colossal statues, and the vastad colonnades of Egypt,

casting their shadows over the sunny landscape of Greece, and giving the starting-point of her architectural style. Here was undoubtedly the source of the massive and thickly-columned Doric order, which in its general proportions is no offspring of the Greek mind; but the form which it took on Greek soil is highly characteristic of the people, and of their climate and scenery. For it is in those countries where, as in Egypt, man is dependent on or overawed by natural forces, that there is fostered that spirit which gives to art and religion the gloomy grandeur which is the outward expression of that indefinable dread of external nature which we call Superstition. But to the Greek,—

"From him who on the mountain lies
By dancing rivulets fed his flocks,
To him who sat upon the rocks,
And dined to the morning sea,"

there were none of these terrors; his landscape was sufficient to delight, but not to overawe, the mind; and his religion, and consequently the temple taking their tone from the scenery, lost indeed in mystery and grandeur, but gained immensely in concentrated effect and cheerful aspect. The influence of the critical intellect of the Greek was even more marked: he could not be satisfied with the mere optical gratification derived from the profuse employment of colour, nor allow of the incongruity obvious in the use of natural forms, such as the palm and lotus, to support a heavy architrave; but transformed the column and capital into regular, angular, and strictly architectural forms, in harmony with the other lines of the building, but designed, nevertheless, upon broad natural principles.* But it is in sculpture that the peculiar genius of the Greek mind is pre-eminently shown. Here we see on the one hand the most intense love of physical beauty, and triumphant skill in the delineation of it, in figures and friezes suffused with that blithe and joyous spirit which could only subsist in an age when men had not learned to think deeply, and were undistracted by the questionings, the doubts, the anxieties, which in later days were to stir the human mind; but, on the other hand, we cannot but be sensible, both in the building and the sculpture, of the entire absence of that spiritual feeling which gives the last and highest value to a work of art.

The great characteristic of Greek art, in addition to this tone of buoyancy and severity which pervades it, is the artistic self-restraint displayed in the breadth and simplicity of treatment, both in the building and the sculpture. But, as it has been well remarked by a recent writer in the *Westminster Review*,†

"This generality or breadth has nothing in common with the lax observation, the unlearned thought, the flaccid execution, which have sometimes claimed superiority in art on the ground of being 'broad' or 'general.' Hellenic breadth and generality come of a culture minute, severe, constantly renewed, rectifying, and concentrating its impressions into certain pregnant types."

Passing from the antique, we are led into the more modern world through the gates, as it were, of that great city where, though little was practised that could really be called art, the arts, sciences, and literature of the then known world, amid a luxury and wealth almost incalculable, were collected together, as in one huge reservoir, ready for the use of the Gothic nations who were to form the new blood of Europe. Long, however, was it before any order was evolved out of the chaos which succeeded; and for centuries architecture wandered in bye-ways, trying her hand at this and that fashion, struggling between the old forms and the new spirit; and when at last a consistent style was struck out (simply by the substitution of the constructively correct buttress for the constructively false engaged column and pilaster), we are indeed in a new world. The chief monuments are still temples; but this very fact serves to emphasize the contrast with the Greek style. Nor are the causes of such contrast difficult of comprehension. The writer in the *Westminster Review*, before quoted, remarks that "religions brighten under a bright sky; they become liberal as the social range widens; they grow intense and shrill in the clefts of human life, where the spirit is narrow and confined, and the stars are visible at noonday." No words could more precisely describe the condition and origin of Mediæval religious art. De-

* It has been arranged that the appeal from the judgment of the Vice-Chancellor shall be carried direct to the House of Lords.

† Read before the Liverpool Architectural Society.

* For some striking remarks on the genesis of the Doric column and capital, see Garbett's treatise on the "Principles of Design," pp. 114 and 140.
† January, 1867, under the heading "Winkelmann." This admirable essay is well worth the attention of those who are interested in Greek art.

prived of the cheerful influences and free thought under which Greek art was nourished; placed, both metaphorically and literally, under a gloomy sky; the lamps of science and literature withdrawn; hemmed in on every side by doubts, fears, and superstitions, what could the human mind do but rise upward, in almost frantic aspirations, in the only direction permitted to it; leaving us, in default of books, the record in stone of its struggles to be free? The men who worked, too, are in strange contrast to the Greek artist; a race of little refinement, little endowed with physical beauty, and with very limited power of delineating it, but possessing much of that sense of moral beauty, that spiritual feeling, which we noted as absent in Greek art; and, on the other hand, entirely deficient in that invaluable quality of breadth and simplicity, that faculty of "knowing where to stop," without which a man must always run the risk of spoiling his own work. We see also that the feeling of dread or superstition, which is again present as the dark background of life, has induced that prevalence of gloom and mystery that we notice in the Egyptian style, giving also an intricacy and extension to the building, which makes it approach more nearly to the feeling of landscape art than any preceding style. The influence of climate is of course obvious—we can no longer do with fittings and facias and such delicate sources of effect; under this dull northern sky, we must have deep hollows and large rolls in the mouldings, deep shadows in the foliage and capitals; indeed, the Mediæval mason would sometimes cut and gash into the stone with a certain grotesque vigour, which has led to the remark that genuine Gothic has something "wolfish" about it.

Amid the commercial towns of North Germany, with their Federal constitution, we do indeed find, in their cloth-halls and stadt-houses, something more of breadth and repose, some escape from that uncompromising spirit of aspiration which pervades the religious edifices of the period; and in the sunny Republic of Venice something of the old Greek brightness shines through its Gothic veil. But, on the whole, the art of the time is that of minds cut off from the lessons of the past, and pressed upon and enaged by feudal and religious terrorism, the joint influence of which cast a gloom over both the visible and the invisible world, and justified more than any other consideration the often-applied epithet of the "Dark Ages." This darkness, however, was ere long to be dispelled. Already, through the resuscitation of the long-buried literatures of antiquity, men's minds were awakening to the perception of a far wider horizon of thought and feeling; already the first streaks of sunshine were appearing, and the feverish dreams of Mediævalism were growing faint and pale in the morning light. So rapid, indeed, and yet so blending, was the transition, that the last and greatest temple built under the dictates of the old feeling took, nevertheless, as it were unconsciously, the artistic expression of the new. The peculiar and significant position occupied by St. Peter's Cathedral in history has been so eloquently commented upon, in one of the most remarkable books lately written, Mr. Lecky's "History of Rationalism," that I cannot do better than quote the passage:—

"Of all the edifices which have been raised by the hand of man, there is none that presents to the historian of the human mind a deeper interest than St. Peter's. . . . The most sublime associations that could appeal to the intellect or the religious sentiment cluster thickly around it, but an association of which none but dreamers have consecrated it, and will abide with it for ever. The most sacred relics of the Catholic faith are assembled within its walls. The genius of Michelangelo, Raffello, Bramante, Cellini, Thorwaldsen, and Canova have adorned it. Mosses of matchless beauty reproduce the greatest triumphs of Christian painting, and mingle their varied hues with those gorgeous marbles that might have absorbed the revenues of a kingdom. Beside that majestic dome, which stands like the emblem of eternity, and dwarfs the proudest monuments below, rest the remains of those who were deemed the greatest of the sons of men. There lie those Mediæval pontiffs who had borne aloft the lamp of knowledge in an evil and benighted age, who had guided and controlled the march of nations, and been almost worshipped as the representatives of the Almighty. . . . But inexpressibly great as are these associations in the eyes of the theologian, the recollection of Luther and the indulgences and the Reformation will tower above them all; while to the philosopher, historian, St. Peter's possesses an interest of a still higher order. For it represents the conclusion of that principle, growing out of the anthropomorphic habits of an early civilisation, which led men for so many centuries to express their religious feelings by sensuous images of grandeur, obscurity, and of terrorism. It represents the absorption of the religious by the æsthetic element, which was the sure sign that the religious architecture had expired and perished. The age of the cathedrals had passed. The age of the printing-press had begun."

Here, then, was once for all a complete change in the conditions of architectural progress. It

was no longer possible for a nation to work out its own style with that singleness of aim and unconscious freedom from external influences which rendered possible the concentrated unity of expression and steadiness of purpose which we find in the Greek and Gothic, and in a lesser degree in other styles before this date. Not only had the antique past been resuscitated, but, through the invention of printing, it was in some sense no longer the past; the ideas which had formerly been lost in the distance being thereby floated down over the sea of Time, and "brought home to men's business and bosoms." Hence arose that vacillation of style,—that tendency to copyism and consequent absence of definite expression which has characterised architecture since the fall of the Mediæval style, and has been, with good reason, so much deplored by the most thoughtful of recent architectural critics. For when a generation of men who have been at work upon their own style, isolated by the conditions of time and place from the accurate knowledge of any other style or form, and therefore unconscious of anything like a principle of selection, simply because they had nothing to select from,—when men so placed suddenly had a wealth of new ideas opened up to them, without time to mature any principles, it was inevitable that they should immediately be seized with the desire to imitate and adopt all that seemed so admirable in this new field, without much thought of its fitness for their own purposes. In process of time, indeed, some degree of selection was arrived at, in so far as some things were seen to be more worthy of imitation than others; but that clear though unconscious unity of purpose with which the Gothic architects worked is gone for ever; we can never revive it; it depended upon a condition of things which the state of modern society and education has rendered for Europe, at least, an impossibility.

The vacillation and mixture of styles consequent upon the newly acquired knowledge of the art and literature of other times, was rendered still greater by the increased inter-communication between different countries, which the advance of civilization and commerce induced and rendered possible. Yet, strangely enough, this influence of foreign travel, which for a long time fostered the multiplicity of art-fashions, by giving to different nations just sufficient intercourse to enable them to borrow one another's ideas, without the opportunity of arranging and systematising them on any concerted principle,—this very habit and facility of locomotion, when raised to the comparative perfection in which we now see it, seems likely to afford the best means of regaining that unity of art which was lost in the fifteenth century. For if the invention of printing was a triumph over time, making the past to become present with us; surely the invention of the steam-engine may be called a triumph over space, whereby distant countries are brought into comparatively close union and brotherhood. Forty years ago it was remarked by Carlyle,* that the increased means of communication seemed likely to unite Europe into one nation; and Mr. Matthew Arnold, in a recent essay,† observes "Europe tends constantly to become more and more one community, and we tend to become Europeans instead of merely English, French, Germans, or Italians. So whatever aptitude or felicity one people imparts into a spiritual work gets imitated by the others, and thus tends to become the common property of all." This is a significant sentence, and is fully borne out, I think, by fact. When we notice the incessant stream of travellers and tourists passing from end to end of civilized Europe (in which epithet I do not of course include Russia), when we remark the prevalence everywhere of the languages of the two leading nations, and observe how completely the literature of any one nation, even down to its reviews and periodicals, is the property of all literary Europe; when, looking at our own profession, we see eminent men among ourselves employed on great works in Germany and elsewhere, and eminent architects from all parts of the Continent contesting our own competitions with us; when we look at our own architectural alliance (which but for railways would have been impossible), and consider the facilities that are and may be offered for similar associations on a far more extended scale,—it is not difficult to see where all this must land us. The old barriers are breaking down, the old landmarks are being submerged, the old prejudices and

nationalities are fast fading away, and we may look forward with confidence to the development of a European style of architecture.

What turn would such a style probably take, and upon what basis, amid the present embarrassing wealth of materials, might it be with any firmness fixed? The styles which have shown most unity and stability hitherto have been those which most represented the spirit and feeling of their day. Reasoning from analogy, if we would have a style with any permanent life in it, it must be in accordance with the principal moving spirit of modern Europe. But what is that spirit? "Oh!" some will say, "that is easily answered; any one may see that the prevailing spirit now is the romantic—the Mediæval." Granted, just now; but how long will that last? On closer inspection, it will be seen that the present century has hitherto been, in a peculiar degree, a period of rapid oscillations of thought and feeling, of which the Mediæval mania is merely the latest phase.* These changes on the surface, which usually accompany a transitional state of society, but are much accelerated by the increased interchange of thought in the present day, should make us careful lest we mistake for the great movement of the age a mere passing fashion, influencing, in fact, only a section of the community. But were I to describe in one word what seems likely to be the characteristic spirit of the present age in Europe, I should call it emphatically the age of *Political Economy*. It is this spirit (taking it in its widest sense as the effort to secure the greatest happiness and convenience of all men) that underlies everything else, and is viewed and studied with interest by men of all nations and parties; and it is the more likely to be a lasting influence, for some time to come, because it is yet in its infancy; we are only just becoming conscious of its mission; only, to use Mr. Mill's words, "touching with the tips of our fingers" the great social questions which it involves. "But what has Political Economy to do with Architecture?" Much every way. An age which is engaged in investigations, in all directions, for the solution of problems so important and so eminently practical as this science involves, will certainly not, in the long run, choose for its architectural expression a style characterised entirely by upward aspirations. The effort to provide suitable dwellings for the poor, which is only a branch of the subject, is already leading us to numerous experiments in planning and construction. The Wages question, again, will indirectly affect the style of construction. A great modern writer has observed, speaking of the Pyramids of Egypt, that "the mere appearance of those huge and costly buildings is a proof of the state of the nation that erected them. To raise structures so stupendous and yet so useless, there must have been tyranny on the part of the rulers, and slavery on the part of the people. No wealth, however great, could meet the expense that would have been incurred, if they had been the work of free men, who received for their labour a fair and honest reward."† Contrasting such a state of things with the rising power of what are called the "working classes," and the increased demands made by labour upon capital, it is evident that political economy will produce structural economy, and that a class of buildings not yielding a per-centage will necessarily be at a discount. Let the advocates of the "free-church movement" take this into consideration.

There are two other, less deep-seated perhaps, but still prominent characteristics of the present age, which must certainly influence our future style. One is the ardent desire for knowledge and light of every kind, the greatly increased faith in the progress of science, of which we have daily larger evidence. This feeling will certainly render it impossible for us to be satisfied, for any length of time, with the rough-out forms and unscientific sculpture which have characterised the Gothic school of architecture; nor will the comparative gloom and mystery of that style be at all acceptable to an age which has shaken off all superstition, and seems inclined indeed to ignore the supernatural altogether. To such a state of feeling the carefully-studied sculpture and the cheerful

* "That great reaction against the materialism of the last century, . . . which produced in art a renewed admiration for Gothic architecture; in literature, the substitution of a school of poets appealing powerfully to the passions and the imagination, for the rigid intellectualism of Pope and Voltaire, is everywhere passing away."—Lecky's "Rationalism," vol. ii., p. 407.

† Buckle's "History of Civilization."

* "Miscellaneous Essays," "Gothic."

† In the *Cornhill Magazine* for July, 1866.

aspect of the buildings of the Classic school will certainly be the most acceptable models, while the increased perception of the law and symmetry everywhere pervading the natural world will not dispose us to accept the wild irregularity of plan and outline which has been carried to such a fantastic excess in some ancient and many modern Gothic buildings. On the other hand, the seriousness of thought of which we first observed evidence in the works of the Medieval artists, combined with a certain indescribable grasping after infinity, which is a peculiarly modern feeling, and which probably originated the present love of landscape art, and of external nature, with its lofty hills, cloud shadows, and sweeping distances,—all this tends to disatisfy the mind with the restricted, rigidly symmetrical, and comparatively cold and colourless beauty of the pure Classic school. In short, the whole tone of modern thought, considered on all sides, seems to demand in art a blending of the artistic refinement and severe training of the Classic school with the deeper, more earnest feeling, and (in a chastened form) something of the picturesqueness and colour of the Romantic school. The two types of art have been left us, each in its unalloyed unity and completeness; our task is to aim at a higher perfection than was attained by either, by selecting the higher and enduring elements of each, and rejecting the lower and transient. This can scarcely be said to have been fairly attempted yet in architecture; but that such a union in art is possible, and with the highest results, has been fully proved in some of the most beautiful designs of Flaxman and Thorwaldsen.

It must be remembered, however, that while the influence upon architecture of national habits and tone of thought is one that changes with time, there is another powerful influence over it, which changes with place and not with time; I mean that of climate and atmosphere. And if we look into it, we shall find, I think, that while the former influence has most effect upon the general plan and design of buildings, the latter will regulate the character of the details. In an age, for instance, where the ecclesiastical spirit is predominant, and where churches are the principal buildings, a vertical style is likely to predominate. But let the same nation, in a time of advancing prosperity, become engaged in commerce as its principal object, and the result will probably be a preference for a horizontal style in its architecture, both from the more commonplace and less aspiring spirit that would be induced, and also because the increased value of land and the large accommodation required for carrying on business would necessitate buildings of several stories one over another, which, on true architectural principles, would be marked on the external design. But the atmosphere remaining the same, the style of mouldings and foliated ornaments which was effective at one period would be equally so at another. And there can be no doubt that, in our own climate, whatever dignity and symmetry of general design we may derive from the Classic principles, we shall still require the deep undercutting of mouldings and the masses of shadow which characterise our original English style, if we are to make our buildings effective. Let any lover of Classic purity who doubts this go up into the portico of the Liverpool Free Library on a day of ordinary clearness, and thence contemplate the west flank of St. George's Hall, and contrast the admirable effect of the colonnade of square massive pillars, relieved by the deep shadows between them, with the tame and spiritless aspect of the shallow panellings over the windows, and the faintly recessed facias of the architrave round the northern portion of the building, and he will probably come down again convinced. Returning along Dale-street, he may see in the new Public Offices that details, Gothic in spirit and perfectly effective in this climate, may be applied to a "regulation" Classic building with a considerable heightening of its effect; and if he continue his walk to Old Hall-street, he may there see, in that admirable building the Albany Offices, a design expressing the purpose intended and the high civilization which renders such buildings necessary, yet enlivened with ornament perfectly Gothic in type, and adapted to a northern atmosphere as completely as the roll mouldings and deep-cut foliage of the Medieval artist.

If the foregoing views be in any degree correct; if there are glimpses of a progress, uncertain indeed and wavering at present, towards a possible unity of architectural principles and style; if the present vagaries of design and want

of definite aim be admitted to be highly unsatisfactory, it were well to consider for a moment what may be the causes of this state of things; what the obstacles to our arriving at the desired haven. And, first, with regard to our profession, it is much to be deplored that its present status is so low and its limits so undefined; that there is, in fact, no recognised entrance to the profession; and that any jerry-builder who has perpetrated a shop-front for a friend, may dub himself architect, and play his fantastic tricks before high heaven to his heart's content, without let or hindrance, rendering the aspects of our streets pitiable enough, and degrading the profession in the eyes of educated men. This will never be stopped until all who wish to practise as architects are subjected to the test of a compulsory examination. This is the only cure—the evil is a crying one, and half-measures are needless. And with regard to the question, what such an examination should comprise, it may be said that the education of the best section of the profession at present is too broad, and not high enough; they are expected to be conversant with a variety of subjects, such as no one man can possibly master, and many of which have no necessary connexion with architecture; while no provision is made for raising and strengthening the tone of the mind by the study of history and general literature. Yet it is only by such studies that the habit of thought and power of generalization are fostered, without which a man is at the mercy of every caprice of fashion, and for want of which many men of high talent, and possessed of every necessary capability of hand and eye, are at this moment employed in carrying out, with great industry, buildings which the next generation will infallibly regard with disgust (if it regard them at all). No doubt, power of manipulation with the pencil is indispensable, and should be acquired by every architect; but something more than this is necessary, namely, the power of thought, without which a man is not a designer, but only a draughtsman, and his dexterity with his tools may amount only to an extensive capability of doing mischief. Yet it must be admitted that in a large number of the buildings designed even by our cleverest men, there is but little evidence of anything like the requisite amount of thought having been bestowed, especially upon details. Too often there are the indubitable marks of hurry and want of time; mouldings and ornaments with no appearance of having been designed for their place, or carefully considered with reference to the total effect of the building; but having a stuck-on appearance, and encumbering instead of emphasizing the expression of the design. A great deal of the ornament of modern Gothic just at present seems to consist in cutting circles in every available place: church windows are seen composed entirely of round holes of different sizes pierced in a plate of stone; and the same feature re-appears *ad nauseam* in buttress-gables, bench ends, pulpits, &c., &c. This is a very easy way of designing. Much of the hurried appearance of modern work is owing to the fact that architects in large practice have generally more work than they can possibly attend to in person; and for this the architect himself, perhaps, is not so much to blame, as the clumsy per-centage system of payment, which makes his income depend not on the quality but the quantity of his work; whereas, if he had the power, as a painter or musician has, of raising his terms in proportion to the necessity of overtaking himself and could afford to restrict himself to such an amount of work as he could really give his whole mind to. But with the present system comes the necessary but very serious evil of working by proxy, whereby the architect, instead of being an artist and constructor, is turned into a sort of art-capitalist, and his office into a manufactory, where we might write up, "N.B. Designs in all styles turned out with neatness, finish, and despatch." Another injurious influence in modern practice is the constant desire for novelty, both on the part of the architects and the public. Copyism is wretched work, no doubt; but why, on the other hand, should a building resemble nothing that has gone before it? And why, when a man has designed a really successful ornamental detail, for instance, should he not repeat it in suitable positions? The Greek and Gothic architects did so continually. But no—this is not to be allowed; and so the design is altered, not in order to improve it, but simply for the sake of alteration,—and ten to one it is spoiled. From a similar feeling arises the de-

mand for sensational effects and preposterous skylines, to which all breadth and simplicity are too often sacrificed. It is really difficult now to find a design with sufficient breadth of wall-space and unbroken continuity of line to constitute anything like repose or dignity of effect. It is to be feared that the system of architectural competition, where every man endeavours to attract attention to his own design, has done much to foster this sensational style. If so, the inroads made by that system upon our pockets and our time are the least of the evils for which it is responsible. Some of the most instructive developments of this style are to be found in the treatment of inlaid and pierced woodwork in cabinets, organ-cases, &c. Some of these look like the productions of an enterprising Feejee islander, who had nothing better to do, rather than the work of educated European minds.

Upon the question of round arches *versus* pointed, the importance of which has been so much exaggerated, it does not seem necessary here to say much. We are all beginning to perceive that the Classical or Romantic schools of design are not necessarily dependent on either form. In a general way, it may be said that could we divest ourselves of the present prejudice in favour of the pointed arch, we should probably perceive the round one to be artistically the best form, especially on a large scale, and where dignity and grandeur of effect are sought for. The beautiful effect of the pointed arch in pure Gothic arises chiefly from its complete adaptation to the constructive necessities of the vaulted roof, to the perfect execution of which it is indispensable. But a style of roofing so expensive and so wasteful of material is not likely permanently to find favour in these days; and the principal formative influence of the pointed arch being thus removed, it does not seem consonant to sound art that the feature should be retained in the secondary parts of a building; and it seems more likely that, in high-class works of architecture, the noblest of internal features, the dome, would give the keynote of the modern style; for whatever form of construction, whether lintel, pointed arch, or round arch, be adopted in roofing a building, should, I imagine, be carried out in the minor parts of the building also: certainly much of the satisfactory effect of the Greek and Gothic temples is owing to this unity of construction. The principal use of the pointed arch, in future practice, would seem to lie in its constructive value, in all cases where weight has to be concentrated on the crown of an arch; and it is not improbable, therefore, that its future employment may lie more with the engineer than with the architect.

Lastly, if anything decisive is to be done by our profession towards advancing the art of architecture, and raising it to a higher and more satisfactory state, it is necessary not only that we should establish principles of action, and assist and encourage one another therein by mutual co-operation and criticism; but also that the public, our employers, should be awakened by every possible means to more interest in the art, and a better understanding thereof. This is the more necessary because we have now to deal with hundreds where we formerly dealt with units. With the rising of that great new power, the People, the patronage of art has been taken from the hands of a few of the influential among the upper classes (who had some opportunities of learning something about art, if they cared to do so), and is distributed among the numbers constituting what is called the middle class, for whose education in art our public schools and universities furnish no provision worth naming. And our own art seems to fare worst of all; for how often do we meet with intelligent and educated people who have a fair appreciation of a picture or a piece of music, but who, on the subject of architecture, are in Egyptian darkness,—ignorant of its first principles,—ignorant, indeed, that it has any principles at all. How are we to pierce through this gloom? In the absence of organized instruction in architecture in our schools something might be effected if those in our profession whose abilities, age, and standing, would give them some influence, would take opportunities, when possible, of lecturing publicly on the subject, and thus stirring up, if it may be, an interest in it among those to whom at present it presents no meaning or attraction. Something also is perhaps being effected by societies consisting, like our own, of professional and amateur members,—a constitution which has been found fault with lately, very unwisely, I think; for by this mingling of the amateurs with the professional architects,

the interest of the former in the subject of architecture is certainly stimulated, and they in turn may influence others who are out of our reach, all which is manifestly for our advantage; not to speak of the valuable hints which we may, and often do, receive from our amateur friends. But above all it is necessary that architects should fully realize the fact that they are bound to be the leaders of public taste, not to be led by it; that they are untrue to themselves and their art when they consent, for the sake of pleasing a capricious and ignorant client, to build that which they know to be bad. It is no answer to say, "I must not offend my client and lose my commission." The making of money is not the business of an architect, or of any artist whatsoever. His aim should be to do the utmost, according to his talents, to advance his profession, and to carry out the work entrusted to him in the best possible manner; any payment that he may receive for it is simply the means necessary to enable him to prosecute his calling. To make money, to produce capital,—is the legitimate object of our friends on 'Change: may they prosper therein! Our part is to help them to spend it in a useful and ornamental manner, not upon works which will be a nuisance and an eyesore to future generations; for of those who build badly it may truly be said,—

"The evil that they do lives after them;"—

and, until architects are prepared to give up a commission rather than erect an ill-planned or inartistic building, there will be little hope of a high standard of architectural taste being established among us.

Such appears to be the problem—such the principal difficulties—presented to the modern architect. To fuse into one complete and living whole the two complementary elements, as I may term them, of all past art, each of which, at its highest point of development, has been crystallized and preserved for our use; to join to the brightness and technical perfection of the Classic school the energy and passionate feeling of the Romantic; and to work out these elements with all the increased constructive knowledge and variety of material now at our command—this is surely a great task, and worthy of the highest efforts of our profession. And the present century is a peculiarly fitting time for such an attempt. To all who study history comprehensively it must be evident that there occur from time to time periods of unusual mental activity; times when a new spirit moves upon the face of society; when there is a "stirring among the dry bones," and men, as by one consent, show a common impatience of the old paths, of the worn-out forms which no longer satisfy them, and rise up with the determination to awaken a new spirit in art, or religion, or politics, and to find a new scope for their enlarged perceptions and aspirations.

"On such a full sea are we now afloat:"

never, perhaps, in the history of the world has there been a time of such intellectual activity, such strenuous exertions in every department of thought and industry, as at present; and nowhere is this more conspicuous than in the great works which are employing the time and abilities of so many of our profession. It is for us to take care that we do not let this opportunity pass without making the most of it; that we leave to the generation to come after us works evidencing careful and original thought, and such as may be worthy to give the key-note for the future style of Europe. But if we would do anything towards this great work, we must turn from the trivialities in which so much time is being wasted, and direct our thoughts rather to the future than to the past. Surely it is very pitiable work to see talented men consuming their energies over church millinery,—engaged in acrimonious squabbles as to the scraping of an old cathedral, or the position of a crozier in the right or left hand of a monumental statue,—when a great European civilization is opening out before them; promising new forms of thought, increased social and artistic communion, new developments on a greatly extended scale, of a higher and nobler art than has ever yet been practised,—

"And all that else the years will show,
The Poet forms of stronger hours,
The vast Republics that may grow,
The Federations and the Powers;
Tibetic forces taking birth
In divers seasons, divers climes;
For we are Ancests of the earth,
And in the morning of the times."
Tennyson's "Day-dream."

H. H. STATHAM, JUN.

DUBLIN.

GREAT excitement has of late existed in Dublin, in consequence of a leakage in the large reservoir at Varrity, which is of the dimensions of a good-sized lake. The leak happened the more unfortunately that the safety-valve and conduit regulating the supply were out of working order. A cut in the by-pass was opened, thus discharging 70,000,000 gallons per day. The water continued to diminish at the rate of about 1 inch in the hour, an enormous quantity over such a great area. The leak was not altered in quantity, and every precaution was being taken against any possible accident. The contractors weighted the bank, and a large ball, with which a defective discharge-pipe was stopped up, was got out. The engineers anticipated no danger; and in the House of Commons, a day or two since, Lord Naas, in reply to a question on the subject, said that the Government had received satisfactory assurances in regard to the safety of the works.

Mr. Dargan's funeral, in Dublin, was the most numerous attended within the recollection of the citizens. The *employés* of the Dublin and Wicklow Railway, of which Mr. Dargan was a director, walked before the bier, and the remains were interred in the "O'Connell Circle" of the Glasnevin Cemetery. It has transpired, for the first time, that a sum of 2,000*l.*, for the purchase of pictures and other works for the National Gallery of Dublin, anonymously bestowed in 1864, through the late Irish Lord Chancellor, was a gift by Mr. Dargan to the institution.

THE PROPOSED PARK IMPROVEMENT AT HYDE-PARK CORNER.

OUR readers will recollect of Mr. Snell's proposal in the *Builder* to convert the Park-road, from the Corner, up to Park-lane, at Stanhope-gate, into a public road, thus obviating the costly necessity of widening the Piccadilly end of Park-lane, and saving to the rate-payers nine-tenths of the 105,000*l.* which the scheme of the Metropolitan Board of Works will cost. Mr. Snell has since addressed the Vestries interested on the subject, and has also sent a detailed communication as to it to the Metropolitan Board, with coloured plans, showing both schemes and how he proposes to alter the position of the Park Gates, clear of Apsley House, so as to face Rotten-row and the other roads radiating from the Corner, together with the new Park-road to Stanhope-gate, which he proposes to form in lieu of the nearly parallel one, to be used as a public road.

The chief objection would probably come from the owner of Apsley House, though there is the general objection to alienating any part of the Park. Nevertheless, the proposal has much in its favor, and should receive careful and impartial consideration.

SPONTANEOUS COMBUSTION OF GAS.

IN the course of the inquiry into the cause of the disastrous explosion at the Oaks Colliery, a letter was read by the coroner from Mr. John Marshall, of Stewarston, Ayrshire, stating that under certain conditions coal gas became ignited spontaneously. Mr. Stewart does not give any details, but says, in conclusion, "Notwithstanding the present systems of ventilation and the use of the Davy lamp, the fire-damp in mines will sometimes explode through activity of the latent causes to which I have referred." Mr. Stewart's letter reminded us that the subject was brought before the Society of Railway Engineers of Berlin, on the 9th of January, 1866, by Herr Busse. The author called the attention of the society to a fire which took place at the goods station of the Stettin Railway Company, which broke out two hours after all the lights were extinguished. An escape of gas was, we presume, known to have taken place, and Herr Busse gave an account of a theory according to which a jet of gas is liable to spontaneous ignition. Herr Schwartzkopff mentioned a fire which took place in his own manufactory, in consequence of the ignition of a small jet of gas, which escaped notice, during the operation of trying the pipes with a lighted candle, suggesting at the same time that the fire mentioned by Herr Busse was due to the same cause. The source of our information, the *Zeitschrift für Bauwesen*, 1866, p. 473, unfortunately omits the details of Herr Busse's theory,

so that we are unable to give an opinion as to its probability. It must be remembered that coal gas is a perfectly stable compound, and is not liable to spontaneous decomposition or explosion, as some other gases are. The well-known lecture experiment, in which a mixture of chlorine and hydrogen is exploded by simple exposure to the sun's rays, will probably occur to most readers. Considering the number of lives lost annually by explosions of carburetted hydrogen, any theory explaining them, however unpromising at first sight, is worthy of examination.

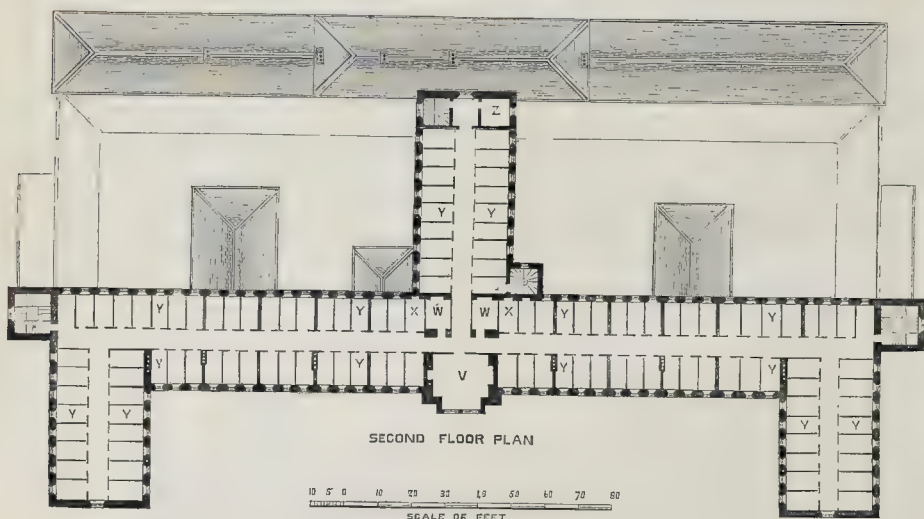
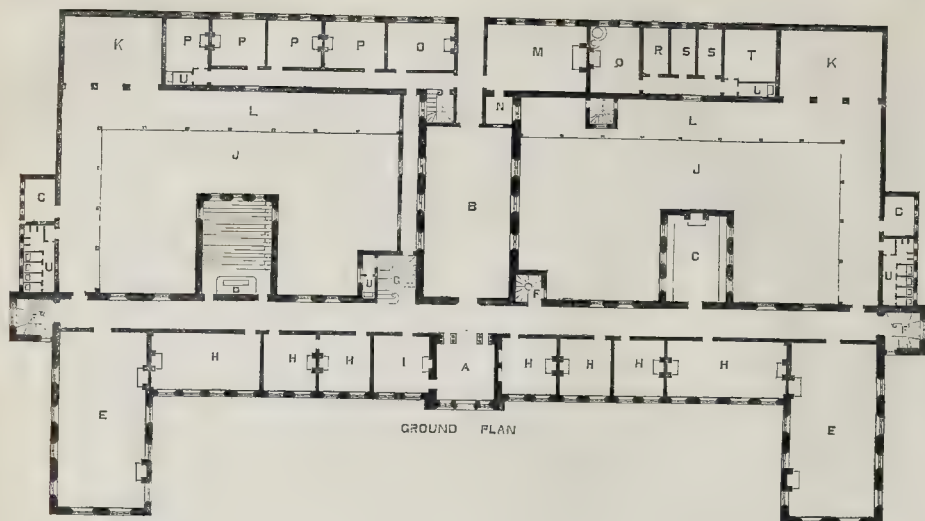
INTERNATIONAL COLLEGE, SPRING GROVE, MIDDLESEX.

THIS college, of which we give a view in our present number, is now being erected for the International Education Society, at Spring Grove, and is intended, when completed, to afford accommodation for 150 pupils, with six resident masters. The head master has a separate residence. The ground-floor contains two schoolrooms, each 51 ft. by 25 ft. 6 in., designed as wings, and two stories high; series of classrooms and masters' rooms, approached by a corridor running the whole length of the front building; and dining-hall, 49 ft. 6 in. by 25 ft., extending from centre of front to back building, which contains the offices. The lecture theatre and laboratory are thrown out from the back of the front building.

The first floor contains the secretary's rooms, committee-rooms, masters' bedrooms, and daily superintendents'. A sick ward is provided, with separate staircase and entrance in the back building. The second and third floors are devoted to the dormitories and contingent offices of the pupils. Each dormitory is distinct, and separated by a partition 7 ft. high. The staircases throughout are of stone, those for the pupils being carried up, at each end of the corridor, in towers, which form bold features.

The masters' stairs are on one side of the dining-hall, and approached from the corridor. The building will be constructed of brick with stone dressings, faced with yellow malmes, with courses and diapering of red bricks. The total cost will be about 30,000*l.* The portion now being erected has been contracted for by Messrs. Holland & Hannen, of Duke-street, Bloomsbury, at a cost of about 12,000*l.*, and will accommodate eighty-four pupils. Messrs. Norton & Masey are the architects.

The idea of international education seems to be traceable to the great International Exhibition of 1851. It was then felt that it would be a great advantage to every nation to gain some knowledge of the arts and the industry of other nations, and that an honourable competition might thereby be created, which would be highly beneficial to the progress of all. The results answered the expectations, and both the social and commercial intercourse among the civilized nations has since increased to a degree to which history furnishes no parallel. Such a state of things could not but call for some change in the system of education, at least in this country and in France, in both of which the study of foreign modern languages had not received any great encouragement in the public schools. The vastly altered circumstances began to demand that our young men—those intended for the learned professions, as well as those destined for mercantile life—should be tolerably well acquainted with the leading languages of Europe. These considerations, coupled with the extreme unwillingness of our great schools to reform themselves in such a manner as to satisfy the demands of the age, led a number of gentlemen, about two years ago, to form a society for the promotion of international education. Their aim was to establish schools or colleges in England, France, Germany, and Italy, in all of which the same system of education was to be followed; so that a pupil at any time, and without any interruption in his ordinary studies, might be transferred from one school to another, and thus acquire a practical as well as a theoretical knowledge of the language of the country in which for the time he might be residing. The Society was at first headed by the late Richard Cobden, whose noble efforts to establish amicable relations among the peoples of Europe have endeared his memory to all who are interested in the progress of humanity. The vacancy caused by his premature death is practically filled by his friend, the treasurer, Mr. A. W. Foulton, to whose indefatigable zeal and large-hearted generosity it is in great measure owing that the Society has been



THE LONDON COLLEGE OF THE INTERNATIONAL EDUCATION SOCIETY.

able to erect the building at Spring Grove, of which we have given a representation. The building will be completed about Midsummer, but in order not to lose any time in carrying out its plans, the Society has secured a temporary house in the immediate neighbourhood, which was opened for the reception of pupils on the 1st of May, 1866, under the head mastership of Dr. L. Schmitz, late rector of the High School of Edinburgh. Negotiations are in progress for founding a similar institution in France, and Dr. A. Baskerville has recently been appointed as the Society's representative in Germany (Lindenthal House, near Cologne), where pupils receive the same kind of education, and on the same terms, as at Spring Grove, in England.

Besides the acquisition of modern languages, the object is to impart a sound knowledge of the natural sciences, which unfortunately are even more neglected in our great schools than the

modern languages. Nor should it be imagined that classical studies are pursued with less energy than in other public schools. The fact that Dr. Schmitz is the head master is a sufficient guarantee that justice is done to this department. But in the new College the study of the classical languages is not commenced until the pupils are familiar with the grammar of their mother tongue, it being held that by this mode of proceeding greater and more rapid progress is made than by boys beginning their linguistic studies in a foreign language so different from their own as the Latin.

The London College of the International Education Society, to sum up, professes to afford thorough instruction in classics on an improved and rational system, and in the subjects which are commonly too much, if not altogether, neglected,—modern languages and natural science.

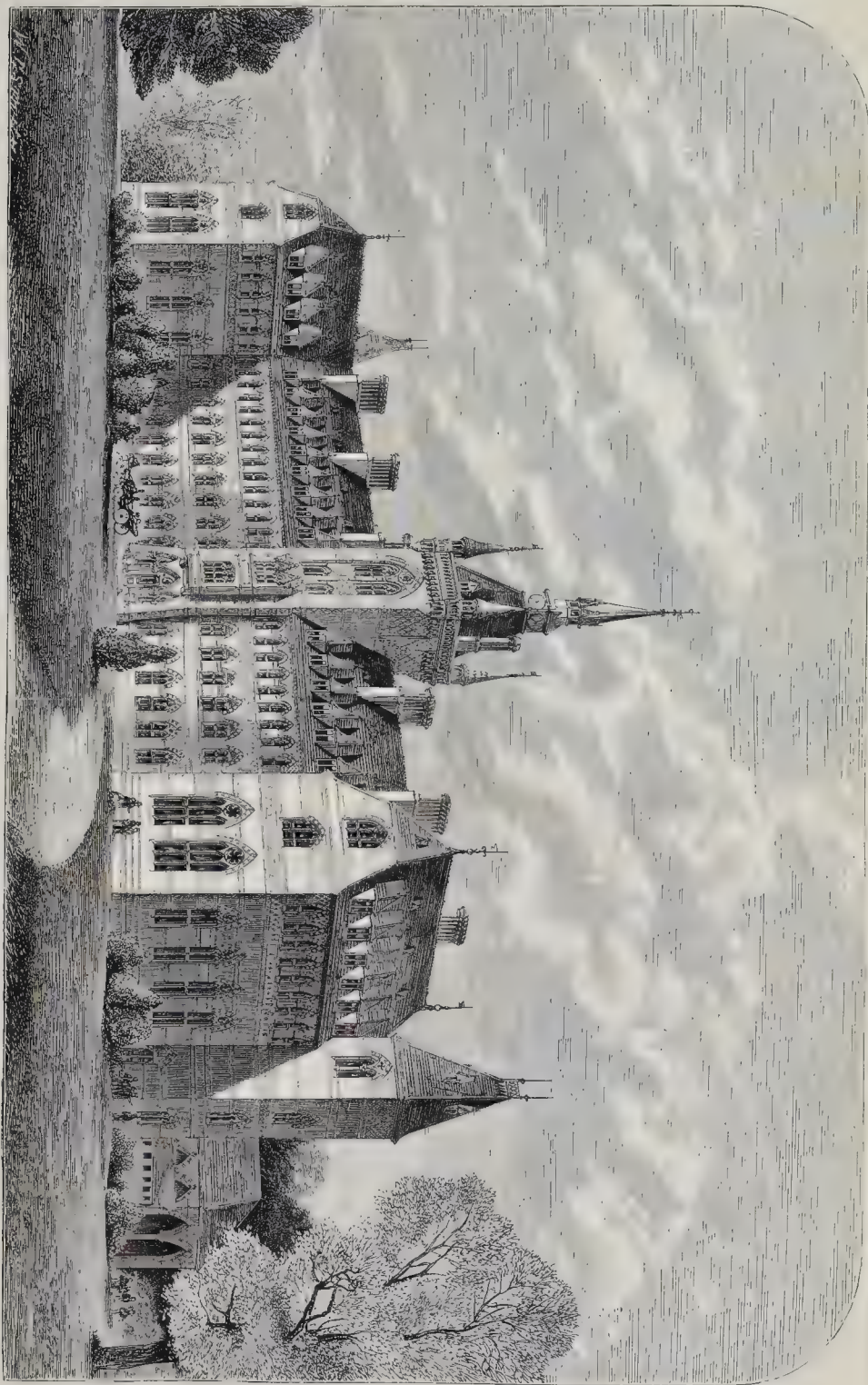
That the Society's scheme is duly appreciated

by the public is evident by the number of applicants for admission, for we understand that at present there are very few vacancies remaining.

We wish the undertaking every possible success: the country is sadly in want of a better system of education than that usually enjoyed by the higher classes of society.

REFERENCES.

- | | |
|------------------------------|------------------------|
| A. Entrance-hall. | N. Serving-room. |
| B. Dining-hall. | O. Housekeeper. |
| C. Lavatory. | P. Store-room. |
| D. Lecture-theatre. | Q. Scullery. |
| E. Schoolroom. | R. Pantry. |
| F. Pupils' stairs. | S. Larder. |
| G. Principal staircase. | T. Coals. |
| H. Class-room. | U. W.C. |
| I. Reception-room. | V. Master's bedroom. |
| J. Yard. | W. Bath-room. |
| K. Gymnasium. | X. Linen-store. |
| L. Covered way for exercise. | Y. Dormitories. |
| M. Kitchen. | Z. Housemaid's closet. |



INTERNATIONAL COLLEGE, SPRING GROVE, MIDDLESEX.—MESSRS. NORTON & MASEY, ARCHITECTS.

THE FEMALE SCHOOL OF ART.

THE Royal Society's large room at Burlington House was filled on Saturday last, to witness the presentation of prizes to the successful students. Earl Granville, the Countess with him, officiated, and many old friends of art in general, and of this school in particular, were present. Professor Donaldson read the report, which stated that by the erection of a spacious and lofty gallery for the study of the antique, and by extensive improvements in the original building in Queen-square, such as adding other classrooms, dressing and luncheon rooms, improving the ventilation, and other alterations, the school, the committee believe, is now rendered as complete in all its various departments as is possible, both in regard to the studies of the students, as well as their personal convenience, health, and comfort. At the last competition the number of medals offered was ten gold, twenty silver, and fifty bronze; 100 schools competed, and 968 works were selected from the schools for the competition. This school had obtained one gold out of the ten, one silver, two bronze medals, and one prize of books! The report further stated that the dress and veil of Honiton lace worn by Princess Helena at her marriage were designed by a student of the school, Miss Margaretta Clarke. Miss Bryant, a former student, had designed successfully a Honiton lace blouse for Mrs. Treadwin, of Exeter, which was to appear at the forthcoming International Exhibition in Paris. Messrs. Kindon & Powell, of Old Kent-road; Messrs. Lapworth, of Old Bond-street; and Miss Bell, of Alton, had offered prizes for designs. The gratification with which the committee saw the completion of the buildings, and the general satisfactory condition of the school in other respects, was considerably tempered by the fact that they had found themselves compelled to incur a debt, which, although it might not be very large, considering the importance of the objects gained, was still heavy enough, if allowed to continue, to hamper the future operations of the school.

We can mention only a few of the recipients:—

PRIZES presented by the Committee of the School to those Students whose Works were selected for National Competition:—Alice Williams, painting of flowers from the flat; Virginia East, painting the figure and landscapes from flat copies; Mary Howes Dennis, painting the figure from the life; Fanny Seddon, drawing the figure from the life; Hannah Cole, drawing the figure from the cast; Emily Flint, study of flowers from nature; Jane Chapman, sheet of proofs of wood-engraving.

THREE PRIZES for Designs for Oil-painting, presented by Messrs. Kindon & Powell, of Old Kent-road:—First, Alice Bailey; second, Mrs. Stead; third, equally divided between Charlotte Tills, Wheeler Smith, and Maria J. Andrews.

MEALS and Prizes presented to those Students whose Works were successful in the National Competition: Mary Whiteman Webb, a book prize for outline from the east; Mary Julian, a bronze medal for study of flowers; Catherine Banks, a bronze medal for study of flowers; Alice Bailey, a silver medal for elementary designs; Alice Manly, a gold medal for study of grapes from nature.

The Lords of the Committee of Council on Education also presented the Second Princess of Wales's Scholarship to Alice Manly as having taken one of the two highest prizes of the year awarded to the female students, in the national competition of all the schools of art.

The Chairman then addressed the meeting in his usual agreeable manner, urging at starting the desirability of getting rid of the debt, about 1,000*l.*, when the school would, doubtless, prove self-supporting; and the worthy superintendent of the school would be able to devote the whole of her time to the care of the school itself, the development of the institution, and making known among all classes in the neighbourhood the facilities which this school affords for the study of art. After urging the value of learning to draw, believing it to be most conducive to the interests of all classes, of immense advantage to the nation at large, that the pursuit of art contributes to our material prosperity, to the elevation of our sentiments, and adds immensely to the charm of life, the Chairman continued, with respect to those who, either from want of sufficient time or from other causes, have not been successful to-day, I would say, persevere. To those who feel they have no natural disposition or taste for art—if there are any such among you—I would say, notwithstanding the possible favour of your excellent superintendent, Miss Gann, or the committee, give it up and leave the school. To you, however, who feel that the instruction given has produced increased facility of conception, increased power of observation, greater accuracy of both hand and eye, I would implore you to go on in a course of study which is one of the most fruitful sources of happiness and pleasure I can

possibly conceive. To those of you who have been successful in different degrees the best advice I can offer is to beg you to persevere in the course upon which you have entered, and do not allow yourselves to be diverted from continuous labour by the great and brilliant successes you have achieved.

Mr. Boreford Hope said schools of art like that tended to break down the old pedantic barriers which formerly circumscribed and hemmed in the artist, and separated him from those who were students of the variety of forms of nature and art for the purpose of making them their own, and reproducing them in various branches of manufacture. That pedantic rule would "dub" him or her an artist who would paint some picturesque old gate, or ruin, or landscape, but would refuse the name to one who produced with great care and elaboration a design for a screen or a grille to be reproduced afterwards in metal. Miss Gann had set herself the task of breaking down that barrier, and she was engaged in fighting the battle not only for the present time, but for future generations. The great end for which this and similar schools of art were established, was to show by the works which were produced the great law of proportion, of mutual dependence of size, which must govern not merely all constitutional forms, but the very possibility and the existence of all things in this material world. True art was the essence of proportion. Art was the chemistry of form, just as much as chemistry was the art of elementary substances. Every one had his faults. Men were hard, dry, and calculating; they worked by form, rule, and numbers, and wanted the impulsive element. Women, on the other hand, were gushing and impulsive, and were not disposed to take hard matter-of-fact views of things. It was necessary, he said, to sober down the light hues, to bring into harmony those darker spots which floated before the sunlight of woman's infinite perfection.

Professor Westmacott proposed a vote of thanks to the chairman, which was seconded by the Rev. Emilus Bayley, and of course carried unanimously.

We must offer our own praises to Miss Alice Manly, Miss Julian, Miss Isabella F. Smith, Miss Cons, Miss Chapman (wood engraving), and some of the other young ladies whose works we have seen at the school.

A concert will be given by "The Wandering Minstrel," in aid of the school, on the 2nd of March, and a bazaar, with the same end in view, will be held in June next.

THE ESTIMATES.

MR. OSBORNE wanted to know, in the House of Commons, under what circumstances Messrs. Banks & Barry had been appointed Architects to the Office of Works, and how it was they had prepared designs for a new National Gallery at Burlington House, at a cost of 5,000*l.*, when the House expressly refused to remove the National Gallery to that site. For the first time they got the cost of the meeting in Hyde Park. The estimate for that was 3,372*l.* That was the cost of the meeting, though it was put down to the railings.

Lord J. Manners said, Messrs. Banks & Barry had consented to reduce their charges by 3,000*l.*, on condition of their being appointed architects to the new buildings at Burlington House. The charge for Hyde Park was an exceptional one. The money had been expended in replacing, in a temporary manner, the railings that had been pulled down; and it was obvious that this year, and not next, was the proper year to be charged with the expenditure.

Discussion ensuing as to the money that would be required for the Paris Exhibition,

The Chancellor of the Exchequer gave the following details:—"Internal fittings, 1,610*l.*; supplementary buildings in the park, 23,670*l.*; ancient and modern art, 11,050*l.*; Government departments (Admiralty, War Office, &c.), 11,490*l.*; management, watching, and lighting, 14,755*l.*; house expenses, 17,300*l.*; jurors, 12,600*l.*; royal commission, expenses, 2,750*l.*, and others, making a total of 117,650*l.*

The French Government, it appears, have thrown a larger expenditure on foreign Governments than was expended.

The sum of 45,271*l.* was voted for the purchase of the Blacas Collection, now in the British Museum. The Chancellor of the Exchequer observed that the purchase had been made

under fortunate circumstances, and on terms which for his part he should never regret. More than one State in Europe were disappointed at its being now stored in the national collection of England.

Mr. Gladstone said,—"I do not see how the wealth of the country can be beneficially employed if it be not in the acquisition of treasures of this nature, which are themselves not only a perpetual and an unfailing source of delight to multitudes of cultivated persons, but which are likewise most powerful instruments of practical education for the people."

IRON CHURCH FOR PARIS.

A CONTRACT has been entered into by the Paris Church Committee, with Messrs. Cox & Son, of Southampton-street, Strand, the church furniture manufacturers, to supply on hire for the English church service an iron church, to hold 500 persons, to be erected close to the Exhibition building. The nave of the church will be seated with chairs, but we understand it is the intention of the firm to fit up the church handsomely, with carved oak pulpit, desk, table, stalls, and brass altar-rails, illuminated reredos, and other appropriate fittings, so as to show our foreign friends how an English church should be fitted.

RESTORATION OF ST. MARY'S CHURCH, GAINFORD, NEAR DARLINGTON, ON THE BANKS OF THE TEES.

THIS church is one of considerable interest to the archaeologist. Although Roman and Saxon buildings existed on the site, the present edifice was entirely constructed in the thirteenth century, and consisted of a west tower, supported on arches, and open to the body of the church, a nave with north and south aisles, under one immense roof, which left the aisle walls unusually low, whilst the nave was of considerable altitude: the nave roof, being continued, formed that of the chancel, so that the side walls of the chancel were very lofty compared with the aisles. In the fifteenth century alterations were made. The church was pewed at various times and ceiled; the arches of the north aisle and the tower filled with galleries, the latter being like hostings or the stage of a wild-beast show, the tracery taken out of the windows, and two large windows of tasteless design inserted on the south side. After a complete destruction of all architectural features, the church was permitted to fall into a still more deplorable condition by neglect; the eaves were allowed to drip over the walls, the earth to accumulate round about them, and dampness and decay with its accompanying mustiness (the floor in some places being broken up with rat-holes), made the church thoroughly disgusting. The west arch below the tower and the south aisle wall showed signs of giving way, large cracks being observable in many directions. The bells consisted of three, one of which was cracked, and there was an old clock greatly out of repair. Asphits and other abominations were close to the main entrance of the churchyard, and in the churchyard. Such was the state of the church in April, 1864, when the restoration commenced; Mr. J. A. Cory being the architect. The south wall and tower were taken down; the old stones rebuilt so as to preserve their original character. A new roof has been put on the nave and chancel of the original pitch; the whole of the church fitted with solid open seats of oak, and carved pulpit and desk of the same wood; the chancel has been laid with encaustic tiles, and stalls and communion-rails, also of carved oak, have been placed in it. Two arches have been opened, one into the chancel (north side), the other into the east end of the north aisle, and a chamber built, in which is placed a beautifully toned organ of considerable power, having twenty-eight stops and four couplers, and every recent improvement. Below the organ chamber is a cellar for the hot-water apparatus, which successfully warms the church.

In making the alterations a great number of curious stones were discovered—five evidently of Roman workmanship, two of which are inscribed (see *Gentleman's Magazine*, Sept. 1866), one with part of a Saxon inscription,—and remains of several large upright Saxon crosses, slight remnants of Norman work and tombstones, or coffin lids, of all later periods. The whole of these have been carefully preserved; such as

have only one side sculptured (including some which were found in rebuilding the vicarage kitchen wing) are ranged in a new north porch, and the others are intended to be placed in a sort of cloister, where they can be inspected by the antiquary and preserved from injury. Several coins of Alfred the Great were found.

An excellent clock and a fine peal of six bells have been placed in the tower, under the directions of Mr. E. B. Denison. Provision for the more decent interment of the parishioners has been made by enclosing half an acre of land and adding it to the churchyard, and new gates and boundary wall have been erected.

The restoration has cost 2,000*l.*, including 398*l.* for the chancel, which sum was found by Trinity College, Cambridge, the patron and owner of the great tithes. It is almost inconceivable that the church of a living in the gift of that noble foundation should have been suffered to fall into such a state; but allowance must be made for its distance from Cambridge, a consideration, however, which the easy access to the place by railway now puts out of the question for the future. The organ and bells cost about 1,000*l.*; the clock about 120*l.*

PROPOSED ALTERATIONS IN CONTRACTS.

BRISTOL ARCHITECTURAL SOCIETY.

A MEETING of the professional committee of this society was held on the 15th inst., to which all the architects in Bath and Bristol, not members, were also invited. The chair was taken by Mr. Hansom, one of the vice-presidents. The hon. secretary, Mr. C. J. Phipps, read letters from the Architectural Associations of London, Liverpool, Birmingham, Newcastle, Nottingham, Manchester, and Glasgow, and from a number of architects who could not attend, but who sent their opinions in writing upon the subject for which the meeting was called, viz., "To discuss a circular issued by the General Builders' Association, addressed to the architects of Great Britain upon the subject of building contracts." The circular was signed by the representatives of fifty-two builders' associations in England (including those of Bristol and Bath); but it was a matter of remark that none of the London builders had signed it. The gist of the circular is, that the builders suggest the following alterations in contracts:—

1. To omit all indefinite clauses.
2. To make the bill of quantities a part of the contract, subject, in case of inaccuracy, to the measurement of the work during progress or at completion, with provision for arbitration.
3. Allowance for time in case of lock-outs or strikes.
4. Provision for settling all disputes during the progress of the works (hitherto in every case referred to the architect) by arbitration.

A long discussion ensued, during which a form of contract, suggested by Mr. Plevins, of Birmingham (and published in our pages), was read, it having been drawn up specially with a view of setting the matter upon a proper footing. It was felt that, in these days of low estimating, it was absolutely necessary for the architect to have considerable power in dealing with builders, but no architect of any standing or position would use that power in an arbitrary way; if so, builders could refuse to tender under him; and it appeared unfair to urge conditions upon architects as a body which were only applicable to persons calling themselves architects, with no pretensions to the honours or responsibilities of the properly-qualified practitioner. Eventually the following resolutions were unanimously agreed to:—

"That a building contract being an engagement between an employer and contractor, it being open to one or the other to make special conditions to meet the special requirements which arise in nearly every case, it being also open to contractors to decline any contract where the conditions are not such as they can execute to, it is the opinion of this meeting that the conference between a committee of architects and the General Builders' Association, as suggested by the latter, would be perfectly useless, and lead to no satisfactory result.

The system of quantities being taken up by architects for their own buildings is deprecated by the rules of the Royal Institute of British Architects, and it is considered by this meeting objectionable to make the quantities a part of the contract, but it suggests that the plan adopted in Government works, and by a large section of the profession, should be generally adopted, viz., to allow the builder whose tender is accepted sufficient time to prove the accuracy of the quantities as representing the measurement of work contained in the drawings and specifications, after which no question as to their accuracy to be raised."

The form of arbitration suggested by clause 4 of the Builders' Circular was considered objec-

tionable in the highest degree, as opening the way for endless disputes and complications, it being generally agreed that, as heretofore, the architect during the progress of the works should be the sole referee upon all questions of payments due, quality of materials, and workmanship,—in fact, the carrying into effect the designs; and that the arbitration clause should be confined to all matters arising after the completion of the contract as to any amount due to the contractor, &c., according to clauses 15 and 16 in Mr. Plevins's suggested contract. As regards clauses 1 and 3 in the Builders' Circular, no objection could be raised.

WHITE LEAD.

At the last meeting of the British Association, a paper by Mr. P. Spence, "On a new Process in the Manufacture of White Lead," was read in the Chemical Section. It runs thus:—White lead is one of the staple chemical products, of almost first necessity. It has long been in use as the basis of nearly all the pigments employed in oil painting, few, if any, of the colouring bodies having the qualities that are required for painting in oil; and although, from its susceptibility to discolouration on the slightest contact with sulphuretted hydrogen, and also from its poisonous character, substitutes for it have been eagerly sought after, as yet nothing has been found to supersede it. Anhydrous oxide of zinc has, to a certain extent, been introduced, but does not appear to make any way. It has not an equal covering quality with carbonate of lead; but its chief defect is its want of permanency. White lead forms an almost indestructible compound with the oil, while oxide of zinc forms only a mixture. The various modes that have more or less been adopted in the manufacture of white lead are historically known to those interested in chemical manufactures. Almost all of these processes are based on the action of acetic acid upon lead or lead oxide, with the exception of the process patented by Pattinson in 1841, which is founded on the decomposition of galena by hydrochloric acid, the formation of chloride of lead, and the decomposition of the chloride by alkalies, or by alkaline earths, such as lime or magnesia. Practically, this process is now confined to the production of oxychloride of lead, which seems to act with oil to a great extent like white lead. The oldest, most successful, and most generally practised mode of producing white lead, is that called the Dutch process: by this mode the object is accomplished by placing castings of pure lead of a suitable form one over another in stoneware pots, in the bottoms of which acetic acid or vinegar is poured; the pots are then loosely covered and piled in masses, the whole being then covered over with spent tan or some other slowly fermenting body, which will generate a small degree of heat for a considerable period. This evaporates the acetic acid, which acts on the lead, oxidising it and partially carbonating the oxide, and in about eight weeks the greater part of the lead is corroded and converted into oxide and carbonate of lead, the acetic acid is spent, and the crude lumps of white lead are ground, any metallic lead left being picked out, and after washing, the article is ready for use. Nearly all the white lead now made in this country is by this mode. The German and Austrian process is the same in principle as the Dutch, but differs in detail. A good many attempts at the manufacture of white lead have been founded on the fact that acetate of lead in solution has the property of dissolving lead oxide, forming a basic compound.

My reasons for presenting to the Chemical Section of the British Association a process which may at first sight appear only as one of the many futile attempts to improve upon the established mode of producing white lead are two:—First, that the process is new, being in altogether a different direction from any attempt that I can find recorded, and although based upon a known law, yet that law never having been seen to point to this process, it is technologically a discovery. My second reason is, that a very important feature of the process as distinguished from all others is, that by white lead can be manufactured from materials now useless. All other modes deal either with the pure metallic lead or equally pure oxide of lead. Pattinson's process must deal either with the purest galena, free from iron or copper, or the chloride of lead must subsequently be freed

from contamination by these metals or others, before it is used for the precipitating of oxychloride. By the process I shall now describe, any ore or mineral that contains eight or ten ounces of lead can be used for the production of white lead, and it is of no consequence what other metal the mineral contains; the process separates the lead directly without touching the other constituents of the mineral, and the white lead is perfectly pure. This being so, practically, I expect that all the white lead required may be made from ores or minerals now consigned to the rubbish heap as being too poor to work; and I know of large quantities of minerals useless as lead ores which will be economically adapted for the production of white lead. The process is based on the fact that oxide and carbonate of lead are soluble in solutions of caustic soda or potash, and are insoluble in the carbonates of these alkalies: the process, therefore, is effected by taking any mineral that contains oxide or carbonate of lead, or lead in any form that can be calcination or otherwise be converted into oxide or carbonate of lead, and by either macerating or boiling the mineral in a caustic solution all the lead is dissolved and extracted in a limpid and colourless solution. If the mineral contains oxide of iron, copper, or zinc, the caustic solution does not touch any of those oxides, and only attacks the lead. The lead solution is now passed into it carbonic acid gas, by which the alkali being carbonated, the lead is instantly precipitated as oxide and carbonate. The alkaline solution is now causticised by quick lime, and is ready for a second action on mineral containing lead oxide. The precipitated white lead has only to be washed to separate the solution of carbonated alkali, and then dried for use. It has been tried for painting, and is said by the painter, who had it used in various ways by his workmen, to be equal to any white lead he could procure. It has also been tried as a glaze in the potteries, and declared to be equal to any white lead the firm had in stock.

STONES AND TREES OF BRISTOL.

SPRINGING from the label-moulding of a window in the tower of St. Mary Redcliff Church, is a tree more than fifty years old. It is a specimen of the well-known magic witcher or rowan tree—the mountain ash (*Pyrus aucuparia*). The tree naturally delights in mountainous districts, and the seed of this specimen was probably inserted by one of the birds known to dearly love the orange-coloured fruit. As might be expected, the tree is small, hard, and wiry, and old inhabitants can remember it for more than fifty years past. Its occurrence is not, however, so remarkable as the many young yew trees to be seen growing on Penoyd Church, Herefordshire, where the penetrating roots of a number of the young trees have actually displaced the stonework.

On the top of the tower is another fruit-bearing tree, a specimen of our common blackberry (*Rubus fruticosus*), that annually displays its white rose-like flowers, and produces its sweet tiny black fruit. (By the way, the blackberry was recently referred to, with amusing ignorance, by a reviewer, as the original of our garden-raspberry!) On other parts of the church may be seen the fern known as *Asplenium Ruta muraria*, the rue-leaved spleenwort or wall rue; the stone-crop (*Sedum acre*), ivy, and a good many grasses and plants of lesser note.

The roof of the south porch and some of the tower staircases are littered with twigs and small branches, brought to the church for building purposes by the loquacious and whimsical jackdaws. These birds find an irresistible attraction to the church in the many ancient puddock holes that go right through the thick walls into the belfry and tower staircases. Owls are not to be seen there, but pigeons and other birds frequent the church in company with the water-loving wagtail.

Near Bristol, and just over the Suspension Bridge, are the rocky, precipitous Leigh Woods, where may be seen a good number of well-grown trees, principally oak and ash: many of the old ash trunks present an appearance seldom met with to such an extent as may be observed in these woods. The trunks of several of these trees are studded and bossed from top to bottom with hard, woody, jet black, polished, hemispherical projections, ranging in size from the diameter of

a walnut to that of a large orange. The hard knobs sometimes in place of being polished are covered with a sooty down, which really consists of millions of the black seeds or spores of this woody parasite, which is a hard fungus (*Hypoecydon concentricum*), quite peculiar to the ash.

The old oak trunks are overgrown with two other fungous parasites—the exclusive property of the oak—both jet black, shapeless, wicked-looking, and gelatinous; the first, *Bulgaria inquinans*; the second, *Evidia glandulosa*. The latter is very tremulous and gelatinous, covered with small black papillae, and may be immediately known by the touch and appearance of the under side, which feels and looks exactly like black crape.

A day in January is not the time to observe living nature; had our visit been on one of the beautiful humid days of a wet October these notes might have been extended ten-fold.

W. G. S.

FAIR PLAY FOR THE NEW LAW COURTS.

SIR,—I have reason to believe you prefer principle to person, and are not afraid of speaking plainly when necessary. I ask you, therefore, and have little doubt as to your compliance, to let me tell the Secretary of the Commission for the New Law Courts, Mr. Edwin Field, that he is acting neither wisely nor well. His partisanship is the object of general remark on the part of all who have had occasion to frequent the building containing the designs: and I could tell instances by the score, and will, publicly and by affidavit, if this note should have no effect, of his endeavours to bias persons in favour of one particular set of designs, and to prejudice them against others. In fact, it is going on all day. My chief object in writing is to express a hope that the report of the Architectural Clerk and his assistants will be forwarded to the judges independently of the secretary. All the costly arrangements of the commissioners to ensure the fullest and fairest consideration for every competitor in this arduous undertaking will go for nothing in the public mind if the present system of tooting and depreciating, obvious to all, be not put an end to.

ONE ON THE SPOT.

SIR,—I was at the exhibition of the designs yesterday, and noticed a gentleman actively engaged in pointing out and explaining to persons round him,—myself for one,—the plans and arrangements of one particular design. I thought no more of it, considering, of course, it was some one appointed from the architect's own office, and was surprised, when informed this morning, that it was the Secretary to the Commission. Would you kindly inform me if it is usual in competitions for the Secretary to the Commissioners to attend and explain to visitors one particular set of drawings. A CLERK OF WORKS.

"A Chancery Barrister," and "An Architect's Clerk," write to the same effect. We are quite ready to attribute the proceedings complained of to excess of zeal, and have no doubt the but here given will lead to greater moderation in the exercise of it. It is greatly to be desired, in fact absolutely necessary, that two professional architects should be added to the judges, and that they should be chosen by the competitors themselves.—Ed.

THE CONSTANT SUPPLY OF WATER FOR LONDON AND FROZEN PIPES.

In the report of Mr. Bateman's valuable lecture on the above, given in your pages, it is stated that when the constant supply of water to London is introduced, "very much of the annoyance and inconvenience arising from frozen cisterns and burst pipes, which are the common attendants of the winter season, will be avoided."

Agreeing, as I do, in the main with Mr. Bateman's lecture, and with the principles laid down, in which, probably, most engineers, having experience in the construction and management of water-works, have long since, for the most part, concurred; yet, with the statement I have quoted respecting frozen cisterns and burst pipes, I must say my experience is not in unison.

Frozen cisterns, so far as cisterns may be abolished, of course, would cease; but with respect to burst pipes, I have known 70 to 80 per cent., or more, of the consumers of large districts, supplied from impounding reservoirs by gravity, even on the system of constant supply—for instance, the town of Ashton-under-Lyne, in Lancashire—to have their service-pipes frozen and burst in time of very severe frost.

When any town or district is supplied by river-water, or from surface water collected in open impounding reservoirs, or by means of

water led through long distances, in open aqueducts, the water, in cold, frosty, and snowy seasons, necessarily passes into the mains and service-pipes at a temperature only a few degrees above freezing. For instance, the average temperature of the water in the Thames, for a whole month, in a cold winter, is frequently as low as 35 or 36 degrees Fahr.

Water of such a cold temperature can hardly fail to get frozen, and in freezing to burst the tenants' service-pipes in houses as usually constructed, especially those of the middle and poorer class, whether supplied on the constant or any other system.

My experience teaches me that, in order to remedy the great inconvenience and loss arising from water freezing in cold weather in service-pipes, and thus bursting them, it is necessary that the water should be supplied into the mains and distributing pipes of waterworks, not at a temperature of 35° or 36° Fahr., but at a temperature of 50° to 52° Fahr., which is the normal temperature (summer and winter) of spring water about London; and that care should be taken to lay the service and distributing pipes at a sufficient depth below the surface of the ground, say the top of the pipe 3 ft. to 4 ft. below the surface of the ground, in order to prevent the water being unduly cooled down before it reaches the consumers.

When water of the normal temperature of 52° Fahr. is conveyed, without exposure to the air, direct from its source into properly covered reservoirs, and is distributed through mains and pipes laid at a sufficient depth below the surface of the ground into the houses of the consumers, and care is taken to place the draw-taps indoors, say in a scullery or wash-house, so that the tap in the cold weather may be slightly opened to permit a small quantity of water to drip from it without inconvenience; then, owing to the well-known great specific heat of water, the comparatively warm water from the mains slowly passing through the draw-taps and service-pipes keeps the water in the service-pipes from freezing, and thus from bursting the pipes and taps used to supply the consumers.

In confirmation of the above I may state, that although the Caterham Spring-water Works have been in operation for more than five years past, and are situated on a high hill, at an altitude of 700 ft. above the sea, and supply a district of country varying in altitude from 700 ft. to 400 ft., yet such a thing as a water-pipe bursting, from being frozen, is rarely known. Still, it must be borne in mind, that should a water-pipe burst, say at night, or in an empty house, without being at once attended to, a greater, rather than a less, flooding would be the result of constant supply.

The water, in the case of Caterham, is derived from a deep well in the chalk; the water is pumped direct from the well into a covered reservoir, and the mains and service-pipes are laid below the surface of the ground, to the depth hereinbefore named; and, I may add, the water is supplied on the system of constant supply. The Kent Water Company supply 33,000 houses with spring-water, from wells sunk in the chalk, of the normal temperature of about 52° Fahr.; and water of this normal temperature is supplied to the towns of Brighton, Croydon, Hull, and many other towns.

With water of such a normal temperature, frozen and burst pipes, on the system of constant supply, with proper care, may be prevented; but when water, already nearly at the freezing point, is distributed from water-works deriving their supply from rivers or open reservoirs, or from long open ducts, I must say that I have never found that the water could be prevented, at least in ordinary houses, from freezing in very cold weather, and thus bursting the service-pipes, even when distributed on the system of constant supply.

SAMUEL COLLETT HOMERSHAM.

THE STREETS AND HOUSES OF THE METROPOLIS.

SIR,—It must be acknowledged that the plan for the renaming and renumbering of the streets of London has proved, so far as it has been carried out, a great success, to the convenience of the public in general, and the rapid delivery of the post in particular. The thing to be regretted is, that the system has been only partially adopted; the Act of Parliament, in a certain sense, being only permissive, that is, the Metropolitan Board of Works have no power to order alterations of names, &c., except on the previous request of parishes or individuals; and we know what slow coaches vestry boards are, and at the present rate of progress it may well take fifty years be-

fore the metropolis is reduced in its numerous Johns, Thomases, Williams, Gloucesters, Carltons, Clarences, and other favourite names in every quarter of London. There is a new Building Act expected to pass through the House of Commons this session,—would it not be well to give to the Metropolitan Board the power to take the initiative in these matters? I live in the district of St. John's Wood and Edgware-road, and we have two Carlton-roads, two Canterbury-roads, two Clifton-roads, two Bloomsbury-roads, and a number of short streets rejoicing in three or four names. Would it not be well to simplify matters, and get rid of subsidiary names, &c. &c. And as to the Edgware-road, in particular, it should be divided into three names,—Edgware-road, Maids-vale, Kilburn-road; at present nobody knows where the Edgware-road ends or where it begins; and so of many other parts of London. I submit the building trade is much interested in this apparently trifling matter.

A. B. C.

THE NATIONAL GALLERY COMPETITION.

WE have reason to believe that our few words last week about the National Gallery Designs have not been without effect, and that the injustice meditated will not be fully carried out, though the report may still be unsatisfactory.

THE DESIGNS FOR THE NATIONAL GALLERY.

SIR,—I am one of many who think that the designs for the National Gallery have not met with fair play at the hands of the critics. With some exceptions they seem to me highly creditable, and much of the criticism bestowed upon them might more fairly have been directed against the vagueness of the conditions, and the strange difference of opinion which exists among artists as to what constitutes a good picture-gallery. It also seems to me that the designs labour under a great disadvantage by reason of the places where they are exposed, for I cannot say seen. It is almost impossible, even on a light day, to make a careful examination of the drawings. At Lincoln's Inn all is light and cheerful, and each design is well exhibited and easily seen. At the Royal Gallery the effect is dull, dark, and dispiriting, and it is most difficult to examine the designs.

I cannot believe, however, that the First Commissioner of Works will allow the gross injustice hinted at in your last number to be carried out; as, if so, there must, as it seems to me, be an end for the future of Government competitions.

A SPECTATOR.

BLACK BRICKS.

SIR,—Will some of your readers kindly inform me of a well-tried and permanent black stain or dye for fancy brickwork? I am aware that black bricks are made, and are undoubtedly the best; but it frequently happens that the readiest and least expensive method is to black the bricks after they are built in.

B. A.

POTASSIUM AND LEAD PIPES.

SIR,—With regard to the inquiry suggested by your correspondent, "P. Squire," February 9th, as to the effect of Dr. Schwartz's discovery, I never tried it myself, knowing how to prepare a "hot solution of the sulphide of potassium," and entertaining the opinion that this singular coating, if not soluble itself by the same water which solves the oxide of lead, and thereby renders the pipes poisonous, would be at all events so liable to erosion and abrasion from the numerous curvatures and joints which the pipes have to undergo in the process of laying or fitting, that it would turn out, even if theoretically correct, to be practically useless.

The only safe means I know of to render leaden pipes innocuous is to give them a thick coating of tin on the internal surface; and for this process there are at least two patents existing.

M.

THE LINE OF FRONT.

At the Hammersmith Police Court, Mr. E. H. Corbould, the artist, was summoned for erecting a building beyond the general line of frontage, as determined by the Superintending Architect of the Metropolitan Board of Works.

Mr. Raymond, on behalf of the Kensington vestry, who were the complainants, gave an outline of the case, from which it appeared that the defendant's house was situated at the corner of the Victoria and Eldon Roads, with a frontage in the former road. A studio, with a conservatory, &c., in the Eldon-road, had been taken down, and a new and larger building erected. The general line of other buildings in the Eldon-road was considerably behind the line of the new building. He said the summons was taken out under the 76th section of the Metropolitan Local Management Acts Amendment Act, but the 74th section also applied, and he argued that both sections should be read together. The 74th section of the 26th and 28th Vict., cap. 102, stated that in case any building which shall in any part project beyond the general line of the street in which the same may be situated, or beyond the front of the building, wall, or railing on either side thereof, shall at any time be taken down to an extent exceeding one-half of the building, it shall be lawful for the Board to require the same to be set back into such a line and in such a manner for the improvement of any street as the Board shall direct, provided that the said Board shall make compensation. The 76th section stated, "That no building, structure, or erection shall, without the consent in writing of the Metropolitan Board of Works, be erected beyond the general line of buildings in an street."

Mr. McLeod, for the defendant, said the case was of considerable importance to Mr. Corbould, who had expended 1,100l. upon the building. He (Mr. McLeod) argued that the 74th section was inapplicable to the case, inasmuch as the defendant only pulled down a portion of his premises, upon which a larger studio was constructed. The house and studio were all one premises, having an internal communication, and therefore did not come within the meaning of the section. He also contended that the 74th section was not applicable, because one-half of the building had not been pulled down. If it had, then the Board might proceed to set it back, and pay the defendant compensation.

Mr. Raymond, in reply, referred to the other words in the section, "structure or erection," being used.

Mr. Ingham decided against him. He also thought that the 75th section was inapplicable, as it applied to new buildings.

Mr. Raymond intimated an intention to submit a case for one of the superior courts.

Mr. Ingham then dismissed the summons, and ordered the vestry to pay five guineas costs.

Without giving any opinion as to the annoyance caused to neighbours, or otherwise, by rebuilding the studio of larger size than it was previously, we have no hesitation in saying that there was no case under the sections quoted to take before the magistrate.

COMPETITIONS.

New Town-hall, Grantham.—The Town Council of Grantham are about building a new town-hall and goal for prisoners, and for this purpose invited designs. Twenty-seven were sent in, and on Friday last the first premium was awarded to Mr. Watkin, of Lincoln, the gentleman to whom the Corporation of Doncaster lately awarded the first premium for their Corn Exchange and market extensions.

LONDON AND COUNTY BANK.

Some shareholders of the bank ask us to point attention to the advertisement in our last, showing the declaration of a dividend, making the dividend of the whole year 25 per cent. We willingly do so. There is the fact, and it will doubtless have its weight. But when they go on to say the balance-sheet *proves* this and *proves* that, then we demur. The balance-sheet proves nothing. It is utterly valueless, and one item will establish the truth of what we say,—the item that shows the "Discounted bills and advances to customers" to be 114 millions and more. Of what value, in comparison with this, are all the other items of the statement? Absolutely none. Everything depends on the nature of the securities on which these advances are made. They may be worth 114 millions, and doubtless are; but they may be worth nothing. To talk of a banking company's balance-sheet proving anything, is simple nonsense. Without the guarantee of impartial and able examiners that these advances are made on sound securities, it would be nonsense to talk of proof: everything must be taken on trust. All the other items are absolutely of no consequence at all in the face of this one entry, concerning which nothing is known. It will be readily understood that we are not seeking to cast the remotest slight on the successful and respectable banking company which has afforded us an example. Our observation applies to a system.

WATER SUPPLY AND DRAINAGE.

Doncaster.—The town council have resolved to advise with Mr. Rawlinson, C.E., as to the best means of obtaining an adequate supply of pure water, and of disposing of the town sewage.

Stockport.—A Bill is now before Parliament applying for powers to supply this borough with water, and also to purchase the present works of the District Water Company. The corporation are the promoters of the Bill. Their water supply committee offered 130,000l. for the works, payable by mortgages redeemable at seven, fourteen, and twenty-one years, with interest in the meantime at 4 per cent., being nearly twenty-two years' purchase upon the present rental of 7,500l. Mr. Bateman, C.E., chairman of the District Water Company, stated in reply, that the offer was not one which the shareholders would accept, and that the question should be determined by arbitration. The council have also agreed to petition Parliament against the Manchester Water Bill so far as it affects Stockport.

Maryport.—At a meeting of the Waterworks and Sewerage Committee held to confer with Mr. Lawson, C.E., on the subject of his Parlia-

mentary estimate, and to ascertain from him how far it could be reduced so as still to give a sufficient supply to Maryport, Mr. Lawson's explanations of the various items were held to be, upon the whole, very satisfactory. The reductions, he thought, might safely be put down at from 5,000l. to 6,000l., and the entire cost might be brought within 20,000l. Detailed particulars of his reduced estimate he promised to furnish to the trustees.

CHURCH-BUILDING NEWS.

Rumboldswyke (near Chichester).—The church has been re-opened after repair and restoration. Mr. Gordon M. Hills was the architect, and Messrs. Busby & Son, of Littlehampton, the builders, by whom the changes have been effected. The church consisted of a nave and chancel; the oldest feature being the chancel arch, which probably is Saxon work. The door and the windows were of the thirteenth century, inserted in the older walls. In the progress of the restoration some mural paintings were discovered in the chancel. These were of different dates (from 1200 to 1700), painted one over the other. The walls were found to be largely built of Roman brick near the arch mentioned. There are two pieties—one in the south wall of the nave, and the other in the chancel.

Reform.—In addition to the improvements in the heating apparatus in St. Peter's Church, and the new organ recently erected by Messrs. Forster & Andrews, of Hull, the turret clock shown at the York Industrial Exhibition has just been fixed in the tower. An addition has been made since the clock left the exhibition of striking apparatus and two bells for the quarters. The cost is about 200l. The incumbent has now turned his attention to the windows, which he proposes should be filled with patent cathedral glass, instead of the common glass by which the church is at present lighted (except at the east end).

Ystradyfodwg.—The parish church of this village has been re-opened by the Bishop of Llandaff. The edifice has been considerably altered, under the superintendence of Mr. Buckridge, of Oxford, architect. Little has been done to the exterior, but the windows, which in the former building were very low and square, are now large, and oblong, with arrow-headed arches. The two windows at the east and west ends of the church especially denote the change. The building is entered by a porch opening to the north. The lath-and-plaster ceiling has been removed, and the roof thrown open. The roof, which forms a pointed arch, is held up by five supports, which, in uniformity with the roof, rest on carved stone brackets. The chancel is divided from the body of the church by a Gothic arch, which rests on two dwarf columns, with foliated bases and capitals. The chancel is paved with glazed encaustic tiles in colours, put in by Mr. Harding, of Hereford. Over the altar-table a sculptured red marble cross is inserted in the wall. The interior walls of the building are not defaced with plaster or stucco, but the open brickwork is presented. Fire-bricks have been employed, relieved by alternate lines of red bricks; while the red brickwork is also brought into service in the formation of the arches over the windows, doors, &c. As there are no means of lighting the place with gas, paraffine-oil has been used, and a chandelier, containing four full-sized lamps, depends from the roof, in the centre of the chancel, while ranged along each side of the church are brackets attached to the wall, holding each a light. The pulpit is formed of white sandstone, chiselled into a circular shape. The pews are new. The building is warmed by means of a hot-air apparatus. Mr. James Price, of Cardiff, was the contractor employed.

Books Received.

Up and Down the London Streets. By MARK LEMON. London: Chapman & Hall, 1867.

On the first hearing of these sketches, in the shape of lectures, at the Gallery of Illustration, in Regent-street, and afterwards as they appeared in the pages of "London Society," they received our commendation; and this, now that they are gathered together in a handsome volume, with various copies of old prints to illus-

trate them, we gladly repeat. Mr. Mark Lemon, to whom as much as to any man living all are indebted for wholesome amusement, has not pretended to write a new book about the metropolis, or to set himself up as a fresh authority on the subject; but he brings the old stories together cleverly, and tells them pleasantly and well; and his book will greatly increase for many the pleasure of future walks "up and down the London streets."

VARIORUM.

The current number of the *Fine Arts Quarterly Review* (Day & Son) contains, amongst other papers, a very interesting account, by Mr. George Scharf, of the Westminster Portrait of Richard II., illustrated by Mr. Scharf's correct pencil. Success appears to have rewarded the very bold and risky steps taken by Mr. Henry Merritt, under the direction of Mr. G. Richmond, R.A., to get rid of the over-paint. If it had not done so, we know very well what would have been said of those steps. Mr. Scharf bears strong testimony to the skill with which the work has been done. The number altogether is a good one.—"Journal of the Transactions of the Victoria Institute or Philosophical Society of Great Britain." 1867. Hardwicke, Piccadilly. This volume contains some able papers and discussions, preluded by an Introductory Address by the Rev. Walter Mitchell, M.A., one of the vice-presidents, in which he dissects pretty sharply some portions of Mr. Grove's address to the British Association. The paper by Professor J. R. Young, "On the Language of Gesticulation and the Origin of Speech," is a very interesting and able one, no less ably controverted in the discussion which followed the reading of it. Much suggestive matter also occurs in the paper on Miracles, by the Rev. W. W. English, and the discussion on it; and another paper on the same subject, by Mr. E. B. Penny, adds to the interest of the subject. A paper on Geological Formations, by Mr. Evan Hopkins, also merits notice.—"Phases in the Developmental History of Infusorial Animal Life," by Jabez Hogg, F.R.S., is a reprint on a curious subject from the *Intellectual Observer*. Mr. Hogg is the senior assistant surgeon to the Royal Westminster Ophthalmic Hospital, and author of various scientific treatises, especially on the microscope. The elucidation of the mystery which surrounds the beginnings of organic life and the discovery of the living principles which exert so powerful an influence on all animated creation are noble subjects for study, notwithstanding the fear of timid and superstitious minds that such study is an encroachment on forbidden ground. Mr. Hogg treats the subject in a philosophic and interesting manner.—"Destitution in Poplar," a letter to the Earl of Derby, with practical Suggestions." By T. Lond, Honorary Secretary to the Relief Committee, Poplar, Tweddle, Strand. Mr. Lond suggests that Government might order the construction of some ships, on which the ship-building trades at the east end might be employed; and he deprecates the "foolish and wicked" conduct of those who, in the face of such distress as has of late existed at the east end of London, preferred throwing themselves entirely out of work, to enabling their employers to undertake new contracts at a lower rate than usual, by submitting to a reduction of 6d. a day from 7s., as the workmen's share of the relative loss.* Mr. Hogg explains, however, that the great weight of the distress has had nothing to do with this transaction, in which only a comparatively few out of the "30,000 men who are at the present moment in the most abject state of utter destitution and wretchedness" took part. There are hundreds of shipwrights out of employment, he says, who would be thankful to work for 6s. 6d. a day if there were work for them to do, and no trades-union to prevent their doing it. Mr. Lond admits that "the effect of this refusal on the part of the shipwrights has been to close the hearts and purses of thousands against the necessities of the starving mechanics;"—the more is the pity that a minority of misguided men should have made the majority so to suffer by their folly. Mr. Lond suggests that the

* Even as we write we observe from the Thames Police reports, in the daily papers, that a new strike has taken place amongst the iron-shipwrights, and that intimidation is being used against the trade which remained at work. It is full time something were done for the protection of workmen against the stupid and merciless conduct towards them of their own idly-inclined fellow-workmen.

workhouse regulations ought to be relaxed in the present instance, as they certainly ought ere now to have been. Lord Derby, in reply, reminds Mr. Lond that the distress in Poplar is nothing to the cotton famine in extent, which is rather a little too much in the Job's comforters' style of consolation, in a case where the depth of distress may be no less severe, though not so extensive as that of the cotton famine. His lordship declines to order ships to be built "which are not required for the public service," and as to the relations between capital and labour which Mr. Lond suggested should be taken into consideration by the Legislature for the curbing and protection of both labour and capital, Mr. Lond is indirectly referred to her Majesty's speech.—Keith Johnston's Royal Atlas: Africa and Prussia. Blackwood & Sons, Edinburgh. These two new maps, engraved for Dr. Keith Johnston's Royal Atlas, comprise the explorations of recent travellers in Africa, and the marvellous transformations effected by the seven weeks' war and subsequent negotiations in Prussia and neighbouring states. The proprietors appear resolved that no exertion shall be wanting to make this atlas a perfect one of its kind.

Miscellaneous.

FALL OF A FLOOR.—A sad accident has just happened at Monte Rocca Dona, in Sardinia. The mayor, Pietro Masala, who was highly esteemed, died, and the people wishing to testify their respect hastened to visit the mortuary chamber. About a hundred persons were assembled in the room when suddenly the flooring gave way, and the whole of them, as well as the corpse, were precipitated to the lower story. The neighbours hastened to their assistance, and after some hours' labour they were extricated, but one woman was found dead and several other persons were more or less injured.

THE LIABILITY OF PUBLIC BODIES FOR THE NEGLIGENCE OF THEIR SERVANTS.—An important decision was given in the Court of Exchequer (sitting in Banco) affecting the liability of public bodies for the results of negligence on the part of their servants. The vestry of Bermondsey were making a sewer in Blue Anchor-road, when Mr. Juniper stumbled, in the dark, over a heap of dirt left by the workmen, which caused his death. Mrs. Juniper then brought an action, and obtained a verdict, with 875*l.* damages, which the vestry appealed against, and now moved for a rule to set aside. In giving judgment, the Lord Chief Baron said that recent decisions had finally settled the principles of the law as applicable to cases of this nature; and it was authoritatively settled that the members of a public body, created for public purposes, although having only public duties to perform, receiving no salaries, and having no funds out of which to pay damages, were liable for the damages caused by the negligent performance of their duties. The rule was refused, and the verdict therefore stands.

ROMAN VILLA ON LANSDOWN.—The Rev. Prebendary Scarth has read a paper to the Bath Natural History Society, entitled "A Notice of a Roman Villa which stood on the old Harbour Farm, in the Parish of Wick, near the ancient Cromlech, and which was excavated in the years 1865-6 by the Bath Field Club." The building consisted of fourteen chambers, with the remains of two suspended floors and their hypocausts and heating apparatus. The lecturer went into the probable nature of the walls of Roman villas, and considered them to have been constructed of timber and earth or clay, and upon a foundation of stone, probably about 4 ft. high from the foundation. He gave instances in support of this conjecture, from the wall-plaster in other villas having been found to contain upon its impressions of straw-bands, which revealed the construction of the interior of the wall. The cob-walls of Devonshire, and the walls of some of the barns and out-buildings in other counties, seemed likely to perpetuate this kind of building. This mode of construction, he suggested, may have been introduced by the Romans, though many considered it to be much older than Roman times, as it is a mode very generally followed in the East, and in Africa among the Moors, and may have owed its origin to Phœnician settlements. If the walls of Roman houses were so constructed, it would account for the great mass of earth that now covers the site of Roman towns and villas.

A "HALL OF JUSTICE," FOR BRIGHTON.—The town council have resolved "that, as it is desirable that all the buildings for the administration of justice should be contiguous and erected on public property, the Pavilion Committee be instructed to bring up a report, with plans, showing what portion of the Pavilion property is available for such purposes."

THEATRES.—In the House of Commons, Mr. O'Beirne asked the Secretary of State for the Home Department whether it was his intention to introduce any measure this session for the better regulation of theatres and places of public amusement in Great Britain. Mr. Walpole said that he hoped to be able to bring in a Bill on the subject involved in the hon. gentleman's question, and that Bill would embody several of the recommendations of the committee.

LIMITED LIABILITY COMPANIES.—On Wednesday morning was issued a return to Parliament of the number of companies registered under the Limited Liability Act during the years 1864, 1865, and 1866, with the amount of capital proposed to be raised in shares. The summary of the return is as follows:—1864: 992 companies were registered, with a proposed capital of 237,437,083*l.* 14*s.*; 5 companies were registered without nominal capital—total, 997. 1865: 1,013 companies were registered, with a proposed capital of 205,391,818*l.*; 20 companies were registered without nominal capital—total, 1,033. 1866: 758 companies were registered, with a proposed capital of 76,599,823*l.*; 10 companies were registered without nominal capital—total, 768.

RATING OF GAS-WORKS.—Certain gas-works were rated to the poor in respect of the occupation of land by the Company's pipes. The Company claimed deductions in respect of their meters, retorts, purifiers, steam-engines, boilers, and gas-holders. The meters were supplied by the Company to each consumer on his premises, and were their property. The other articles were commonly used in gas-works, and such as a tenant carrying on such works would have to take to and find capital for working. It was held by the Court of Queen's Bench that all of them, except the meters, should be considered as forming, if not part of the freehold, at least so far connected with it as intended to be permanently attached thereto, and therefore should be taken into account in determining the rateable value of the land so occupied by the pipes. This was the case of the *Queen v. The Inhabitants of Leo*.

INDUSTRIAL DWELLINGS COMPANY.—Several members of Parliament and other gentlemen who take an interest in the question of providing house accommodation for the poor, were present at the half-yearly meeting of the Improved Industrial Dwellings Company, at which Mr. Alderman Waterlow presided. The chairman, in moving the adoption of the report, said he thought Government should give some assistance to the object. Mr. Samuel Morley said it was quite a mistake to suppose that the investment of money in improved dwellings did not pay, for 3,000*l.* he had invested in such undertakings was now increased to 5,000*l.* The Right Hon. G. J. Goschen, M.P., in moving that a dividend of 5 per cent. per annum be declared upon the paid-up capital of the company, said he saw that it would pay commercially to invest money in such undertakings. The company had proved that it was possible to pull down dens and build good houses in their place at a profit instead of a loss; the reason being that they could choose their own sites, and escape the expenses of arbitration. Thus by a selection of economical sites good business might be done. The direction was entirely honorary; all the expenses were cut down to the very lowest point; and he hoped that a large amount of capital would be attracted to the work. The 50,000*l.* or 60,000*l.* expected to be obtained from Government would help the company very much; and that afternoon he intended to ask the Secretary of the Treasury why the grant had not been made sooner. It was true that these new dwellings did not house the extremely poor, but the enhanced rates were cheerfully paid, and hundreds of tenants try to get into any vacant rooms when they are to let. The rents vary from 4*s.* 6*d.* to 7*s.* 6*d.* per two rooms, averaging 2*s.* 5*d.* per room. The shareholders would be glad to learn the fact that each block of buildings erected by the company yielded by itself a profitable revenue. He knew of no reason why the company should not always realize good dividends.

WRITING ON GLASS.—We hear of the preparation of an ink with hydrofluoric acid and hydrochloric acid, properly thickened, with which, using any pen, ineffaceable characters can be traced on glass.

THE COST OF CASTING THE NELSON LIONS.—Public disapprobation is increasing of the asserted fact that Baron Marochetti is to receive 11,000*l.* for supplying the metal and making the castings of the lions in Trafalgar-square. About 6,500*l.*, it is stated, would be a full price. Moreover, was not some of the metal given by the Government?

OTHER FOUR LIONS.—The four Lions are now being placed in front of the Leeds Town-hall. Two of the four have been uncovered, in the presence of a large number of spectators, including the sitting magistrates; the architect, Mr. Brodric; and Mr. Wm. Day Keyworth, jun., of London, the sculptor selected to execute the statues. The two placed animals, though similar in size and general effect, their height being 5 ft. 6 in. and length 11 ft., differ in expression, countenance, and position of head. The lions are in a superior kind of Portland stone. The manes are disposed in large bold masses, the surfaces of each lock of hair being tooled, to convey the impression of smaller locks. The less covered parts display the huge anatomy of the king of beasts, and the suppleness of the limbs.

FALL OF THE HOE PILLAR AT WOKING.—This old beacon has fallen into a complete ruin during a recent gale. The traveller by the South Western Railway, when passing the Dramatic College, may have noticed a slender shaft, octagonal in form, rising to the height of 60 ft., or upwards, amid the group of elms by which it was surrounded. This was the Hoe Pillar of Woking. Within memory, it was surmounted by a wooden cupola open on all sides, which served as a Belvedere by day, and a lantern by night. This being neglected by its owner, the Earl of Onslow, was blown off some fifteen years since, and then the work of destruction began, which weather and the subsoil plough have since completed. The Hoe Tower, or tower on the height, as the Saxon name denotes, was built to light beightway wayfarers across the trackless heath, or to show the way to the royal hunting parties overtaken by darkness. Though of no great altitude, it could throw its light into Middlesex, Hampshire, and Berkshire. Some years after the death of the Duchess of Cleveland, which did not occur till 1707, the property passed into the family of the present owner. The tower, like that of Pisa, had long inclined on one side, but without any other signs of decay, and would have stood two centuries more had a few pounds been bestowed on its repair. Nothing now remains but the fuel chamber at the base, and a few old elm trees near the spot.

ST. LUKE'S NEW VESTRY-HALL.—The old work-house of St. Luke's, a part of which has long been used for vestry offices, is now superseded by a building, in the Italian style, of simple design, at a cost of 6,400*l.* The dressings to the windows and doors are of Portland stone, and the front of Suffolk bricks. The main front towards the City-road is divided into two stories above the basement. The entrance porch is of Portland stone, with carved capitals to the piers, and leads to a vestibule protected by an enclosure. On the ground-floor are offices for the vestry clerks and their assistants, the surveyor, the headle, and a waiting-room. A corridor separates these offices from the vestry-hall and ante-rooms in the rear. The vestry-hall is about 50 ft. long, 25 ft. wide, and 25 ft. high; it has an elliptical coved ceiling, containing eight lights, and springing from an ornamental bracketed entablature, which is supported by Corinthian pilasters of polished Parian; it is intended to have records of the several charities placed between the pilasters. A stone staircase leads to the first-floor, on which are a large board-room, committee-room, and waiting-room. Another corridor corresponding with the one on the ground-floor, runs from end to end, giving access to all the rooms. The basement story contains kitchen and waiting-rooms, muniment-room, bread-rooms, &c. Mr. Christie, the surveyor to the vestry, arranged for the rooms of the several officers, but had not time for the completion of the drawings and superintendence of the works. The vestry, therefore, applied to Mr. F. Warburton Stent, of Westminster, to complete the designs and superintend the works. Mr. Sawyer, of Dulwich, was the contractor.

NEW LIGHTHOUSE AT BOMBAY.—The chief stone of the new lighthouse on Konerry was laid on the 19th of January, by Sir Bartle Frere.

LEAD-POISONING.—M. Marmise points out a novel source of lead-poisoning, viz.—the painted woodwork obtained from the demolition of old houses, and which being used for fuel gives off smoke charged with lead, that may be disseminated and taken in with the breath. According to the *Lancet*, five out of ten dealers in old panelings in the city of Bordeaux have suffered more or less from lead colic, and in some instances the metal has been found deposited in the chimneys of those fireplaces in which old woodwork has been burnt. It is also said that the handling of freshly-printed journals, inasmuch as the ink contains litharge, may also account for the existence of symptoms clearly referable to the injurious influence of lead.

METROPOLITAN COMMON POOR FUND.—The following charges are, by Mr. Hardy's Bill, to be paid out of the Common Poor Fund, in addition to the relief of the houseless poor already charged upon it:—The expense of the maintenance of lunatics in asylums, registered hospitals, and licensed houses, and of insane poor in asylums under this Bill, except such expenses as are chargeable on the county-rate; the maintenance of patients in any asylum specially provided under this Bill for patients suffering from fever or small-pox; medicine and medical and surgical appliances for the poor in receipt of relief; maintenance of pauper children in district, separate, certified, and licensed schools; salaries of clerk to guardians, chaplain, medical officer, relieving officer, master, matron, nurse, and porter of workhouse, and of the dispensers in the proposed dispensaries; compensation to any medical officer affected by the determination or variation by the Poor-Law Board of a contract for medical relief in the workhouse; fees for registration of births and deaths; and fees and expenses of vaccination.

THE AMALGAMATED ENGINEERS.—"We stated in a paragraph, some months ago," says *Engineering*, "that the authorities of the Amalgamated Engineers had determined, if possible, to put an end to piecework, and that the cost of many varieties of work was regularly sent in by foremen, workmen, &c. These statements were at once denied by the secretary of the union, but we have since had further evidence of their truth. Unless masters can exert sufficient pressure upon the men, the whole system of piecework is doomed, and the slow and slovenly workman will be placed upon the same footing as the most active and efficient. We know superior workmen who have earned 2l. 10s. to 3l. a week at locomotive factories and repair shops, by taking piecework at low prices, and we know that they are marked men, with all the grudges and jealousy of inferior workmen,—the latter leagued together in a powerful body,—upon their shoulders. It is impossible to say to what a depth of inferiority the overthrow of the piecework system would sink most kinds of mechanical labour." We may here note that we observe the Great Eastern Railway Company are purchasing French locomotives, and that they obtain them 200l. below their former prices.

LONGITUDE BY THE ATLANTIC CABLE.—The difference of longitude between England and America has, hitherto, rested upon the chronometric expeditions instituted by the Coast Survey during 1849-51 and 1855. Fifty chronometers were transported three times in each direction across the Atlantic. The probable error of the result of these expeditions was estimated at 19-100ths of a second. When the success of the cable provided telegraph transatlantic connexion with England, parties of the Coast Survey were formed, under the direction of Dr. B. A. Gould, to take advantage of these means of obtaining a result still more precise. The probable error of the resulting longitude is now estimated at about 4-100ths of a second. A distance of about 1,900 miles has thus been measured, and the measure is considered to be probably not more than 40 ft. from the exact truth. The time required for a signal to pass through the cable has been discovered with still greater precision to be 31-100ths of a second, which is regarded as being probably not in error by 1-100th of a second. This is equivalent to a velocity of 6,020 miles a second, and is notably less than the velocity of the electric force upon land lines, which numerous observations have shown to average 16,000 miles a second.

CHARING-CROSS HOTEL COMPANY.—A dividend for the half-year has been declared at the rate of 10 per cent. per annum.

NEW LIGHTHOUSE AT GUERNSEY.—The structure which has been for some time in course of erection on the eastern extremity of the Castle Breakwater, at the southern entrance of the outer harbour, is now all but completed. The edifice, to the point of the vane, stands 56 ft. above high-water mark, the masonry being 41 ft. 4 in. The light will be furnished with a third-class dioptric lens, and will show 43 ft. above high-water springs, and 59 ft. above mean-tide level. The lantern and lens are supplied by Messrs. Chance, Brothers, of Birmingham.

BARRIERS ACROSS STREETS.—At the last meeting of the Metropolitan Board of Works, the Works and General Purposes Committee brought up a report, recommending that a petition be presented by the Board to Parliament, to repeal any authority given to private individuals to erect gates or barriers across streets or thoroughfares so as to obstruct the traffic therein, in cases where the lighting, cleansing, and paving of such streets or thoroughfares is paid for out of the public rates. The committee had taken counsel's opinion on the matter, with the view of advising the Board. The report was agreed to.

DAUGHTER PAPER.—There is a great difference in the combustibility of common paper. Enamelled card paper, on account of its compact body and the presence of mineral matter, white-lead or barytes, is quite disinclined to burn; in fact, some kinds are practically fireproof. White writing and printing paper can seldom be lighted by a spark, and when ignited by a flame it requires dexterity to keep it burning. On the other hand, there is a common reddish yellow paper, which, in some circumstances, according to the *Paper Trade Review*, is as dangerous as gunpowder. It takes fire by the smallest spark, and burns like tinder. When once lighted, if left alone, it is sure to be consumed completely. All the yellow and buff paper, out of which envelopes are made, partakes more or less of the same character. There is no doubt that such paper has been the occasion of some of the fires in paper warehouses and offices of professional men.

BOILER EXPLOSIONS.—The report for the past year of Mr. H. Hiller, the chief engineer of the National Boiler Insurance Company, Limited, has been printed. It states that the business of the company is making satisfactory progress: no explosion had occurred to any boiler under the company's inspection, while in other cases throughout the country nearly six explosions had taken place in 1865 and seventy-four in 1866, in the latter instances causing seventy-seven deaths and injury to 152 other persons. Over-pressure caused twelve out of the seventy-four explosions, external corrosion nine, deficiency of water eight, and weakness of internal fire tubes eight. Of the exploded boilers, twenty-two were one- or two-fired, and externally fired, and twelve plain cylindrical ones, externally fired. The boilers exploded by over-pressure were two small vertical ones with internal furnace, two Cornish one-fired, two portable (locomotive type), two marine, one Galloway, one plain cylindrical, and one balloon. The report contains much useful information on the subject of steam boilers.

LABOURING CLASSES' DWELLINGS.—In the Commons recently Mr. Goschen asked whether any applications for loans had been made under the Act of last session "for enabling the Public Works Loan Commissioners to make advances towards the erection of dwellings for the labouring classes," and how any such applications had been dealt with. Mr. Hunt replied that there had been ten applications for loans under the Act. No money was to be advanced unless the Board of Works certified that the buildings were suitable for dwellings for the labouring classes. Of the ten applications sent in, six did not give sufficient information to justify the plans being sent to the Board of Works, and they had been referred back for further particulars. By-laws had been agreed upon within the last few days, under which the remaining applications were to be dealt with, and one of the plans had received the sanction of the Board of Works, and been referred back to the commissioners to ascertain what sum should be advanced. Another of these plans was under consideration; and as to another, it was expected that a loan of 20,000l. would be asked for.

TENDERS

For building Fire Brigade Station, for the Board of Works, Sheppard's-lane, Brixton. Quantities by Mr. Young:—

Johnson	22,220 0 0
Brasier	2,220 0 0
Taylor	2,130 0 0
Jackson & Shaw	2,080 0 0
Laustance	2,040 0 0
Sabey	2,040 0 0
Piper & Wheeler	2,040 0 0
Oliver & Co.	1,987 0 0
Nutt & Co.	1,987 0 0
Eddy, Brothers	1,984 0 0
Webb & Son	1,880 0 0
Wignours	1,948 0 0
Manley & Rogers	1,944 0 0
Eaton & Chapman	1,892 0 0
Fish	1,890 0 0
Nightingale	1,873 0 0
M'Lucian	1,843 0 0
Marsland & Sons	1,835 0 0
Sawyer	1,789 0 0
Rigby	1,714 0 0
Mann	1,687 0 0
Cooper	1,637 0 0

For villa residence, at Blackheath, for Mr. A. W. Gibbs, Mr. C. W. Courtenay, architect:—

Hart	21,995 0 0
Welby	1,984 0 0
Prince	1,983 0 0
Webb & Sons	1,980 0 0
Green	1,874 0 0
Bland	1,894 0 0

For villa residence, at Loughton, Messrs. Lander & Bedell, architects:—

Manley & Rogers	21,475 0 0
Williams & Co.	1,489 0 0
Dobbs	1,443 0 0
Dove, Brothers	1,385 0 0
Webb & Sons	1,283 0 0
Corrie	1,273 0 0
Mann	1,219 0 0
Egan	1,201 0 0

For new Congregational Church, Tynemouth, Northumberland, exclusive of foundations, which are already in. Mr. Thomas Oliver, architect. Quantities supplied by the architect:—

Henderson	24,470 0 0
Scott	4,393 0 0
Welton	4,345 0 0
Elliott	4,337 0 0
Jackson	3,900 0 0
Robinson (accepted)	3,880 0 0
Hardwick (tender incomplete)	3,769 0 0

For five villa residences, at Hornsey, for Mr. T. Lawes, Messrs. Bacon & Bell, architects. Quantities by Mr. James Gandy:—

Emery & Co.	27,601 7 6
Carter & Sons	7,325 0 0
Kilby	7,260 0 0
Francis	7,183 0 0
Auley	6,861 0 0
Forster, Jm.	6,365 0 0
Spearing & Condy	4,600 0 0

For erecting new relief offices and dispensary, for Southampton Incorporation. Mr. P. A. Skilton, architect. Quantities supplied by Mr. H. Fether:—

Stevens	21,298 0 0
Conway	1,230 0 0
Martin	1,250 0 0
Sanders	1,198 0 0
Adams	1,178 0 0
Gambling	1,128 0 0
Philips	1,090 0 0
Bull & Sons (acc'd.)	1,115 0 0

For alterations to the Crown and Shears public-house, Minorities, E. Messrs. Humphrey & Son, architects:—

Stephens & Watson	2,475 0 0
Sparks	739 0 0
Scrivenor & White	739 0 0
King & Sons	688 0 0
Emur (accepted)	613 0 0

For new warehouses, Oat-lane, City, for Mr. Charles Beckwith, Mr. George Elkington, architect:—

Gammon & Sons	22,738 0 0
Brown & Robinson	2,706 0 0
Kilby & Co.	2,681 0 0
Brass & Co.	2,454 0 0
Piper & Wheeler	2,388 0 0
Coleman	2,378 0 0
Hendons	2,348 0 0
Wells (accepted)	2,285 0 0

For public-house, at Acton, for Mr. J. J. Sterne, Mr. M. V. Horne, architect. Quantities supplied by Mr. Sidney Young:—

Bull	21,735 0 0
Langmead & Way	1,867 0 0
Robson	1,697 0 0
Mann	1,645 0 0
Salter	1,650 0 0
Nightingale	1,533 0 0
Eborall	1,468 0 0

For works, at Cambridge House, Ladbrooke-grove, Kensington Park, for Mr. J. T. Thomas, Mr. C. E. Davis, architect:—

Jenkins	21,083 0 0
Piper & Wheeler	1,063 0 0
Colley	1,044 0 0
Richardson	990 0 0
Johnson	898 0 0
Bull	888 0 0
Nightingale	815 0 0
Neale	793 0 0
Eborall (accepted)	748 0 0
Norton, Brothers	598 0 0

For building three villa residences, for the Walton Villa Company, at Walton-on-Thames, Mr. R. Kinnip, architect. Quantities supplied:—

Curtains	£4,785 0 0
Hardware	4,427 0 0
Johnson	4,400 0 0
Stevenson	4,206 0 0
Neale	4,030 0 0
Warne & Co.	3,875 0 0
Nightingale	3,670 0 0
Harris	3,689 0 0
Hunt	3,364 0 0

For new warehouse, Southwark New-street, for Mr. Bates, of E. Bates, architect. Quantities supplied by the architect:—
Hart (accepted) £2,740 0 0

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The Builder.

VOL. XXV.—No. 1256.



How Not to Invest.

EW subjects have attracted more constant attention than prognostication of weather. Rules

of more or less exactitude are given us to enable us to ascertain what the morrow will, in this respect, bring forth, by authors of every grade. We find them in the Georgics of Virgil, and we find them in the almanacs of Zadkiel and of

Old Moore. Weather forecasts were but the other day published by the aid of the English Government. One only drawback has been found to attend the efforts of the astrologer, the naturalist, the man of science. The rules, no doubt, are right enough, but the weather will not go by the rules; so, after all, we are reduced to the simple and ominous precaution of carrying an umbrella on all occasions as the only absolute weather wisdom in the latitude of London.

There is, however, one sort of observation as to the weather that possesses a positive value. When we know what is the state of the barometer at different points of Europe at the same time, we then form a very tolerable guess at what is coming. When barometers are high in the northern countries and low on the Atlantic and Mediterranean coasts, the resulting north wind is pretty sure to bring cold weather. In this case we do not so much predict as infer, from the action that is indicated as taking place, the natural results that will follow. We do not prophesy, we observe.

In the unusually depressed state of that which, to so many of us, has for some time been a more serious matter of observation than the weather, namely, the public confidence, the barometer of Lombard-street has been long and anxiously watched for symptoms of change. Nothing has been read for many a month but the doleful counsel, "Expect much rain about this time." At last the constant fall has ceased, out no gentle and steady rise, so grateful to the expectant of fine weather, has succeeded. The financial atmosphere has remained in the most capricious state of unstable equilibrium. Thunder-storms there have been; but they have not cleared the air, and the oldest observer cannot remember such a period of prolonged gloom.

That the time of change must come, experience forbids us to doubt. It may be rapid when it sets in; it may be gentle and steady. That can be only prognosticated as a guess. But when we find indications of the variation of pressure, or of the return of a more buoyant state at other stations, it is natural to expect that the change will, before very long, affect our own shores.

One of these indications has just reached us. While the City barometer still remains with unaltered index, we hear of a rising of the mercury on the Continent. "The German loan-markets," we are informed by a very competent authority, "have rarely been so buoyant as at present." What does that buoyancy promise?

A period of great activity in our own public works has been succeeded by a period of stagnation. It is not because all such enterprises as

contain within themselves the elements of success are accomplished. Far from it. On every side, at home and abroad, a careful examination will detect much that requires to be done,—much that, if properly executed and managed, would amply repay those who undertook the work. The returns on our railways are slowly overtaking the rate of dividends that was thrown away in 1845. In spite of a profuse and lavish expenditure,—in spite of the sums wasted in Parliamentary conflicts,—most of the old lines are steadily increasing the dividends on their swollen capital. The effect of the application of science to the service of man is becoming daily more apparent, and that in spite of the reckless manner in which the promise of increased wealth has been so often discounted. The commerce of Great Britain was never so extended as at the present time. The condition of the revenue and of the expenditure of the empire was never so satisfactory. At no period of our history did there seem such a fair field open for legitimate enterprise, and at no period has there been less apparent probability of its resumption.

The cause of this apparent contradiction is not far to seek. In every quarter you will hear the same cry. There is a want of confidence. Money is not only plentiful, but is becoming more than plentiful—it is lying idle. Men prefer to let it lie idle rather than risk it. The dog has been so badly burned that it dreads not only the fire, but anything which can convey the sensation of warmth. We are balancing a period of extreme and baseless confidence by one of equally groundless and equally injurious mistrust.

This general feeling is by no means confined to the enterprises regulated by the engineering and architectural professions. It is not merely commercial, not exclusively even financial; neither is it confined to our own country. Everywhere man seems to look with suspicion on his neighbour; and the worst of this is, that it is at the same time an impractical and a destructive suspicion. It is the case of the patient who will neither take the advice of his doctor, nor bestir himself to recover health by any exertion of his own.

We have instances of this morbid state of feeling on the largest scale. They seem present in the bosom of more than one of those deliberative assemblies on which the hopes of so many repose. Any effort to grapple with the great questions of the day is met with a chorus of depreciation. The general condemnation of every attempt at progress cannot be called criticism, for criticism involves a knowledge of the subject. It rather results from that state of suspicious and ignorant incredulity which is the most formidable barrier to any kind of improvement. Abuse may defeat its own object, direct attack may be turned upon the assailant; but a shrug and a sneer are as unanswerable as they are often fatal.

There are some features in our own social condition that indicate the probability that this general and hopeless state of distrust may have the result of throwing on the executive government responsibilities which each person is so anxious to shift from his own shoulders. Our chronic fear of undue governmental influence is swallowed up by our acute fear of being unable to watch our own interests. A nation which in three years, or, rather, in two years and a half, found a sufficient number of subscribers to the new form of limited companies to register capital to the amount of 519,428,724*l.*, is now leaving its spare cash unemployed for fear of being taken in. What more likely than that the next feature in our unreason will be a rush to invest in such securities as bear the sanction of Public Law. All must go wrong if a Government ceases to pay. Foreign Governments, as a rule, have paid with exemplary regularity the interest on their loans. It is, therefore, by no means an

unlikely supposition that the buoyancy of the German loan-market may indicate a coming buoyancy in the English market for foreign loans.

Why not? Why should people be content with 2½ per cent. when they may receive 5 per cent? 1,000*l.* invested in English Consols will only return 34*l.* 6*s.* 8*d.* per annum. Why not invest in French *Rentes*, and receive 43*l.* 5*s.* for your interest? Why not, even more eagerly, invest in Italian Stock, and find your income raised to 92*l.* 10*s.*? What is the reason that what we may call, to coin an appropriate name, the Peneometer, stands at such a different height at London, at Paris, and at Florence?

Something, of course, goes for convenience. It is worth something to have your dividends paid in sterling at the bank, instead of in francs or lire, which have to be remitted to you through a foreign banker. But difficulties of this nature are moderate in their amount, and, if they were all, would rapidly evaporate before a profit of nearly three to one. There remains, then, the ugly certainty that, after all, the investor has more confidence in the English than in the French or the Italian funds,—much more confidence,—confidence that, represented by a pecuniary measure, is in the extreme difference nearly as three to one.

Now, when the foreign loan-market becomes buoyant, this nervous want of confidence disappears. That is the meaning of buoyancy. People are not afraid to buy. It is true that they may not buy with the view of a permanent investment. They may buy in the hope of a rise, and with the intention to sell at a profit. So long as such investments are not the fashion, a man has to rely on the dividends alone. He may have no good reason for anticipating any hesitation as to their payment, but his property will not be readily convertible. Convertibility is, with many, as important a desideratum as good return. A rate of dividend, therefore, that will not attract the *bond fide* investor, when alone, will attract with magnetic force when the investors count by tens instead of by units. It will cause a notable rise in price when the tens amount to hundreds.

And after all, in nine cases out of ten, what other guide has the would-be investor than the rush of his fellows? Who among us has the time, or the means of information, or the patience, to sit down and make a calculation for himself? Thus might he reason. If I purchased at the present rate, I shall have 6 per cent. for my money beyond the return which I should have for an investment in Consols. If such-and-such a Government, then, satisfies its creditors for twelve years, I shall have recouped my principal, and my stock will, by that time, have cost me nothing. Whatever it is then worth will be so much to the good. How long, therefore, can I count with tolerable certitude on the stability of the Foreign Government, and on the maintenance of its good faith?

An investigation of this nature, sound as it may be in its principle, is not to be expected from the generality of men who are seeking to invest their money. They do so on the ground that A, who ought to know, says it is a good thing, or that prices have gone up ½ per cent. while they have been making up their minds. Unfortunately A, who ought to know, cares more to be sure that B, C, and D will follow his example, or, as the case may be, his advice, than to make the more troublesome inquiry on his own behalf. So when, by some of those impulses which never fail when the season is propitious, the movement commences, it continues with increasing momentum, and takes its rank in that great decennial wave of flow and ebb which has brought ruin to so many firesides since 1825.

We can offer a little light to B, C, and D. But a rushlight, it may be; but still enough to make

them see the propriety of working out, each for himself, the simple formula we have stated. We can tell him how much our foreign friends will have to borrow—of us if we will let them, of somebody at all events,—in the next ten years. We can tell them this, not as matter of prediction or prognostication, but as matter of deduction from well-ascertained data. We cannot even say that the effort will be crowned with success, but we can tell the alternative. Three ways, as usual, lie before us. We think that a careful study of the map will deter any traveller, not hopelessly urged on his journey, from following either path.

There was a well-known English nobleman who was ultimately distinguished, even more than by his exalted rank, historic name, and princely seat, by his gigantic embarrassments, and by results thereof unusual to men of his order. This nobleman had a peculiarity which, according to the testimony of those who should know best, cost him something disproportionate to the luxury of his indulgence. He never would be without a certain sum of money—1,000*l.* or so—in his possession in notes or gold. He made a point of it. In the state of the ducal revenue this sum was only to be obtained by the expensive process of borrowing; and the loan had, of course, to be negotiated, not in the City, but at the West-end, where the Bank minimum does not rule the rate of the day—or rules it only when multiplied by ten. So long as there is something hard upon certitude of ultimate payment, loans are always to be had on these terms (or were at the time we refer to) in the parishes of St. James and St. George. The upshot was, that his Grace always had his money; that he often made no use of it—that is, of this habitual reserve; so that when the three months' promissory-note on which it was advanced came due, the identical bank-notes which he had furnished were handed back to the lender, with, say a tenth more for the three months' interest. The plan had this radical defect, that if the nobleman could have made up his mind to do without this reserve of unused cash in hand for the short period of two years and a half, he would have saved the full amount by the mere delay.

Now those who would borrow the money of John Bull are in even a worse predicament than the nobleman to whom we have referred. They cannot afford to wait. They do not, indeed, borrow at 40 per cent.,—at least, not as yet. But borrow they must, or else they must cease to pay for that which they have already borrowed. How much they will need between this and 1876 we may tell with some accuracy from totting up how much they have borrowed between this and 1856.

We must just make a very honourable exception. If Myneer wants our money we cannot do better than accommodate him: but then he does not want it. Alone in the world the Dutch government has, within the last ten years, paid off 16 per cent. of its national debt. All honour to the Dutchman!

Belgium and Great Britain must also be spoken of with respect. Omitting to notice some of the smaller and more prudent German powers, because no one is yet in a position to say what will be the effect of the war of 1866 on their financial position, Belgium and Great Britain alone, of European states, have paid the dividends of the last ten years out of revenue. The debt of Belgium, and the united debt of Great Britain and of India, have, during the last ten years only increased respectively by 4 and by 3·4 per cent. For nine years out of ten these countries, therefore, have faithfully satisfied the public creditor out of their revenues. In doing so they stand alone.

It requires no great effort of the imagination to impregnate the remaining powers of Europe as visitors to the well-stored bank of John Bull. The Spaniard stalks by, with the corner of his cloak thrown over his shoulder, and casts side-long glances at the cash-box. He does not beg,—not that he is ashamed, but that he knows it would be useless,—but he cannot resist the fascination of the jungle of counted gold. Most Southern people seem to feel that the very aspect and neighbourhood of money have something of the nature of sunlight; they like to get as near to it as they can. The Greek and the Italian are more hopeful than their experienced and repudiating cousin. They draw nigh with intent glances and agreeable smiles, and with a very consistent and dramatic story ready, so soon as they find a moment in which to tell it. The German looks on with a frown, a contribution

cigar in his mouth, and the needle-rifle in his grasp. He, too, thinks the moment inopportune. It is the Frenchman who, with an easy air, takes the *pas* to which he is no doubt entitled. "Mon cher Boule," says he, "I have no want of you. My own countrymen will supply my need. The discovery of the day is to go to the millions for your loans, not to the individuals. I find the idea to answer. During the last ten years I have borrowed 160,000,000 of what you call sterling. I pay 10,000,000 sterling a year in taxes more than you do. I spend 30,000,000 a year more than I did when I adopted the Imperial régime. My income will soon equal my expenditure,—next year, or in 1868 at farthest. Meantime the milliard that I mean to spend in public works will be forthcoming if I lift my finger. It would be only out of neighbourly feeling if I let you subscribe for ever so small a part of it. I shall only require two or three other milliards between this and 1876 to do as I have done for the last ten years, and I shall thus readily pay the interest on my *rente*. I am in a proud and enviable position, and am happy to give you a lesson. It is not every one who can increase his funded capital at the rate of 16,000,000*l.* a year for ten years running. I can, and I mean to go on. Some of my neighbours you can make a good thing by helping. My friend here, who has only increased the amount of his *rente* by 57 per cent. during the last ten years, will require 100,000,000*l.* sterling to make a railway to Siberia. My Hungarian neighbour would be glad of a similar sum in order to resume specie payments. My Italian friend and protégé will require nearly twice as much in order to make both ends meet, while he is trying how to *fare da sé*. These are the chief investments which offer themselves at present. I am not particular for a month or two, or even for a year or two; but, if you will take the matter *en bloc*, you will find that nine or ten of us have borrowed, rather more than 700,000,000*l.* sterling since 1856, and that, to pay a regular interest on this, and on what we borrowed before, we must have at least an equal sum before 1876, or the consequences will be unpleasant. In fact, as I am not in the market, I do not mind saying that we have had to borrow all the *rente* we have paid for the last ten years. To do without this assistance we should have to raise our taxes all round 30 per cent. People cannot stand that; so, when you cease to lend, we,—very reluctantly,—shall be obliged to cease to pay! You see it is to your interest to go on."

It is possible that our neighbour might not be so frank. The outline of the case, indeed, is thus correctly stated, but it might be thought prudent rather to rely on questions of detail. So much goes to the thorough examination of a matter! Every man of the world acknowledges the duty of putting the best foot foremost. The Frenchman may tell you with truth that his annual expenditure, per head, of the population, is 5*s.* less than that of England; that the actual commerce of France is greater than that of Great Britain; that her area is nearly double, and her population eight millions more numerous; so that her national debt amounts to only 10*l.* per head, instead of the 30*l.* per head owed by the Englishman. All that is true. But it may be regarded in another light. The area and the population of France are much larger than our own, but the density of her population, that sure gauge of prosperity in an old country, is as 38 to 51. Her commerce is larger in total amount, but, taken per head, it is only as 11 to 17 compared with that of Great Britain. Her debt is less in amount and less per head, but it has increased nominally cent. per cent., and virtually 58 per cent. during the last ten years, so that every sou paid to the public creditor with one hand has been borrowed from him with the other. That is the view of the same case with the other leg put forward.

We hope, therefore, when the great reservoir of unemployed money that is weekly swelling more and more within its dykes shall at last overflow, as it assuredly must do, that the diversion of the fertilising stream will not be turned to rendering buoyant foreign loans. If we see further indications of such a tendency, we shall gladly strengthen the dykes by the rude statistical facts of which we have above indicated some of the results. Better take the debentures of the A, B, and C railway, which, if they represent neither capital nor interest, at least have a credit on the bank of hope, than invest savings, or hope for profit, in the never satiated quicksands of foreign loans.

THE MAGIC OF MASONRY.

Of late years our discarded superstitions have come into vogue again for a new purpose. It is supposed that some of our old household stories, sayings, spells, and beliefs in fairies, goblins, hobgoblins, and other varieties of supernatural beings, are fragments of some old mythology that obtained among men in pre-historic times; that the deeds of the giants, dwarfs, imps, and elves to which we used to listen breathlessly were, possibly, articles of faith to the men of the iron, bronze, and stone ages, and, certainly, accepted facts with thousands in the Middle Ages; and that by gathering these together, piecing them, contrasting them with the forms the same legends have taken in other countries, we may recover some long lost lore. As we have said, it is only recently that the idea of considering these old wives' tales in the light of traditions handed down orally from Celtic or pre-Celtic people has taken root. Bishop Percy and Sir Walter Scott, the revivers of popular interest in Mediæval literature, put in no claim for so remote an origin for the "great thoughts of heart," they collected. But when we consider the tenacity with which man clings to ancient customs, especially when undisturbed by much contact with other peoples, something may be said for those who suppose that the lip-lore in question has the antiquity now assigned to it. The sacrifice of animals to avert some threatened calamity is not unknown among us at the present day, and yet science and theology have been equally opposed to such a proceeding for centuries. Yet the custom is clung to by some minds. Mr. Henderson, Durham, records that less than fifteen years ago one of a herd was so slaughtered in the county of Moray when threatened with the murrain; and, going farther back, but not beyond the bounds of the enlightenment of modern civilization, in the records of the Presbytery at Dingwall there are entries that show that the sacrificing of bulls and pouring libations of milk on mountains was practised at the island of Innis Maree, in Loch Maree, down to A.D. 1678; especially, that several members of the Mackenzie family were cited before the Presbytery "for sacrificing a bull in an heathenish manner, on the island of Saint Rufus, commonly called Eilan Moray, in Lochew, for the recovery of the health of Cirstene Mackenzie, who was formerly sick and valentinarian." Now, if the tradition of this Druidical custom remained in details vivid enough to court a trial of the efficacy of the cure, how can we deny the same vitality to some of the legends of the same period? And, when we find curious legends full of uncouth power in the possession of country people, especially among those living in out-lying, hilly, and secluded places, in which the incidents as related are alike as defiant to scientific facts as to common sense, and could have only originated in minds that were totally unfettered by the exigencies of probabilities and possibilities, and yet were bold, plastic, and fanciful, we may suppose that we have the thread of some old story in our hand that was woven before our primeval forests were felled.

Among this quaint lip-lore there are a few statements relating to masonry, which we give as we have met with them. In the instances in which supernatural beings have endeavoured to prevent building on certain spots, we should probably not be wrong in assigning an Oriental origin for the main facts of the legends. The abandoned tower of Babel, still standing in the likeness of a mighty mound of ruin, as described by Mr. Layard, would not be without influence or celebrity; and tribes moving westwards would bring its wondrous story with them. A general belief that supernatural beings occasionally interfered to prevent the progress of building would find fresh expression in particular instances; and is, probably, the root of the particular traditions we are about to mention. In various parts of the country it is stated by the local residents that a certain house in the neighbourhood, generally the hall or castle, was attempted to be built on a different site; and after every commencement the work was always found overthrown next morning till the site was altered, when the building was allowed to proceed. A story is current to this effect concerning Callaley Castle. The edifice is seated on low-lying ground at the base of a lofty hill, about five miles north of Rothbury, in Northumberland, which is clothed with wood, ferns, and heather to its summit. From the hill a lovely prospect is gained. The rich vale of Whittingham on one side,

and the low country watered by the Cognet on the other, the one hemmed in by the Cheviot Hills in the distance, and the other bounded by the green and grey hills around Rothbury, are spread out at the feet of those that climb the towering crag; and it is at this elevation that it is believed the first builders endeavoured to plant the castle. The oldest portion of the present edifice appears to be of Edwardian antiquity. Whether it is this early portion of the stronghold or some previous work now lost sight of, that is supposed to have been interfered with by the fairies, does not appear; but the story goes, that three attempts to build upon the hill were as many times defeated; upon which it was decided to try the plain at the foot of it, where no further opposition took place. Callaley Castle was granted by Gilbert de Callaley, in the reign of Henry III., to Robert Fitz-Roger, whose son was surnamed Clavering, by King John. This son left no male issue, but his daughter's history and that of her descendants have made Callaley a centre of interest for the historian and antiquary. She had four husbands; by the second of whom, Ralph Nevill, of Raby Castle, she had two sons. In the space of six generations Lady Eva Clavering numbered among her descendants a king of England, a queen of England, a duchess of York (who in her turn was mother of two monarchs of the house of York and grandmother of a third), a duchess of Clarence, a duke of Bedford, a marquis of Montacute, an earl of Northumberland, Westmoreland, Salisbury, Kent, the Earl of Warwick, besides several other personages whose deeds are part of the history of the country. The castle has remained in the occupation of the descendants of the first Clavering down to the present day.*

We take our second example of supposed supernatural interference in the progress of buildings from a Devonshire story. It may be referred to in the appendix of Household Stories affixed to a new work on Folk-lore, by Mr. Henderson, which we have before mentioned. It will be found to the following effect:—When Sir Francis Drake, the Elizabethan navigator, proposed to build himself a house at Buckland Monachorum, he brought workmen from Plymouth, Exeter, and Tavistock, who worked with so much goodwill, some squaring the stones, others setting them, that they reached a height of six feet from the foundation the first day. Next morning, when they meant to resume their task, they found every stone removed to a great distance. This occurred twice. On the completion of the same height for the third time, Sir Francis hid himself in a tree and watched till midnight, when he perceived a multitude of little devils step out of the earth, who, with much laughing and talking, began to carry the stones away again till cockcrow, when they vanished, leaving the masons' work again demolished. Nothing daunted, the walls were rebuilt for the fourth time, when as evening approached, Sir Francis dressed himself in white, and hid himself again in the tree. At midnight the little devils appeared once more upon the scene, and were about to commence their mischievous operations when the great sea-captain flapped his arms and cried out with a loud voice, "Kikkeriki." They took the great white figure in the tree for a bird which had come to announce the end of the world; and dropping the stones they were removing, disappeared, screaming with fright. We must add that this incident in the life of Drake does not appear in Dr. Johnson's account of the navigator, although he goes into various details, including his burial at sea in a leaden coffin. Hitherto it has been lip-lore only. Mr. Baring-Gould is doubtless right in deeming it only a fragment of a household tale that has suffered anthropomorphism. There are many other instances of the application of this kind of magic to masonry in various parts of the country. We content ourselves with calling attention to the fact and to these examples of it.

Great building powers are attributed to his Satanic Majesty. The number of Devil's causeways, Devil's dykes, Devil's gaps is curious. Near Wooler, at East Lilburn, there was formerly a large heap of stones which Satan was accredited with having brought there. It was called his "Apronful of stones." When it was determined

to make use of this huge cairn-like heap of material for repairing the roads, the base and fragments of a cross, raised on a platform four steps high, were found in it. This confusion between things that are sacred and things that are supposed to be accursed, is puzzling. It crops out again in the belief that the first person who enters a new church is the property of the devil. This is a German fancy. And here we may quote Mr. Baring-Gould again. "At Aix-la-Chapelle is shown a rent in the door, which is thus accounted for:—The church was ready for consecration, and before any one entered it a dog was driven in. The devil, in a rage, seized the dog, and flew away with it, shivering the door. In various parts of Germany, and in Norway, a dog or pig was buried in the churchyard as an offering to the devil. He is thus outwitted, and receives a beast instead of a man as his tribute."

In connexion with the last subject, Mr. Henderson mentions, in the interesting work we have before referred to, that a clergyman of the Church of Scotland informed him that there was a great difficulty in bringing his new churchyard into use, for no one liked to bury their dead there, as it was thought the first body interred would be a *toind* to the evil one. This feeling was only cast aside after a poor tramp was found dead on the road and buried in it. Mr. Henderson relates, of his own knowledge, that a similar dread existed with reference to the churchyard round St. John's Church, in the parish of Bovey Tracey, South Devon, which was long unused, the country people averring that the devil would seize any body laid in it; and that interments did not take place till a stranger, the servant of a visitor in the parish, was buried in it. In Aberdeenshire the workmen employed to pull down an old church on the completion of a new one, manifested some reluctance to take out the first stone of it for the purpose of pulling it down; but this difficulty was overcome when the agent for the estate pulled it out, as the second stone did not seem to involve the same terrible consequence. It was alleged that whoever pulled out the first was liable to a violent death. It is deemed just as unlucky to begin to build on a Friday as it is to commence any other task except that of a journey through life; for, curiously, in some parts of the country, Friday is thought well of as a birthday, as witness the saying,—

"Friday's child is loving and giving;
Saturday's child must work for his living."

The ruined residence of a giant was pointed out, not many years ago, at Charlton (West), on the North Tyn. This encompassed an acre of ground, with strong walls built of large ashlar stones, 4 ft. thick. Its size, strength, and antiquity, in the absence of any exact knowledge of its history, impressed the minds of the country-people in the vicinity that it had been the habitation of some mighty giant in the days of old. This ready belief in the potency of unknown beings and unknown powers is an easy way people used to have of accounting for many things connected with building and the arts. Most of the Roman relics found on the great Roman wall were mutilated in the Middle Ages to dispose of them of any power with which their heathenish proprietors might have invested them; and many of the objects of Roman art found in the Thames seem to have been purposely mutilated for the same object. Unknown evil spirits lurked in ruins, ghosts promenaded in churchyards, shades of various degrees haunted hundreds of houses. People used continually to see these things and to hear them: yet, where are they? Judges and juries sat upon witchcraft cases, and frequently adjudicated death, with a fearless inconsistency, to aged people who, if they had been able to practise any occult arts, would surely have turned their most evil eyes upon them for their verdict and sentence.

We have two other short stories connected with the magic of masonry to tell. The first we must call the magic of gallantry. At Heidelberg the cicerone shows strangers a handsome stately gateway leading from the castle grounds into a fair garden overlooking the windings of the river in the plain below and the academical town at the foot of the hill on which the mighty castle stands. It was here that Elizabeth, daughter of James I., was brought on her marriage to the Prince Palatine. At that time there was no gateway between the castle grounds and the garden. One day the princess said to her husband, "I wish there was a gateway here," and behold! next morning there it stood as we see

it now. He called a little army of workmen together, and built it in one night. The second gives something of the character of a fulfilled prophecy to the Britannia Bridge, between Carnarvonshire and Anglesea. Hundreds of years ago a Welsh poet prophesied that the island of Anglesea would some day be joined to the opposite shore; and, as we know, unlikely as this seemed, it has come to pass. There was a particular spot near Porthaeth-hwy where a natural jetty of small rocks appeared, as though it had once stretched across the channel, till the sea had washed away some support which caused the greater part of it to give way and tumble into the bottom of the channel, the rocks shivering and splintering as they fell. Perhaps the Welsh poet, wandering along the shore and noting the hollows and cavernous interstices formed by the masses of these fallen rocks, and seeing and hearing the sea eddying and boiling in the deep pools it formed, was uplifted by the grandeur of the scene, and so moved to prophecy. Faint fact as this is, it is a link between minds of a very different order over an interval of centuries. Our folk-lore, however, is supposed to have had no such interval, though extending over as many centuries, and possibly many more. From lip to ear, and from ear to lip, it has been handed down from generation to generation from we know not what remote time. When and where, for instance, originated the belief that it is a sign of good luck to the occupiers of a house for swallows to build under the eaves? This is the general impression of the whole Germanic race. Was the coming of the swallow a sign of the approach of summer to the hardy Scandinavians, and so of open seas, with fresh sea exploits and plunder, and a season of things they enjoyed? or was the confidence of the bird an assurance of a genial climate and generous soil to tribes wearied with wandering thousands of years before this?

GENERAL EXHIBITION OF WATER-COLOURS.

THE sales at the "General Exhibition of Water-colour Drawings," at the Egyptian Hall, have been very good up to this time. They amount, we understand, to 2,700l. The collection, consisting of 678 frames, is an interesting one. Observers must be struck with the similarity of manner and feeling observable in the majority of the works exhibited; so much so, in fact, that many of the artists might be thought to be pupils of one master. This of course results from the proclivities of the hanging committee, who had an enormous number to select from. The number submitted, indeed, was so great, that many of the drawings could scarcely be looked at. Last year, the majority of female heads exhibited had the "I'm a weary" and "He will not come" expression; and the same aspect, in a somewhat less degree, will be observable in the present collection. We mention this, by the way, not in disparagement, by any means, but as indicating the school. Amongst the most finished and complete works will be noticed "Jack o' Lantern" (63), H. S. Marks; 166, by J. D. Linton.

"Music that softlier on the spirit lies
Than tired eyelids upon tired eyes."

"Myrtle Blossoms" (177), by Simeon Solomon; "Moonshine" (196), by Adelaide Claxton (an improvement on her Ghost Scene at the Academy); "Cordelia's Portion" (249), by F. Madox Brown; "Holmby Hill" (274), a brilliant landscape, by Vicat Cole; and "The Island of Graves, Skye" (291), by Walter H. Paton. Mr. Raymond Tucker's "Boat" (27) is well afloat; and Mr. A. B. Donaldson, "Tobias and the Archangel" (91), emulates oil painting. The works of Mr. Halliday, Mr. Thomas Danby, Mr. Poynter, Mr. Waite, and others, would have comment if our notice were more extended. There are nearly fifty-nine ladies amongst the exhibitors.

VANDALISM AT TENBY.—The town council of Tenby have doomed to destruction one of the ancient gateways of their town. Few like it remain. Are there no common-sense men in Tenby (we say, artistic hearts) who will move to prevent this wanton and irreparable injury to the place. To destroy a point of interest in such a town as Tenby is an act of suicide.

* The popular local rhyme in which this supposed interference is recorded is as follows:—

"Callaley Castle built on the height,
Up in the day and down in the night;
Built down in the shepherd's shaw,
It shall stand for aye and never fail."

THE DESIGNS FOR THE LAW COURTS.

The designs are no longer so freely on view as they were.* The public interest in them appeared to diminish to the last. Day after day, although admission was limited to those who had procured tickets of permission, through after long lounged before those clever prospects which but a short time ago were but sparkling, or anxious, or despairing, or brilliant thoughts, in the brains of the men whose pencils have made them more apparent. Here and there a wigged and gowned barrister was to be seen among the constantly changing groups that were passing all day long from drawing to drawing and from court to court; and there was no lack of fair spectatrices of the architectural tourney. Now the stream was arrested, as it were, before the fine vision of Mr. Burges. Eager gazers took in its wealth of towers and turrets, and refreshed themselves in a dreamy sense of power. In another compartmental side there were as many eyes wondering at the pencilled thoughts of Mr. Seddon; and into one after another were to be seen groups inclining away or converging as the case might be. There was no particular preference exhibited for either of the works displayed, if we may take the dissemination and concentration of the public into groups as a guide to popular sympathies. Into them is for the works of particular artists at the exhibition of the Royal Academy. Paulas at a first visit we might have remarked a large throng that clustered in Mr. Scott's court, attracted by his lavish of sculptured decorations, bas-reliefs, and wall paintings, but, as we moved on, this great gathering was reversed, and we found his corridors and halls, with their cunning bits of story, comparatively deserted, and the same eyes equally absorbed before the shadowy, suggestive water-view of Mr. Waterhouse's odd beaklike towers. Men's eyes and women's eyes were slow to turn from this mystic piece, showing the rising site, the slow waters, the pile darkening in the gloom thrown upon it by the cloudy dying day, and its tall towers with their corbelled parapets standing out against the sky as only towers have hitherto been seen to do on the grape-bearing banks of the Italian and German rivers. But turn they did at last; for we might see the same spectators arrested but a few minutes afterwards by Mr. R. Philip Brandon's eclectic whorlwork, or by Mr. Street's picturesque and powerful strokes. "See what can be done with only three strokes," we heard above the faint hum and rustle. At another time it was impossible to get sight of Mr. Barry's capital plan, or his dome, recalling St. Peter's to those who know Rome, and St. Paul's to those who do not. Again, Mr. Deane's group of separate buildings for separate purposes had its admirers; and Mr. Abraham's utilitarianism; Mr. Lockwood's quiet, reticent manner, as though he had but to let his pencil free and a hundred towers would spring up where he now keeps them down; and Mr. Garling's versatility, had their due share of admiration. The meeting will now go into the hands of the judges. We content the fullest consideration for all.

The actual site of the proposed courts is fast becoming a scene of utter desolation, though in the heart of the heart of London. The wide courts, the narrow courts, the fine old mansions, with their Renaissance plaster ceilings, chimneys, pieces, oaken staircases with carved balustrades, and carved oak wainscoting, window-shutters, and doors; the smaller houses with their less ample doorways and plaster ceilings, are putting on the most forlorn appearance, as one after another is dismissed and deserted preparatory to demolition. Shut-up shops, broken windows, unwept footways, unheated oversteps, dirt and rubbish drifting into every crevice of the many nooks and corners, denote that the destroyer is at hand. Though most of the houses and shops, too, were dingy in the extreme, there were, and will be for a few weeks, among them some specimens of interiors of the days of William and Mary and Queen Anne that are well worth more than a passing glance. Antiquarian and archaeological societies should take steps to save what may be worth recording, if preservation be out of the question.

We propose to publish views illustrating the external aspect of three or four of the designs

* We are asked to say that the Designs will, after this present month and until further notice, be open to the Public on Thursdays only, and to Members of both Houses of Parliament, and other Special Visitors on Saturdays only; the remaining days being required for the work of the Commission.

which seem to present the strongest claims for consideration on the part of those who are to make the selection. In our present number we give a view of the Strand or south front of the design by Mr. Waterhouse.* A block plan of the arrangement, and some descriptive particulars, will be found in a previous number.† The main entrance to the courts and central hall is nearly in the middle of the front, and would be approached by a private carriage-way, separated from the Strand by a parapet wall, and passing under the great porch, so as to set down persons thus arriving under cover. The Temple Bar Bridge, on the right of the view, has an archway for this road. The Clock Tower, and the Ventilating and Smoke Tower are seen on the same side. Into this Smoke Tower it is proposed to carry the smoke from all the open fireplaces, brought in the first instance downwards through vertical flues under the streets, and opening into the Smoke Tower at the foot, or 300 ft. below the top of the shaft, where it would finally escape. The chimney stacks seen in the view, instead of being used to emit smoke, are intended for the supply of fresh air to the various rooms. The enormous system of artificial ventilation shadowed forth seems to us one of the weak points of the plan. The Will Towers are at the west end of the pile, and do not come into the picture. The gateway at the extreme left of the view admits to a roadway through Clement's Inn. The archway between this and the great porch gives entrance to what the designer terms Common Law-street, shown on the block plan. There is another entrance to the same street at the foot of Temple Bar Bridge. The style adopted is, generally speaking, the Gothic of the thirteenth century. Portland stone is recommended as the material for the exterior, with red brick piers, in combination with it.

We understand that our suggestion as to the appointment of a certain number of architects to assist the judges has been taken up by the competitors. They have such confidence in Mr. Shaw and Mr. Pownall that they ask that these gentlemen should be placed on the list of the judges with equal votes, and that the competitors should name a third architect to rank with the others. It is sincerely to be hoped that this request will be complied with.

DEBATE AS TO THE NEW COURTS OF JUSTICE.

On the motion for going into Committee of Supply in the House of Commons, Mr. Bentinck called attention to the estimates for the designs of the new Courts of Justice, and, after some remarks, made the following motion:—

"That, in the opinion of this House, it is expedient that all arrangements respecting the building of the new Courts of Justice should be placed under the sole responsibility of her Majesty's Government."

Mr. Barend Hope, in reference to the remarks, said he was sorry his hon. and learned friend had prejudiced his case by giving an opinion which lent a colour to the supposition that some artistic or personal objection to the designs underlay it. Admitting, as he did, in the fullest manner, the legal eminence of the commissioners, he must contend that the First Commissioner of Works ought not to be relieved from his responsibility in the construction of the new Law Courts. As the representative of the architectural profession, he had presented a memorial to the Government asking them to amend the tribunal. The answer he received from the Treasury was—"You are too late;" but it did not say one word in answer to the claim. He could not go with his hon. friend in his objections to a larger expenditure than 750,000. That was originally set down as the price, but then there were further requirements; and when the architects were ordered to carry these out, it was not fair to blame them for exceeding the estimate. In the instructions to the architects not one word was said about style. His hon. friend said that if the matter had been left in the hands of the Government, the architecture would have been that of modern times. He presumed that by modern style his hon. friend referred to the architecture of Harley-street and Baker-street, and that he would have had the Courts of Law a repetition, on a large scale, of No. 73, Upper Baker-street. He hoped that his hon. friend would not press his motion to a division. Parliament would not, he thought, wish to refer this subject to any

others than the eleven distinguished architects who had sent in so magnificent a series of designs, and he trusted there would be no variation in the intention that this edifice should be of English architecture.

Mr. Cowper said he wished to assure his hon. friend that there was no question at issue as to relieving the Government from responsibility with respect to the erection of the buildings to which the resolution related. The Commission had been appointed simply to consider and report on the subject. On that Commission all branches of the legal profession, including several judges, were represented. The estimate of 750,000. was, he still maintained, quite adequate to secure the amount of space it was then intended to provide. The Commission were, however, of opinion that it would be a pity to lose the opportunity thus afforded of going beyond the immediate wants of the hour. As to the question whether the Government or the House were committed to the carrying out of those views of the Commissioners, his answer was that neither was bound to adopt them unless they chose. As to the designs themselves, it would, he thought, be admitted they were admirable by almost every one, except the hon. member for Whitehaven, who, although very fond of talking about art, and possessed of great taste and ability, had shown himself on all occasions to be quite incapable of seeing any merit in the Gothic style.

Lord J. Manners said that as the appointment of the Commission had been decided upon before the present Government came into office, he thought it right to allow a member of the late Administration to explain the circumstances of the case before he ventured to speak on the subject. Having heard from the right hon. gentleman who had just set down that explanation, he had no wish to add to it a single word. Of course, everything would be done with a view of keeping the expenditure within reasonable bounds, but he must say that any motion which at the present moment would intercept altogether the action of the Commission would be a great misfortune.

Mr. Bentinck then withdrew his motion.

THE CONDITION OF ARCHITECTURE AND ARCHITECTURAL EDUCATION IN THE UNITED STATES.

At a recent meeting of the Royal Institute of British Architects, Mr. W. R. Ware, of Boston, United States, member of the American Institute of Architects, gave an address on this subject.

Seeing, as we have long done, to connect in our sphere the two countries, we gladly welcome Mr. Ware amongst us, and print the pith of his observations, not alone because they will interest our readers, but in the hope that the publicity thus given may serve to aid the objects he has specially in view.

Mr. Ware said: The invitation I received a fortnight ago, to tell you something of the condition of architecture and of architectural education in the United States, came with the force of a command. The wishes of our benefactors are imperative, and I have enjoyed too many favours at the hands of this Institute and its individual members not to be glad to do anything that would even seem to repay them. It is some months since, at the instance of my kind friend Professor Donaldson, your honorary secretary for foreign correspondence, favoured me with a circular letter of introduction, which has obtained for me in every part of England and in Scotland courtesies and kindnesses from the Fellows and Associates of this Society for which I cannot sufficiently express my obligations, and which I am glad to be able thus publicly to acknowledge.

But I am particularly willing to make the use you have indicated of the time put at my disposal, because I may perhaps thus best serve the two institutions whose minister I am, the American Institute of Architects,—a society constituted in most respects like your own, and whose seat is in New York,—and the Massachusetts Institute of Technology, established within a few years in Boston, the educational institution with which I am myself especially connected. In saying what I wish to say of their history and prospects, I shall perhaps best cover the ground you have staked out for me. The condition of the profession on the other side of the water may perhaps be most distinctly set forth in relating what the Institute is trying to do for its improvement, and our modes of build-

* See p. 161.

† See p. 69, ante.

ing, in explaining the structures shown in the photographs, with which you have done us the honour to cover your walls. The condition of architectural education may best be shown in speaking of the only institution of learning which, so far as I know, has taken up this work in earnest.

Up to a very recent period,—indeed I may say up to this time,—the condition of architecture in the United States was very similar to that which it held in England twenty or thirty years ago, previous to the establishment of this Institute, or of the architectural periodicals which have done so much for its improvement. Building, in general, was to a small extent only in the hands of professional architects, and was, for the most part, carried on by builders and contractors. The professional architects of most of the large cities of the United States might be counted on the fingers of one hand, and their works were almost entirely confined to the more important public buildings, such as state-houses, churches, custom-houses, and banks, the great bulk of the general work being done by masons, carpenters, and contractors, of one sort and another, in which the interests of art were left to take care of themselves. In the last century this state of things perhaps did not do so much harm. At that time the respectable practice obtained of following the rules of Vignola; and the consequence was, though there were no architects engaged in the work, the carpenters and mechanics following those rules covered the country with houses, not very novel indeed, but comely and decent. Amongst the photographs on the wall will be found illustrations of the works that were done under that *régle*—cubical buildings with classical cornices and details, a repetition in wood of the sort of buildings erected in England during the last century, monuments of what the song calls the "good old colony times when we lived under the king;" these were the dwellings of the squires and local aristocracy, and the smaller houses were, in their degree, like unto them. The neighbourhoods around Boston are full of them, dating from before the American Revolution, and some have attached to them a good deal of historical and local interest. One of the best of these old houses, of more than ordinary pretensions, is standing on the outskirts of Cambridge, being the house which was occupied by General Washington during the siege of Boston, and now acquiring a new title to fame as the residence of the poet Longfellow.

This state of things has long been overthrown, and a succession of styles has since prevailed, faint adumbrations of the phenomena which European architecture has meantime exhibited. The influence of Stuart and Revett, and of Pugin, of the Italian school, of the German school, and of the French school, of the rage for cottages, and of the rage for castles, may easily be traced, together with any number of styles which native enterprise has concocted out of these various elements, making the confusion worse by confounding everything. This enterprise would have lacked its most obvious and characteristic manifestation, and the chaos would have remained incomplete, if its agents had not everywhere assumed the title and degree of architect. Under this dispensation the rules of professional procedure became corrupted and lost, artistic work pretty much unknown, and even the traditions of professional etiquette and the old-fashioned way of doing business, so far as we had ever inherited them from the mother country, fell into abeyance and were forgotten. Such changes were, of course, natural to a society which, from being part of an old nation, had come to be a part of a new one: they were the phenomena of a state of transition, of which other things as well as the arts of building felt the influence.

But a state of transition is an uncomfortable one, as those architects found who, in spite of every thing, endeavoured to conform to their own practice to an ideal standard. It is hard for isolated individuals to stand against the current, and vain for them to try and turn it. Feeling that it was only by acting together that they could do anything to affect public opinion, that it was only by helping each other that they could themselves advance, a few architects in New York, eminent alike for professional attainments and for professional zeal, combined to establish a society, professedly modelled upon your own, its objects being, as its constitution declares, "to promote the artistic, scientific, and practical perfection of its members; to facilitate their intercourse and good fellowship; to elevate the standing of the profession; and to combine the

efforts of those engaged in the practice of architecture for the general advancement of the art."

In these objects it has succeeded to the extent of promoting good will and confidence among its members, and establishing among them a considerable uniformity of professional procedure. It has also, by admitting them to its privileges as Associates, been of great service to young men, mostly the pupils of the older members, who have thus enjoyed the society and counsel of the most distinguished men of the profession. It has also, as I have said, by extending its fellowship to architects of other cities, been the means of producing an intercourse which has been of the greatest advantage to those who have shared it. They have not as yet attempted to enlist within their ranks the members of the profession at large, wisely preferring to try their experiment on a small scale at first; but they are now enlarging their operations, and rapidly extending their numbers and usefulness. I had the pleasure of handing to one of your honorary secretaries at the last meeting one of the printed papers of our Institute, in which it has been attempted to establish amongst the members of the Institute, and thus in the profession at large, fixed rules of procedure in their business, similar in its general character to that which has been issued by this Institute. Within these last few months it has been proposed to establish, under the direction of the Institute, an architectural journal, which shall at the same time benefit the profession and interest the public in architectural matters. From the circular issued by a committee of the Institute I will read a single paragraph, which fully explains its objects and character:—

"It is proposed that the journal shall contain illustrations; so much of the minutes of the Institute as would be of interest to the public; papers on the principles of design and general art criticism; discussions of problems of construction; correspondence from members, at home or abroad, both professional and honorary; notes of travel by architectural tourists; extracts and translations from foreign architectural and æsthetic periodicals; test cases of architectural litigation; prices current of building materials at the principal business centres; and other items of interest to the architect, or instructive to the public."

Nothing decisive has yet been done upon this scheme, and this circular was only issued to the members of the Institute in order to elicit their counsel and advice. Still it shows, as far as it goes, the direction in which the Institution is moving, and the field of usefulness which it proposes to occupy.

It may be interesting to you to hear something of the men by whom this Institute was originated, and of their works; to make, as it were, the personal acquaintance of your friends over the water. To this end I will give a brief account of the architects of the American Institute, beginning with those who have been bred as well as born in the United States. They were not in all cases the persons who have the largest professional practice; the largest share of work still falls into the hands of men who look upon architecture not as a profession, but only as a business, and who naturally possess the confidence and sympathy of a business community. Yet we are not without men of great and deserved repute; and of these the most eminent, and one whose eminence is illustrated by the photographs before you, is Mr. Thomas U. Walter, one of the vice-presidents of our society, the architect of the famous Girard College in Philadelphia, and of the extension of the Capitol at Washington.

The English architects belonging to our society are Mr. Withers, a name familiar in this place, and Mr. Diaper, still one of your members. Mr. Vaux, well known in this country by his publications, was formerly associated with Mr. Downing in the introduction into the United States of the English system of landscape gardening; and of late years, since the sudden and lamented death of Mr. Downing, he has largely devoted his attention to this branch of art, not, however, abandoning the practice of his profession, as these photographs attest. The bridges and other architectural embellishments of the Central Park, in the city of New York, have been erected chiefly from his designs.

Another Englishman, Mr. J. W. Mould—once, I believe, a pupil of Mr. Owen Jones, and a coadjutor with Mr. Vaux in the Central Park—was one of our earliest members, an architect whose works, though not numerous, show great vigour and fertility of mind, besides exhibiting the characteristics, rare on our side of the water, of the school in which he was trained. These circumstances have given him an influence, and an influence for good, as marked and extensive,

perhaps, as that of any one of our number. The best qualities of his work are but inadequately exhibited in the photographs contributed to this collection.

The influence, however, of Mr. Upjohn, our beloved and venerable president, has been for thirty years far greater and more salutary than that of any other man in his own line of work. He was the first person in the United States to practise with thoroughness and fidelity the classical Gothic, if such a combination of terms is allowable in this audience. Well versed in the different English precedents, he set himself to build well-advised and defensible examples of the different styles in which he worked, and his first work of magnitude, Trinity Church, in New York—standing at the lower part of Broadway, at the head of Wall-street—was and still is the most conspicuous and most extensive Gothic structure, perhaps, in the United States. The erection of this church, between 1840, I think, and 1845, was an era in the architectural history of the country.*

Mr. Ware, after speaking in more detail of these and other architects and their works, especially of Mr. Eidlitz and Mr. Lienau, who represented the German and French influence, of Mr. Wight, the architect of the new Academy of Design, and of Mr. Richard Hunt, the most eminent of the Americans educated abroad, and describing severally the illustrations of their work furnished by the photographs, which, as members of the American Institute, they had presented to this society through his hands, explained that the incompleteness of the collection was due to the haste in which it had been gathered together, these gentlemen having emptied their portfolios and stripped their walls rather than let him come without this mark of their respect and goodwill. He then proceeded to speak of the peculiarities of construction these buildings exhibited, especially in the methods of building in iron and in wood. The new dome of the Capitol, 100 ft. in diameter, and 285 ft. high, was the most important example of the first, built entirely of cast-iron, inside and out, for the upper 216 ft., and braced and framed with iron trusses, as was shown in the photograph of the section taken from Mr. Walter's drawing. This structure was quite unique, but cast iron had been used a good deal for façades, instead of stone walls, both alone and in conjunction with brick. In design these iron fronts vary from the perfectly simple forms adapted to warehouses and workshops, to elaborate imitations of Venetian Renaissance palaces, sometimes backed up with brick, sometimes lined with only a lath and plaster partition.

The extent to which wooden buildings prevail, he continued, and their excellent quality, seems not to be understood in England. In the towns the buildings are of brick, the fronts often faced with stone. But in the country almost everywhere wood is the universal material, and the houses and churches built of it are perfectly firm, tight, and warm. They only differ from stone or brick houses in the outer walls, the partitions within being, of course, of the ordinary construction, vertical studding, faced on each side with laths and plaster. The outside walls are built in the same way, lathed and plastered on the inside, but covered on the outside with two sets of horizontal boarding. That next the studs is common rough boarding, 1 in. thick, on which is nailed a peculiar board, called clap-boards, from 4 ft. to 6 ft. long, 6 in. or 8 in. wide, laid lapping so as to expose a weather face of from 4 in. to 4½ in., and of a wedge-shaped section, about half an inch thick at the lower edge, and tapering off to a feather edge where it is covered. They are planed on the outer surface, to shed rain more easily, but left rough underneath to make a tighter joint.

The frame into which this outer studding is fitted consists of sills, posts, girts, plates, and braces, which are all tenoned and pinned together. The sills lie horizontally at the bottom of the wall all round, and the plates at the top, just like any wall plate. Between the sill and the plate are the vertical posts which stand at the corners of the building, and at convenient intervals along the sides. If, as is usually the case, there are two stories, beams called girts run between the posts at the level of the upper floor, those parallel with the floor joists being on a level with them, and those which cross their ends and support them being sunk to receive them. The lower floor joists are cut into

* Mr. Upjohn has been elected Honorary Corresponding Member of the Institute of British Architects.—Ed.

the sills, so as to come flush at the top, and those of the third floor rest either on the plate at the top of the wall, or upon plank halved into the upright joists at a somewhat lower level. The junctions of the posts with sills, girts, and plates are strengthened by braces, about 6 ft. long, tenoned and pinned, as are all the other articulations, with oak pins. The timber is generally spruce or pine, but the sill, as being exposed to rot from the dampness of the ground, must be of pine. In the north a cellar is dug, and the stone wall carried above the surface of the ground to receive the sill. In the south, where there are no cellars, the sill is supported by posts driven into the ground. The roofs are like all roofs, but covered either with slate, or with shingles of pine or cedar, sawn or split. The sawn lie closest and are warmest, but decay soonest. The split cedar, shaved, are the best. In all cases the rafters are covered with a close boarding, to keep out snow and wind. We have no tiles.

The construction of the inside partitions presents no peculiarity, except, perhaps, this, that we avoid the use of large beams at the floors, to save shrinkage, putting only a 2-in. strip of southern pine or chestnut at the top of the studs below, as a partition head, and resting the floor joists and studs of the story above directly upon it, taking care to bring their bearings as nearly over the studs below as possible.

Walls or outside partitions, such as I have described, with only the clap-boards, the rough boarding, and a coat of lath and plaster between the air within and the wind without, though generally thought sufficient, are rather thin and cold, and a variety of things are done in the better class of houses to improve them. A layer of tarred paper or felt between the clap-boards and the under boarding is the most common and most effectual device. The under boarding is itself often tongued and grooved. Sometimes bricks laid in mortar, either flatwise or on edge, are built up between the joists, but this is not so much done as formerly. It was at one time the fashion to fillet the studs and cut in laths between them, so as to give what was called back-plastering; but the best opinion at present is rather in favour of covering the entire inner surface with a second coat of lath and plaster, separated from the first by inch battens. Any one or any two of these measures—and it is not often that more than two are employed—makes a wall impervious to wind, rain, cold, or heat. The thickness of the walls is altogether between 6 in. and 8 in.

In this way are constructed the "shingle palaces," which Washington Irving celebrates, light, cheap, dry, and warm. They are not exposed to any agency that will not equally injure a stone or brick building, except the decay of the sills. This makes very old houses crooked and shaky. But against this we now take precautions, and by giving the sills plenty of air and letting no water get to them, hope to save the buildings of the present generation from decrepitude in their old age. As to fire, isolated houses never catch fire from without, and the wooden house is no more likely to catch fire within than any other. When it does burn, it burns up clean, which is rather an advantage.

It is hardly worth while to go more into these details, which it is difficult to explain without diagrams. The photographs show how the window frames and caps, the cornices, strings, and bases, and the corners of the buildings, are finished with joiner's work. They also show how we are trying to introduce, influenced remotely by German or Swiss example, a form of building and a kind of finish, more suited to the material in hand than the classical details employed by our ancestors.

The newer parts of the country are full of extensive and costly buildings, but they do not, so far as I know, present any unusual features, except, indeed, the gigantic warehouses for corn erected in the western cities. But these can hardly be explained without drawings.

The lateness of the hour prevents my going, as I could wish, into the second branch of my subject—the condition of Architectural Education in the United States, past, present, and future. So far as the present is concerned, indeed, the chapter need be no longer than the famous chapter on the snakes of Iceland. We have at present no system of professional education, young men educating themselves, and picking up in offices what they may, some as pupils and some as draughtsmen, of whom the latter are rather the best off, as it is important to their employers that they should know some-

thing, while the pupils, who sometimes pay fees and sometimes not, are left pretty much to their own devices. Any system of regular apprenticeship is quite unknown to this generation, so far as my information extends, except that Mr. George Snell, an Honorary and Corresponding Member of this Institute, and personally known to many of you, has made an effort to introduce in Boston the English usage in this respect, in his own practice, and with valuable results.

The only scheme of education which has existed within my own experience, other than this desultory work in offices, was established by Mr. Richard Hunt, whose name I have mentioned, and who, after his return from Paris, opened in New York an *atelier*, upon the French system, and for four or five years had a small class of students, who enthusiastically pursued, under his electric influence, the study of architectural drawing and composition. A mere private establishment of this sort, dependent upon the energy and devotion of one man, suffered, of course, from the lack of the regulating and sustaining influence which the *École des Beaux Arts* exerts upon the *ateliers* which supplement it; and Mr. Hunt's *élèves* were, of course, utterly without the systematic instruction by lectures in history, science, and construction, which, to a certain extent, supply in Paris the deficiencies of mere *atelier* education. But he was able to breathe into it what was more important than all this—the atmosphere of the Paris school; and his studio, while it lasted, was a real home of art, a real fountain of inspiration. From this school were recruited many of the younger members of the Institute, who, joining it as Associates, sat at the feet of their elders during their novitiate, and have since ascended to the upper steps.

Some years later than this, finding a good deal of difficulty in obtaining assistance of the sort I needed, I attempted to repeat this experiment in Boston, on a smaller scale and chiefly for my own behoof. Beginning by myself, I soon afterwards enjoyed the powerful co-operation of Mr. Van Brunt, who had been a fellow pupil with me at Mr. Hunt's, and who has, since 1863, been associated with me in my business. Following, in general, the same course that had been followed with us, we endeavoured, so far as other avocations allowed, to add some practical information to this purely theoretical course, and achieved a very satisfactory success, perfectly answering our own immediate purpose, of obtaining a valuable company of auxiliaries, and we accumulated a capital portfolio of drawings made by them during their pupillage, which was quite a show among our friends. It was this success that attracted the attention of the managers of the Massachusetts Institute of Technology, and led to their inviting my co-operation in the Architectural Department of their School, and to the organization of that department, so far as it has been organized at all, in the form it now presents.

I will say but a single word of the nature of this organization and of the character of the work in hand. The architectural classes are a part of a general school of applied science—the only part which touches the domain of fine art; though drawing, as a useful accomplishment and a natural language, is taught in all the departments. In the exercises of these departments the architectural students may learn what they require of mathematics, physics, chemistry, engineering, construction, mechanics, and the modern languages. All this work is taken off our hands. Whatever we need for our students can here be supplied. Our own work thus relates only to our own profession and our own art.

In the performance of this work we propose to do nothing that can be dispensed with, leaving matters that can be learned in offices to be learned there, and not encumbering the student with useless and irrelevant lore. At the same time we recognise the fact that many practical matters whose details may best be learned by office work, need a systematic and theoretical discussion for their proper comprehension, and this discussion we propose to afford. We also recognise the architect's need of a liberal culture in his art and extensive learning, at least to the extent of having explored the field it covers, and knowing where to find detailed information. Nor do we consider an acquaintance with the other arts of design either useless or irrelevant, but regard a practical knowledge of what are called the industrial arts, so far as it can be obtained, as being even more serviceable than a technical knowledge of the fine arts, in developing and disciplining the ideas of proportion, harmony, and æsthetic expression, by means of subordina-

tion and contrast, upon which architectural composition depends. In historical research and in the study of construction and professional procedure, we propose to treat our classes rather as students than as pupils, leading them, under the necessary guidance and control, to pursue a course of independent study and individual investigation, each contributing to the common stock the result of his labours. The Class of Construction in the Architectural Association, a society which, if I may say so, seems to be doing more for professional education than any agency now at work in the kingdom, affords an example of the application of this co-operative system, which I have observed with the greatest interest and satisfaction. Its continued success will afford to our own undertakings the greatest encouragement.

The constant practice of design, which, when the topics chosen and the data given are suited to the student's state of development, seems to be the most efficient and wholesome, as it is undoubtedly the most stimulating method of study, we propose to employ with great freedom, not only as an exercise in modern architectural composition, but as an auxiliary to the study of the history of the art, just as boys compose in Greek and Latin to perfect their acquaintance with those tongues. In these exercises, competition rather than co-operation comes naturally into play, and we propose to establish real or nominal prizes, as circumstances may determine, as an incentive. The occasional delivery of special lectures on special subjects, by persons specially qualified to treat of them, is the only remaining feature of the plan that need be mentioned. By these lectures, as well as by our collections, and by the accumulation in the course of time of much valuable information, we hope to be of service not only to our own classes, but to the profession at large and to the general public.

Of the personal material with which we have to deal, I will only say, in conclusion, that besides drawing in the pupils and draughtsmen and assistants already at work in offices, we shall have students devoting their time exclusively to the school, and pursuing a stated curriculum of liberal training and culture, who of late years have turned their attention to architecture (a band that would have been much larger than it is, there is reason to believe, had any satisfactory means of education been open to them), gives cause for the most satisfactory anticipations in this regard.

I have laid upon your table a copy of a pamphlet, explaining in somewhat greater detail the ground this school proposes to cover, and the principles by whose guidance we propose to fashion our educational structure. A portion of this paper Mr. Godwin has done me the honour to re-print, in the last June part of the *Builder*. To collect the materials for this structure, the photographs, casts, prints, books, business documents, drawings, and sketches, which must form our educational apparatus,—or to learn where they can be got, to perfect our plans by the study of European schools of art, and to chasten our judgments and correct our aims by the counsel of men whose insight or experience fits them to be our counsellors,—this is the quest which brings me to your shores, and has directed my footsteps to your door. We need the best advice and information, as well as good apparatus, to enable us to set out upon our path with confidence, and pursue it with a reasonable assurance of success. For the valuable suggestions and sagacious counsel I have already enjoyed, I cannot too strongly express my obligations.

Sir Walter James said he had listened with great gratification to Mr. Ware's address. He thought it worthy of note that that gentleman should have come over to this country to take notes here, and to elicit information as to the state of the architectural education in this metropolis. He felt that a great compliment was paid to this Institute and to the architects of England by the circumstance that he considered whatever instruction they were able to give Mr. Ware would in the course of a short time be amply repaid to them by the reflected light which would be returned to them from that new continent, where, to use this gentleman's own phrase, architects have, perhaps, a freer swing than was the case in this country.

Mr. T. L. Donaldson, Fellow, said that, but for the lateness of the hour, they might have wished to have elicited more information than they had received from the simple, unaffected, and plain statement they had heard from their American colleague. Nothing, he was sure, could be more agreeable to their feelings than these opportunities of giving a welcome to their professional friends, from whatever part of the world they came, more particularly those who held the relation of brethren both in blood and feeling. It was a great pleasure they had received among them Mr. Ware, and listened to his explanations and information he had given them. They were

indebted to America for many notions. Possessing in a large degree the genius of invention, that nation had, perhaps, shown greater aptitude in the improvement of the inventions of others, as well as great intelligence in the application of them to the necessities and purposes of life. The fine arts in connection with architecture did not appear as yet to have been cultivated as they deserved in America, because the first necessities of a people had to be supplied before attention could be paid to the higher refinements of the human mind. It was now found that their American brethren were coming forward in this respect, and there were numbers of their fellow-countrymen studying in Italy, particularly as sculptors, and those who had already acquired the science had distinguished themselves by their productions exhibited in this country, for which we had given them all honour. They must all be gratified at seeing the energetic movement now being made with reference to the architectural education of the young men who would hereafter enter into the profession. There was no question that elementary principles were necessary, but it seemed, as in Europe so in America, there was a great notion of leaving genius to itself, untrammelled by the theories of a by-gone age. America possessed many fine architectural monuments, and he trusted they would improve themselves by an adherence to those rules of previous centuries which had produced the buildings of which this country and Europe generally boasted. He was sure they had been greatly interested by the communication Mr. Ware had made to them in so simple and unaffected a way, as well as gratified by the warm interest he had manifested in the proceedings of this Institute. He begged, therefore, to propose a cordial vote of thanks to Mr. Ware for his highly interesting communication.

Mr. M. Digby Wyatt, Fellow, said it was with feelings of great pleasure he rose to second the motion. They trusted they would improve themselves by an adherence to those rules of previous centuries which had produced the buildings of which this country and Europe generally boasted. He was sure they had been greatly interested by the communication Mr. Ware had made to them in so simple and unaffected a way, as well as gratified by the warm interest he had manifested in the proceedings of this Institute. He begged, therefore, to propose a cordial vote of thanks to Mr. Ware for his highly interesting communication.

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Professor T. H. Lewis said, having had the pleasure of attending a good deal of Mr. Ware's work in England, he would bear witness to the assiduity with which that gentleman had prosecuted the objects he had in view; and he (Professor Lewis) was satisfied, from what he had seen, that he would carry back with him to America pleasing recollections of his sojourn in this country. The point on which, if time had permitted, he should particularly like to have heard a more detailed explanation was, as to the practical part of architectural education proposed to be adopted by the different institutions, more especially that with which Mr. Ware was personally associated. He could only unite most cordially in what had been said by the gentlemen who had preceded him, and join most heartily in the thanks addressed to Mr. Ware.

Mr. George Godwin, Fellow, said it was his privilege to make the first address of Mr. Ware known to English readers, he was glad to be called on to add his humble tribute of thanks to that gentleman for his straightforward and interesting statement. The names he had mentioned had, no doubt, recalled many interesting circumstances to the minds of those present. It was gratifying to find that men known to them a few years ago were now acting so good a part in America. The portrait of Mr. Walter which Mr. Ware had brought with him particularly interested him, because he had had the pleasure of that gentleman's personal acquaintance during his visit to England years ago, soon after he had completed the erection of the Grand College. He had had the satisfaction also of considerable correspondence with another gentleman mentioned—Mr. Downing, at the time of the publication of his work on Landscape Gardening, a book which had done great good in America. Mr. Vaux, too, had been his correspondent. He concurred to the fullest extent in the hope expressed by Mr. Wyatt that Mr. Ware would, in some form or other, have the opportunity of presenting the modes of construction adopted in the buildings of America.

Mr. C. F. Hayward (Hon. Sec.) would say one word with respect to the Institute with which Mr. Ware was connected, the Institute for the Study of Art in Rome. One great feature in the course of instruction in that Institute was, that while a four years' course was required, the first two years were devoted rather to general than technical education, but from the third year not only mechanical but freehand drawing was made a necessity. An institution which embodied that among its general requirements was, he thought, deserving of particular notice, because it indicated the importance of the present day sufficiently recognised the importance of drawing as a branch of education.

The President (Mr. Beresford Hope, M.P.) said he would only trespass with the remarks which he was sure Mr. Ware would take in good part. They had listened with great interest to Mr. Ware's narrative of the gradual development of architecture in America, and the recognition of the profession, the pleasure he had with pleasure how the kindred art of landscape-gardening had been fostered there, and fostered as the President always con-

sidered it should be, as a branch of and connected with architecture, a thing which in England they had too much lost sight of. He would invite Mr. Ware's attention to one point, and would ask him whether there was much of the architecture would hereafter be called in, as it had not been before, in the planning of the American streets, so that the too prevailing monotonous plan of rectangles and squares would be abandoned in favour of some more natural methods of laying out towns? The radiating plan, of which Washington was a distinguished instance, did not exist, he believed, in any other city north or south; which were, like New Orleans and the new parts of New York and Boston, laid out uniformly on the rectangular plan. That system of planning towns was most disastrous and disadvantageous to the proper appearance of the public buildings of these towns; and he was sure if the American Institute, with the intimate knowledge they possessed of the susceptibilities and tendencies of their country, would direct attention to the advantages of the radiating plan, so as to make the great public edifices the principal objects, it would give a great impetus to the growth of architecture, of which they had already seen such vigorous young shoots.

Mr. Ware, acknowledging the vote of thanks, said, with regard to the points raised by the President he would say, he felt that architecture and landscape-gardening, in connexion with each, were more likely to have way than had hitherto been the case, and with respect to the planning of towns, although Washington was built upon the radiating plan, it was considered one of the most inconvenient cities in the United States, in regard to strangers finding their way about. Of late, architecture in connexion with landscape-gardening had been called in, laid, in laying out new towns, but new parts of towns. With regard to fire-proof construction in America, the plan was that which was familiar in this country, of wrought-iron girders and brick arches. With regard to the remarks that fell from Mr. Hayward and Professor Lewis, he assured them it was at the sacrifice of personal feeling that he had put the Institute with which he was more intimately connected in the background, and had placed the American Institute of Architects in the more prominent position. He thought, coming here as he had done, it was best to touch upon those subjects which were likely to be of most interest to them, rather than advance any personal views of his own, or the objects he had most at heart.

ART AND ARCHÆOLOGY IN ROME.

ONE of the studios of Rome still open to the public, and still called by the great artist's name, who is no more,—that of Gibson,—may now excite a peculiar and mournful interest. Many of its contents, both casts and marbles, are packed in boxes ready to be sent to England; but many others, and among them the finest of those produced within recent years, are still on view. With renewed pleasure must we now consider the sculptor's last work, the "Thesens slaying the Robber Chief," to which he was about to apply himself at the very moment the mortal stroke first rendered him helpless, and which those responsible have judiciously caused to be cast from the unfinished model, without any attempt to complete in the clay what had been left as we now see it,—an imperfect but noble work, wanting much of anatomical detail, especially as observed at the back of both figures, but still so far elaborated as to present in impressive truthfulness the entire conception and feeling. Nothing could be finer than the indignant but calm energy with which Thesens stands over the prostrate robber, about to slay him with the sword held aloft, and in an action that throws out the finest attributes of the heroic beautiful in form. This group a year ago, and in that state seen by Thorwaldsen, who expressed approval; and the idea of completing it had frequently occurred to the artist, who at last applied himself to the long-postponed work with some feeling of presentiment (to infer from what his assistants tell us) that it might be his last, or that he might not live to finish it.

At Bonzoni's studio, the principal work lately produced, and just completed in marble, is the group, above life-size, of the "Flight from Pompeii," or Diomed assisting the mother with her infant at the dread catastrophe, as described in the well-known romance; and whatever we may think of the inappropriateness of such a subject for sculpture, we must admire this wonderful example of difficulties overcome in a scene of utmost agitation and terror, hurried movement and confusion, presented with pathos that at once touches the heart, whilst conforming to the ideal standard of the sculptor's sphere; the noblest quality being the predominance of the moral feeling, in the generous humanity of Diomed, and the motherly tenderness of the female, over the selfishness of fear as over the physical horrors of the situation. In the accessories, ornaments, vessels, &c., strewn on the ground, are exact copies from Pompeian antiquities; and this striking group is to be placed by its purchaser, a Mr. Stephens, of New York, in the centre of a hall fitted up and decorated so as exactly to reproduce one of the aristocratic interiors in the lava-buried city. We hear that Tenerani, now a septuagenarian, has commis-

sions on his hands sufficient for ten years' labour, but has dismissed several of his workmen, yielding to the irritation in his mind (such, at least, is the report) at the generally unfavourable criticism passed on his monument to Pius VIII., when that colossal work was first exposed at St. Peter's, about a year ago. In that criticism on the Papal monument rare merits have been overlooked, even granting, as we may, that the figures be less impressive when grouped together than as seen in the studio. No new work of importance has been undertaken within the last year by Tenerani. Mr. Rogers, one of the most successful and constantly engaged of the American sculptors in Rome, has received a commission for one of the many monuments to be raised in the cities of the United States to the President Lincoln.

Much decorative and restoring work has been in progress in Rome's churches, and much is still continuing, begun in the last or in previous years. Our general impression is of splendour, lavish use of rich material, marbles, gilding, bronzes, &c., sometimes in suitable accord between the new adornment and the architectural character viewed as a whole, but not of any exalted merit or feeling in sacred art, still less of any intelligent appreciation for the Christian antiquities thus too often marred or tastelessly altered in the intent to embellish. The restorations and paintings, by Coghetti and others of his school, at S. Maria in Trastevere (in its oldest parts a church of the twelfth century), are still progressing, and, we are told, are to involve the outlay of 200,000 scudi, half given by Government, half by the capitial clergy. Along the high attics have been executed large fresco figures of sixteen male and female martyrs, divided by pilasters with gilt capitals; and above the chief portals have been opened three round-arched windows, with glass paintings, large size, of Cornelius, Calixtus, and Julius I., sainted pontiffs who contributed to the building or restoring of this church. The fine Medieval pavement of inlaid marbles has been taken up, but will, we are told, be replaced in similar style, and with the same materials. S. Maria in Aquiro, better known as the Church of the Orphan Asylum, a modern edifice of indifferent architecture, has been renewed interiorly with much magnificence,—colossal fresco paintings, coloured marble incrustations, stucco reliefs, and gilding. Along the flat spaces of the heavy piers between nave and aisles, large figures of Greek and Latin fathers, executed with a certain breadth and boldness, in which we recognise the student of Michelangelo; on the wagon-vault roof the four Evangelists with their emblems, angels; and along a frieze below, scenes from the life of the Virgin Mary; in two ample lunettes at the end walls, the Visitation and the Assumption of Mary, with a group of saints and Pope Paul III., patron of this orphanage; in the cupola, Moses, Jeremiah, David, and Isaiah, associated with four sibyls; and on the pendentives below, Joachim, Joseph, Zechariah, and St. John Baptist, here admitted as personages connected with the Virgin in life,—all by Cesare Mariani, a professor of the St. Luke Academy, now in high repute among Roman artists, and certainly entitled to a high place in this local school. The restorations of the same church, modern Italian in style, are by the architect Gustavo Morichini. More noticeable for historic importance is the lately-completed renovation of S. Niccolò in Carcere, a church that had been shut, on account of these repairs, for nearly twenty years, and which stands above the ruins of three temples, partly preserved within its structure, to Hope, Piety, and Juno Sospita, a subterranean beneath being the supposed site of the story of the "Roman Daughter," not, however, according to archaeological authorities. Entering this church, which is of the basilica type, we are struck by the splendour of the renewed interior, as contrasted with the insignificant front. Along its attics we see the frescoes, in ten scenes, illustrating the life of St. Nicholas of Myra (patron saint of Bari), by Guidi; and in the apse two larger scenes, one from the same biography, the other representing a vision of the Saviour and the Virgin in glory, by Pasqualoni—two artists not yet very well known, nor hitherto (we believe) engaged to adorn any other public buildings; their works here being, if not of the worst, certainly not among the best, lately admitted into Roman churches. Over the high altar we notice a superb canopy of bronze and gilt woodwork, resting on four columns of Oriental alabaster. Another ancient and historic church, renovated by recent labours, is

S. Bartolomeo, on the Tiber Island, founded by the Emperor Otto III., A.D. 1000, on the site of the Temple of Esculapius, frequently restored, but still of the same basilica type, and now rich in newly-placed marbles and gilding, also adorned with frescoes by Fra Bonaventura, one of the Franciscans of the adjoining convent, who has painted along its attic and coffered ceiling scenes in the life of Mary and heads of apostles. At S. Agostino (a church long in part closed to allow of extensive repairs), Gugiardi is still engaged on a series, begun several years ago, of frescoes along walls and vaults, illustrating the lives of St. Augustine and other saints of his order, besides numerous figures of apostles, patriarchs, martyrs; and at the grand old basilica of S. Lorenzo (the late restoration of which we must protest against), an artist of new-born renown, Fracassini, is now employed in fresco-painting. The works at St. Paul's are still carried on with activity, all the windows along the minor aisles being now painted with large figures (too large, it strikes us, for their location), and the mosaics on the facade advancing to completion, though in no part yet visible. At two of the less prominent churches, S. Maria in Monticelli, and S. Lucia, the above-named Signor Mariani has either nearly or entirely finished other paintings, spoken highly of in the Roman journals.

At the last meeting of the British Archaeologic Society, at the English Consulate, was read by Mr. Shakspeare Wood, secretary, a translated paper by Visconti, on antique Roman construction and modes of building, explained with much learning and fulness of detail, by the Italian writer. But most of all did this lecture derive interest and importance from the many illustrations in coloured drawings by Mr. Charles Cooper Wood, brother to the above-named secretary of the society; these drawings, of spirited execution and admirable effect, representing their subjects, chosen among Rome's classic ruin-piles, were on the same scale as the originals, and with exact transcript of the details peculiar to successive periods. For such treatment of the theme of the day's studies as was thus provided, addressed to eye and mind, thanks were due, and with like emphasis, to the learned writer of the paper, and to the artist of the illustrations. Since that occasion the society has twice assembled in the open air, to visit, under Mr. J. H. Parker's guidance, the most interesting remains of aqueducts, both within the city walls and on the Campagna, at certain distances. At the last meeting of the society's committee, it was reported that members, up to that day, were 66 in number, associates 172. The Archaeologic library is developing, thanks to many donations, and the catalogue has just been printed.

The diggings in Trastevere have further brought to light the remains of what is inferred to be a station of the Vigiles, where several *graffiti* have been found, besides other antique objects of some value. Much interest is excited by the announcement of a discovery, through works directed by Visconti, of a buried city near Albano, assumed to be more ancient than Rome; a paper referring to the ruins on the site of which was lately read by that gentleman at the Roman Archaeologic Academy.

COAL SUPPLY.

The question started some time since as to the length of time our coal was likely to last has led to inquiries by our Government as to the coal supply of other countries, and the result must be very reassuring to those (if there be any such) who fear that the world will be short of coals some three or four thousand years hence. The information appears in the form of a blue-book, containing reports which have been received from secretaries to various British Embassies and Legations respecting the prospects of a supply of coal, if need be, from abroad. The return includes reports from Austria, Baden, Bavaria, Belgium, Brazil, France, Prussia, Russia, Spain, the United States, and the Zollverein. France, in 1865, produced 11,297,052 tons, and imported 7,108,286 tons, of which 1,455,206 tons were imported from Great Britain. Every year shows an increase of coal consumption in that country. Prussia is rich in mineral fuel, especially in very good coals. The working of the coal-pits is rapidly and continuously increasing. No coal is exported from Russia, which is supplied in a great degree from other countries, prominently Great Britain. During

1863, the latest date from which statistics are supplied, the coal produce of Spain amounted to 401,297 tons. No coal is exported from that kingdom. Austria, Bavaria, Belgium, and other continental countries all seem to have well stocked coal-cellars to fall back upon.

In the year ending June 30th, 1866, the produce of the United States was 20,553,550 tons, being an increase of 3,447,049 tons as compared with the previous year. It has been estimated that the capacity of the Pennsylvania mines alone is fully equal to 20,000,000 tons a year. In nine counties of the State of Missouri there are about 3,500 miles of coal lands, which average a mean thickness of 11 ft. Professor Sealow's computation makes out 38,000,000,000 tons of coal in these nine counties alone. In forty counties of the same State there is said to be sufficient coal to last 3,000 years of 300 working days each, if an average of 100,000 tons were mined every day. Professor Rogers has estimated that the Illinois coal-fields are six times as extensive as those of Great Britain, and that it would take 100,000 years to exhaust them. South America, too, has abundance of coal.

British Columbia, Falkland Islands, Mauritius, Newfoundland, New South Wales, and New Zealand are all reported on in an Appendix. In none of these, however, is there coal in any quantity, with the exception of New South Wales, where this valuable mineral is described as abounding. The exports of coal from the colony are extensive, and are rapidly increasing. Coal, too, has been discovered in Natal, so that the notion prevalent among men of science in England that there is "not an inch of coal in Africa" requires qualification. The coal of Natal is of good quality and large quantity, forming a huge watershed, draining a very large area into one natural outlet, the channel of the Tugela river. The coal occurs in seams over 6 ft. thick, which alternate with beds of shale, and it may be seen running directly into the face of the hills. It is richly bituminous, burns readily, makes excellent fires, and cokes well. It is already in almost universal use among the blacksmiths of the colony. There are no engineering difficulties between the coal-field and the sea which would prevent the speedy construction of a railway, and the coal could thus be sold at the port for about 11. sterling per ton. Steam-vessels of large burden could be made to perform profitable voyages of six and seven thousand miles, with a speed of twenty miles an hour, if they could obtain coal at this price, and Natal is less than 7,000 miles from England, and much less from India.

So much for the world's coal supply, and for our own position even were we to run short of coals at home.

FROM MELBOURNE, AUSTRALIA.

The old Olympic Theatre, in Lonsdale-street, has been totally destroyed by fire. The foundation stone of this building was laid by the late G. V. Brooke, in 1855, and within six weeks the theatre was opened. The building at the time was facetiously termed the "Iron Pig," in reference to its having been constructed of iron, with the exception of its foundation, which was of brick. Since then improvements have from time to time been effected, the iron walls having given place to brick. When more commodious theatres had been erected, the tide of fortune deserted the Olympic; and, after remaining closed for some time, part of it was used for Turkish baths, and the theatre and front offices passed into the hands of the German Association, who had possession, as tenants, of it at the time of the fire. The amount of damage is estimated at over 3,000l., the loss falling on several insurance companies. The German Association are heavy losers, having lost a quantity of valuable music, and all the fittings of their gymnasium.

At a recent meeting of the Melbourne press, held at the London Tavern, it was resolved that steps should be taken to erect a memorial to the late Mr. G. V. Brooke, and a committee was appointed to consider and report on the form that memorial should take.

A new joss-house, or temple, has been erected at Emerald Hill for the Chinese residents, and was recently devoted to its purpose. It stands near the southern extremity of Clarendon-street, and is partly European and partly Chinese in its style of architecture. The erection consists of a central hall and two wings; the central hall being the main place of worship, the door of which opens directly into the sanctum of the

Buddhist rites. The main entrance opens on a lobby, or, by its peculiar construction, a portion of the hall, as it may be. A few feet from the door are two pillars, with doors so attached as to be capable of making a partition or not, as may be desired. There are pillars ranging right across the hall, and dividing it into three parts, the centre being devoted to the priests, the outside to the worshippers, who, at the opening, might be seen standing in respectful and silent attitudes, fully intent, to all appearance, on the object for which they were assembled,—the acquisition of bliss, through the rites and ceremonies, all appealing to the wandering mind and aiming at the captivation of the soul by sensational effects. These rites and ceremonies, accompanied by strange music, gunpowder explosions, and other no doubt Chinese soul-stirring accompaniments, were renewed at short intervals throughout the day.

The Exhibition is regarded as a success. One would scarcely expect to find a Medival Court in an exhibition of the products of a new colony; but such a court there is, illustrative of ecclesiastical architecture; and it constitutes, perhaps, the most pictorially effective part of the whole building. Messrs. Ferguson, Urie, & Lyon, glass-stainers, Melbourne, exhibit a decorated chancel, the ceiling of which has for a centrepiece the *Agnus Dei*, surrounded with Scriptural texts and Gothic clouds. The other portion of the ceiling is divided into twelve compartments, having the emblems of the twelve Apostles. The walls are diapered with a simple pattern. It is lighted with five stained-glass windows, the subjects of which are, the Nativity, Passion, Crucifixion, Resurrection, and Ascension. These windows are made for the chancel of the church at Casterton. At the altar are two illuminated tablets of the Commandments, Lord's Prayer, and Creed; also an illuminated painting of the Last Supper. A considerable quantity of stained glass is exhibited, in ecclesiastical and domestic styles; also, numerous samples of stained and embossed borders and small subjects. On the right-hand side of the court is a carved baptismal font, in Caen stone, designed and executed by Mr. John Young, contractor, Melbourne. It is all colonial workmanship. The upper portion is octagonal, representing the Four Evangelists. The base represents evil spirits, in the form of dragons, emblematic of the sacrament of baptism casting them down. The lid of the font is of carved colonial blackwood, polished, ornamented with wrought-iron. In this department are also some ornate water-fonts, sculptured by Mr. F. Utyco; a number of figures carved in wood, for the internal decoration of St. Patrick's Cathedral; an altar and fittings, some hand-rails, and several statues of saints. The *Australian News*, a spirited colonial illustrated newspaper, gives a good engraving of the Medival Court.

The arbitrators in the metropolitan lunatic asylum case have decided in the plaintiff, Mr. Young's, favour, to the extent of 10,887l.—that is, 7,000l. for profit, 450l. for work done, and the balance for the plant on the ground when the contract was stopped.

The Committee of the West Melbourne Literary Institute have accepted a tender for the erection of the front portion of their new institute. The building is to be erected on a site at the south-east corner of William and Little Lonsdale streets, granted by the Government for the purpose, and is to be constructed of blue stone and brick, with cement dressings. The cost, when completed, will be about 2,200l., but it is intended to finish the front portion only at present, the contract for which is 637l. 10s.

Strenuous exertions are being made to obtain sufficient funds wherewith to erect another hospital in or near Melbourne. The site on which the present hospital stands is considered unsuitable. It is understood that over 3,000l. have been subscribed for the new building.

Messrs. Greenwood & Co. are now making good progress with their contract at the Malmesbury waterworks. They have been engaging men as fast as they offer themselves. The pug mills are at work, and 200 men are now employed at the aqueduct. It is intended to carry on this work as far as the Expedition Pass, by means of day labour. At the Pass, and at Stoney Creek, near Geelong, the works are also reported to be satisfactorily progressing.

The building trades in Kyneton are fully employed. A local paper observes:—"We were informed yesterday by a master builder that he found it necessary to send to Castlemaine for men to complete works on hand. Prices for

labour have not advanced, but the abundance of employment and cheapness of food must be beneficial to the working men, and betoken a cheerful Christmas."

A movement is on foot to induce the Government to place an import duty of 15 or 20 per cent. upon all manufactured ironwork imported into the colony. A mistake.

A meeting of the timber merchants of Melbourne and suburbs has been held, for the purpose of obtaining redress for losses suffered at the hands of importers of timber. After some discussion, it was resolved "That the American timber was incorrectly marked, and that the meeting should not bid for it; that undressed timber should not be bought by superficial but by actual measurement; that should a deficiency of one per cent. occur in dressed timber, full measure should be required, as well as the immediate delivery of at least half of each auction purchase."

It is understood that the Government has accepted a tender in the sum of £5,000, for the erection of industrial schools for the Ballarat district, the site for which is designed to be rising ground some distance to the north-west of the Botanic Reserve. It appears that about two hundred acres of land will be appropriated to the uses of the institution; and, as this tract has to be placed under cultivation and irrigation, the Government desires to arrive at some arrangement with the Ballarat water supply committee as to a supply of water.

THE SEWAGE QUESTION.

Birmingham.—The Public Works Committee of the Town Council have now submitted a definite plan for the disposal of the Birmingham sewage. They have procured the offer of land, on lease, adjoining the sewage outlet at Sateley, and suitable for irrigation. Mr. Adderley's agent has again reminded the council that the pollution of the Tame continues unabated, notwithstanding the order of the Court of Chancery, and hints at the possibility of a more peremptory edict being procured from that tribunal.

Oxford.—The drainage question has advanced a stage by the report of Mr. Bateman having been laid before the local Board, and ordered to be printed. The original idea of Sir Wm. Cubitt was to convey the sewage and water of Oxford to Sandford, in sewers 6 ft. in diameter. The plan was approved by Mr. Bazalgette; but the surveyor strongly urged the desirability of separating the storm-water, and so reducing the dimensions of the main sewer to 4 ft. 6 in. The Board determined to send the rainfall to the river—the sewage to the soil; and Mr. Galpin has been co-operating with the eminent water-engineer first mentioned to secure the result. All previous plans have included the carrying of the sewerage system beneath the bed of the river, to reach the Berkshire shore; and it was formerly intended to discharge the sewage of about 30,000 persons into the stream at Sandford. Mr. Bateman proposes to provide for 45,000 inhabitants, on the principle of applying the sewage to land. He agrees with Mr. Galpin as to the separation of water and sewage, as well as the lines the sewers should generally take. He, however, departs from all previous proposals by taking the sewage under the river, by inverted siphons. It appears that a similar *modus operandi* has been adopted successfully in the city of Hamburg, and is also being applied at Barking Creek. By this means all the difficulties of sewerage beneath the river would be avoided. Under the head of "sewers" Mr. Bateman estimates a cost of £7,000. The land to which the sewage is applied must not be water-logged, but of a friable absorbent nature, and the quantity must be strictly regulated to the limits of fertilization, in order to ensure the greatest possible utilization of the sewage. High ground, near Oxford, must be selected; that near Bagley Wood was accessible and in every way suitable; if more were required, the system could be extended to Littlemore. The cost of pumping the sewage would be £5,000. The quantity of sewage on which Mr. Bateman's figures depend is several million gallons a day. In Edinburgh and London, the sewage is undiluted, and there 600 acres of ground would be the limits which that quantity would fertilize. In Oxford, with a smaller fall, and the necessary flushing required, it would be diluted, and more land would be required, but he could not say exactly how much. Authority is not agreed

as to the proportion of sewage per acre; but the balance of testimony being in favour of 5,000 tons, for a four-fold increase of crops, he based his calculations on that amount. For an outlay of about 100,000l., Mr. Bateman thinks the irrigation scheme may be carried out with pecuniary advantage. At a low estimate of its value, even below that of Mr. Morton, the sewage would be worth 3d. per ton for sale to the farmers. The quantity in Oxford will be, say 4,000,000 gallons a day, but being diluted with water for flushing, its value is reckoned at 2,500,000 gallons of the rich fertilizing elements when not diluted. This will realize 8,486l. 10s. per annum, showing a surplus of 4,000l., after paying interest and working expenses, should the co-operation of the agriculturists be secured. If the Corporation have to apply the sewage themselves, and become, as it were, their own farmers, there will be a further outlay; but the sewage may then be made, it is said, worth 1d. per ton, or 16,972l. per annum, when, of course, the profit would be double.

Tunbridge Wells.—Mr. Bazalgette has just made a report to the Local Board of this town, in which he states that, after a personal examination of the northern (or Tunbridge) and southern (or Groombridge) valleys, he concurs in the views expressed by Mr. Lawson (the engineer whom the Board had previously consulted), that the lands in the southern valley are best suited for irrigation with sewage. He suggests that, before designing works for such distribution of sewage, it would, of course, be prudent to treat for suitable lands for its reception. The lands which are available and can be irrigated by gravitation are known to the Board, and whether they should purchase and lease such lands and farm them themselves, or sub-let them, or lease the sewage to any of the present occupiers after conveying it to them, could be best determined by the Board, upon negotiations instituted by some land surveyor on their behalf. In selecting the position of such lands, it might be roughly estimated that the cost of conveying the sewage to a distance in a covered channel would possibly be at a rate of about 5,000l. per mile. Mr. Bazalgette agrees with Mr. Lawson that about 200 acres will be required, and says that when available lands have been selected, the plans and estimates of the cost of conveying the sewage thither can be more definitely determined.

THE PICTURE OF GUILDHALL.

THE Court of Common Council, at their last meeting, determined not to purchase the picture painted by Mr. and Mrs. Melville, representing the interior of Guildhall on the occasion of presenting the Freedom of the City to His Royal Highness the Prince of Wales, though the City Lands Committee had recommended it should be bought, at a price not exceeding 5,000l. It is a very large picture, includes a great number of portraits, and has occupied the artists three years continuously. The result must be something like ruin; and if, as is asserted, they were misled to believe that the picture would certainly be purchased, the case is a very hard one. The painting has considerable merits, though when we saw it much work was wanting to bring it together as a whole. Many of the portraits are good, but, by the arrangement of the picture, the important personages are in the background; and, concerning the majority of the gentlemen and ladies represented in the foreground, though doubtless very eminent and beloved in their respective circles, posterity probably will not much interest itself. Justice, however, is justice; and if Mr. and Mrs. Melville have been led by members of the Corporation to this devotion of their time and abilities, they are bound to prevent the sacrifice of the artists. The price named was preposterous, and probably contributed to bring about the decision of the Court.

THE TRADES MOVEMENT.

Termination of the Masons' Strike, Newcastle. After long dispute, the question at length narrowed itself to that of the men accepting 11. 10s. for working ten hours a day, or 55½ hours a week; or the masters should concede to the men the nine hours per day, or 50½ hours a week, at the old wages of 11. 7s. per week. Mr. A. Carse made a suggestion through the press that a meeting of the employers and the em-

ployed should be held in the Lecture-room, and the question finally settled by the ballot. This was at once accepted by both sides, and the meeting was held in the Lecture-room, Nelson-street, Newcastle. Each person entitled to vote was provided with a perforated slip of paper, on one side of the perforation of which was printed "9 hours," and on the other "30 shillings," so that when the proper time came the holder could easily divide the piece of paper, and put the piece which represented his particular view of the case into a large glass jar provided for the purpose. After a statement on the part of the masters had been read and the men had replied, voting commenced. At the close, the Chairman said that 422 had voted, and of these 401 had voted for the nine hours and 21 for the 30s. a week. The result was received with loud and prolonged cheering.

Trades' Unions.—At the invitation of the Amalgamated Society of Engineers, a number of members of trades' unions met at Exeter-hall, on the 21st ult., to consider the recent decision of the Court of Queen's Bench as to the legality of trades' unions, and also the issuing of a royal commission to inquire into the law relating to these bodies. Mr. Wm. Newton, engineer, presided. The hall was full. After an able address by the chairman, the following resolutions were unanimously adopted:—

"That in the opinion of this meeting the recent decision of the Court of Queen's Bench in the case of *Hornby v. Close* virtually destroys the protection which trade societies have enjoyed since the passing of the Friendly Societies Act, and takes from them the privileges the Legislature intended to give in the passing of that measure. It therefore calls upon all trade societies to support the following requisition to the Home Secretary in favour of Mr. Neale's Bill.

"That in the opinion of this meeting no commission of inquiry into the doings of trade societies can give satisfaction to the working classes unless they be represented on the commission by members of their own order; and that, as the royal commission appointed to inquire into the organizations of trades' unions contains no such direct representation, we feel bound to express our disappointment and regret that the commission has not been more equitably composed."

Mr. Walpole's Bill has been printed. It gives to the Royal Commission power to enforce the attendance of witnesses and the production of documents, and gives to any witness, not being the actual perpetrator of any act of outrage or crime, and making a full and true disclosure, a certificate of indemnity against any civil or criminal proceeding in respect of any matter touching which he has been examined; but no person is to be compelled to answer questions tending to criminate himself as such actual perpetrator. No evidence taken under this Bill is to be admissible against any person in any civil or criminal proceeding whatever.

Bradford.—The plasterers of Bradford are taking a most arbitrary and unjustifiable course of action. Among other regulations they insist that no plasterer shall be allowed to work in Bradford unless he is a member of the society, or to serve "any firm consisting of more than two masters, unless every partner's name is publicly stated in full." They even go so far as to dictate what work shall be done and what work shall not. They demand that no employer shall, under penalty of a strike, be allowed to dismiss any plasterer unless the rest choose, or to employ more than one apprentice to every five journeymen, each boy being under fifteen years when he joins the trade. In one case the men struck because a master plasterer had some of his sons working under him who were not members of the society.—*Albion*.

Masters and Workmen.—Lord St. Leonards has written a letter to a gentleman in the north with regard to his Masters and Operatives Bill. He says,—

"You have probably seen that I introduced my Masters and Operatives Bill into the House of Lords last evening. The only alteration which I have made is to extend the authority of the arbitrators to future wages for a period not exceeding twelve months. Both masters and operatives have asked me to extend the Bill to future wages generally, which I have declined to do. I have reason to be satisfied that the operatives generally are willing to accept the Bill. The masters, who were once strongly in favour of it, appear now to think that it will be of no use to them. This, I think, is a mistake. The Bill, you will observe, is simply permissive. The Government intends to inquire into strikes. I told Lord Derby that, although I approved the step, it would be found very difficult to do with trades' unions. They have become national, and they have attempted an international union, and they are now joining the Reform League. Their organization is surprising, and their power very great. . . . I told Lord Derby in the House last evening that I wished to co-operate with the Government, and I would therefore either read my Bill a second time and take the sense of the House upon it, or let it be referred to his committee on strikes, and he is to read the Bill and let me know his views."

Birmingham.—A special general meeting of the Master Builders' Association has been held

to receive a report of the results of the recent conferences with the trade delegates with reference to the proposed alterations in the local trade rules. Mr. W. Webb presided, and there was a very good attendance. The alterations in the masters' proposed code of rules were unanimously adopted by the meeting, and ordered to be circulated amongst the master builders of Birmingham, and sent to the various branches of operatives in the town. It was also decided that the rules should be signed by the Association if they were agreed to by the men. Should the operatives refuse to agree to these rules, the masters were prepared to meet the operatives at a public meeting, when delegates should be appointed on both sides, and the question decided by arbitration.

Wolverhampton.—As the operatives in nearly every branch of the building trade have given notice for an advance of wages and other privileges, the delegates of the master builders and of the operative carpenters and joiners and the plasterers have met and discussed the claims, under the presidency of Mr. R. Kettle, the umpire. The questions were fully and fairly argued with the best spirit on both sides, and the decision rests with Mr. Kettle, who has taken time to consider the grounds relied upon by the respective sides. The operative carpenters and joiners have resolved, at a recent meeting, that it would be desirable for them to form a co-operative building association on the limited liability principle, and have appointed a committee for the furtherance of the end in view.

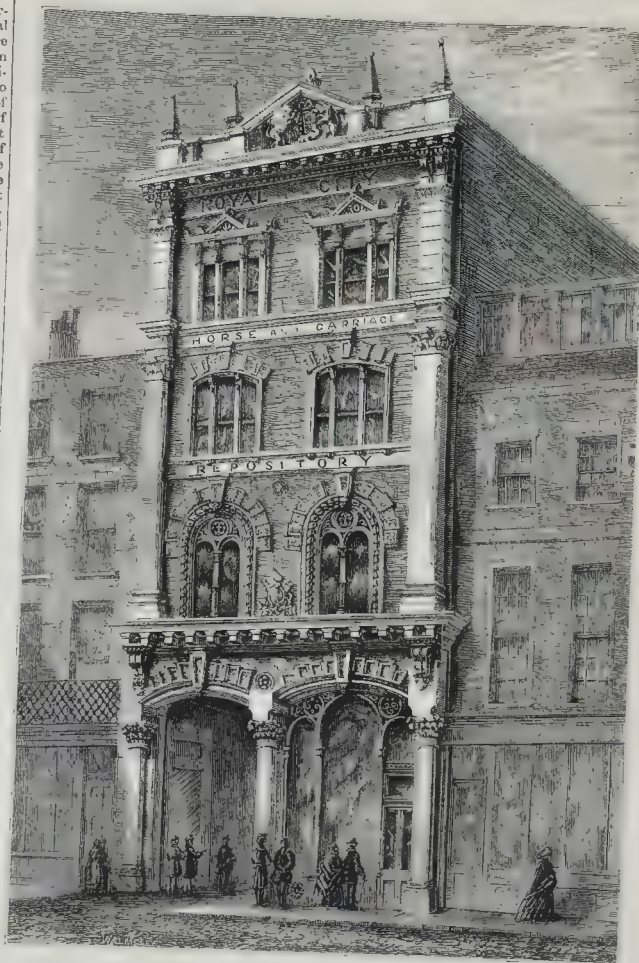
South Wales.—The notice of a reduction in wages at the South Wales Ironworks has expired at the majority of the establishments, and the men have unreservedly accepted the drop of 10 per cent. Owing to the activity in the coal trade, the wages of the colliers have not been interfered with, and they continue on the old scale.

ANTIQUARIAN DISCOVERIES AT HOLME CULTRAM.

A MONUMENTAL slab of one of the abbots of Holme Cultram has been discovered. The inscription runs thus:—"Hic jacet WILLELMUS. REX. KAR. Abbas xx. de Holme Cultram, cuius aie propicietur Tens. Amen." The letters between y and k in the surname are unfortunately broken out. A correspondent of the *Carlisle Journal* says,—"The late character of the work would lead one to suppose it of about the same date as that of the west porch, A.D. 1507, and probably the work of the same abbot, Abbot Chambers. William de Redekar was abbot in 1484 (see 'Dugdale's Monasticon,' vol. v. p. 593), and was the immediate predecessor of Abbot Chambers; so that this monument is undoubtedly to the memory of William de Redekar, or Rydekar, and probably erected by Abbot Chambers." The material is red sandstone, 4½ in. thick. Interesting as this discovery is, there are now lying in the churchyard the remains of a monument surpassing it in interest,—that of Abbot Chambers himself. The fragments are sculptured in high relief. The abbot, the central figure, is represented in his robes, mitred, with the staff in his left hand.

DRAYTON BEAUCHAMP, HERTS.

THE church has been restored, in memory of "the judicious Hooker," formerly rector of the parish. It is a small church, but has many points of interest about it. The plan is, a nave, with aisles, chancel, west tower, and north porch. The arcades are of four bays, of simple bold First Pointed work. The rest of the church is of late Third Pointed date, with clear-stories and insertions of very debased work. The font is a fine Norman one, with small sunk arches round the bowl. At the east end of the aisle is a beautiful Third Pointed reredos, formed by quatrefoil and other shaped panels, bearing traces of their original painting. There are several brasses of the Cheyne family, who lived here as early as Richard II.; and in the chancel is a great tomb of the same family. The east window, before the restorations commenced, was filled with stained glass, taken from other windows (it is said). It was greatly injured, but there remained the figures of the Virgin Mary and some of the Apostles, with armorial bearings below, chiefly relating to the Cheyne family. The whole has been re-arranged and repaired by



HOUSE ARCHITECTURE, BARBICAN.—MR. ROBERT WALKER, ARCHITECT.

Messrs. Clayton & Bell. The structural works undertaken have been, repairing the ancient flat-pitched oak roofs of the nave and aisles, a new oak roof to the chancel, new battlemented parapets to nave aisles and chancel, the old parapets having been entirely destroyed; rebuilding the chancel aisle, and reseating the whole area with new oak seats following the old seats, which have been retained in their former positions. During the progress of the works a number of ancient tiles were discovered; these, together, with others previously in the chancel, have been reproduced by Minton, and the chancel has been laid with them, in patterns, divided by borders. The pulpit is of oak, on a stone base, octagonal in plan, and on each face of it is an angel, 2 ft. 6 in. high, bearing an emblem, and with its outspread wings covering the whole side. A new carved pyramidal font-cover, of oak, has been placed on the ancient font; this, together with the pulpit and the carving of the chancel-seats, has been executed by Mr. Forsyth.

The external facing, of flints and stone, in chequers, has been restored, having been covered over with rough cast and cement. The tower still remains to be done.

The works have been carried out, under the architects, Messrs. Slater & Carpenter, by Mr. Chappell, of Tring, Mr. W. Thompson being clerk of works.

A brass plate has been let into the pulpit, with an inscription.

CITY HORSE REPOSITORY, BARBICAN.

CONSIDERABLE alterations are in progress at the Royal City Horse and Carriage Repository, Barbican, of which Mr. J. S. Gower is the proprietor. The stabling and yards have been increased by the purchase of a large freehold site at the back of the Clarence Hotel in Aldersgate-street, where an additional entrance has been formed, nearly opposite the new station of the Metropolitan Railway.

The portion of the property facing Barbican has been pulled down and a new building erected, as shown in the above engraving. It comprises a large arched entrance-gateway to the Repository, with foreman's residence over, and a warehouse on the right-hand side; a series of loose boxes and a three-story granary have also been erected in the rear, and an additional range of stabling, with offices and buildings over, will be shortly commenced.

In consequence of the heavy traffic to the premises great care has been taken to round all the external angles of the buildings, and for the same reason the columns supporting the front are of cast-iron, weighing about 1½ ton each, and resting on granite bases. The arches and entablature over are in Portland stone, and the rest of the dressings in Portland cement.

The first portion of the contract is being executed by Mr. Andrew Kilby, of Limehouse. Mr. Robert Walker, of London, is the architect.



DESIGN FOR PROPOSED LAW COURTS.—By MR. ALFRED WATERHOUSE, ARCHITECT.—View in the Strand.

[See p. 14, ante.]

THE HEMEL HEMPSTEAD WATERWORKS,
BATHS, AND WASH-HOUSES.

THE contract for the erection of these works was taken by Messrs. Atkins, gas and water engineers, London, who erected similar works at Berkhamstead last year. A piece of land was purchased for a site opposite Marklew's Chapel. The buildings are of considerable extent. There are two entrances to the baths, with arches supported on stone pillars with carved capitals. Between the two entrances is the pay-office, and on the left are the private rooms of the managers of the works. There are six baths in each department, four first-class and two second. The bath-house is heated by steam pipes, and ventilated. Waiting-rooms are provided for the bathers. The second-class baths are but little inferior to those of the first-class. The washing processes are carried on by the company themselves.

A single steam engine supplies the town with water, and impels all the machinery in this establishment. The superfluous steam from the boiler, passing by pipes through a tank of water, is condensed into water again, and the water in the tank is thus heated, the boiler replenished, and the baths and laundry supplied with hot water.

The company obtain their supply of water from an artesian well, 213 ft. deep, in a chalk and flint formation. From this well the water is pumped, by steam power, into a covered reservoir, in Chapel-street. A continuous high-pressure supply is given from the reservoir to the consumers' houses, and storage tanks are rendered unnecessary. The company state that their pumping apparatus enables them to deliver water to the highest elevation in the district. Mains are laid on in all the principal thoroughfares; and fire-plugs and stand-pipes are placed at different parts for watering the streets, extinguishing fires, and for other purposes. The charge for a supply of water for domestic use, supplied by meter, is 1s. 6d. the 1,000 gallons. The engine and pumps were designed by Mr. Atkins, and made by Messrs. Tidcombe & Son, of Watford. The boiler is a Cornish one, 6 ft. in length and 21 ft. in diameter. It was manufactured by Mr. William Wilson, of Glasgow.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of members was held at the House in Conduit-street on Friday evening (the 15th ultimo), Mr. R. W. Edis in the chair.*

Mr. Turner brought under notice the desirability of increasing the library, either by voluntary donations from members or others, or by assistance from the funds of the Association.

Mr. Armstrong suggested that the better course to adopt would be to raise a fund of 100l. or 150l. in the first instance, either as a gift from individual members, or by way of loan, to be repaid in future years by crediting the annual subscriptions with a portion of the money lent. If it were known that the Association possessed a really good library, he believed it would be the means of attracting many additional subscriptions, because there was no other architectural library in the metropolis which allowed the members to bring the books to their own homes.

After conversation, Mr. J. D. Mathews (hon. secretary) said the committee could not see their way to devoting their funds in the proportion mentioned, even to so valuable an object as the formation of a better library; and he for one would object to setting aside a portion of the annual subscriptions in the manner suggested. His own opinion was that, if it were more generally known that the Association wanted a better library than it now possessed, the senior members of the profession would come forward and help them. In fact, many gentlemen had volunteered subscriptions to the Association, but, as their rules prevented them from accepting such offers, all he could do was to suggest that the volunteers should become members of the Association, and in that way many senior members of the profession had joined them. He believed that, if the members would invite their professional friends to assist them in making the library more useful, assistance would not be refused.

* The following gentlemen were elected members of the Association:—Mr. A. J. Hewitt, Mr. Wall, Mr. F. T. Dolman, Mr. Fitzpatrick, Mr. Taring, Mr. Collier, and Mr. John Scott.

Mr. R. Plimbe thought the great want of the Association was a large room for the use of the members, and for its general business.

Mr. T. Roger Smith inquired whether any surplus books had been received from the Institute lately.

Mr. Mathews replied that none had been received for two years.

Mr. Smith said that in that case he would place in the hands of the Secretary a letter he had received from Mr. Beresford-Hope on the subject, and that he would recommend them to agitate a little until they got what they wanted. He suggested whether, without seriously trenching upon the funds of the Association, a small percentage of the subscriptions might not be applied to the extension of the library. Good books were the most valuable agents which the student of architecture could have in acquiring a knowledge of his profession; but he thought it would be more desirable to accumulate them in the library than to take large premises, as the library being a lending one, the books could be taken home. He was not aware that the senior members of the profession had been asked for assistance.

Ultimately the subject was referred to the Committee.

The Chairman drew attention to a letter which he had received from the Secretary to the Architectural Museum Society inviting assistance towards their new building near Westminster Abbey. The subject had, he said, been brought under the notice of the Committee, who had arrived at the conclusion that they would not be justified in voting any of the Association funds to the Museum unless they got something in the way of an equivalent. Under these circumstances, they had asked for fifty tickets, but they had not yet received any answer. Should their proposal be favourably entertained, the Committee would subscribe. He understood that the new buildings in Westminster would be convenient and comfortable for art students.

Mr. T. Wells then read a paper on "The Influence of Eastern and Western Art, and more especially on that influence as exhibited through the medium of Constantinople." These influences he considered under five principal heads—first, in Greece and Rome before the transfer of the seat of empire from Rome to Constantinople; secondly, in the effects of the political, commercial, and artistic relations between Europe on the one side, and Constantinople and her dependent cities in the Levant on the other; thirdly, in the effects of the occupation by the Saracens of Spain, of Sicily, of much of the shores of the Adriatic, as well as of the European coast of the Mediterranean; fourthly, in the results of the Crusades; and, fifthly, in the art of Modern Europe. To the explanation of the second of these manifestations Mr. Wells chiefly applied himself, contending that the arts of Europe were in past times greatly indebted for their excellence to the graceful and fertile imagination of the East. In his opinion much of the inferiority of the art of modern Europe was due to the lack of that stimulus of emulation once provided by the compulsory existence of a powerful, cultivated, and, in Mahomedan times at least, a rival condition of society in the Levant. This emulation was excited and continually renewed by the fame of edifices, of admirable invention and beauty, rising in never-ending succession in all her famous cities, by a familiar acquaintance with the examples of her art in all classes and degrees of excellence, which she day by day sent forth (whether under the regis of Constantinople or other sovereign cities) to pass freely as articles of commerce from hand to hand throughout the length and breadth of Christendom.

A short discussion ensued.

ARCHITECTURAL EXHIBITION SOCIETY.

THE report of the Council shows that the current expenses of last session were fairly met by the receipts, though the amount paid by the public for admission was very small. This, of course, means that the exhibitors had a much smaller public than it is desirable should be gained for them. The council have put themselves in communication with the committee of the Architectural Museum, and the lectures of the two societies will be made to form one list. The council are striving to render the next exhibition a good one. Drawings must be sent in by the 6th of April next.

BRITISH ARCHÆOLOGICAL
ASSOCIATION.

At the meeting on the 27th of February, Mr. H. Syer Cuning, V.P., in the chair, Mr. E. Roberts, F.S.A., exhibited the known portrait, by Zincke, of Shakspeare, denounced in pp. 22, 23, in Wivell's Supplement, for the examination of the Society, as few persons of the present day are acquainted with it. Mr. Bailey exhibited an enormous tooth of a Seal, found in London-wall in December last, at a great depth. It was discovered in the usual black soil, but as it appears to be the only known example found in England, information was requested. Mr. Irvine exhibited drawings of Roman antiquities in Cirencester Museum. As regards an assumed sacred monogram, I. H. S., on some pottery, it was hoped the specimens themselves would be sent up, as doubts were entertained, firstly, of the accuracy of the sketch; and, secondly, of the meaning attributed to it.

Mr. Cato exhibited a very beautiful and perfect Roman glass bottle, having a globular-shaped body indented on four sides, and a long narrow neck, found in Dover-street, in December last. Mr. Cuning stated that it is of a very rare type. Mr. Gunston exhibited some of the most recent bone forgeries.

These and numerous other exhibitions caused discussions, which left little time for the consideration of the paper by the chairman, on the "Cross Tau of St. Anthony," giving an account of this early emblem; its being found in the hands of Egyptian divinities; having been worn by Pharaoh's subjects; used by the Druids; used as charms in Gnostic, Hebrew, and Knights Templars' times; and subsequently known as the emblem of St. Anthony.

In the brief discussion which ensued, Mr. Roberts, followed by the Rev. W. S. Simpson, threw out the suggestion that this emblem, like the triangle, always was applied to a trinity of almighty powers.

THE PROPOSED ROAD IMPROVEMENT AT
HYDE PARK CORNER.

SIR,—In the notice you have done me the honour to take of the improvements at Hyde Park-corner suggested in the *Builder* of the 15th December ult., you state that the proposition to alienate part of the Park is likely to be objected to.

Permit me to draw the attention of those likely to make such an objection to the fact that the proposal is nothing more than a repetition of what has already been done in St. James's Park by the formation of Birdcage-walk; for this roadway was originally part of the Park; and then let me ask them to look at the question in the following manner.

Imagine Birdcage-walk roadway not to exist, and the question now to arise for the first time, what is the best way of providing for the passage of traffic between George-street, Westminster, and Buckingham-gate? Imagine, further, that the Board of Works answer the question by a proposal for carrying the traffic round Victoria-street, and that a counter proposal is started for the formation of the present Birdcage-walk roadway. They have then a case analogous to the one now before the public for the improvement of the roadway between Stanhope-gate and Grosvenor-place, and with the same probable public objections thereto: that such public objections have not prevailed against the formation of the Birdcage-walk roadway is a sufficient reason that they should not be allowed to militate against my proposal, especially when it is evident that the benefits resulting to the public from the adoption of my plan would be more than treble those afforded by the Birdcage-walk scheme.

But who can read your interesting article last week on the Grosvenor-place and Piccadilly Improvements without regretting that what you call "a main artery from Grosvenor Hotel to Hyde-park Corner" should be stopped short in its course at Piccadilly, while an opportunity is offered for, and a saving of 94,000l. is to be effected by, continuing that grand thoroughfare in an almost direct line to Oxford-street.

The direction of and want for this "main artery" now being constructed by the Marquis of Westminster, is caused by the erection of the Victoria and Paddington Railway Stations, and the consequent increase of traffic between these two points; clearly, therefore, a plan having for its object the continuation of this enormous

stream of traffic in a direct course to its destination, is better than one which would make that stream stop short in the middle of its course, turn sharply off at an acute angle, and then, after a passage of 300 yards, make another turn at a still more acute angle, before it could again assume the direction in which it was ultimately tending. And this, sir, you will see on reference to the two plans is really the difference between the scheme of the Metropolitan Board of Works and my own.

You truly state that "the chief objection to my plan would come from the owner of Apsley House." His Grace will, however, have learned from the result of the opposition by another high personage to the formation of the Thames Embankment, how impossible it is for an individual to successfully oppose a public improvement.

HENRY SAXON SNELL.

THINGS NOT GENERALLY KNOWN.

WHEN the sinking of the caissons for pier No. 3 (the second from the Middlesex side) of New Blackfriars-bridge is to be commenced.

When the new Meat-market is to give us meat.

When the Circus at the corner of Cornhill, Gracechurch-street, &c., is to be made.

When the circus is to be formed at the bottom of Ludgate-hill.

When the railway-bridge over Ludgate-hill is to have its side staircases opened.

When the widening of the road at the top of Ludgate-hill is to take place.

When Contract No. 1 for Northern Thames Embankment (Westminster-bridge to Somerset House) is to be finished.

When Contract No. 3 for Northern Thames Embankment (Temple to Blackfriars) is to be commenced.

When the Chelsea Thames Embankment (Chelsea Hospital to Battersea Bridge) is to be begun.

When the part of the Southern Embankment which reaches from Ferry-street Dock, Lambeth Bridge, to Gun House-alley, Yauxhall Bridge, is to be completed.

When Albert Bridge, Chelsea, is to be finished.

When Wandsworth Bridge is to be commenced.

When Southwark Park is to exist!

When Finsbury Park is to be.

When Park-lane is to be widened.

When Middle-row is to be removed!

When St. Clement's Church, Strand, and St. Mary's Church, Strand, are to be removed; and the wretched "Strand Middle-row," which forms the south side of Holywell-street, is to be taken down, and the Strand made of a decent width as an approach to the new Law Courts.

When the sixty or seventy houses which now form a barrier to a straight road from the Strand to Hampstead, by way of Newcastle-street, Lincoln's-inn-fields, Gate-street, and Southampton-row, are to be removed.

When the opening from Whitechapel to Commercial-road is to be commenced.

When the Pneumatic Railway (Whitehall to Waterloo) is to be in operation.

When the Metropolitan District Railway is to begin to run trains.

When the East London Railway will commence tunnelling under the East Dock of the London Docks.

When the side streets running from Victoria-street (the Blessed) are to have their names put up.

When Phillips-street, Victoria-street (the street which runs behind the noble new distillery), is, after twelve years' unfinishment, to be proceeded with and opened.

When the Metropolitan Railway will reach its destination, the Crescent, Minories.

When the carriage road in front of the Metropolitan Board of Works Office, Spring Gardens, will be thrown open to the public.

When Waterloo, Charing Cross, Lambeth, Yauxhall, Chelsea, Putney, and Hammersmith bridges are to be free bridges.

When the bridge from the Tower to Bermondsey is to be built.

When Old and New Bond-street are to be renumbered, and form one street,—Bond-street.

When Wood-street and Cripplegate-buildings are to be renumbered, and form one street,—Wood-street.

When the wilderness of ground on three sides of Battersea Park is to be built upon and civilized.

When Dowgate-hill, Cannon-street, is to be cleared; and Walbrook to be widened.

When the Metropolitan Board of Works will acquire all the property needed for New Earl-street.

When the notches in Newgate-street are to be filed off.

When the Westminster Bridge-road is to be made of the same width as Westminster Bridge.

When the Tottenham and Hampstead Junction Railway is to be completed.

When the new Blackwall Railway Bridge is to be built over Leman-street, Whitechapel; and when the widening of Royal Mint-street is to be completed.

When San Tavern-gap (a delicious spot), Ratcliff Highway, is to be made a carriage thoroughfare.

[There was to have been inserted here,— "When Victoria-street is to be completed," but it has been suggested that that is a thing generally known. The answer being, — "Never." This, therefore, is omitted.]

When the press is again going to report to the world the monthly money progress of the Southern Thames Embankment, commenced September 21, 1865, and last reported by the press, September 23, 1866; when 67,000*l.* had been done in plant, materials, and labour, about 5,600*l.* a month.

When the Thames is to be embanked from the Victoria Tower to Lambeth Bridge.

When buildings which are to last for many ages are to be so planned as to allow of easy alteration to admit of new improvements and inventions, and not be open to the objections which Sir A. Clifford recently most righteously brought forward against the New Houses of Parliament.

When architects will learn that steps at the street-doors of buildings, whether churches, Strand Music-halls, shops, or any other buildings, are almost necessarily a nuisance and a defacement,—a relic of the times when, there being no pavements, a man was compelled to build his house high to keep himself free from floods.

When the electric telegraphs of the country are to be placed under one management, and a very small uniform charge made for messages.

When Tower-hill, and all round the Tower, are to be lighted and properly paved.

When a proper system of public urinals, lavatories, &c., is to be established in London, with directions at the corners of the streets as to where they may be found.

When notice-boards on church doors are to cease to be shabby with old partially-defaced bills.

When travelling in London is to be (as it might be) half its present price, with double its present convenience.

A WANDERER AND A WONDERER.

BELLS FOR PUBLIC CLOCKS.

CERTAIN well-known dictionaries and cyclopædias tell us, that a bell is "a vessel or hollow body of cast metal, formed to make a noise by the act of some instrument striking against it." And the fact must be admitted that numerous bells, of various kinds, are "formed to make a noise,"—in too many instances a dreadful one—and nothing more. Nevertheless, I maintain that a bell, properly so called, is "a musical instrument of percussion;" and that no "vessel or hollow body," the tone of which is offensive to a good ear, ought ever to be introduced for a public clock, or, indeed, for any other purpose.

Moreover, knowing that the sound of a really good bell is often marred in effect by that of its neighbour, I have long entertained the opinion that when a tower or a turret contains a clock with a fine-tuned and truly efficient bell, no other bell, the note of which is not in accord or harmony with that of the former, should be put up for any other public clock within a reasonable distance from such tower or turret. Accordingly, when consulted some years ago respecting a clock bell for a new edifice standing near an old church tower containing a powerful hour-bell, being the tenor of a peal in the key of E, I proposed to design one to emit the dominant note of that key. So that whether the two clocks happened to strike simultaneously or otherwise, no disagreeable effect would be produced.

A word on the composition and form of bells, for notwithstanding the statements of our highest authorities, based upon the experience of the

best founders in the world, we find year after year, the following "vulgar errors" reproduced:—1. "The finest old bells had silver in their composition, which accounts for their sweetness of tone." 2. "Bells for turret clocks should be made in the hemispherical form."

Now, with regard to the first point, I may say, that in fragments of some old bells that have been subjected to analysis, a very small proportion of other metals, such as zinc, silver, &c., has been detected, in addition to the usual alloy of copper and tin. But experiments have been made, the result of which clearly shows that the notion that bells would be improved by silver is a delusion. It rather injures their sound.

As to form, everybody knows, that for house-clocks, &c., bells of the hemispherical form are very properly used. Nevertheless, if you want a bell for a tower or turret, to produce a good volume of sound, and a fine quality of tone that shall be heard at a reasonable distance, it must be made of the long-established shape and proportion of our best church-bells. And we know the reason why. Bells of the hemispherical form weighing about 4 cwt. may answer for cemeteries for obvious reasons. But the sound of heavier bells of that form is generally *tubby*, extremely doleful, and offensive.

THOMAS WALESBY.

FAIR PLAY FOR THE LAW COURTS COMPETITION.

SIR,—You have given good help. The letters which you published last week,—but especially your own remarks appended to them,—in which the matter was put so kindly, and yet only fairly, as every one must admit who knows the secretary's genuine integrity, had a very good effect; but the help must be continued, or the competition will end in disgrace yet to every one. There are pretty decided indications that the batteries are only "masked" for the present.

I enclose a printed paper, which will show what I mean. It was handed to the Solicitors' Committee,—of whom I am one,—and the Bar Committee,—for whose guidance it had been prepared,—and one or two of us who had examined the designs saw that it was substituting a new test for the only one which the architects could accept, viz., the book of "Instructions;" and, worse still, that the new test was constructed on the basis of one design, that of Mr. Waterhouse; so that while it might admit one or two other designs on some minor points, it would admit the first-named design *alone*, on those points which the paper declares to be vital!

The Bar Committee refused to look at the paper. We, the Solicitors, received it, but had it reprinted as "confidential." It is being worked upon: so, you see, means are still being adopted to force the one favoured design into the first place. I could name several, but I content myself with one more instance which has come to my knowledge in a curious way.

Dr. Percy was invited to report on the various schemes as to *capability* of ventilation, as well as on the systems proposed. He wrote a private note to say that he must warn Mr. Field that he was greatly prepossessed in favour of Mr. Waterhouse. Most persons would have thought that the writer, by this candid and very proper intimation, was disqualified from acting in the proposed capacity. No such thing. It is understood that he has now accepted the duty, and it remains to be seen if his first note will be laid before the Commission. Pray continue to keep a vigilant eye on the whole business.

A MEMBER OF THE SOLICITORS' COMMITTEE.

AS TO THE PROPOSED LAW COURTS.

SIR,—I have read with much interest the description in the *Builder*, of the plans now being exhibited for the new courts, intended to be erected near Temple-bar; and having had considerable experience of courts of justice, my vocations having caused me to attend them for many years, I may be allowed to have acquired some knowledge of what is required, although not an architect.

I am a Londoner, and know the site in question, and observe that it is called the Strand, but I will call it Pickett-place, which I believe to be more correct. The ground rises gently

from Pickett-place to Carey-street. I am against a central hall, and suggest an inner court-yard, the Law Courts forming four sides of a square, the chief entrance to be from Pickett-place, through an archway, protected by gates; and after the judges have alighted from their carriages, the gress to be through an archway into Carey-street, with a porter's lodge at each gateway.

You will perceive from the above that I mean the judges to ascend to the judgment-seats of their respective courts by entrances from the courtyard.

I propose that there should be eight distinct blocks of buildings, separated from each other by a passage-way, with a side entrance to the barristers and attorneys, and a front entrance on the four sides for witnesses; with a staircase leading to a gallery for the public, with three law courts in each block: this would allow of a fourth part of the block for a consulting-room for the barristers and attorneys, the arrangement being one court on the ground-floor, and two courts on the first floor, with rooms above for any purpose deemed necessary. This plan would meet the wish of the authorities, and prevent idlers from passing from court to court, unless they left one building before they entered another.

The judge's bench in each court to have the windows of the room on the right and left of the judge, which will give him a good light, and preserve a current of air, from side to side, by allowing the window sashes to be slightly raised in very warm weather. The judges' benches to be parallel to each other, with a room between the two walls, having two doors, one on each bench, behind the chairs of the respective judges, to which room they can retire for consultation or other purposes.

Over the front gateway a clock-tower to be erected, with fire-proof chambers for the records. Over the Carey-street gateway, apartments for the hall-keeper and other attendants.

In the centre of the inner court-yard an octagon building, with rooms for barristers, robing, and other purposes.

It will be seen that by this arrangement of the building twenty-four law courts are secured,—which, it will be acknowledged, are as many as will be required,—and numerous rooms on the second floor for the officials attending on the judges, &c. From studying the matter, I think an inner court-yard would be a great advantage, particularly as it would give the judges an easy and convenient entrance to their courts, and obtain good light and air, a very important consideration.

MENTOR.

PUBLIC AND PRIVATE BATHS.

THE bath prevailed to such an extent amongst the ancient Greeks and Romans, that at last its use came to be looked upon more in the light of a necessity than a luxury, and it was even customary for the host, immediately on the arrival of his guest, to offer him the refreshment of lavation, with all the concomitants of costly perfumes and rich garments. This practice still obtains, in a certain degree, with the higher order of Orientals, who have their bath-rooms fitted up in the most superb style, and replete with every convenience to increase the exhilaration of the process. In striking contrast to all this is the disregard which the majority of Englishmen appear to pay to the hygienic and other beneficial effects derivable from a free use of the bath. Unquestionably, in the case of public baths, this indifference and apathy is partly to be attributed to the laches of parochial authorities, in not taking proper steps to introduce them into the districts over which they exercise surveillance. For instance, in the parish where the writer resides (Chelsea), with a population of about 60,000, there does not exist a single public bathing establishment, and those of the inhabitants who during the summer months wish to indulge in the healthful and delicious recreation of natation can only do so by making a journey to Pimlico or Lambeth. This state of things naturally reflects discredit upon those in power, more especially as there are generally plenty of people ready to invest capital in any enterprise likely to be remunerative; and no reason is deducible why the erection of public baths and wash-houses should not prove as profitable as a vast number of other investments, if regulated and maintained in a proper spirit. If it is really desired to eradicate some of those infectious diseases that make such terrible havoc

amongst us from time to time, and which are indubitably in a certain measure due to want of cleanliness on the part of the poorer classes of the community, some action should be immediately taken in the matter, so that, at least this reproach would be removed from our doors. Supposing the purification of the Thames, owing to the improved system of drainage, continues to progress in an even ratio to the present, it is not Utopian to premise that some day we shall find baths floating upon its pellucid surface similar to those of the Seine, Rhine, and Danube. The only objection to this mode is that the water cannot be made tepid in proportion to the coolness of the weather; but bathers will put up with almost any discomfort rather than total deprivation, and the plan seems to answer exceedingly well on the rivers just referred to.

The importance of some such realization is considerably intensified at this moment by reason of the observations which the calamity in Regent's Park has called forth. Many persons hold the opinion that had more of the unfortunate sufferers been able to swim the terrible results of the disaster would have been greatly mitigated. Such sentiments are not entirely without foundation, for two or three of the survivors affirm that they owe their lives to a knowledge of this art, although at first sight the excessive frigidity of the water certainly appears to militate against such a possibility. However, be that as it may, the fact nevertheless remains patent that the chances of escape must have preponderated immeasurably in favour of swimmers, as in all probability they would have continued comparatively tranquil until succour arrived, and not exhausted their strength in vain and ineffectual struggles, as unfortunately too often happens.

Concerning baths in private dwellings. From the frequency of accidents lately through the failure of certain details of the apparatus arranged to produce hot-water, it might be surmised that there are difficulties in the way of obtaining suitable means for this purpose. But it is not so. The principal solution of the problem is the fact that men are engaged who have scarcely any idea of the *modus operandi*, and much less of the laws which govern the circulation of water, and the expansion and contraction of metals: consequently, the whole concern gets fixed in a most confused and unsatisfactory manner, totally irrespective of the influence exerted by these laws. The only sure remedy is to employ none but those who are experienced; this being, as in almost everything else, the unfailing insurance of competency.

The practice in vogue in order to secure a constant supply of hot-water for the bath is either to locate the boiler at the back of the kitchen-range in such a manner as to be in direct and immediate contact with the fire, and subject to its full effect, or to pose it somewhere low down in the chimney, exposed to the influence of the hot gases arising from the combustion of the carbon beneath. A great drawback to the first arrangement, however, is the inaccessibility of the boiler, when after some time, in spite of the circulation of the water, incrustation supervenes. The sediment has to be removed by means of a scraping tool inserted through a plug-hole into the boiler, or the latter must be disconnected from the range, which requires to be drawn out for that purpose, operations consuming time, and always accompanied with trouble, and inconvenience. Therefore the plan which places the boiler above the fire is preferable, as an aperture panelled on ordinary occasions can be formed in the chimney-breast to admit of inspection or extraction, as the case may be. Again, to diminish the chances of mishap from frost, supposing the fire to become by any means extinguished, the pipes and cisterns are invariably situated within doors, and the former, where convenient, are ranged in close conjunction to those intended to supply cold water to the upper chambers, thereby preserving them likewise from the same all-powerful action. Extra precautions are also taken by fixing a small lever or spring safety-valve to the "return" pipe, and placed in a wooden box provided with an overflow tube to carry off the waste water. The surface line of the water in the cold cistern is shown through the instrumentality of a glass gauge similar in many respects to those ordinarily seen on steam boilers.

In instances where a magazine of hot-water is not imperatively demanded, a periodical supply is efficaciously attained by affixing a gas furnace to the bath itself, with the usual adjuncts of flow and return pipes; these are naturally much

shortened, and expensive fittings almost entirely dispensed with. Moreover this furnace is capable of receiving sundry appliances for warming linen and other domestic articles, no mean consideration to matrons of schools, and establishments, &c. It is true that the time needed to convey sufficient calorific to the cold water is rather extended, but then compensation is afforded by freedom from danger and decreased cost of erection and maintenance.

S. W. WORRIS, Jun.

CONDENSED WATER FROM GIRDERS.

SIR,—I have lately been concerned in the erection of a school-room for the use of the working-classes. The room is frequently used in an evening for lectures, and occasionally for social meetings, and is generally crowded. The roof is sustained by seven iron beams of a semi-circular form, about 12 yards in diameter. These beams are cased in wood, with the exception of a band about 2½ inches wide. When the room is full, the warm air condenses on this iron band, and a constant dripping of water takes place, to the great annoyance of bald-headed men and gaily-dressed women. "There is nothing new under the sun," we are told; and if so, this inconvenience is not new, and probably you or some of your readers may be able to suggest a remedy. I shall be grateful for any practical suggestions that may cure the evil.

ALTIQUS.

*** The obvious remedy is to cover with absorbent material the exposed part of the girder, though efficient ventilation might render this unnecessary.—ED.

THE REMOVAL OF TEMPLE BAR.

IT having been proposed to fix the old landmark as one of the entrances to the Temple in Fleet-street, I beg leave to move as an amendment, that it be placed at the entrance to Temple Gardens, where it would be better seen in an ornamental point of view than if crowded in among the houses in the street, to say nothing of the ground it would occupy,—at least enough for five or six houses, which, at a rough calculation, would produce 3,000l. a year: rather too expensive a lodging for our old friend. The entrance to the ornamental inclosure, opposite the Horse Guards, would be a better place than the Temple, but I suppose there is an objection to its leaving the City. GEORGE ELLIS.

ODOURS FROM NEWSPAPERS.

SIR,—Can you, or any of the readers of your journal, explain how it is that such a horrible smell proceeds from some newspapers, particularly when held, as they often are, between the reader and a hot fire? It cannot be the paper, I should think; if not, then it must be the ink; but whatever it may be, I assure you I have often been not merely disgusted, but sickened by it. On one occasion I had accumulated a pile of newspapers and magazines in a closet of my bedroom, and the smell resembling rotten cheese, which I ultimately traced to its true source, was such as to render the apartment almost uninhabitable. As you are a sanitary authority, and as the *Builder* never smells bad (whatever places it describes may do), I thought me of writing to you on the subject. I have not the least doubt others have suffered from the same cause. C. B.

FOLKESTONE COMPETITION.

SIR,—Has any one heard if the South Eastern Railway Directors have arrived at any decision on the plans submitted in this competition at Christmas last? A COMMENTOR.

HEALTH IN LEEDS.

SANITARY matters here seem in a ludicrous condition. The town-council appointed an officer of health; and, poor innocent man, he actually began his work, uprooting nuisances and foul abuses militating against public health. All Bumbledom was rampant, and in public meetings he was recommended to "go to the place from whence he came, for Leeds didn't want him." Ominous hints were given to him that those who paid his salary might possibly withdraw it, if he insisted too much on new-fangled notions of there being any virtue in cleanliness. The West Riding motto—and Leeds *par excelle-*

lence is the West Riding—is, "Where there's muck there's money," and he must be conservative of muck, or there might be lack of money. to his account especially. And so the poor officer is simply exterminated. Nothing has been heard of him for months.

The Society for the Prevention of Cruelty to Animals has, in conjunction with private persons in the town, appointed a resident officer in Leeds, Inspector Temperly, and week by week we see the result, in cruel human brutes being fined at the police courts for illtreating brute animals. But not so with the sacred privileges of landlords. The people pay for the officer of health, but seldom hear of his earning his salary, when the sufferers he is appointed to protect are mere human beings.

RAILWAY MATTERS.

A new station has just been opened at Crewe which has been built by Messrs. Parnell, Son, & Bennett, of Rugby, at a cost of about 36,000l. A deviation line, about a mile long, is also being made north of the station for the Chester line, which at present passes through the Crewe Works. Extensive shopping is being added to the already great pile, in which the manufacture of steel rails, locomotives, carriages, &c., is conducted at this rapidly growing railway town.

A project has been proposed to the North-east Railway Company of Switzerland to cross the Lake of Constance by floating the trains over. A train of fourteen to sixteen carriages is to be placed upon a steam-vessel, which will be furnished with rails for the purpose. The boat or raft, will be propelled by an engine of 200-horse power.

The Prussian Government has given the Berg-Märkisch Railway Company permission to build a bridge across the Rhine at Hamm, just above Düsseldorf, on condition that the piers are constructed in such a manner as to admit of being blown up at any moment below the water, and so effectually as to make its repair a work of time. The company is also required to build sufficiently strong works for the protection of the bridge against a *coup-de-main*, to secure the power of destroying it before it can be forced by the enemy.

COMPETITIONS.

W. J. C. Cemetery.—The design submitted by Mr. J. D. Webster, of Sheffield, architect, has been unanimously adopted by the Burial Board, and the buildings will be commenced forthwith. The cost will be about 1,300l.

INSTITUTION OF CIVIL ENGINEERS IN IRELAND.

A GENERAL meeting of members has been held in the Museum Buildings, Trinity College, Dublin. The chair was taken by Professor Downing. Colonel Meadows Taylor read a paper on "Tank Irrigation in Southern India, with the native construction of Dams, Sluices, and Escape Weirs." The paper, which was of a practical kind, commenced with a brief description of the various soils, and the means of irrigation by use of tanks and reservoirs in the south of India, touching on the various historical events by which these inventions were brought about, resulting in the most noble hydraulic works in the world, which had existed and would continue to exist for centuries. He gave lengthened and minute descriptions of several of the principal reservoirs visited by him in India, and great credit to the native skill by which they were constructed. He also described waterworks he had constructed while holding an official position in India. The lecture was illustrated by diagrams and lasted nearly two hours.

Mr. W. E. Bateman, C.E., remarked on the difference between the construction of such works in India and in this country, arising from different surrounding circumstances and materials available in each case. There were not the difficulties to contend with in India that there were in England and Ireland in constructing water-tight embankments, especially as regarded the foundations on which they were laid. Here the engineers had to contend with broken strata and unfavourable soil generally, as well as want of proper material in sufficient quantities for the

puddling, and which abounded in India, where the surface of the ground was essentially water-tight, and where they had clay without broken sandstone. He described the various methods of constructing reservoirs in England, and stated that it did not follow that because there was a leakage in an embankment there was necessarily any danger, or that there need be any apprehension of a disaster to the works; and he also illustrated, by means of a large diagram, the cause of the catastrophe which occurred at the Bradford reservoir some few years ago. The chief cause of that unhappy occurrence was the portion of the bank which gave way being laid on a slippery foundation of sloping rock.

COMPENSATION.

Excess and Turner v. The Royal Commissioners of the Metropolitan Police. This case, heard by the High Court of Westminster, commenced at 11 A.M., on Monday, 27th, at 11 A.M., and adjourned till 10 A.M. on Tuesday, 28th, for the trial of the case. The plaintiff, Messrs. Excess and Turner, who are book-sellers, had established a business, and the profits were yearly increasing. They could not procure other premises, and until they should sustain a loss, and have to quit the situation. The value of the property in the house in question was estimated at 430l. a year. An instance was given of the loss of property, in the fact that Mr. Archer, a telegraphist at the Metropolitan District Railway, had taken a place in the Strand, at the corner of the Strand, and had to pay a premium of 50l. and to expend 100l. in new premises, and then to pay a rental of 30l. Mr. Lloyd (with whom was Mr. Kersey), for the claimants, made the case as one of a hard-ship, they had been established business, and were patronized by the legal profession, and by their removal would suffer a great loss. Mr. Hawkins, Q.C. (with whom was Mr. M. Mason), for the Commissioners, called no witnesses, but produced of the claim, made. The High Court has accordingly ordered that the jury take the matter of the evidence, they retired, and on their return gave a verdict for 100l.

BUILDERS' LIABILITIES.

In the Court of Common Pleas (Sittings at Nisi Prius, in London, before Lord Chief Justice Russell, and a special jury), the case *Buck v. Brass* has been decided, and a special verdict has been returned. The defendant (a builder) was employed to erect some buildings on the site of the East-India Warehouse, and the plaintiff was placed in a covered way. There was an opening across this covered way for carts to pass to and from the building, and the plaintiff was at passing through the opening to cross the road, and was stepping over some scaffolding by which he had to pass, and when he was in the middle of the road, he was struck by a cart, and he could not get up, and he was killed on the spot, and his estate fell nearly to the ground. His left arm was broken near the elbow, and the arm was very severely lacerated. The plaintiff was permanently injured. The defendant was a man of 40 years of age, and he had been in the business of a builder for 10 years. He had a family of 12 children, and he was a man of good character. The plaintiff was a man of 40 years of age, and he had been in the business of a builder for 10 years. He had a family of 12 children, and he was a man of good character. The plaintiff was a man of 40 years of age, and he had been in the business of a builder for 10 years. He had a family of 12 children, and he was a man of good character.

THE PEABODY FUND.

ACCORDING to the "Statement" of the trustees for 1866, four blocks of buildings, accommodating 195 families, have just been completed at Shadwell, and named, like those at Islington, Peabody squares. These when filled, together with the others now occupied, will contain about 450 families, numbering about 2,000 persons. The amount of capital invested in the land and buildings at Islington is 40,307l. 2s. 1d., the gross rents from which for the year amounted to 1,171l. 16s. 9d., and after deducting 543l. 16s. 4d. for taxes, working expenses, and charges for repairs, alterations, and improvements, there remains a net return of 1,174l. 0s. 5d. The investment in land and buildings at Shadwell is 27,151l. 11s. 3d., and the amount of rents for the year, 1,019l. 8s. 6d. Deducting 375l. 6s. 4d. for taxes, working expenses, and charges for repairs, alterations and improvements, there remains a net return of 644l. 2s. 2d. The cost of the general management of the trust during the year, including printing, stationery, salaries, and small sundries, was 317l. 11s. The trustees have laid out 4,632l. on land at Chelsea, and 4,891l. at Brompton. The cost of land and buildings at Shadwell to the present time is

40,982l. This statement relates altogether to the original gift of 150,000l. The subsequent gift of 100,000l. is in Hudson's Bay Company's Stock, and is to accumulate till 1869. Freehold sites may be purchased in any locality within ten miles of the Royal Exchange, accessible by railways.

EQUALIZATION OF METROPOLITAN POOR-RATES.

A CONFERENCE at the instance of the Tower Hamlets Association for the Equalization of Metropolitan Poor-Rates, has been held at the London Tavern, for the purpose of considering whether any, and what, action is necessary with respect to Mr. Gathorne Hardy's Bill. The chair was taken by Mr. Locke, M.P. The Rev. H. G. McGill, after referring to the desirableness of having Mr. Hardy's Bill passed into law, especially as it recognised the principle that the poor parishes of the metropolis ought not to be called on to support all the poor in these parishes, but that the burden should be equally distributed over the metropolis, moved the following resolution:—

"That this meeting, while cordially approving of the general principles of Mr. Hardy's Bill, is of opinion that the charges to be levied on the ratepayers of the metropolis should be extended, so as to include, if not the whole expenses of the poor's rate, at least all cases of cancer, paralysis, and other acute and easily curable diseases, as also the whole of the expenses of building under the Act; and that a provision should be made for levying a rate in aid in event of any special emergency pressing upon any particular district."

The Rev. G. T. Driffield seconded the motion. Mr. Ayrton, M.P., thought there was very little use in arriving at any specific resolutions on the question, or offering any public opposition to it, as it was certain to be for years the subject of amendment Bills, and to involve the loss of 100,000l. If they attempted to criticise the Bill he did not know where they could stop, as the Bill was obviously defective. He thought it best for a deputation to wait on Mr. Hardy with reference to the question. The Rev. Mr. McGill adopted the suggestion, and embodied it in his resolution, which he moved in its amended form. Sir T. Fowell Buxton, M.P., seconded the resolution, which was then carried.

THE ALKALI ACT.

In a recent article on this subject, we mentioned that the evidence of the inspector was often of the greatest value to manufacturers in cases of actions brought against them by individuals for injury to their crops or goods. The inspector was able to come into court and say that the system of condensation was so perfect that the quantity of hydrochloric acid sent into the atmosphere was too small to be estimated. Several actions have, in fact, been decided for the defendants on the impartial evidence of the inspector, and the proprietors of alkali works began to think that they were at last free from the harassing and vexatious law-suits, to say nothing of heavy damages, to which they were continually subjected. A recent decision in the Birmingham County Court entirely upsets this view. An action was brought against Messrs. Chance, the well-known glass manufacturers, by a draper, for damage to his goods caused by noxious emanations from the defendant's alkali works at Oldbury. In spite of the evidence of Dr. Angus Smith, and the other Government inspectors, and of some local chemists, as to the perfection of the condensing arrangements, the court gave judgment for the plaintiff. The amount claimed was small, only 4l., but the principle involved in the decision is a very important one. It was admitted by Dr. Smith, that a condenser which had worked so well as to allow only 7-10ths per cent. to escape, had suddenly been found to give out nearly 7 per cent. of acid.

STAINED GLASS.

St. Ann's, Brighton.—A stained-glass window by Messrs. O'Connor, has been erected in this church. The window consists of a central six-foiled circle, surrounded by eight smaller circles. In the central circle is placed a figure of the ascending Saviour, surrounded with a glory, and having the globe beneath its feet. Four of the outer circles contain the signs of the Evangelists.

In the remaining four the triumph of the Cross is indicated by crowns in the two upper quatrefoils, over crosses in the two lower. By an ingenious treatment of the colouring the four quatrefoils at the principal points are made to suggest the length and breadth of the window. A special effect has been produced by rendering the face and upraised arms of the Saviour in glass of delicate hue, on which a halo of light is reflected from a small portion of pale green glass in the outer part of the window.

St. Matthew's, Egham.—Mr. Bailey has erected a stained-glass window in the south aisle of St. Matthew's Church, Egham, in memory of his late daughter, Mrs. J. Smith, and her children. The subject selected is the raising of Jairus's daughter. The window was by Messrs. Hardman, of Birmingham.

Books Received.

The Analysis, Technical Valuation, Production, and Use of Coal Gas. By the Rev. W. R. Bowditch, M.A., F.C.S., Incumbent of St. Andrew's, Wakefield. With numerous illustrations. London: Spon, Bucklersbury, 1867.

Or the Rev. Mr. Bowditch's long-continued, and we hope to himself profitable, efforts to improve our gas-light, we have more than once spoken favourably in the *Builder*. He appears to have mastered the subject in all its bearings, and the present learned and useful volume is the result. It is somewhat curious to note here the calm and effective way in which the author incidentally denounces the ignorance of some of his quondam detractors, who ought to know better while sneering at one who evidently does know more of their own subject than they themselves do.

On the nature and mode of carburetted or naphthalizing gas we shall quote a passage or two for the purpose of showing how the author deals with his subject.

"The following is Professor Dussen's statement ('Gasometry,' p. 113):

ANALYSIS OF MANCHESTER GAS. IN 100 PARTS.	
Non-illuminating (Hydrogen	15.24
Heat-producers (Marsh gas	34.94
(Carbonic oxide	47.92 per cent.
Illuminants (Water	1.12
(Sulphuretted	2.35
(Carbonic acid	6.16 per cent.
Impurities (Sulphuretted	0.29
(Water	2.43
(Carbonic acid	3.67

100.00
This is canal gas. In common gas, such as that of London—which has little more than half the illuminating power of Manchester gas—the proportion of illuminants is smaller, and of non-illuminating heat-producers is larger. The mean of results of analyses of many different samples of canal gas does not contain more than 1 per cent. of illuminating constituents, the other 99 per cent. being non-illuminating heat-producing compounds; that is, 4 ft. in 100 yield light, as 96 ft. yield heat. It is an extraordinary fact when we buy and burn 100 cubic feet of canal gas, we obtain and use only 6 ft. of useful illuminants, and are obliged to take 94 ft. of gases which do not burn any light. But an unusual person is apt to exclaim, "Can this be? And if it be, is it necessary? Cannot the illuminants be made and sold without the heat-producers?" This is impossible. Gas cannot be made without its bulk being non-illuminating. But still something can be done to increase the proportion of illuminants, and this is called naphthalizing or carburetted. We find by experiment, if we pass gas over the highly carburetted substances called naphtha, that every foot of gas carries away with it as vapour a part of the naphtha; and that the naphtha vapour burns with the gas; and that the light-giving power of the gas increases with the quantity of the naphtha added. We can measure the gas, weigh the naphtha removed, determine the increase of light obtained, and thus ascertain exactly the illuminating value of each gas of naphtha burnt with the gas. The naphtha, thus added to gas, does not burn with a red flame, which gives off much smoke, as it does when burnt alone; but it gives a bright, white, smokeless flame. This result is due to the non-illuminating but heat-producing compounds of the gas. The naphtha contains much carbon and is the heat-producing hydrogen, which when it is set on fire alone the carbon is not heated sufficiently to burn it, still able to render it highly luminous; whereas its light is feeble, and much of the carbon is deposited as soot. But when it is burnt with the gas the heat-producers in the gas raise the carbon of the naphtha to a sufficient temperature to enable it to give off a brilliant light, and to burn without smoke. Thus the heat-producers are rendered directly useful. They raise the carbon to the temperature required for illumination and combustion. The naphtha, therefore, reduces the waste of illuminants in the gas by adding to it much carbon, in which it is deficient, and but little hydrogen, in which the gas itself abounds. Experience shows this to be a mistake, and proves that the illuminating value of a gas of naphtha depends upon the relation which it bears to the bulk of gas with which it is burnt, and that, within certain limits, its illuminating value varies greatly. The hypothesis I advance (for carburetted gas) consists of a gas-giving metallic vessel to hold the hydrocarbons, from which depends a gaspipe carrying one or more burners. The hydrocarbon vessel is provided with a screw-plug for convenience of filling, and with an inlet for gas, by which it

can be attached to ordinary fittings. The hydrocarbon vessel is placed above the gas-flame, so that it may be heated thereby to the temperature required to enable the gas in its passages to combine with and carry forward a suitable quantity of hydrocarbon vapour. Seven inches between the burner and the hydrocarbon vessel is found in practice to be the most suitable distance to secure enough, but not too much, vapour. When the gas is first lighted it gives but little light, owing to the fineness of the burners through which it passes; but as its heat warms the hydrocarbons, their vapour passes with the gas which comes over the surface, and the light gradually improves until the full heat is supererogated. This happens as soon as the hydrocarbons have obtained their normal temperature. The vapour of these hydrocarbons is more than four times the density of air, and consequently their tendency is to descend. Their specific heat is so small that they condense very readily, and the union between them and the gas is dependent upon the maintenance of high temperatures; wherefore I place the pipe which carries the burners below the hydrocarbon vessel, that the flow of heavy vapour may be facilitated by gravity. This pipe, moreover, is so placed as to be heated considerably, so as to prevent condensation, and thus is secured an illumination which cannot be procured otherwise. The light is so placed in reference to the pipes as to be shaded, as in some situations this form of apparatus is unsuitable, and I have therefore adopted a modified form suitable for chandeliers, &c., but still retaining the principle of heating the hydrocarbons, and passing them and the gas through heated tubes. In gaspiping the hydrocarbon vessel is heated to the proper temperature by a small subsidiary jet of gas, and the aims which carry the burners extend from the vessel but a very short distance, so that they may be kept hot enough to prevent condensation. 1. The superiority of carburetted over uncarburetted gas-light is shown—1. By the steadiness of the former as compared with the latter; and 2. By the carburetted light enabling us to distinguish colours with almost the same distinctness and accuracy as we distinguish them by day-light, the imperfection of ordinary gas-light in the latter particular is well known."

Photographs of Old English Cathedrals. Mason & Co., Old Bond-street.

The second part of this work consists of five views of Ely, with a brief account and list of bishops. In the view of the west end the lines are scarcely so upright as might be desired; the details, however, are presented with great fidelity. An excellent view is given of the choir, with the fine reared and other modern work.

VARIORUM.

The current number of "Nature and Art" concludes an interesting account of Holbein in Germany, with copies of portraits of himself and his wife, the latter coarse enough to almost explain why he remained in England without her. Mr. Aaron Peuley's hints on Sketching from Nature are continued. Black's "Guide to Paris International Exhibition of 1867," at 6d., is a misnomer. It is a guide to Paris, not to the Exhibition; and though, of course, only an outline, is compendious, and will be found very useful for the pocket. It is edited by Mr. D. T. Ansted, and has maps. "Debreit's Illustrated Peerage" is very convenient as to size. We find in the 1867 edition, the addition of clubs, seats, and residences, the biographies of the younger sons and married daughters of peers; the name of the eldest son (if any) of the heir apparent or presumptive of every peer; full account of the colonial bishops; and biographies of every new peer and bishop up to the date of publication. "Debreit's Baronetage" matches the "Peerage," and appears carefully brought up to the latest moment before publication. It claims to be the oldest publication of its class.—Lockwood's "Builder's and Contractor's Price Book for 1867" has been revised by the editor, Mr. G. R. Burnell, to meet the present state of the trade of building.—"The Engineer's, Architect's, and Contractor's Pocket Book" (for 1867) contains its usual large amount of valuable information. Its interest does not end with the year.

Miscellaneous.

EXPLOSION OF GAS AT WHITEHAVEN.—For some time past there had been an escape of gas from a pipe connected with the shop of Mr. Robert Douglas, draper, King-street, and the gas so escaping had made its way into the shop of another Mr. Douglas, also a draper, who occupies the shop adjoining, thereby causing him considerable annoyance. He procured a ladder, and with a lighted candle in his hand, mounted it for the purpose of inspecting the pipe communicating with the lamp which hangs in front of his neighbour's shop. A loud report took place, and the sign bearing the name of his neighbour was blown across the street, and deposited in front of a shop opposite. Beyond this, however, no damage was done.

THE GRAMME. At the next meeting, to be held on the 13th inst., ladies will be admitted.

STATE SUPERINTENDENCE OF THE TELEGRAPHS. In reply to a question in the Commons, Sir S. Northcote stated that Government have the question of bringing in a Bill for placing the telegraph lines in the kingdom under the superintendence of the state under consideration.

THE NEW CLUB HOUSE, LINCOLN.—The directors of the Lincoln Club Company (Limited) have accepted Mr. Huddleston's tender to erect their new club-house for 24,000l. This building, which has been designed by Mr. Drury, architect, will be four stories high, and 68 ft. long, occupying the site of the present club premises and the stone-yard adjoining. The material is to be red brick with stone dressings.

A PHOTOMAGNETIC COMPASS.—An ingenious contrivance has been recently invented by a naval engineer, M. Corriol, for ascertaining a ship's course during a voyage. On the dial of the compass, instead of the star which indicates the north, a circular opening is made, furnished with a small lens. The light shining upon the compass penetrates through the lens, and traces a black mark or line on a sheet of sensitive paper underneath, which is made to move at a certain speed by means of clockwork. The sensitized paper turns with the ship, and as the needle remains perfectly steady, every deviation or alteration of the course is photographed on the paper.

DISCOVERY OF THE SITE OF A LOST VILLAGE. The site of one of the Domesday villages in Yorkshire, to which the traditional name of Thorndale has attached, has been brought to light. Mr. R. Mortimer, of Fimber, has examined the place now known as Thorndale, and has found the traces of numerous foundations of the lost village. This examination was made consequent on the finding of an ancient well in one of the fields. The well to some depth is walled, and it is 43 yards deep, and has at the present time 16 yards' depth of pure water. The discovery in a country so badly watered as the wolds will prove of very great value, independent of its antiquarian interest.

EVENING OPENING OF MUSEUMS.—A public meeting has been held in Peckham, to promote the opening of museums on week-day evenings, as recommended by a Parliamentary committee which sat in 1860. The following resolution was carried:—"That owing to the great success which has attended the early closing and Saturday half-holiday movements, the great majority of the working classes could occasionally or habitually visit the museums on week-day evenings, as proved by the large attendance in the evenings at the South Kensington Museum and the industrial exhibitions held in various parts of London, and that the petition to Parliament be adopted." Mr. Hill, who seconded the resolution, remarked that 2,210,000 persons had visited the South Kensington Museum in the evenings since it had been opened three nights per week, and at the recent Industrial Exhibition held at Islington more than 5,000 persons paid for admission in ten weeks, the great mass of whom were of the working class, who attended in the evenings.

WIRE-ROLLING FOR THE PARIS EXHIBITION.—Messrs. Johnson & Nephew, of Bradford Ironworks, near Manchester, the wire manufacturers, have rolled, in their serial wire-mill, a telegraph wire rod, of No. 3 gauge, 281 lb. weight, and 530 yards long, without a weld or joint in any part. This extraordinary length of wire, says the *Engineer*, was made from one bloom, and rolled into a 1½-square billet 50 ft. long. This at the same time was bent into a serpentine form, that it might be more readily placed in the heating furnace, which is of gigantic dimensions, heated by gas on Siemens's latest improved regenerative principle, at the mouth of which is placed Mr. G. Bedson's patent serial wire-rolling mill. The billet is placed in the furnace at the opposite end, and in a few minutes is sufficiently heated to enter the rolls, and is gradually drawn out of the furnace by the mill itself. During this operation one portion of the billet is leaving the furnace, whilst the other end is being coiled (finished wire, about 1 inch in diameter. The time occupied in heating the billet was only seven minutes, and in three minutes more it was passed through the mill complete. The rolling speed and present capability of production in the mill are upwards of 100 tons per week.

LITERARY FUND ANNIVERSARY.—The Very Rev. Dean Milman will preside at the ensuing dinner.

"GREAT EASTERN" STEAMSHIP.—47½ per cent. dividend last year, and 10 per cent. for the recent half-year, with better prospects for the present! What do the old shareholders say about this and the clever fellows who managed the sale of the vessel?

GALLERY OF ILLUSTRATION. MR. AND MRS. GERMAN REED'S ENTERTAINMENT.—"The Family Legend" will be withdrawn at the end of this week, when the gallery will be closed for a few days, in order to prepare a new entertainment, by Mr. F. W. Robertson, the author of "Ours." It is a Venetian story. The scenery is by Mr. W. Telbin and Mr. John O'Connor, and promises well.

CHANDELIERS AND FOOT-LIGHTS.—The Messrs. Defries, of Houndsditch, have been exhibiting a "Crystal Candelabrum," manufactured for the Nizam of the Deccan, and a model of their Patent Float or Footlights. The Candelabrum is a fine thing of its kind. As to the footlights, experience must decide their value. We are bound to mention that the accounts which reached us from the new theatre in Liverpool, where they are used, were not, in the first instance, wholly satisfactory, and that some alterations were then about to be made. We have long urged the want of improvement in this item of the stage, and shall be very glad to hear that the objections which were found to attend at first the arrangement made by Messrs. Defries have been successfully overcome.

INDIAN GUARANTEES.—On the general subject of Indian railways, or any particular points connected with it, no man is listened to with more respect than Mr. W. P. Andrew. We are glad, therefore, to see him come frankly forward to vindicate the Indian Government, with respect to the good faith which it had always observed in the matter of its guarantees. "I have been a party to no less than four contracts with the Secretary of State for India in Council conferring the advantages of the guarantee of the Government of India on the several undertakings with which I am connected, and in no instance has there been for a moment the slightest cavil as to the amount of interest due from Government, or a day's delay in the payment of the amount." This is no more than ought to be said about the good faith of the Indian Government; but it is well that it should be said on high authority.

ARTISTIC FURNITURE.—We have seen some very elegant pieces of furniture manufactured by Mr. Leonard Collmann, of Grosvenor-street, and intended for the Paris Exhibition; notably a piano-forte of satin wood and ambony wood, and a cabinet to match. The metal work and the carving are exceedingly well executed; heads of the muses appear in the frieze of the piano-forte, and their Greek names are found amongst the foliage below. The great merit of the furniture, however, is that there is no extra size, that there are no extra and awkward projections, for the mere sake of ornament. Like some other good things, its merits are discoverable rather than protruded. Mr. Collmann, who has the advantage of being himself a good draughtsman, supplements his exhibition with some capital views of apartments in the British Museum that were decorated by him, and a very rich ceiling executed by him in Lancashire.

WATER SUPPLY, DRAINAGE, AND VENTILATION. A practical and useful lecture was lately given in connexion with the Hastings Mechanics' Institution by Mr. John Banks, of Bleak House, the subject being "Water Supply, Drainage, and Ventilation," as affecting the public health. In the course of his lecture Mr. Banks spoke of the plans adopted at Croydon and Worthing for the utilization of the sewage, and in continuing said there is no doubt that legislation is much wanted in the matters of water supply and drainage. There is no reason why Local Boards should not have powers over watersheds, or catchment basins. Why should a town, situated at the upper part of a valley, have the power of damaging water which runs towards the lower part? To look nearer home, why should not the governing body of Hastings have power to prevent pollution of any kind taking place in the valley in which it is situated? That it would come to this he had no doubt. The lecturer then offered some remarks upon the various points connected with the subject of ventilation, pointing out the way in which it is neglected, and giving some useful hints in regard to it.

GYMNASIUM, NEWCASTLE-ON-TYNE.—It is proposed to erect a gymnasium on a site in Bath-lane, in this town. Mr. Thomas Oliver is the architect.

THE HULL TOWN HALL.—At a meeting of the Town-hall committee, Alderman Bannister (the chairman) stated that the pulling down of the old Mansion-house, the erection of the new Town-hall, the extension of the building, and the whole of the furnishing, together with architects' charges, amounted to 21,665l. 8s. 10d.

GAS.—The Liverpool Gaslight Company have declared their usual dividend of 5 per cent. for the past half-year.—The Malvern Link Gas Company have declared a dividend of 6 per cent. for the last year.—The Stafford Gas Company have declared dividends at the rate of 10 per cent. per annum on their old shares, and 8 per cent. on new for the last half-year.—The Ipswich Gaslight Company have declared a dividend of 10 per cent. on original shares and 7½ on new, free of income-tax, for the last year, over and above a balance of 227l. carried forward to next year.

THE DISTRESS IN EAST LONDON.—The manager of the Millwall Ironworks suggested, that as on the 1st of April in each year the War Department order from 9,000 to 10,000 tons of iron to be manufactured for guns and gun-carriages, if it could be so arranged that a portion of that order, say 1,000 or 2,000 tons, could be given out immediately, the company with which he was connected would at once take on about 800 workmen, equivalent to the relief of 3,000 people. This suggestion was very favourably received by Lord Derby, who promised to lay it before General Peel and Sir John Pakington as the heads of the War and Naval Departments. The result has been favourable. Last week the Millwall Ironworks Company received an order from Her Majesty's Treasury for 1,000 tons of iron, in addition to the quantity the company were already under engagement to supply for the use of the manufacturing departments of the army. The company at once took on 400 additional workmen. It is stated that, with the concurrence of his colleagues, Sir John Pakington is about to give out several contracts for ironclad vessels without waiting for the passing of the navy estimates.

IPSWICH PUBLIC AND MUSIC HALL.—A site for the proposed hall has been secured in Westgate-street. The hall itself will be built away from the noise of the street, the frontage to Westgate-street being appropriated to the erection of two or three shops and as many private houses. The length of the hall (including the orchestra), will be 125 ft., the width 53 ft., and the height 50 ft. There will be accommodation on the floor for 1,000 persons, the orchestra will accommodate 250, the first gallery, at the upper end of the hall, 370, and the second gallery 210; so that in all the hall will seat 1,800 persons. There will be two entrances: one from Westgate-street (which it is proposed should be 20 ft. wide) will lead to the second-class seats and galleries, and the other from Museum-street to the reserved seats. Provision will be made by the way of ante and retiring rooms, and from the Museum-street entrance a covered way will lead to a porch, which will lead to a large room, 56 ft. by 25 ft., to be used as an ante-room to the large hall, and also available for public dinners and other meetings. From this room broad flights of steps are to lead to the great hall. In the basement there will be a kitchen for public dinners and tea-meetings, and with a lift to a refreshment-room in immediate communication with the halls. The architect is Mr. F. Barnes. The promoters anticipate an income of five per cent. on the money invested, and calculate that the total cost will be 11,000l., made up as follows:—Cost of site, 3,000l., of the front buildings, 2,000l. (after allowing 500l. as the value of the old materials), of the hall, 4,200l., of furniture, 800l., and for extras, a margin of 1,000l. is allowed. About 350 shares have already been applied for.

TENDERS

For the erection of two cottages at Reading, for Mr. R. Attenborough. Messrs. Wm. & J. T. Brown, architects:—

Beicher (accepted) 2,460 0 0

For two houses and shops at Snarebrook, for Mr. Wilkinson. Mr. Marshall, architect:—

Rivett 21,353 0 0

Mundy & Hutchinson (accepted) 1,325 0 0

For building a new church at Cassop-cum-Quarrenden, for Mr. Withers, architect:—

Bell 22,380 0 0

Readshaw 1,610 0 0

Lowes 1,572 0 0

Simpson & Co. (accepted) 1,450 0 0

For alterations at Longdon Vicarage, Worcester, for Mr. Withers, architect:—

Bell & George 2,408 0 0

Griffiths 475 0 0

Osborne & Co. 418 0 0

Meddings (accepted) 398 15 0

For building a new church at Coxhoe, Durham, for Mr. Withers, architect:—

Bell 22,326 0 0

Foster 2,529 0 0

Gradon 2,448 0 0

Robson & Son 2,288 0 0

Lowes 2,270 0 0

Spencer & Co. 1,850 0 0

Simpson & Co. (accepted) 1,785 0 0

For house and shop at Snarebrook, Essex, for Mr. Bodger. Mr. Marshall, architect:—

Loose 2,675 0 0

Mundy & Hutchinson (accepted) 660 0 0

For the erection of a new Station Hotel, Ascot, for Messrs. Langton, Burrows, & Co. Messrs. Wm. & J. Brown, architects:—

Bell 21,400 0 0

Fether (accepted) 1,190 0 0

For the erection of an earthenware manufactory at Hanley, for Messrs. Thos. Worthington. Messrs. R. Scriven & Son, architects. Quantities supplied:—

Woodbridge 23,250 0 0

Baily 3,324 0 0

Collis & Hudson 3,315 0 0

Steele 3,167 0 0

Mathews (accepted) 2,997 0 0

For completing Convent Church, Magdalen-road, for Leonard's-on-Sea, Sussex, for the Rev. Superiress. Mr. G. Goldie, architect. Quantities supplied by Mr. James Schofield:—

Contract A. Contract B.

Hunt 24,100 21,191

Nightingale 4,100 1,043

Simms & Martin 3,785 898

Roberts 3,325 925

King & Son 3,233 591

Fritcher 3,090 807

Simpson 2,982 719

For building four houses for Mr. Allen, at Newwood, for Mr. A. Bridgman, architect:—

Warne 21,720 0 0

Wallis 1,945 0 0

Johnson 1,190 0 0

Nightingale 1,103 0 0

For building two houses for Mr. Nightingale. Mr. A. Bridgman, architect:—

Wallis 2,600 0 0

Johnson 850 0 0

Nightingale 513 0 0

For eight houses at Barking, Essex, for Mr. Hawes. Mr. J. W. Dennison, architect:—

Amble 21,567 0 0

Rivett 1,743 0 0

Stokes 1,500 0 0

Withers (accepted) 1,360 0 0

For sixty-eight cottages at Wilneote, Warwickshire, for Mr. J. W. Dennison, architect:—

Clarson 25,000 0 0

For building additions and making alterations and new shop-fronts to 21, 22, and 23, Victoria-road, Emsay, for Mr. F. Gorringer. Messrs. Walford & Donkin, architects. Quantities supplied by Mr. Doughney:—

Turpin & Son 24,315 0 0

Lawrence & Sons 3,922 0 0

G. H. & A. Bywater 3,771 0 0

Ramsay 3,786 0 0

Newman & Mann (accepted) 3,464 0 0

Accepted for improvements on Crown property in Oxford-street, for Mr. T. Holloway. Mr. J. Dale, architect:—

Stone Front. Carter & Son 21,678 0 0

Fittings of Ground Floor and Library. Carter & Son 1,987 0 0

Plastering Work. Parsons 750 0 0

Ornamental Ceiling. Jackson 260 0 0

Mus. Johnson 70 0 0

For works on schedule of prices. The following trades were accepted:—

Iron Shutters.—Clarke & Co.

Decorations.—Cowan & Co.

Senghila.—Dapson & Son.

Engineering and Copper Works.—Punflet & Wood.

General Fittings.—Aulton.

For the erection of two new houses and shops, Shepherd-street, Mayfair, for Mr. W. H. Whitehouse. Mr. Joseph B. Mox, architect. Quantities supplied:—

Stoner 24,387 0 0

Supwell 1,794 0 0

Walton 1,693 0 0

For plastering at Sadly Hall, near Harrow. Mr. John Dale, architect:—

Eustake 2,933 0 0

Ford (accepted) 245 10 0

D. Welling 235 0 0

Andrews 216 0 0

Horne 108 10 0


WANTED, by a respectable steady Person, well acquainted with both the foreign and English timber trades, a SITUATION as FOREMAN or CLERK. Highly satisfactory references can be given.—Address, F. B. No. 29, Stafford-place South, W. London.

THE ENGAGEMENT with a Surveyor and Valuer. An argument for future Partnership not objected to.—Address, R. A. of "The Builder."

The Builder.

VOL. XXV.—No. 1257.

On the Principles of Proportion as Common to
both Gothic and Classic Architecture.



N general principles it would appear to be fairly assumable that the Gothic and the Classic styles, being both architectural, must have common dependence up to a certain point upon identical principles common to all architecture; and if this is the case both styles should prove susceptible of common furtherance as these principles become better understood, their applications and developments subjected to more masterly control. Upon this ground, so far as its just range extends, neither one school nor the other can arrogate an exclusive nor even a prior right. Here both alike are in a stage of pupillage, and it is at a subsequent stage that the privileges of independent option, and even of individual caprice, fully accrue. There are certain conditions of propriety and dignity in a door or window which must be acknowledged in the instance whether the head be pointed or horizontal. Such common conditions are general indeed, but therefore it is that they are so universal; and therefore it is, that they stand the earliest as well as most unremitting cognition. After the common constructive obligations, it is in allegiance to Proportion, that architectural styles most importantly insculcate, by peculiarity of proportion no doubt that style becomes so strongly contrasted with other, but this is no more than an extreme of the same principle of modulation, by which all but limitless variety is developed by varied proportions within the conditions of the style.

The subject of Proportion as an element of art has occupied more or less of the attention of all the important writers on architecture, and those who have devoted to it the fewest words have marked emphatically their sense of its influence it exercises,—the dignity of its results; of those who have treated of these more in detail, it may, perhaps, be said that the most successful have been the readiest to admit the completeness of their results, whether relative to ideal theory, or even to the fund of principles which seem to have been within the grasp of architects who have left no works other than architectural.

One of the best introductions to remarks upon the subject in itself, may be a critical survey of the conclusions of a recent writer, and we choose the article on Proportion in the Dictionary of Architecture, by M. Viollet-le-Duc. If the refutation of an erroneous system were but the establishment of a true, how many controversies would have long ago sunk to rest! But, as systems may conflict, and yet neither be just, just as vessels may come into collision, and both be sunk. There is good service to be rendered nevertheless, in buoying the wrecks, and ensuring a happier voyage for future adventures.

turers. We freely concede, therefore, to the writer that M. Quatremère de Quincy cannot be safely followed in his view, that a true system of proportion would establish such an absolute reciprocal dependence of principal parts, of subordinate and of the smallest subdivisions, that given a particular instance of relation, the proportions not only of the parts but of the whole would at once be deducible. Beauty is not thus to be produced by receipt, and the enigma of sublimity is not to be solved by overhearing a catch-word.

Doubtless when we contemplate a truly harmonious work we recognise an affinity between all members, and even parts of members, and the whole; the foot of Hercules affects us with a sense of congruity in its forms with the hand of the hero, and both with the general musculature of body and limbs. It is even possible that by careful study we may work our way to some leading principle by which the congruity was brought about, or a special application of such a principle; but the genius of the artist invented the principle as well as effected its application. A key-note governs a symphony,—its harmonic relations may be as well known to us as to the composer,—but neither the key-note nor the very theme itself would ever have helped any but the gifted musician to his symphony.

The setting of a palette is no unimportant part of a painter's day; but, after it is set, it will be of little avail for any pencil but his own.

It were but a weak retort that if the theory of proportion is not useful to the extent of enabling us to evolve beautifully proportioned structures, it may at once be set aside as worthless of study. Not on such view proceeds the melodist as he applies laboriously to the recondite mathematics of his art,—not so the executant who practises unwearying scales,—not so the painter observant and experimentative without ceasing of the effects of colours upon each other in every variety of mixture, and purity, and tone.

It is always a nice question how nearly theory may be pressed forward upon practice, and the relation of proportion to architecture is no exception. Up to a certain point, the development may be said to be purely scientific and remarkably precise; beyond that line there is little more to be established than a limited code of general maxims,—limited, indeed, and general, and yet the grand results of the intellectual inquiry. The next function is for inventive imagination to devise for ever-variable contingencies, those combinations of elementary principles in subordination to the general, that constitute happy and beautiful solutions.

When we come to analyse a complete and successful work, it is of the utmost importance to recognise the distinction indicated;—it is much the same that obtains in grammar between etymology and syntax. We may easily mistake what is but scaffolding for the building if we are content but to note by aid of what lines and centres work was set out, and fail to observe the broad contrasts to which these details were subservient. There is, therefore, indeed, a preliminary inquiry as to what scale the artist employed; and even this we are at liberty to criticise as possibly but a makeshift; but let it have what excellence it may, the far more important question arises afterwards as to the principle and the success of his application of it.

Natural taste is sometimes ahead of scientific culture, and snatches a grace that it would not have ventured to justify, knowing not that it was justifiable; and at other times it pays the penalty exacted from ignorance by missing, in its awe of the established rule, a beauty fairly within grasp.

An exacter analysis of the design of Classic architecture has brought out the result that the Greek architect set great value upon his dimensions being simple in their relative proportions, and those executed with the nicest exactness;

and it has, moreover, appeared that the lines which he held of most importance to be brought into proportional dependence, were the vertical and the horizontal; that is to say, to the apprehension of the Greek the architectural eye was inevitably disposed to appreciate heights upon the plumb-line, with reference to the several breadths most intimately connected with them, and *vice versa*. The influences that predispose to such dominant comparisons lie deep in nature, and are within us and around us at every moment.

Every movement we make strengthens our personal experience of the dependence of stability and equilibrium or balance upon the lateral distribution of mass with reference to the vertical, and the satisfaction of the sense of security in these respects is the primary condition of architectural effect. Again, the convenience of every distribution of plan or opening, and the requirements that they make upon us for movement or use are naturally estimated by dimensions taken upon the vertical and horizontal lines, and to extent of divergence upon lines at right angles to each other.

When we look at the proprieties of the case thus broadly, it would seem that up to this point architectural principle is—

"Whole as the marble, solid as the rock,
As broad and general as the casing air,"—

and that to this primary rule architecture, as architecture, must render allegiance until such time as it shall be called upon to satisfy tastes and habits in a new condition, where the all-regulating plumb-line ceases to be at right angles to the horizontal. Every diversity of classic style, between early Doric and latest Corinthian, recognised the obligation and the guidance of the principle; nor does it appear how any other style, however contrasted, Byzantine, or Moorish, or Indian, or Gothic, can emancipate itself from a rule at once so stringent and, in truth, so advantageous.

That in truth they cannot, whether so ill advised as to wish it or no, is apparent from the universality in all architecture of any pretension to fine art, of that symmetry which is in fact one of the most important consequences of our principle.

A Gothic cathedral is to the full as symmetrical a building as a Greek temple; the prevalent supposition that it is not so, is either the mistake, or a concession to the mistake, of those who do not distinguish between original design and alterations, and semi-restorations and patchwork; who feel bound to take pleasure in the varied styles of Canterbury Cathedral, and think that the nave and choir of Gloucester happily illustrate the flexibility of their favourite Gothic.

And whether the ceiling of a nave or a cella be arched,—be semicircular or pointed or flat,—it will ever be estimated as low or lofty in effect by an appreciated proportion between its height and breadth,—it will be broad or narrow by corresponding mental comparison of its breadth taken at right angles to its length.

Tros Tyrinsve.—Gothic or Greek: from these spontaneous acts of indissoluble association there is no escape, and the corollary appears to be, that in Gothic design, as in Greek, heights are bound to be proportioned upon the vertical in relation to the horizontal; and the further presumption is as little to be overlooked that exact execution of proportionate dimensions will be as valuable in one style as in the other.

This last, however, is a last refinement, and highly as it may enhance the last effect,—admirable effects, though not the most admirable, are probably not inconsistent with somewhat negligent observation of it, especially when very large and varied dimensions are in question.

It would follow from these premises that, if the Gothic architects,—whatever the details and the general proportions of their predilection,—did not make these comparisons the basis of their design, they must have worked upon a faulty

and defective plan. Inventive imagination and corrective taste may, it is true, in favourable cases, compensate for false theory and bad technical aids and instruments, and with such saving qualifications the Mediaevals must be largely indeed credited. In fact, if we are to assent,—as it seems we must,—to the expositions of their system by Viollet-le-Duc and others, it is only so that we can account for their practical success, in despite of the disadvantage at which they were placed by their theory.

This is a matter that becomes of importance if Gothic is a style that is to live on; it can only really live, like any other organism, so long as it continues to grow; and growth is dependent on healthy roots and free circulation of air, and resolute cutting away of whatever is dead, whatever is stunted, and rigorous control of whatever, vigorous though it be, is tending to deformity.

Let us follow out then, to a certain extent, the theoretical system upon which a Gothic work was set out, and satisfy ourselves whether it really had much to do with the best beauty that was realized,—whether it was not constantly inapplicable to very important problems, and had not to be departed from,—did not very frequently stand in the way of a better rule,—frequently induce distributions that had been better dispensed with. This is a very heavy bill of indictment, and the greater the honour to the architects who in their self-assumed fetters could still vindicate their native artistic power. With all our respect for them, we owe it to the common art to bring their schemes of harmonizing proportion to the test; and the great test of all is, whether in a given instance, where it was certainly applied, beauty was really achieved, and, when achieved, was really due to the employment of it,—or came by the neglect of it on all critical points, and so, in fact, was conquered in its very despot.

It appears satisfactorily made out that the architects of the Middle Ages adopted triangles, and of these a certain set as generators of proportion.

The first was the rectangular isosceles triangle; that is, a half square set on the diameter of the square as its base, and with right angle at apex.

Secondly, the so-called Egyptian isosceles,—having a base proportioned to vertical as 8 : 5.

Thirdly, the equilateral triangle.

For an example it is shown, among others, that, in the Sainte Chapelle at Paris, not only was the clear of the pointed window-arch formed on an equilateral triangle, but that the full height of the windows was determined by the prolongations of the sides of these triangles; the window-sill being made coincident with the line of their third intersections. The beauty of this chapel may well commend to our favourable consideration a system which manifestly had an influence upon the design. Whether this was the technical system employed exclusively,—whether it is based on true principle, and, if not, how its defects declare themselves in the work, or how it was that they were effectively counter-acted, are further questions. Certainly the scientific justification of the system as set forth seems to demand emendation.

The proportions of architecture are based, we are truly told, in the first instance, on stability, and the laws of stability are dependent on geometry; and we may further admit that a triangle may give a very satisfactory expression of stability if appropriately applied—but scarcely that, as a general fact, it gives the most satisfactory: apart from solid pyramids that are their own abutment, inclined forms, by the very force of geometrical stability appealed to, are suggestive of sliding and collapse.

Still less does it appear why design should be restricted to three particular forms of the triangle. Marvellous variety and beauty were certainly evolved from combinations of the specified three, but this only awakens enterprise to experiment upon those that have been passed over. Doubtless, the selected forms present themselves as most easily managed; the rectangle in the semicircle,—the triangle of which the apex is given by the intersection of arcs struck with the same radius, and the triangle which can be set out by the whole numbers, 3, 4, 5, applied to half-base, vertical and inclined side,—a form which, however, shares its advantage with others, though less known. As regards the first form, it has no special Gothic application, being equivalent, even in the cited example of the Cathedral of Bourges, to the system of equal squares, which is the common property of mechanical design in all times and countries.

The most complete example of a systematic application of theory in the design of a great Gothic work is, probably, Cologne Cathedral, as elaborately analyzed by Boisseree. The favourite equilateral triangle regulates dimensions in one form or another throughout, and the result that, at least, was not avoided, stands thus on record:—"At Cologne, the artist has vigorously adhered to his geometrical data; his composition is a formula which makes no allowance for perspective effect, nor of the apparent alterations of curves resulting from the height at which they are placed. Thus the choir of Cologne is rather surprising than delightful; the geometrician has overpowered the artist." So Viollet-le-Duc. Fergusson marks still more distinctly that it is precisely in the aesthetic effect of proportion that the building is defective. "Looking at Cologne in any light, no one can fail to perceive that its principal defect is its relative shortness: now that the whole of the interior is finished these defects of proportion are become more apparent than they were before,—the height of the nave is nearly four times the width, a proportion intolerable in architecture, &c."

Viollet-le-Duc, while stanchly asserting the employment by the Goths of an harmonic theory, makes claim for the French architects—especially at Beauvais—that they avoided the rigid practice that failed at Cologne; "the artist is ever present at the side of the geometrician, and knows in case of need how to make formulas give way" (*faire fléchir les formules*).

If this can be approved, it is excellently said; but a still stancher theorist of harmony is justified in saying that frequent and important suppressions of formulas prove by their very success either that the formulas were wrong, or, at least, the system incomplete, and so he gains a *locus standi* for the exposition of a more developed theory, that will render an account both when subordinate rules must be observed and when they either must or may be departed from.

We will take the very cited example of Beauvais,—the choir, as figured and commented upon in vol. vii, p. 551, of the Dictionary of French Architecture. It is shown that the spacing of the piers both of nave and aisles is determined by the division of the plan into systems of equilateral triangles. Thus the axis of the nave being laid down and its width from centre to centre of pier adopted, the axial lines of the nave piers are also obtained; their longitudinal spacing upon these is then determined by an equilateral triangle, having one angle on the nave axis and each of the others on the centre of a pier; that is to say, the diagonals of the four piers of a bay intersect the axis of the nave at an angle of 60 degrees. The oblong plan of a bay thus obtained has the proportion of the side of an equilateral triangle to double its vertex, or 4 : 9.238. These numbers may seem tolerably near to the ratio of whole numbers 4 : 7, but the error in exactness upon a plan of 46 ft. amounts to more feet—2.6—than a Greek would have tolerated tenths of inches.

In general result, the spacing of the side openings is rather more than half the width of the nave, which may possibly be effective; but the advantage of such a distribution of difference would have been as easily obtained by direct comparison of lengths and breadths—a system which would also have provided a large variety for free selection.

To proceed: the prolongations of the sides of the equilateral triangles give intersections deciding the line of aisle piers or shafts, which are placed upon them accurately; and then still further prolonged, the line of the external wall,—the outer line.

The interior aisle has still the advantage, whatever it is worth, of corresponding with an equilateral triangle in the form that it is transversely as the vertex and longitudinally as the side,—or 1 : 1.732; but in the outer aisle this fails from the thickness of the wall being deducted from the vertex. There is thus introduced a difference of width between the aisles which may have all the general value claimed for it, but which is only gained by the sacrifice of the system,—and might have been so gained under no system at all,—under a more rational system it might have been effected consistently.

Again, the width of the bay next to the piers of the crossing is diminished from just regard to the responsibility of extra thrust, but the degree of diminution is again not in any way deducible from the triangles. Credit is taken for the architect's superiority to formulas in neglecting here the centres of his triangulated plan; but it is

again no slight impeachment of a theory of proportion that it breaks down and has to be deserted precisely where its aid should be most valuable,—on the verge of an inevitable modification.

The incommensurableness of the plan as propagated to the vaulting, as the span of the transverse arch has the same broken ratio of the diagonal again as the vertical to the side of an equilateral triangle; in the arches themselves, where alone the triangular form is real salient, the assumed governing triangle of the design is set aside, and exercises no appointing power over its successor. The transverse,—the more important arch,—is proportioned as in span to 3 in height, or very considerably flatter; and to the height thus determined the diagonal has to accommodate itself; but it does not appear that the particular height was selected from any common principle.

The same system is pursued not much more satisfactorily into the elevation of the interior. The interval from centre to centre of piers taken as the side of an equilateral triangle from which others are raised, forming a vertical series of lozenges, of which the limits should define the architectural divisions. But already at the spring of the arches the scheme fails, and a new commencement has to be assumed, and again above the triforium still another commencement, and different span. It is only in the arch of the window that the equilateral triangle re-appears beyond all question, or indeed is effective apparent at all.

Such a faltering application then of the equilateral triangle as a guiding instrument of design seems to illustrate little else than its inefficiency, if the result at last was beauty compatible with all these divarications and obscurities. In any case it only promises to conduct into a very thicket of incommensurables that try upon the principle of strict proportion at every step.

But even if the coincidences had been much more frequent and exact than they prove to be, to what would they amount? In what manner do they, as set forth, touch or pretend to touch those determining lines on which the ultimate impression of appropriate and expressive proportion depends? The expositor, at least, does not pretend to furnish us with a norm for the full height relatively to breadth, either of a bay or of the nave transversely,—still less of length of choir relatively to height; and yet these are the combinations that appeal directly and overpoweringly to our sensibilities; these are the terms between which, if anywhere, harmony must preside, and assert itself in its prerogative.

We must not, however, sacrifice the architect to his interpreter; from the original error of adopting units of transverse dimensions that are incommensurable, he is not to be absolved, nor from its consequences; but the diagrams supplied seem to establish, or at least allow the assumption of, a more simple process of development than has been set forth.

The height from the proper level of the pavement to the upper string-course of the triforium will be found to equal very exactly the width of the nave and two side-aisles, taken from the centre of the nave-pier to the wall. The width of the nave measures the pier from the floor up to the capital of the side-arch, and the extent from this point to the string-course at the base of the triforium equals the breadth of the first aisle, and the triforium itself equals that of the outer aisle, which is diminished by the thickness of the external wall. The difference, however, here lost is thrown into the dimension from the top of the triforium to the springing of the nave-arch, and makes up its height with one width of the aisle. In this way the height of the bay, from floor to springing, becomes proportioned to the width of the nave as 5 to 2, a very lofty proportion; the added height of the nave arch brings out the still loftier of 6 to 2 = 3 : 1.

The height of the nave, like its breadth, is made up of verticals of the normal equilateral triangle, and has this to thank for its commensurableness; but the bay, having its spacing determined by the side of the triangle, does not participate in the advantage.

In the repetition, as a vertical whole, of a dimension that is very decided, but still broken into more marked divisions, horizontally, the Gothic architect employed a stratagem of cover commensurableness that the Greek had practised before him, and that would be an available furtherance of repose in any style of architecture, but the operation by the equilateral triangle

convicts itself in every case where it does not become virtually inoperative. In detail it leads to the confusion of proportion, and as regards any pretensions it may have for saving general effect, let us hear the independent judgment of an architect well affected to the deservings, if any, of the style.

"No building of its dimensions and beauty of detail can well be so unsatisfactory as the choir at Beauvais."—i. 12. The architects "determined to carry the clearstory to the unprecedented height of 150 ft., or about three times the width, measuring from the centre of one pier to that of the next (opposite). This, with a very long nave, a very acute vault, wide pier-spaces, and bold massive supports, might have been not only tolerable but sublime; but as this cathedral wants all these qualities, the effect now is only, &c."—*Fergusson, Arch.*, vol. ii., p. 494.

We should only be travelling over the same ground to the same results by developing in detail the relation of the beauty of the Sainte Chapelle to the technical theory of regulation that there also was so lightly held in hand.

The most glorious culmination of art is arrived at in those rare and happy instances where genius is in full possession of all traditional, technical, academical aids and instruments, and still can assert its supremacy in unfettered mastery. The workman then has the best tools, but is master of his tools no less than of his materials; the artist is neither cramped by a rule that is wrong, nor forced to break through it,—landably, no doubt, but as at random so ever precariously. The qualification of the style of Bolingbroke by Pope,—

"Correct with spirit, elegant with ease,"—

exactly expresses that marvellous combination of regularity and inspiration that gives effect to the works of the Greeks in poetry, and oratory, and sculpture—and in architecture perhaps most of all. The genius of the Mediæval never quite attained—so it seems to the writer—this last term of accomplishment. What genius could do with imperfect instruments he grandly did; but, as the instrument was advancing to perfection, his chances and his age were past, and theory alone was then unable to do more than turn correctness into coldness, and regularity into restraint, while the free daring of true genius degenerated into extravagance or subsided in stolidity.

Two great masters, but in other arts, came just in time to show the world what the Mediæval spirit was capable of when combined with the cultured sense of proportion which is the world's inheritance from Greece. Only in the sacred pictures of Raffaele did the most divine inspirations of Mediæval painting attain to the fullest and most harmonized development; and only in the plays of Shakspeare, which reflect in every act the influences, however indirectly received, of the antique drama, did the dramatic genius that pervaded the Middle Ages break fully into bloom.

In either case, the proper Renaissance in its disparaging sense,—the revival which would revive the exhausted,—that would accept imitation for a new birth, came later,—or so far as it was contemporary, ran on in parallel stream, but on a lower level. A Gothic Renaissance is measured as much to be deprecated as ever was Classicism in such a sense as this; in a better sense it is worth striking for; he will be at least the right opening who, in the spirit of our mediæval fathers themselves, shall be confident of purpose not to imitate but to surpass them as they ever did their best to overpass their promoters. There is still a large field open for the adjustment of new forms to new requirements, and especially for the enhancement of the best æsthetic effects, by harmony of well-understood and exactly-realized proportion.

GAS-HEATED BOILERS.—An engine and boiler have been erected in the warehouse, No. 50, Cannon-street, City, worked by steam generated by gas-heat, under the patent of Mr. Arthur Jackson. The fire-offices, it is said, have admitted a system to be adopted without any increase of premium, and thus in all warehouses or other establishments where cranes, hoists, or other apparatus requiring power are in use, steam can be supplied, without stoker, smoke, ashes, or dirt, any description. No brickwork or chimney is necessary. The space occupied is very small, and the furnace is fully kindled in a few seconds, and extinguished instantly.

THE HEALTH OF LONDON IN 1866.

THE Registrar-General's annual summary of the Weekly returns of births and deaths in London is at all times full of interest, and the fact of its appearance so promptly after the close of the year with which it deals, gives it a value, of which too many of our official publications are bereft through such delay in their issue, that the facts to which they refer have been previously dismissed from the public mind. The annual summary of the births and deaths in London during the year 1866 is, moreover, invested with an additional interest from its containing the first complete *resumé* of the effects of the cholera epidemic in the various portions of the metropolis for the whole year.

The meteorological conditions of the year 1866, as far as they present any variations from an average of previous years, would appear to have been favourable to the public health. The mean temperature of the air was, at the Royal Observatory, Greenwich, 49.8°, or only half a degree above the average of 25 years, and whereas in the first and last quarters of the year the temperature was above the average, the summer was cooler; thus neither intense cold in winter, nor excessive heat in summer, tended to raise the mortality. The 304 inches of rain which fell during the year, was an inch above the average of 51 years; and the average daily amount of horizontal movement in the air was 274 miles, or considerably higher than it has been since 1848; there was, therefore, no deficiency of rain, or of movement in the air, both elements of considerable importance to the health of the inhabitants of crowded and ill-drained towns. The effect of these apparently favourable conditions was more than counterbalanced by the visitation of a cholera epidemic, which raised the rate of mortality in 1866 considerably above the average, and higher than in any years since 1840, excepting only the influenza year 1847, the cholera years of 1849 and 1854, and 1864 when diseases of the respiratory organs were unusually fatal.

The population of London, estimated to the middle of 1866, was 3,037,991. During the year 107,992 births and 80,129 deaths were registered in this population, thus showing, in spite of the excess of deaths, a natural increase during the year by the balance of births over deaths of 27,863; the excess in the previous year had been 33,262. The numbers of both births and deaths exceeded those recorded in any previous year. The 80,129 deaths give a rate of mortality for the year equal to 26.5 per 1,000 persons estimated to be living; or higher than the rates in any of the last 27 years, excepting the four above mentioned, when they were respectively 27.0, 30.1, 29.4, and 26.5. The average annual rate of mortality in London during the ten years 1856-65 was 23.6; and the death-rate in 1866 from all causes, other than cholera, was 24.6; the rate being raised by an increased mortality from diarrhoea in the autumn, in addition to the actual deaths from cholera. The death-rates in most of our large towns have been steadily increasing during the past few years; and this undeniable fact has only recently attracted the attention which its importance should command. The cause of this general increase of mortality is now beginning to be understood, and there is, therefore, ground for hope that before long a re-action may take place. The growth of London in recent years has been unexampled in previous periods, and yet the buildings have not kept pace with the increase of population. The dwellings of the labouring classes have been undergoing a steady process of demolition for many years to make room for railways, warehouses, or other erections, which bear a higher commercial value than the poor class of houses which have been removed. The evicted tenants, unable and unwilling, to seek their homes at a great distance from their daily occupations, have crowded into the remaining houses of their neighbourhoods, regardless of the consequences to health, and as a natural result, fevers and other epidemic diseases have increased in fatality, and the death-rate generally has been higher. In the five years, 1855-60, the death-rate in London, averaged 22.7 per 1,000, while in the years 1861-5, it had increased to 24.5. The experiments upon a large scale, which have been made by the trustees of Mr. Peabody's gift, and by Alderman Waterlow's company, have set at rest many of the doubts which have been so often expressed as to the practicability of erecting model dwellings for the poor, which should at once be attractive to the classes for which they are intended, and prove a safe 5 per cent. investment for capital.

ists. If the attention of architects and builders were seriously given to the subject, the examples of which we speak would soon be further improved upon; it is also to be expected that the public, convinced that this is a matter of life and death to the labouring classes, and also that such erections on freehold land afford good security for the capital employed, will, ere long, support this movement with at least a portion of the confidence which, has recently been bestowed upon the long succession of "foreign loans."

Of the 80,129 deaths registered in London during 1866, 23,680 resulted from diseases of the zymotic class. Cholera alone caused 5,577 of these deaths; and, before passing on to notice a few of the other principal causes of death, it will be interesting, while the recent epidemic is fresh in our minds, to recall a few of the facts connected with its outbreak, duration, and results. Up to the end of June, throughout the metropolis only 29 deaths had in the six months been referred to cholera, mostly of a sporadic character; but, during the week ending the 7th of July, 14 fatal cases were recorded, and in the following week these had increased to 32, of which a large proportion were of the worst Asiatic type, and occurred in Stepney, Mile-end Old Town, Poplar, and Bermondsey, the very districts that afterwards suffered so terribly. The deaths from cholera now rose rapidly, until, in the week ending 4th of August, 1,053 cases were registered. From this date the numbers declined almost as rapidly as they had risen to about 200 per week at the beginning of September; but from this point the disappearance of the epidemic was very gradual. Even in the week ending 17th of November, 32 cases were recorded; but by the end of the month the disease as an epidemic may be said to have died out. Only in the eastern districts of London did the epidemic ever assume alarming proportions. In those eastern districts comprising the unions of Shoreditch, Bethnal Green, Whitechapel, St. George-in-the-East, Stepney, Mile-end Old Town, and Poplar, occurred 3,931 of the 5,577 deaths from cholera in the whole of London. In Shoreditch, the death-rate from this disease for the whole year did not exceed 1.07 per 1,000 persons living, but in Stepney it was 10.76; in Poplar, 9.08; and in St. George-in-the-East, 8.79. The southern districts suffered next most severely, showing a total of 712 deaths; but the disease in a severe form was almost confined to Greenwich and Woolwich, where the death-rate per 1,000 from this cause was 2.07 and 1.69. In the northern districts, including Marylebone, Pancras, Islington, and Hackney, 417 deaths occurred; the rates per 1,000 were, 1.06 in Hackney, .6 in Pancras, .43 in Islington, and only .3 in Marylebone. St. Giles, Strand, Holborn, Clerkenwell, St. Luke, and the City, comprising the Central districts, contributed 329 deaths, the highest rates being 1.57, and 1.18 in the east and west portions of the City. Cholera was scarcely epidemic in any of the west districts of London, the total deaths in the year being 168; the heaviest death-rate per 1,000 from this disease being .84 in Fulham, whereas in Paddington, Kensington, and Chelsea it did not exceed .25, .21, and .33, and in St. George, Hanover-square, it was only .17. The fact of the first serious appearance of cholera, and of by far its most terrible ravages having occurred in the area supplied by the East London Water Company, is beyond all dispute; but whether this company's water either caused the outbreak, or rendered it more fatal, seems to be beyond the possibility of conclusive demonstration; the accumulated evidence of succeeding epidemics is, however, sufficiently impressive to enforce conviction upon the most incredulous that purity of water supply is an element of the first value in securing comparative immunity during a cholera epidemic.

Other diseases of an epidemic character besides cholera contributed to the high death-rate in London last year. Small-pox, to which in 1864 and 1865 only 537 and 646 deaths were referred, was fatal last year in 1,388 cases. The unsatisfactory working of the present legislation upon vaccination will, it is to be hoped, be remedied during the present session. Measles also increased from 1,302 deaths in 1865 to 2,259 last year; on the contrary, deaths from scarlatina and typhus each showed a decrease. The year 1866 was remarkably fatal to persons suffering from phthisis, the more than average amount of wind may in part account for this; in the three previous years, the deaths from this disease had been successively 7,991, 8,559, and 8,710, but last year they increased to 9,277; the rapid increase in the fatality of this disease has

a very close bearing upon the overcrowding in dwellings in so many parts of the town, which is not only dangerous in times of epidemics, but is continually sowing the seeds of untimely death in numerous and varied diseases.

Space will not allow us to enter more into detail regarding the causes of death in London last year, or even to touch upon many subjects of interest discussed in the pages of the Registrar General's Annual Summary. The result of the cholera epidemic in London is from one point of view satisfactory, its ravages were less extended and less severe than in either of the former visitations of 1849 or 1854; in 1849 the deaths from cholera in the Metropolis were 14,137, in 1854 10,738, and last year only 5,577; but we, inhabitants of the largest city in the world, have a heavy task before us if we would feel secure against future visitations, and seriously undertake to reduce our death-rate more nearly to the established healthy standard of 17 per 1,000 persons living.

A RAMBLE AMONG THE RUINED AQUEDUCTS AND FOUNTAINS OF ROME.

We have already briefly alluded to the visit lately paid by the British Archaeological Society of Rome to the most remarkable ruins of the antique aqueducts. The object was, under the guidance of Mr. Parker, to trace in ruin and identify by historic records the earliest monuments of the uses of water for public benefit or more refined luxury by the Romans, and to illustrate all ascertainable sites and buildings mentioned by classic authors in connexion with the sacred fountain, the public thermæ, the private bathing-house, and the aqueducts of republican or imperial origin.

For the first walking expedition the rendezvous was before S. Annasasia, near the north-western base of the Palatine hill. At a few paces thence is seen, westward from that church, through a cavity opened in the pavement, the subterranean course of a hot spring, identifiable as the *Fons Juturna*, which flows at the depth of about 20 ft. below the modern street-level, and emerges to view near the mouth of the Cloaca Maxima. Leaving S. Anastasia, the party first visited the arch of Janus Quadrifrons, to observe where the ancient city's level is obviously left to this day unaltered, at the base of the great *mur* supporting that quadruple arch ascribed to the time of Septimius Severus. The ruins covering the northern slopes of the Palatine, not far distant hence, present examples of construction various in date,—that of the kings of Sylla and the emperors; and near an extent of buttress walls, in massive peperino blocks, that, if not positively referable to the city of Romulus, must certainly pertain to the very oldest fortifications built on this hill, we enter a conduit hollowed in the living rock, lofty, winding, and sufficiently spacious to be explored for the distance of several feet, that may have served for the supply of water to garisons, or the citizens in general. Mr. Parker observed the similarity between this conduit and that of Alba Longa, which yawns on the rock-side, close to the picturesque convent of Palazzo, above the Alban lake. Ascending the same hill, and bearing in south-eastern direction, along the grounds where excavations are now being carried on by Government, we reach several imposing and, in many parts, well-preserved remains of imperial building, whose long suites of chambers, still vaulted, gloomy, irregular, and labyrinthine, present a solemn effect of dark interiors, in which have been found many valuable marbles, sculptured and architectural fragments. Some of these have the appearance of being baths, several halls having distinctly traceable divisions for bathing purposes, and may be supposed among the works of Nero. Descending the Palatine, on the side of the Circus Maximus, we visit, below the height occupied by S. Balbina, known as the Pseudo-Aventine, south of the loftier hill so called, an extensive brickwork ruin, now divested of all architectonic character on the outside, but with interior divided into parallel vaulted chambers, in the greater part entire—no other than the *Piscina Publica*, or great reservoir, where were centred the waters of the Appian and Trajan aqueduct, now extant in but few remains; the exterior masonry, perhaps, of that last emperor's time, while the interior may be supposed republican. Following the Appian and quitting that highway, near the church of S. Sisto, to enter into private grounds,

we visit the recognisable site of the valley of Egeria, below the western slopes of the Colian, undoubtedly comprised within the actual walls, and not far from the vanished Porta Capena, its proximity to which may be proved by the well-known passage in Juvenal's satire,—*In vallem Egeriam descendimus ad speluncam*, &c. Ascending the Colian, we see, on a terrace ground, near the villa Mattei, and behind the church of S. Maria, a castellum (or great reservoir) of the Neronian aqueduct, that brought water from the Claudian along this hill to the Palatine, and a magnificent specimen of its kind is this lofty structure, the lower part built of large travertine blocks, the upper of finest brickwork.

Near its base we look down, at considerable depth, into a channel through which the waters passed in one direction below the level we stand on. The pleasant gardens of the Volkouski villa, near the Lateran, next site of antiquarian interest, comprise a part of the Agger of Servius Tullius, and a majestic extent of the Neronian arcades now clothed with ivy, along whose lofty summits we distinguish, here and there, the leaden pipes and the *spiragli* (respiratories), conical in form, of the modern *Aqua Felice*, or Sixtus the Fifth's aqueduct, for which many ancient structures were made available; in some parts, indeed, unscrupulously destroyed. Entering another estate near the *S. Croce* basilica, now traversed by the railway, we find many remarkable ruins; among others a suite of vaulted chambers (now partly serving as a garden-house) which Mr. Parker identifies as a castellum of the Alexandrine aqueduct,—that of Alexander Severus. Near this stands the still beautiful decagonal ruin, with the remnant of an ample cupola, commonly called the "Temple of Minerva Medica," but recognised on better authority as the great hall (like another Pantheon) of Alexander's Thermæ, supplied with water from the same aqueduct,—an appropriation further shown by a pentagonal reservoir that opens centrally to its area. On the same estate is a spacious castellum of the Marcian aqueduct, with lofty vaulted chambers, partly subterranean, and of fine brickwork, into which we may descend by a ruinous staircase; also a nymphaeum of the Alexandrine aqueduct, now used as a wine-cellar, and containing a cistern filled with water; its antique vaulting of very ample span, now so completely blackened, that a most gloomy scene is presented by its interior.

The less generally known aqueduct ruins on the Campagna, south of Rome, formed the object of the very interesting excursion on which we set out from the Porta Maggiore on the next day. After proceeding about two miles along the Via Labicana, we struck into a by-way that runs to the right immediately below the arcades of the Sixtine aqueduct, following which structures the first noticeable antique is a series of the Marcian aqueduct arches restored in brickwork of the second century, and almost buried below the ground on the left of the road. At a short distance farther on, leaving the by-way, we see a majestic remnant of the Claudian aqueduct, near to where it meets that of Pope Sixtus at a right angle in a solitary field—offering occasion to contrast the grand style of the antique with the paltriness of the modern building. Here we see how (as, indeed, elsewhere) the Claudian arches have been partly filled up by brickwork of the time of Nerva or Trajan. In the midst of an unenclosed level ground, not far thence, stand the mouldering substructures of a great quadrangular brick building, with rows of niches on the arcades that seem to have served only as buttresses, the masonry in most parts lateritious, in others *opus reticulatum*, and this Mr. Parker well establishes to be a nymphaeum built by Augustus for the enjoyment and use of salubrious waters on this now solitary spot. Next is reached one of the most finely picturesque groups of ruins that even Rome's Campagna presents to us—the parallel arcades of the united Marcian, Tepulan, and Julian aqueducts, and those of the more conspicuous Claudian that approach within a slight distance, here divided from each other by a gently sloping ground bestrewn with underwood, and watered by the *Aqua Crabra* (the antique *Maxima*), here running within a stone channel. The Marcian arcades are of regular and massive stonework; the rest of the structure above them, of concrete; and more modern brickwork (some imperial addition) fills up the interstices of many arches; while ivy, of the most luxuriant growth, in great part conceals this noble structure, adverse to the studies of the archaeologist, but

contributing to the effect of melancholy beauty in this impressive ruin-scene, little known or visited, amidst silent solitude. Not far from this spot we find the Marcian and Claudian aqueducts changing sides, so that the former rises to the left, the latter to the right, as we follow the road in our approach to the modern arch (*Arco Furba*) that stands in the midst of the long lines of partly antique partly modern arcades, thrown over the road to Frascati. Near a modern fountain and beside this arch, the Marcian and Claudian are seen to join, becoming for some extent instead of two a single aqueduct. About half a mile hence we reach the Torre Fiscale, a very high square tower of the fifteenth century, that rises one of the most far-seen among such Medieval piles on the Campagna, from the aqueduct arcades that support it. And the interior of this tower is well worth a visit; for here we see the junction of several *specus*, distinctly discernible as we gaze up the quadrangular building of the Anio Novus, Claudian, Marcian, Tepulan, and Julian aqueducts,—no fewer, indeed, than five *specus* uniting at one centre within this same tower, Torre Fiscale, the name given to it because here those baronial brigands of the Rome of later ages used to levy black mail on all who passed as price of their safe journey to or from the city. On some elevated ground near a solitary *osteria*, not far from that tower, we again find the arcades of the Marcian aqueduct, but here rising to no considerable height, and we can penetrate the *specus*, permeable for a few hundred feet, till choked up by soil or ruin. From this channel it may be assumed that about one-tenth of the water-supply of Rome reached its destination in the Imperial period. We have not to walk far from this spot to find once more the loftier Claudian arcades; and pursuing our way under their shadow, we come upon a sluice of the Julian aqueduct, similar in method to the locks of our modern canals, but as the channel is here narrow, of diminutive scale; and it may be concluded that the great villa of Commodus, whose ruins still stand imposingly near the Appian Way, had its water-supply from this branch of the same aqueduct. On the same level ground we may be startled by suddenly seeing a wide round orifice yawning at our feet, fenced by railings, through which we look down into a mysterious and dark abyss, known to be the *piscina* of the Marcian aqueduct; and Mr. Parker assures his auditors, on reliable authority that we here stood above a stupendous subterranean dome, equal in diameter to that of St. Peter's and with vault, of concrete, about 20 ft. in thickness, overhanging the vast reservoir that extended far in invisible depth below. The engineer of the Roman Government, Signor Morandi, has lately the courage to descend and explore this extraordinary excavation. At a short distance on a line with that orifice, rises a steep isolated mound, that might seem of natural formation, but is ascertained to be the centre shell of a similar and not less enormous dome, pertaining to a *piscina* of the Claudian aqueduct. From its summit is enjoyed a view of great extent and so grandly characterized, so striking in its features both of ruin and landscape that one might, in contemplating it, forget all specific antiquarian studies under the spells of feeling and association. Another similar, but less lofty mound, at a short distance, is identified as connected with the Anio Novus *piscina*, whose swelling dome rises above the Campagna surface like the above-mentioned; and on its slope we observe remnants of some building, perhaps of a later imperial period, constructed upon its summit, or absorbing it. At this point, about eight miles distant from Rome, our day's excursion had its term. In the course of this and the previous day's studies, Mr. Parker had not failed to point out all that is remarkable in the more commonly-visited aqueduct ruins on our route: the majestic castellum of the Claudian and Anio Novus, with the inscriptions of Claudius, Vespasian, and Titus on its high attic, now forming the Porta Maggiore in the line of Honorian walls the castellum of the Neronian, under which the road passes between the Lateran and S. Croce basilicas, and the now half-buried arch of the Julian, Tepulan, and Marcian, connected, in the same later fortifications, with the Porta S. Lorenzo, and bearing inscriptions of Augustus, Titus, and Antoninus Caracalla. Along the outer line of these Honorian walls, between the above-named gateways, are to be observed also several remains of aqueduct structures absorbed into the cincture; the triple *specus*, superimposed of the Marcian, Tepulan, and Julian, with

massive pilaster of stonework below; a massive portion, in peperino stone, of the Anio Vetus, brought to the city A.U.C. 481, by Curius Dentatus and Lucius Papirius, the censors; and another species probably belonging to a castellum of the Julian, near a curtain wall of the best brickwork, with windows and modillions, the style of which seems to indicate an edifice of the Neronian period.

Different, indeed, is it to follow out the familiar range of antiquities described in all guide-books, pointed out by all *clever* men, and to quit that beaten path for explanation based on knowledge, or for verifying theories drawn from the study of ancient writers, such as is the principle that guides archaeological researches like these; the energetic pursuit of which may lead to the discovery of more, among the hidden treasures of Rome's monuments, than has yet been made known.

PROFESSIONAL SKILL IN HIGH LIFE.

To the honour of the British aristocracy be it said, that it numbers in its ranks many who are not afraid of work. In the natural course of things we do not expect a persistence in work and a rent-roll of 30,000*l.* a year to go together. The reason, of course, is that the rich man is under no actual necessity to labour. It is otherwise with the poor man, who has no choice but to live by the sweat of his brow. Hard labour, and continuous exertion of one kind or another, are his only resource. It will be observed that we speak merely of the necessity of the thing. There is a higher sense in which none can claim exemption from work, since work is the universal duty, and the great law of life. But while the obligation to labour is equally binding upon all, it is only the poor and dependent who are under the actual necessity of adopting work as a profession for support. The rich, as the saying is, can afford not to work. Your peer may toil, your peasant must. The dignity and sacredness of labour fully admitted, titles, wealth, and the leisure which wealth brings with it, it must also be admitted, are formidable temptations to idleness, and strongly induce *vis inertia* on the part of the possessor of them, when correct principles and proper motives fail to govern the actions of life. A desire for fame, though a very strong incitement to exertion with mankind generally, is perhaps less so with the lord than the commoner, because the former feels in some measure at least, satisfied with the honours and distinctions that necessarily attach to his exalted position. If he is not entirely devoid of intellect,—if only he be able to “put in an appearance” in the House of Lords, the English peer is to a certain extent a public character, the holder of considerable influence, and the recipient of many privileges,—in the eyes of the multitude a very enviable being. Many of the aristocracy are, no doubt, satisfied with such distinction—that of birth—and are indifferent to true greatness, which is neither born with a man, nor thrust upon him, but is attained by personal achievement. But there have been, and still are, many brilliant exceptions. There are not a few of the “upper ten thousand” who have shown that they love labour for its own sake. On the whole the British aristocracy will compare favourably in this, as in every essential respect, with the aristocracy of any other country. They are not all “wise as serpents and harmless as doves;” they are possibly not what they might be; but still many great men have sprung from them, and, as a class, they have immensely improved in mind, in manners, and in morals even since the days of the Regency. Scandal in high life has not yet entirely died out, but it certainly does not flourish as it once did. Vice, openly and glancingly indulged in, is no longer fashionable.

There is no need to point out that some of the ablest statesmen, some of the most renowned soldiers, eminent lawyers, and distinguished scholars that this country has ever seen, have sprung from the aristocracy. Names might be adduced by the score. In other departments of professional life the nobility have done real service. The labours of some in science and art, for instance, have materially aided the cause of civilization throughout the world; others have shown mechanical skill and inventive talent in less ambitious ways, though with really beneficial results. Walpole gave us an account of royal and noble authors,—a history of royal and noble workers in other fields of labour, as in the field of mechanical invention and discovery,

would prove not uninteresting. And we think it might be shown that the desire and faculty for labour in this and other directions are being largely developed in high places in the present day. It is particularly gratifying to observe that so many of our younger nobles are busying themselves in hard, earnest work of various kinds. We have, for example, Viscount Amberley, a hardworking Member of Parliament, and an able writer, at a very early age. The Marquis of Lorne, who only very recently attained his majority, has already pronounced with judgment on public questions; and we observe the announcement of his first work, “A Trip to the Tropics.” The other day the youthful Marquis of Bute, in a long letter in the *Times*, gave an account of a recent visit to the Mosque of Hebron, describing that interesting place with a facility of expression and an amount of architectural knowledge certainly altogether unexpected from a peer in his teens. Other noblemen, like Lord Milton, set out for wild and unfrequented countries, and endure all manner of hardships in order that they may earn the rewards of the scientific traveller. All this is only in accordance with the earnest and practical character of the age in which we live.

Let us see what our nobility have done in the field of discovery and invention. To go back a little in our history, the first prominent name that suggests itself is that of Baron Napier, of Merchiston, the greatest mathematician his country ever produced, and who was regarded by Kepler as one of the greatest men of his age. Napier's well-known invention of logarithms, published in 1614; his “*Rods*,” designed to facilitate the division and multiplication of large numbers; and his improvements in spherical trigonometry, have conferred great benefits on mankind, and earned for their inventor a world-wide reputation. The first actual steam-engine was constructed by a nobleman whose life forms one of the most romantic chapters of English history—Edward Somerset, Earl of Glamorgan and Marquis of Worcester. He accomplished what everybody before him had failed in,—he provided means to make the action of the steam-engine continuous; and although his invention was ultimately superseded by the condensing engine, and by more perfect inventions since, it was unquestionably a triumph of genius, and served its purpose. The discoveries in experimental philosophy of the Hon. Robert Boyle, son of the Earl of Cork, belong to the same period. The Stanhope printing-press is of purely aristocratic origin, being the work of the eccentric and clever earl of that name,—the “minority of one,”—and brother-in-law of Pitt, Stanhope. Until the introduction of the Columbian and the Albion presses, the Stanhope press was the best thing of its kind, and a most important invention. Though still in use, it is only in a small way, the steam-printing machine having immeasurably out-distanced all its rivals. But Earl Stanhope's inventive faculty did not end with his press. He lays claim to a plan for securing buildings from fire, to two calculating-machines, one of which performed addition and subtraction, the other multiplication and division, as also a monochord for tuning musical instruments, a vessel to sail against wind and tide, and an improved method of stereotyping. We may add that the Stanhope family have in addition given us a new style of coat, and a new carriage. Lord Camelford, who, in 1804, was shot in a duel with Captain Best, was not only a young man of great literary taste, but also a very clever chemist. The Duke of Bridgewater's name deserves mention as being inseparably connected with Brindley and canal engineering; while Lord Rosse will always be remembered with honour for his invention of the great telescope which bears his name. Architecture and building have had several distinguished disciples in the peerage. It is almost unnecessary to refer to the Earl of Burlington, who planned and designed the well-known mansion in Piccadilly, about which so much has been said of late. The colonnade of this edifice is justly admired for the beauty of its proportions. The famous villa of Chiswick was also built from designs by this nobleman. The late Prince Consort, besides being a good architect, was an excellent turner in wood, and an efficient amateur photographer. It is singular, we may here remark, what a fascination photography has for royalty, and how many princes have become extremely proficient in the art. The latest name added to the roll of royal amateurs is that of the Grand Duke of Tuscany, who has produced, it is said, some magnificent specimens

of scenery. For architectural ability the present Earl Lovelace is perhaps the most eminent of his class of the day. We might point to his own mansion at Ripley, Surrey, as well as to the new school and the inn of the village, as examples of his lordship's skill as an architect. The earl's eldest son (Byron's grandson), the late Lord Ockham, inherited his father's notions of the dignity of labour, and carried them much further. Dropping his title, he entered the ship-building yard of Mr. Scott Russell as a common artisan. This young man carried his zeal almost to a monomania. He wanted, he said, to found a great firm—“Lord Ockham & Company, Shipbuilders, Millwall.” Unhappily his career was cut short before he attained the object of his ambition. Another peer, the Earl of Caithness, has turned his practical knowledge of engineering to good account on different occasions. When the Princess Alexandra arrived in London, the Earl was honoured with the direction and personal guidance of the royal train from Paddington to Windsor. In his own country he has transformed his carriage into a locomotive, and travels the turnpike by steam. Several young noblemen, including the Duke of Sutherland and Earl Grosvenor, have gone in heartily for the fire brigade,—following the example of Lord Craven, of Charles II.'s time, who was a constant attendant at fires. Craven used always to have a horse ready saddled in the stable, and rewarded the first that gave him notice of such an accident. He usually rode a white horse, well known to the London mob, which got the credit of being able to smell the fire from afar off. On these occasions Craven is said to have been an active and efficient volunteer. His Royal Highness the Prince of Wales has not disdained the helmet and the hose; and, after all, there may be worse ways of spending time than assisting at a fire. By the way, the Duke of Sutherland's mother, the Dowager Duchess, has exhibited decided taste as the designer of carpet patterns, and we believe that her Grace is not the only clever milliner to be found among our aristocratic dames. Rumour states that the Princess of Wales herself might instruct some of the Court milliners in the mysteries of their own craft. The Hon. Mrs. Damer is probably the only instance of a lady in her sphere attaining eminence as a sculptor; it is pretty generally known however, that many ladies of rank of the present day excel as amateur painters, modellers, musical composers, &c., and their claims in the field of literature are universally acknowledged. With the late Lord Sefton cookery was a fine art. He showed decided talent in the preparation of simple dishes, while the taste which the late Lord Poltimore displayed in laying out a table, earned for himself a name among his contemporaries. Earl Granville and Lord Torrington—the former especially—excel as dairy farmers, Lord Radnor as a breeder of pigs, and the Earl of Essex as a sanitary reformer. Did not Beau Brummell confess with something like remorse, that he once ate a pea? What would the exquisite George have thought could he have received an invitation from the Earl of Essex to inspect one of his lordship's favourite sewers? or had Lord Radnor asked him to examine some of his prize porkers? He must have fainted at the idea. Brummell belonged to the class of which George IV., Lord Petersham, and Colonel Kelly, were leading ornaments, and representative types—men who had skill in cutting out coats, and originality sufficient to invent blacking, but who had no souls above buttons. It must be regarded as a wholesome sign of the time that the mere dandy and idler is dying out, and that work has become the order of the day in the castle as well as in the cottage. We deem it a good social tendency that members of the aristocracy should leave their own circles, and take part with other classes in the common affairs of every-day life. Besides offering an opportunity for individual distinction in a new field, it helps to remove the barriers of exclusiveness, and to increase habits of social intercourse between class and class. In ancient times it was the fashion for each handicraft to have its patron saint. Why should not each handicraft now have its patron peer to maintain its real dignity and right to estimation, as well as to vindicate its utility and value?

HEMEL HEMPSTEAD WATER-WORKS.—The dimensions of boiler given in our notice last week should be reversed: the boiler is 21 ft. long and 6 ft. in diameter.

NEW STAINED GLASS WINDOW IN ST. PAUL'S CATHEDRAL.

OUR readers may remember that as long ago as 1861 the committee for the completion of St. Paul's accepted the offer of painted windows from Mr. Thomas Brown and the Drapers' Company, giving the former as a site the west window and the latter the central east window. The means that were then taken to obtain a good result were elaborate and remarkable, and deserve to be recorded. As a first step, the late Mr. Charles Winston was invited to join the committee. By his advice Mr. Penrose, the Cathedral surveyor, examined the Munich glass recently put up in Glasgow Cathedral. This led him to report favourably of its fitness for St. Paul's; and the committee agreed that negotiations should be commenced with Herr Aimmiller relative to the intended works. In the ensuing summer Mr. Penrose, after going to Belgium, proceeded to Munich to confer personally with Aimmiller. In the first instance there was a difficulty as to the artist who should be employed for the designs. Baron Hesse, who was first invited, declined on account of age and occupations, and some other difficulties presented themselves at Munich; so that Mr. Penrose thought it best to go to Dresden to consult Professor Schnorr, as to the artist who should be employed. From him he obtained much information, and also an indication that the professor himself might possibly not be indisposed to undertake the designs. The committee fully recognized the importance of engaging an artist of such high reputation, and Professor Schnorr was invited to make the designs. The subjects for all the windows contemplated were arranged and approved by the Dean and Chapter; and the surveyor, in concert with Mr. Winston and the Rev. J. L. Petit, prepared instructions for the general distribution and scale of the figures and designs for the architectural accessories. During this period of the work Mr. Winston and the surveyor went to Glasgow that they might prepare their instructions with the Munich glass in view, and also have the assistance of Mr. C. H. Wilson, without whose antecedent work in preparing the Munich glass-painters to work to mosaic glass-painting, and dispense with the use of enamel colour, success would have been more uncertain. Professor Schnorr then met the surveyor at Brussels, that the matter might be talked over in sight of the windows of St. Gudule, when he so fully realized the effect of those master works that he spontaneously put altogether aside studies on which he had already devoted much labour, and made other designs. On the receipt of these they were drawn on glass and studied in respect of scale, chiaroscuro, and colour, on the large model of St. Paul's recently exhibited in the Royal Academy, and many modifications, in detail, were proposed and accepted by Schnorr. Various improvements in the architectural accessories also suggested themselves, which were then embodied in the enlarged drawings prepared by the surveyor for this part of the work. In addition to the above-mentioned elaboration of the designs, Mr. Winston was busily engaged in preparing Herr Aimmiller for the use of a better material than he had employed at Glasgow, and the effect of his instructions seems to be apparent in the window now set up. Aimmiller, too, we must add, had been invited to an interview with the surveyor at Brussels, at which Mr. Winston was also able to be present, after which some of the finest cinque-cento works in France were visited.

The window now set up is at a great height from the ground, and when seen from the nave nearly one-third of it is cut off by a projecting gallery. To provide for this, the design is in two stories, the lower at the bottom, a colonnade of three openings (with figures in them) carrying a sort of attic at such a height that the upper picture is seen complete from most situations. This represents the Conversion of Paul, who lies prostrate in the foreground. On the left of the spectator a Roman soldier, bearing a flag, bends over him alarmed, and on the right two other figures, one of them very vigorously drawn, restrain the horse from which Paul has been thrown. Above him is a figure of Christ, with hand raised, as at the moment of uttering the well-known adjuration. The Saviour stands on clouds, with a kneeling cherub on each side of Him, and under the centre opening of a tripartite triumphal arch, with Corinthian columns and pediment, the entablature breaking round the capitals of the columns, and the tympanum adorned with an eagle. The side openings of the structure

have straight heads: these are hung with green garlands, and on each stands a cherub with flag. The design, as a whole, reminds one a little too strongly of some eighteenth-century title-pages, the likeness not being lessened by the staring letters V and R under crowns in the upper corners. The large ugly iron window bars left in do not improve it. There is much dignity in the figure of Christ, and excellent drawing in parts, though we cannot let this praise apply to the legs of the soldier with the flag. The colour is much more solid than in many of the Glasgow windows: the most brilliant piece will be found, — at any rate in the afternoon, — in the centre group of the lower picture.

With every willingness to congratulate the authorities of the cathedral on their acquisition, if we be asked if it were necessary to go out of England for it, we should unhesitatingly answer no. One of our best artists had been called in to prepare the drawing, as was done in Germany, and the same elaborate pains taken in other respects, the result, we are much disposed to believe, would have been a better window. Whether by this process the cost of the English window would have been made greater than that of the German one we have yet to learn.

Another spandrel under the cupola of the cathedral is being filled in with a mosaic picture.

THE SANITARY ACT, 1866.*

An edition of the Sanitary Act has just been issued, dedicated to members of municipal and local bodies who are charged with the administration of the laws relating to public health in England. It is profusely supplemented with both legal and sanitary information by Mr. R. C. Austin and Dr. Hardwicke. The Act is divided into four parts, which contain sixty-nine sections, out of which our authors pick those which refer to provisions of a novel and interesting character. Mr. Austin at the foot of each page gives notes, which contain references to other Acts bearing upon the subject, and other legal information. And Dr. Hardwicke's contribution follows the Act in a series of short chapters on the subjects enumerated on the title-page. The latter suggests the formation of a code of sanitary law, which is to consist of a revision, amendment, and consolidation of the whole of the laws already passed, the Public Health Act of 1848, the Local Government Act of 1858, and the Metropolitan Local Management Act of 1855 forming the basis upon which they are to be reorganised, this being a similar scheme to that recommended by the standing committee of the health department of the Social Science Department, assembled at Manchester in October. He further calls for centralization of powers, and a new appointment of the duties which are now divided between the National Registration Office, the Ordnance Survey, the departments under the Secretary of State, the Board of Trade, the Poor-law Board, the Local Government Office, and the Privy Council. He advises that Parliamentary blue-books should be circulated among officials engaged in local duties in remote places, for, as they are now printed exclusively for members of the senate, their contents would be unknown except in their circle if it were not for occasional mention by the press. He then proceeds to state his conviction of what the duties of each department should be. The Local Government Board he would entrust with the management of all matters relating to drainage, sewerage, water-supply, gas-works, public roads, parks, and gardens, baths and wash-houses, and cemeteries; and he commends the French example of assistance given to local bodies by the collection of information and plans relating to public works. District Boards of Works he would entrust with much extra power of jurisdiction in the administration of works connected with drainage, of rivers, swamps, and lowlands, the construction and maintenance of bridges, canals, and public roads. The members of such Boards, he wisely advocates, should be chosen from substantial and intelligent classes, and assisted by a suitable staff of officers. He considers the Metropolitan Board of Works a

good sample of a Board whose operations are spread over a large area, and that its usefulness would be still further increased, but for the jealousy of vestries and other small bodies, which still claim power to drain, pave, light, water, and cleanse the highways: if it were not for this want of united action it would be a model of efficiency. Local Boards or corporations would still have to manage the poor, schools, hospitals, water, gas, public baths, highways, markets, and fairs. Concerning specially qualified officers for the administration of sanitary laws, he proposes that the Government should institute an examination, under the auspices of the Privy Council, or Civil Service Commissioners, or entrust the universities and medical schools with powers to confer a degree or other certificate of proficiency for employment by the State. Throughout the work the doctor strenuously urges the importance of the science and practice of preventive medicine, and advocates various other essentials so often, by us, insisted upon.

The chief merit of this edition of the Act lies in its special adaptation to the classes entrusted with the responsibility of making provisions for the public health. To such we recommend it as a condensation of much of the general information now current upon this subject. We will say that it is proposed to establish a village, or town, or temporary hospital. Dr. Hardwicke informs those concerned what are the essentials they must strive after, where they will find the best additional information upon the subject in hand, and the importance of architectural skill and experience in the erection of the necessary building. He urges that national or district hospitals have as just a claim upon the county in which they are situated as prisons and asylums. About 3,000,000 persons are among us in a sick or dying state, who are too poor to provide medicine and attendance for themselves, and he rightly contends that the cost of ministering to these should be equitably equalised over the kingdom, and not made local charges. One or more large hospitals, in suitable districts, he would organize, where the poor could at all times receive medical, surgical, and midwifery assistance, and to these he would add small village hospitals for convalescent, paralytic, and incurable persons. No less than sixty of the latter, built after the model of those at Crawley and East Grinstead, were erected during the last year, and were filled with patients, some of whom were supported by their friends or by sick-beds, and others by the guardians of neighbouring unions, at a charge of from 3s. 6d. to 10s. weekly. The doctor would have such institutions provided with flower-gardens, shady walks, and resting-places for the old and infirm, and in every way made as sanitary, cosy, and attractive as it is possible their associations would permit. If we read aright, he would procure for the poor in every county a staff of physicians and surgeons, on which should be enrolled the ablest men in the provinces, and supplement this invaluable boon with a system of nursing based upon the generous, passionate enthusiasm with which ladies take up works of charity. May his shadow never be less!

Lord Shaftesbury once said, the poor-rates might be reduced at least 2,000,000l. per annum by placing our large towns under sanitary conditions. How much more might be saved, and how many lives might be spared, should all the dominions of her Majesty enjoy the same blessing, would require a long calculation.

ARCHITECTURE IN THE ROYAL SCOTTISH ACADEMY.

The exhibitions of the Royal Scottish Academy, occurring as they do at a season of the year when the sun strives to gain the ascendancy over the keen north-east winds which prevail, are a source of great interest to the inhabitants of Edinburgh. The galleries are, indeed, the fashionable lounge and rendezvous, and are only deserted when Sol obtains the mastery over Boreas. The present exhibition, which opened on the 16th ult., is generally considered one of the best that has occurred for some years past, and there are more pictures of importance than usual. As is invariably the case, many of the pictures are familiar to the London public, having appeared at the last Royal Academy Exhibition; amongst these are works by Landseer, Phillip, Grant, Ford, Millais, Ballantyne, and others; and several productions of foreign artists still further enhance the interest of the display.

* The Sanitary Act, 1866, with notes, statutes, &c. By Robert Cecil Austin, of Gray's Inn, Barrister-at-Law. Together with copious notes and commentaries on Public Health and the Sanitary Laws of England, containing chapters on Public Health and Sanitary Legislation, and Suggestions for a new Code of Sanitary Law. By William Hardwicke, M.D., Deputy Coroner for Central Middlesex. London: Nichol, Brothers, Frederick street, W.C. 1867.

Reversing the usual order adopted in classifying works of art, the catalogue begins with the architectural works. We must premise that there is nothing remarkable in these, either as regards originality or peculiarity of design.

No. 1, "Suggestion for the Improvement of Edinburgh," J. D. Peddie, is a large and beautiful drawing, in which "it is attempted to show what may be done, within practicable limits, to improve the view eastward from the Mound, and to heighten its classical expression, at present seriously lessened by the Scott Monument only." The drawing represents the fountain about to be erected in the Prince's-street Gardens; markets on the site of the present station for the north trains; railway-station buildings of the height sanctioned by the recent Act of Parliament; a railway hotel on the site of the present Queen's Hotel; the National Monument completed, and monuments in the form of Greek temples, and statues on suitable sites on the Calton Hill, which is thus made to assume the appearance of a Greek Acropolis. No. 22, "Mansion-house for Wm. Leing, Esq.," by J. A. Hamilton, might rather be designated as a villa, for such it is, and not a very large one either. It is in the Scottish domestic style, treated in a free and lively manner. Mr. Frederick T. Pilkington is never commonplace, though frequently wild and eccentric. No. 43, "Presbyterian Church, Cardiff," however, has nothing in excess. The spire is well proportioned, light, and graceful, and the body of the church possesses only so much of Mr. Pilkington's peculiarities as to make it recognisable as one of his productions. No. 29, Pilkington & Bell, is a pleasing example of the modern style of Gothic as applied to domestic purposes: abundance of light is given, and variety is secured without violent contrast. 47, "North-west View of Castlehill, Dumfriesshire, the seat of Robert Jardine, esq., M.P., now in course of erection," by David Bryce, R.S.A., is a mansion in the Scottish baronial style, and is by no means one of Mr. Bryce's happiest efforts: the general effect is dull and heavy without being picturesque; and it abounds in detail which is manifestly false and extraneous. Mr. Bryce also exhibits "Sketch of a Monument to the late Miss Catherine Sinclair" (No. 63). It is in the form of an Eleanor's Cross. 65, "Selected Design for proposed Cathedral Church of St. Andrew, St. Andrew's, from the South-East," Robert Anderson. This design has none of the crudeness displayed in those exhibited by Mr. Anderson last year; he has now discovered that truthfulness and moderation are quite compatible with elegance and grace. The style is thirteenth-century French, upon an English foundation.

98, "Perspective of a House designed on an angle of 45 deg., cubic proportion." 230, Ditto, at an angle of 60 deg., James Gowan. Mr. Gowan seems to have an idea that all designs should be founded on mathematical principles. For himself he built a large and very peculiar house, upon the 2-feet square principle. Apart altogether from theory, the designs exhibited are pleasing enough, and should they ever be realized in stone, we doubt if any one, unapprised of the architect's purpose, would discover the subtlety underlying the outward semblance.

89, "Interior View of Church, Compiègne;" 107, "Exterior View of the same," R. Thornton Shiells. The English visitor to Compiègne can hardly fail to see that this church is not the work of a French architect. The style is purely English, and the arrangements are such as are usual in small parish churches. A well-proportioned design is somewhat marred by the undue prominence given to a coat of arms over the doorway in the spire. Mr. Shiells also exhibits "Design for the United Methodist Free Church, to be erected at Park-place." This design is of the Early German type. It has a related brooch spire in the centre of the main gable, with gablet lights in the angles. The side elevation is tame and flat; but from the position the church will occupy, it will not be much seen. The principal front, however, is effective.

117, "View of Craigmount House," and 193, "Design for the Roseburn Free Church," Robert H. Raeburn. Mr. Raeburn's studies have evidently not gone further than "Batty Langley;" the house has pepper-box turrets perched on the highest angles of a tower, and the church is one of those productions which figured thirty or forty years ago as being built "after the Gothic manner."

118, "Grayfriars Parish Church, Dumfries;" and 144, "Lanark Parish Church," by John Star-

forth, are good specimens of pure English Decorated. The spires have a family likeness, are well proportioned, and set to the main structure. There is a slight weakness observable in the doorways, however.

127, "New Magdalene Asylum, Dalry," James W. Smith. Justice has not been done by the draughtsman to a very meritorious building in the style of the country.

162, "Netherby, in course of erection for Mr. Wm. Roberts," by James C. Walker, is weak and ineffective, having more of the appearance of an old house patched up, than of an entirely new one. The detail is of a heavy Renaissance sort, used in the later French chateau.

182, "Design for proposed Churches," John Honeyman, jun. We believe it is proposed to erect this group of churches in the city of Perth. Mr. Honeyman has made them assume the outward semblance of a cathedral, and as such his design is good; but how far the fundamental conception of making several small churches assume this guise is correct is another matter. 195, "Design for English Church, Campbellton," Campbell Douglas. A simple, severe, and unaffected piece in thirteenth-century style, consisting of west tower transepts with double gable and chancel. 229, "The General Hospital, Toronto," William Hay, is a large square Gothic structure, with a tower in the centre of the principal façade, and smaller towers at the angles. The building assumes importance from its size, but there is nothing worthy of commendation or of censure in the design.

There are many designs to which we have made no reference: they are mostly "skayed" so that we cannot examine the detail, and many of them are very washy in colour and ineffective as drawings.

SANDERSON'S "GRAPHICE," 1658.

There is a thin folio of the year 1658, "London, Printed for Robert Crofts, at the signe of the Crown in Chancery-lane, under Serjeants' Inne," with this attractive title: "Graphice. The use of the Pen and Pencil. Or, The Most Excellent Art of Painting: in Two Parts. By William Sanderson, Esq." The book is scarce, and is too often found without "the Picture of the Author," (as is the case with my copy) a marvellous head of the author, by Faithorne, after Soest.

I have something new and suggestive to communicate about this thin folio.

The volume was a favourite with Horace Walpole, who in print, speaks of it thus:—

"Sanderson, an intelligent writer on Art,—his 'Graphice,' though in tortured phrase, contains both sense and instruction."—*Walpole's Works*, iv., 34.

"Sanderson in his 'Graphice,' an affected but sensible book."—*The same*, ii., 231.

Some account of Sir William Sanderson may be found in Granger's Portrait Biographical History. He published several "Histories"—now in little esteem,—and in his prime was secretary to the first Duke of Buckingham of the Villiers family. In this capacity we may fairly assume that he had a hand in the formation of the far-famed gallery of pictures collected by the duke.

His wife, Dame Bridget Sanderson, was "Mother of the Maids,"—i. e., superintendent of the Maids of Honour attached to the court of Catherine of Braganza, queen of Charles II.,—an office demanding great discretion and great control of temper. To my thinking, Dame Bridget must have looked not unlike the Duenna in Leslie's famous picture of "Sancho and the Duchess."

Now for what I have to tell.

Among the Harleian MSS. in the British Museum (No. 6,000, 43 f.) is a thin folio with the following title:—

"An Exact and Compensious Discourse concerning the Art of Miniature or Limning, the Names, Nature, and Properties of the Colours,—the Orders to be observed in preparing and using them both for Picture by the Life, Landscape, and Histories."

The compilers of the Harleian catalogue do not give us the name of the writer; but my opinion (long since arrived at, and now all but confirmed) is, that it is in a great degree the original of Sanderson's affected but sensible "Graphice."

Here are a few extracts, and in the writer's own spelling:—

1. The experience whereof I saw both in the Vatican Library at Rome and in the villa of Cardinal Burghese (19).

2. And this was the manner of our late excellent Mr. Nicholas Hilliard in making his statues (20).

3. Insinuated in the epitaph of your late countryman and my dear cousin Mr. Isack Oliver (21).

4. An ordinary playing card (22).

5. The best abortive parchment (23).

6. The rude and homespun apparel of my upland language (24).

7. For the ground behind the picture it is comonly blew or crimson, somewhat like a satten or redd velvet curtayne (much in request wth our Mr. Hilliard) (25).

8. In the gallery of my most noble Lord the Earle of Arundell, Earle Marshall (26).

9. The working hereof I shall tell you being taught me by our Mr. Hilliard (27).

10. And this secret of making liquid silver I had from Mr. Hilliard (28).

11. In a word the most general and absolute rule, and universally to be observed in landscape, was taught me in the most excellent m^r in this kinde now dwelling in Rome, Paolo Brili, whose delightful worke are many of them extant in print, and gravu by Raphael and John Sadler, besides many other very rare pieces of his owne hand, w^{ch} I have seene in fresco and in oyle both in the Palazzo Montalto by Sr. Maria Maggiore, Cardinal Bontinagio on Monte Canillo, and in the church of Sr. Cecilia Trastevere (104).

12. His [P. Brili's] observation was only this.—Only remember that both in your leaves and trees, rivers, and far distant mountaigns, you assest to expresse a certain seerall morbidez, as Paolo Brili causes it, or delicate softness, w^{ch} is the next remarkable grace and ornament to your worke (114).

13. Those greate and fearful rocks wherein Momper,* of Antwerpe, soe pleases himself as noe piece passes his hand without them (114).

Sir William Sanderson died *intestate* (I am sorry to say) in the year 1676, aged 86, and was buried in the north transept of Westminster Abbey, where his grave-stone is still to be seen; and where, on the north wall, is a clever bust of the quaint old writer,—the sculptor's name unfortunately unknown.

Prefixed to the "Graphice" are two copies of verses, by Flatman,—a poor poet but inimitable miniature-painter; and a head of the author, aged 68, by Faithorne, after Soest, in Faithorne's very finest style. A copy of the "Graphice," with the portrait, is a rarity that commands a high price.

One more extract from the MS. and I have done. The following passage in the MS. may be collated with p. 73 of the printed volume. That the MS. is by Sanderson, or had been seen by Sanderson, I have no doubt whatever:—

"But that which is (*inter omnium*) a History of the Barrell of o' Saioir Jesus Christ, done upon a large table of fine abortive parchment, pasted upon a smooth and well-seasoned board, I think of peare-tree. It is now in the hands of my very worthy cousin, Mr. Peter Oliver, by whose incomparable father, Mr. Isack Oliver, it was beguine and almost finished. It was a piece of the greatest bowty and perfection (soe much as is finished) that I think Europe or the world cannot produce, and I believe if Carlo Van Mander, in his 'Duch History of the famous Paynters,' had seene this picture or the inventor, his booke of quarte would have growne into a tome with the description."—*Earl. MS.* 6,000 fol. (43 f.), (114).

And now for a query. Through what genealogical tree of flesh and blood were Peter Oliver and Sir William Sanderson cousins?

PETER CUNNINGHAM.

THE NATIONAL GALLERY COMPETITION.

THE Committee of Selection, before reporting upon the drawings, in the first instance called in Mr. W. Gardiner, of Montagu-street, to examine them, to see if the instructions had been followed. They had several meetings afterwards, and came to the opinion that there was not one set of designs that could be recommended to be carried out, although in all cases possessing very considerable merit as scholastic drawings. Their report is now in the hands of the printer, together with correspondence between the late and present First Commissioner and Lord Hardinge (their chairman) upon the subject of recommending one of the competing architects to be the architect for the new building. The committee have also submitted suggestions as to the required arrangements for a new National Gallery, which, together with the report, will, we expect, be published in a few days. They have named Mr. Edward M. Barry's design as being upon the whole the most architecturally meritorious for a new building, and Mr. Murray's for an alteration of the present building.

* Of Jodeocus de Momper there is a very fine specimen at Kedleston Hall (Lord Scarsdale's). See *Waggon*, iii., 392.

† The following references to Sanderson's "Graphice" may be found in Waggon's edition of "Walpole's Anecdotes"—pp. 84, 173, 176, 880, 912.

ALTAR RAILS.

At the annual meeting of the Norfolk and Norwich Archaeological Society, the Rev. G. W. Minns read a paper, by Mr. L'Estrange, upon the subject of altar-rails. The paper commenced by calling attention to the direction given by Archbishop Laud, in 1634, "that the altars were to be railed in and that the floor at the east end of the chancel should be somewhat raised." Details were given of the opposition against this by the Puritans throughout the country, especially in the diocese of Norwich; and the paper went on to say that "In 1704, three churches in Norfolk were without rails before the communion-table; but it was principally in remote parishes that they had not been erected. In Taverham deanery, out of sixteen churches, there were only two—Frettenham and Hainford—and in Blofield deanery, out of thirty-two churches, but four without altar-rails; whilst in the deanery of Flegg, comprising only nineteen churches, there were no fewer than eight in which the rails were wanting. There were also other churches in which the rails were misplaced, as at Thwaite and Wolterton. At Hunworth the rails were thrown by at the east end of the chancel; and at Wigton a part of the old one remained, although wrongly placed. There was evidence that some churches were without altar-rails as late as the second quarter of the last century."

Mr. Manning said that at Wigenhall St. Mary the communion-table was formerly in the centre of the church.

Mr. Fitch, referring to a paragraph in the paper stating that the rails were to be of such a character as to keep out dogs, said that he recollected going to Fakenfield Church and seeing a notice to this effect: "Remember to bring no dogs to church."

The Rev. J. Gunn said that in his memory the communion-table stood in the centre of Tunstead Church. He should like to know whether there were any instances in the Roman Catholic period of altar-rails. He believed not.

Mr. Minns replied that there were no such instances.

DRAINAGE AND WATER SUPPLY OF CANTERBURY.

A REPORT on a scheme of sewerage and water supply for Canterbury has been made to the local Board of Health by their engineer, Mr. Pilbrow.

According to this report, Canterbury is in a most deplorable state as regards drainage and water supply. There is no such thing as efficient house drainage. The whole site is surcharged with sewage, and the water supply is pumped from this very site.

"In very many cases the well and the cesspool are in close proximity on the same or adjacent premises, where the practical action daily going on is to put the filth into one hole, and to pump it out, little better chemically, from another in the same or adjoining yard."

No drains or sewers now existing are at all fit or at a proper level to form any part of a new system of sewerage. The present drains and sewers, however, might be used for surface drainage. The separate or exclusive system of sewerage is recommended for adoption, with frequent and free ventilating shafts, the principle of which Mr. Pilbrow claims as of his own introduction about sixteen years ago. The sewers will consist of glazed stoneware pipes, from 8 in. by 18 in. diameter, and oval brick sewers from 15 in. by 22 in. to 24 in. by 36 in., with numerous inspection and flushing shafts. Deodorizing by layers of charcoal in the ventilating shafts is not approved of, as a hindrance to ventilation, and hence promotive of escape into houses through shallow and imperfect traps. Open pipes above the roofs are chosen, as the only safe and sure way to carry off the sewer gases. If irrigation be thought of, the outlet must be below the towns of Sturry and Fordwich, but the land is there too wet, being "half-year land," the engineer, therefore, does not recommend irrigation in this case, nor the Watford method, from the cost of pumping and other difficulties. His plan is to erect perfect sewage works in duplicate, near to a highway about a mile and a quarter from the city, where the sewage will be subsided and deodorized, and the semi-solid manure sold to farmers, while the supernatant water will pass off by an outlet sewer into the river below Fordwich, free from either odour or colour, on the plan established by Mr. Pilbrow at Uxbridge, where he says it

acts satisfactorily, and has paid its own expenses for the last ten years. The estimate for the sewerage works, including outfall, sewerage works, &c., complete, is 18,060l.

The water supply is recommended to be taken from the Silver-hole spring, with a service reservoir on St. Thomas's Hill. The supply, it is stated, would be continuous and abundant, and the quality excellent. The cost is estimated at 23,638l., besides 6,000l. or 7,000l. for the water company's rights, if the supply be taken into the Board's own hands, as is recommended.

COMPETITIONS.

Schools, Ashford, near Staines.—The committee received eighteen designs in answer to their advertisement, and ultimately selected that sent by Mr. John M. Hooker, architect, for execution. *The New Church at Workshop.*—In answer to advertisements for plans for the erection of the new church of St. John's, for Workshop, forty sets of plans were sent in. The plans were exhibited in the Corn Exchange, at the charge of 1s. each, the proceeds to go to the New Church Building Fund. Many availed themselves of the opportunity of viewing them.

COMPETITION DESIGNS FOR HOUSES, GREAT YARMOUTH.

THE public have had access to these drawings for some days. There are between eighty and ninety competitors, whose works well fill the Yarmouth Town Hall, and include more than the usual amount of rubbish, with, of course, redeeming features. The design "Comme il faut" is for a terrace of houses so large as to require centre areas; it is rivalled by "Porte-crayon" and "Alpha." Of the single villas "Apex" and "Fiat" produce a favourable effect; "Suspense" gives both the single villa and the pair; "Omnia Eternitate," "Valentine," and another "Alpha" may close the list. There is more competition for the semi-detached villas than for either the terrace or the single villa, because in this class two premiums are offered, and only one in both the others. In "Ecco A" and "Ecco B" good drawing commends the design (Medieval) to notice; "Comfort, Convenience, and Compactness well considered," "Circumspice," "Palma qui meruit ferat," and perhaps a few others, "Trefoil" or a second "Omnia Eternitate," may be noticed. When will architects give up hawking their wares at quarter-price?

ACCIDENTS.

AN extraordinary accident has happened on the Lancaster and Carlisle Railway, about a mile and a half south of the Penrith station. It appears that as a goods train from the south was passing Yanwath Bridge the axle of one of the trucks broke and threw several carriages from the line. Among these were a powder-van, an iron one, constructed specially for carrying gunpowder, and containing, it is said, about five tons of gunpowder. Shortly afterwards another goods train from Carlisle, and upon the other line of rails, dashed into the overturned vans upon the up-line, smashing the gunpowder van. A fearful explosion immediately took place. The engine and tender of the train from Carlisle were driven into one another, and the driver and stoker were killed, having been blown into the adjacent field, shockingly mangled, and the other wagons of the train were, many of them, shattered to pieces. One effect of the explosion was to set fire to and destroy the train. The permanent way was very much injured, and Yanwath Bridge, which crosses the line at this point, much damaged. The explosion was heard for miles round. At the neighbouring village of Yanwath, the windows and doors of the houses were driven in by the force of the concussion.

At Field Gate, Walsall, Mr. Bradbury, of Birmingham, had been employed to repair a well, and one of the men had descended to insert a kerb to support the brickwork, which was in rather a dilapidated state; but he had scarcely reached the bottom of the well, which is about 70 ft. deep, when the whole of the brickwork, and a large quantity of earth fell upon him and killed him.

A death has occurred at Sheffield from falling on a chisel. Deceased was a joiner and cabinet-maker. He was going along Fir Tree-land, Sheffield, and fell, when a chisel which he had in his side pocket pierced his body, severing one of the main arteries.

An explosion of gas took place lately at Hillhousefield, North Leith. One of the Edinburgh and Leith Gas Company's men was searching for an escape of gas, which had been complained of by the inhabitants in the neighbourhood for several days. He suspected the escape was proceeding from a pipe close to the common sewer, and with the view of ascertaining whether the gas had accumulated in the sewer, he opened one of the man-holes and stupidly put down a light. Immediately on his doing so, an explosion took place. He was thrown against the wall on one side of the street, and severely injured. His "bonnet," or cap, was thrown over a three-story house, and was found in a garden behind. The explosion must have damaged the sewer for a distance of between 90 and 100 yards, for the paving-stones above it for that space westwards are loosened, and the iron frame and cover of another man-hole at that distance were torn up, as were also the causeway stones around the covers opposite to this part. Several windows of a dwelling-house were broken, and the house itself shaken to its foundation.

At Dartford, in Kent, contractors' workmen have been of late engaged in forming the extension line of railway leading from the South-Eastern line into Mid-Kent. To cross the public road it was found necessary to have a temporary wooden bridge thrown over the thoroughfare. The bridge was finished, and a metal tramway was laid on it. Upon this tramway was placed a travelling-crane. The men were lifting an iron girder by it, weighing several tons, in order to span the road. Suddenly the bridge swayed, first to one side and then to the other, and, without allowing a moment for escape, the structure fell, causing the traveller to topple over with the men on it. Some fell clear of the ponderous machine, but were overtaken by the portions of the fallen materials of the bridge, and became embedded in the debris. One man was found to be dead, and three others seriously, if not fatally, injured. One of these has since died.

EXHIBITION MEMS.

FROM the Potteries a large number of works are going to the Paris Exhibition, especially from Messrs. Minton's and Messrs. Wedgwood's. We can scarcely help regretting that most of the principal objects are designed, modelled, and painted by foreigners.

We do not hear good things of the allegories of London, Dublin, Edinburgh, Liverpool, Manchester, &c., proposed to be put up as window blinds in the English compartment.

The English Commissioner at the Exhibition has announced that from 45,000 to 50,000 English workmen will come to Paris during the summer, and will each receive from their several committees 10s. a day for their expenses.

The Palace itself occupies an area of 140,184 square yards, with a circumference of 1,400 yards. Its shape, our readers know, is that of a parallelogram terminated at both ends by two circles, having for diameter the width of the parallelogram itself.

French products will cover a space of 61,000 square yards. The English products will occupy 21,659 yards, and those of the United States of America, 2,900 yards. It will, of course, be necessary to add thereto the space occupied in the Annexes of the Park; and which are of considerable importance.

The specimen of English Domestic architecture in the park attracts great attention: the high-pitched roof and gables, the exhibition of the timber work on the surface, the covering of tiles of variegated form and colour, from black to light-red, and, more than all, the stacks of ornamental chimneys, constructed of moulded cut bricks of various tints, which, like the tiles, are of English manufacture, induce numerous inquiries as to the country of which the style is native. Another surprise of the same kind is reserved for our friends abroad in the form of a bay of the new South Kensington Museum, the materials for which are now being prepared under the superintendence of the son of the architect, the late Captain Fowke. This specimen structure will be of large dimensions, about 60 ft. in height, and of nearly the same width,

and will convey a good notion of our working in brick and terra-cotta.

The courts of Morocco and Tunis are already blazing in gold and colours, as characteristic, and to us as novel, as the decorations of their neighbours—Turkey, Egypt, and the Danubian Principalities; the whole together forming a remarkable contrast with the chaste, solid wood-work of the Russian court close at hand.

In the park the structure now erecting for the Imperial Commissaire-Général begins to present an imposing appearance; it is composed of solid oak framing, put together in divisions before being mounted on a rusticated basement of artificial stone (*Béton aggloméré*).

The Sultan's mosque and the three buildings of the Viceroys of Egypt now make an imposing appearance. The great temple, in the style of the epoch of the Pharaohs, is being covered within and without with the well-known emblems of the period, and with copies of ancient mural paintings in brilliant hues.

The pavilion of the Bey of Tunis, not far removed from the Turkish and Egyptian group, is a very large building, three stories in height, with a façade capped by two small cupolas, the entrance to which is by means of a bold double flight of steps, in the form of a horse-shoe.

The Art of Music is now to be represented in the Exhibition, in the triple point of view of composition, execution, and history. Prizes are to be awarded to two musical compositions, and a sum of 10,000 fr. may besides be awarded, on the proposition of the committee, to the author of the work which shall be judged worthy of being hereafter introduced as a hymn in international solemnities. A special committee will organise a series of concerts, in which a small number of eminent artists will be convened to perform the most remarkable musical compositions appertaining to various epochs and different countries.

The *Great Eastern* is now nearly ready for her new duties—that of conveying passengers from New York to Brest for the Paris Exhibition. She has undergone very extensive alterations. The space last occupied by the cable tanks has been fitted up with cabins, berths, and state rooms for passengers. These apartments, numbering over 500, are lofty and convenient. There will be berths for 3,000 passengers. The deck saloon is a splendid apartment, 140 ft. long and 24 ft. wide, and will admit of 500 persons dining together. There are several smaller saloons. Altogether 2,000 persons may dine at once. The total outlay of this refitting will of course be very large.

THE NATIONAL GALLERY.

The director of the National Gallery has just issued his annual report, from which we learn that five pictures were purchased during the past year, at a total cost of 8,160*l.*, against 17,277*l.*, the amount expended in 1865. The pictures acquired were—a “*Madonna and Child*,” by Lippo Dalmasio, 400*l.*; a “*Rhetoric*,” and “*Musico*,” two companion pictures, attributed to Melozzo da Forlì, 600*l.*; a “*Portrait*,” supposed to be a “*Contessa Palma*” of Urbino, by Piero della Francesca, 160*l.*; and “*Christ Blessing Little Children*,” by Rembrandt, 7,000*l.* Five pictures acquired in previous years were placed in the gallery, and two pictures and one bust were presented to, and accepted by, the trustees. The presentations are portraits of the Rev. George Hodgesford, and Mr. J. C. Bamfylde, by Sir Joshua Reynolds, presented by Mrs. Martha Beaumont; a marble bust of Mulready, by Weeks, presented by friends of the deceased artist; and “*The Remorse of Judas*,” by Armitage, presented by the painter. Fourteen pictures have been protected with glass, and ten have been repaired, cleaned, and varnished. Curtains have been placed before the Turner drawings at South Kensington, to protect them from the action of light during the time they are not publicly exhibited. We may remark that the process of cleaning, or, rather, “*refreshing*,” to use the inventor's word, introduced by Professor Pettenkofer, of Munich, seems to have been abandoned by the trustees. It was first tried about three years ago, and a very favourable opinion of the process was expressed by the late Sir Charles Eastlake in his report for 1864. Since that time, however, nothing seems to have been done with it.

The number of visitors during the year was 1,531,976, showing a satisfactory increase on the years 1864 and 1865, when it amounted to 1,866,369 and 1,387,254 respectively.

The popularity, amongst students, of a particular picture, may, we think, be fairly estimated by the number of times it is copied. During the last year the favourite amongst the old masters was the “*Garvagh Raffaele*,” as it is called, representing the Madonna with the infant Christ and St. John. Our readers may remember that it is a comparatively recent acquisition, having been placed in the gallery in July, 1865. This picture was copied twelve times, and eight copies were made of Velasquez's portrait of Philip IV. Next comes Vandyck's portrait of C. Vander Geest, better known perhaps as the “*Gevartius*” portrait, which was copied five times. This is an old-established favourite, and for the two previous years had stood at the head of the list. Murillo's “*St. John and the Lamb*,” “*Portrait of Rembrandt*,” by himself, and Ryndael's “*Landscap with Ruins*,” were also each copied five times. There appears to have been a slight falling off in the popularity of the well-known portrait of Andrea del Sarto, which was only copied three times against six to eight times in 1865, and 1864 respectively. The exquisite “*St. Catherine*,” by Raffaele, has not appeared in the returns of pictures most frequently copied for the last two years. Amongst modern pictures, Reynolds's “*Heads of Angels*” was copied nine times, “*Age of Innocence*” (the favourite during the two preceding years); Dubufe's “*Surprise*,” and Dyckman's “*Blind Beggar*,” each seven times. The total number of copies made from pictures belonging to foreign schools, was ninety-seven, the number of pictures copied being forty-six, by twenty-seven different masters. Of the British school, 121 copies were made of forty-nine pictures by twenty-five masters. It will be noticed that, with the exception of the absolute number of copies produced, the figures in both cases are pretty nearly the same.

CHOLERA AND VENTILATION.

THE Committee of the Philadelphia Almshouse call attention to the breaking out of cholera at the almshouse in the present year, and to the apparent effect produced by thorough ventilation from the floor, in its prevention and final disappearance from the Institution.

“The disease first attacked four patients and a nurse in one of the wards of the Women's Hospital, which ward, upon close examination, was found to be imperfectly ventilated. This was at once remedied, after which there were no more cases in the hospital.”

In the insane department for females, the cholera occurred in several of the wards; these were ventilated by the old plan, from the ceiling or by windows and doors, as the ventilation in this department was not yet perfected, but on the appearance of the disease strong efforts were immediately made to push it forward, and it is a remarkable fact that as soon as a thorough ventilation from the floor was established, the cholera disappeared from the Institution. It may be proper here to remark, that heat was introduced into the wards about two hours daily, during the prevalence of the disease, and it is also worthy of note that in no part of the almshouse, although crowded, was there any cholera where the ventilation from the floor was thoroughly perfected.”

According to the *Journal of the Franklin Institute*, similar results to those mentioned in this report were observed in the case of the New York Poorhouse, on Blackwell's Island, “where the cholera, after showing itself with great violence at first (some one hundred cases at a time), was entirely extirpated in five days by a judicious system of ventilation, combined with corresponding treatment, such as exercise in the open air and the like.”

THE LONDON WATER-SUPPLY QUESTION.

A PAPER on this subject has been read by Mr. Thomas Beggs, at the Society of Arts, Adelphi. Mr. Beggs urged no special source of supply, but advocated the constant system.

“In all [he remarked] about 150 towns in Great Britain are enjoying the benefits of a constant water supply. Then why not London? It is said that a constant supply means an unlimited supply of water, could not be sustained from the excessive waste that would ensue, and that all the available water resources at command would be exhausted under a waste going on night and day. This has been said in relation to every town, when a constant supply has been proposed. But I have partly answered that by showing the number of towns where the constant supply has been carried out, and it can be further answered by showing that the waste has been much less in the towns where a constant supply has been introduced than in those where an intermittent system prevails. If that be the case, the constant system is more economical, and the difficulties are met with proper appliances and with determination, they will disappear as they have done in other cases. So far as quantity is concerned, we have at present sufficient, if it be properly economised, to supply the requirements of London.”

The subject is, however, generally argued as if the supply of London was insufficient in quantity and im-

perfect in quality. To remove these evils a number of schemes have been proposed, and upon each of them have been expended a large amount of time and no inconsiderable expense. Each of the schemes has its supporters, and the gentlemen who have prepared them are well able to expound and defend them. They propose to bring a supply of water sufficient to supersede all the present sources of supply; and these schemes come recommended to us as the proposals of men of high professional reputation. I will only name a few. Mr. Homer-sham proposed to supply London from the neighbourhood of London itself, and a proposal was made for a company—the London Watford Spring-Water Company; and a Bill was prepared, and read for the first time in the House of Commons, on February 6th, 1850. Mr. Bateman proposes to supply us from a source 183 miles away—from the sources of the Severn. Messrs. Hemans and Liversidge take us a still greater distance, and propose a supply from Ullswater, a distance of 240 miles away; and Mr. Bailey Denton proposes to obtain a sufficient supply from the Thames watershed. Whether any or none of the plans are adopted, the discussion which must ensue will be of immense advantage in bringing every phase of the question before the great body of consumers. I speak with the greatest possible confidence when I say that I believe a constant supply of water in London is perfectly practicable, and that it might be brought about with much less consumption of water than that which is now consumed. Improvements in habits, and consequently in morals, have always followed improved dwellings and improved sanitary arrangements, and this is the great encouragement to perseverance in a good work.”

ARCHITECTURAL EXHIBITION SOCIETY.

ON the 1st inst. the annual general meeting of this society was held, at 9, Conduit-street, when the report and balance-sheet, to which we drew attention in our last, were read and adopted. There can be but little doubt that, if rightly conducted and the profession generally will support it, the annual exhibition may be made useful and attractive, not only to the profession, but to the public at large. The Society proposes this year to add to the attraction of the exhibition by getting artists to exhibit their designs and sketches for fresco and other works more particularly connected with architecture, and by a series of sketches from ancient architectural examples. We repeat that all drawings, &c., for the forthcoming exhibition must be sent to the Galleries by the 6th of next month.

ARCHITECTURAL EXHIBITION.

SIR,—If “the amount paid by the public for admission was very small” last year, would it not be wise to try the effect of reducing the admission fee, and even of opening the exhibition free on certain days, so as to induce the public to go and see it? E. W. T.

THE POSITION OF TOWN SURVEYORS.

WE have received letters from three surveyors in different parts of the country, setting forth the manner in which they have, individually, been treated; but as the statements are *ex parte*, and would provoke replies, for which we could not find space, we must refrain from printing them. One writer, late a surveyor of a town in the south-west of England, who had left another town to go thither, with very strong testimonials, makes out a particularly hard case, having been dismissed, as he asserts, through an individual enemy on the Board. The letter thus concludes:—

“Cannot, under these circumstances, some means be devised by the legislative power of this country to protect the officers whose zeal and assiduity administer and carry out the provisions of one of the most beneficial Acts of Parliament ever passed for the purpose of securing and promoting the public health, from being dismissed in a summary manner? The present system ‘destroys confidence, and civil engineers will despise such appointments rather than compete for them; though they ought to be posts of honour, as well as of emolument.’

In the 1848 Public Health Act there was a clause to prevent surveyors from being dismissed without just and sufficient cause, and the consent of the Home Secretary being obtained to such dismissal.

The conduct which the writer has had to submit to leaves him with a pecuniary loss, damaged health, and a stigma upon his professional character. Is there no remedy for this wrong? There is.

On the 15th of December, 1866, the case, *Wilson v. The North Staffordshire Coal Company*, was tried in the Court of Common Pleas, for wrongful dismissal. Damages, 500*l.*; and salary due, 6*l.* 0*s.* 8*d.* Costs to be paid by defendants.”



THE NEW SUPREME COURT, AUCKLAND, NEW ZEALAND.—MR. EDWARD RUMSEY, ARCHITECT.

THE NEW SUPREME COURT, AUCKLAND.

Of the public buildings now in course of erection in Auckland, New Zealand, under the Public Buildings Commissioners appointed by the General Government some time ago, the Supreme Court, Post-office, and Custom House are now fast progressing.

The Supreme Court, the subject of our illustration, is in a forward state. The building is situated on a reserve in front of the old House of Representatives, and presents a prominent feature on entering the harbour. It has four fronts. The one facing Waterloo-crescent and the Government House is formed by an arcade of three pointed arches springing from clustered shafts with carved caps and bases which forms the principal entrance; over which will be the library, a handsome room 45 ft. by 27 ft., entered from the arcade by a circular staircase terminating with an octagonal turret. Above the library and entrance will rise a tower 60 ft. high, surmounted by a leaden roof with dormer.

From under the tower is entered a vestibule or large ante-hall, 50 ft. by 29 ft., which will be devoted to the convenience of witnesses and other persons waiting on the court, and which leads to the chamber of the Supreme Courts, 60 ft. by 30 ft., occupying the centre of the building, having an open panelled timber roof, and surmounted by a lantern. The court is surrounded by a corridor 6 ft. wide, connecting it with the judge's chambers, and suites of rooms for the judge, jury, and witnesses, and rooms for the accommodation of counsel.

The registrar's and sheriff's departments will be on the right and left, entered from corridors on either side of the building.

On the upper floor will be an insolvent court, and suites of offices in connexion with the establishment.

The natural slope of the ground has enabled the architect to introduce a basement story at the north end of the building, which he has subdivided into cells and rooms for prisoners awaiting their trial.

The extreme size of the building is 145 ft. by 97 ft. It is being built of pressed bricks from the yards of Mr. Holland, of Newton, with Bath stone dressings. The bricks are of a superior character to any before used in Auckland; they are of a reddish and neutral tinge, and have a pleasing mottled appearance in the distance.

The amount of the present contract is 23,777l., which comprises the entire building with the exception of the internal fittings and finishings, which will cost about 6,000l. more.

The building is being erected under the superintendence of Mr. Edward Rumsey, architect, of Auckland, who took the Royal Academy gold medal some time ago; and the contractors are Messrs. Amos & Taylor, late of Melbourne.

PROPOSED REREDOS AND SEDILIA; CHURCH OF ST. MARY REDCLIFF, BRISTOL.

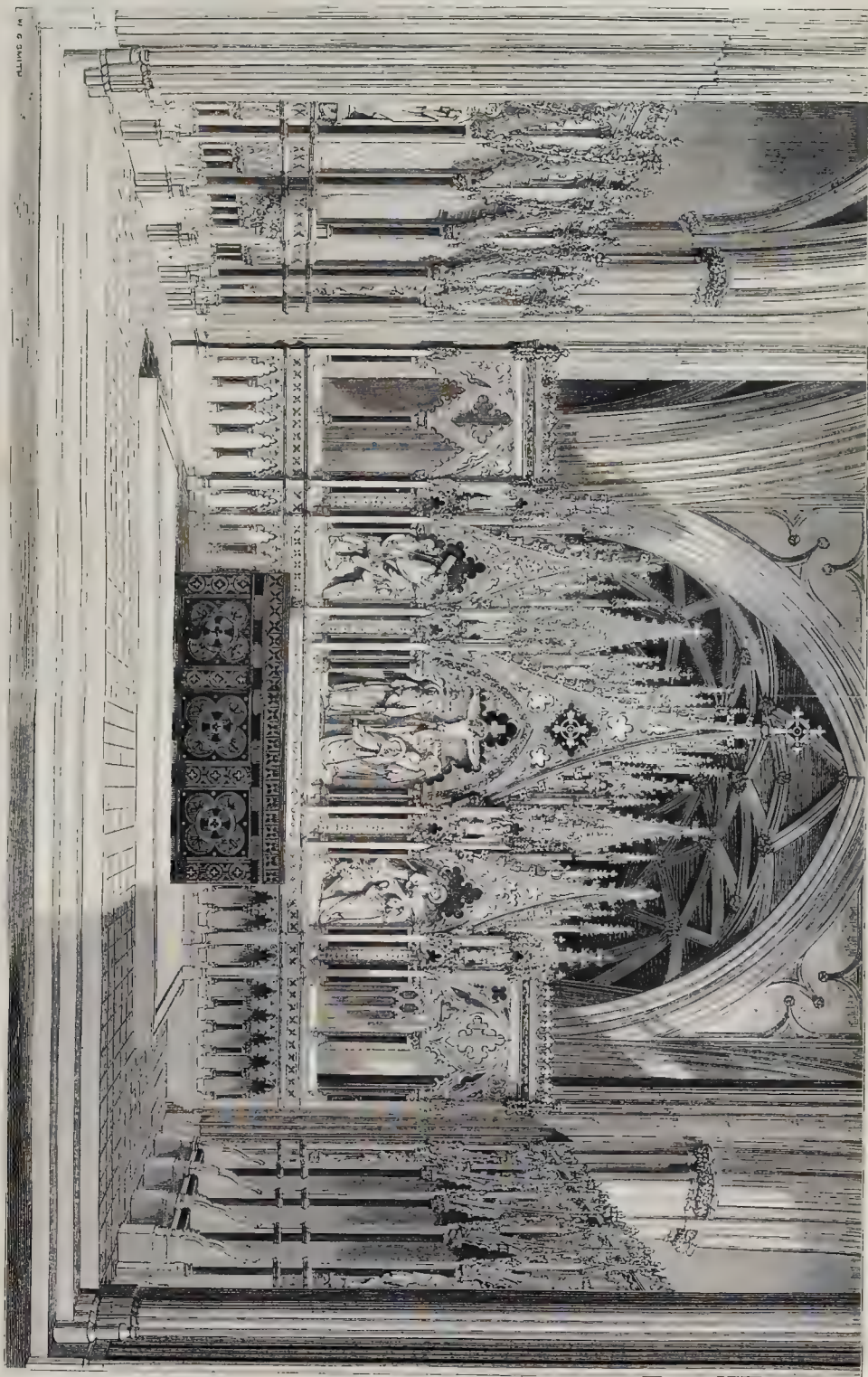
The chief aim of the committee with whom the restoration of the Church of St. Mary Redcliff has rested, having rightly been the maintenance and re-establishment of the fabric, they have persistently applied the comparatively small funds coming annually into their hands to the

restoration of the exterior, which, when they commenced their work, was a crumbling ruin. The exterior work, however, is now considerably advanced; and so, too, is that of the interior; the latter mostly by the distinct subscriptions of individuals. The present rector, the Rev. H. G. Randall, is therefore setting himself to obtain further attention to the fittings of the church. Tenders have been received for properly lighting it with gas: a scheme for filling the various windows with stained glass has been sketched, and some new stained windows are being made. The chancel has long been in a condition little short of discreditable, but something is now to be done to remedy this, and it has been determined by some zealous friends to erect a reredos in accordance with the design of which we give a view in our present number. It will be chiefly of Caen stone; the small shafts being of coloured marbles, the statuettes probably of alabaster, and some few decorative portions of mosaic work. The bas-reliefs, which it is hoped may be executed in a high style of art, represent the Crucifixion, the Agony in the Garden, and Christ bearing his Cross.

It was suggested by a lady at the last meeting of "The Canynge Society" that the reredos should be the offering of those of her own sex who are interested in the restoration of the church. This idea is being acted on, and about 620l. have been already contributed towards it. The cost, however, would be considerably more than this sum, so that assistance is still needed.

The view includes the sedilia, &c., proposed to be undertaken hereafter, to render the design complete. Statuettes of the evangelists would fill the niches at the sides.

PROPOSED REBENDS AND SEDILLA; CHURCH OF ST. MARY REDCLIFF, BRISTOL.—MR. GODWIN, ARCHITECT.



about 13 tons, which would produce a strain of 44 tons per square inch. The anchorage plates and the bearing plates of the saddles were so arranged, that the maximum pressure upon the brickwork could not in any case exceed 10 tons per square foot. In order to provide for the effects of expansion and contraction, and to allow for the movement occasioned by wind and by the passage of heavy loads across the bridge, the two extremities of the roadway were furnished with jointed ends or flaps, 8 ft. long, which gave perfect freedom of motion, both vertically and in the direction of the length of the bridge.

The works were commenced at Clifton, in November, 1862, by Messrs. Cochrane, the contractors, under the superintendence of their resident manager, Mr. Airey, and the bridge was opened for public traffic on December 8th, 1864. The total cost of the ironwork, including the purchase of the chains of the Hungerford Bridge and their carriage to Clifton, was 34,975*l*. Previously to opening the bridge, it was tested by a dead weight of 500 tons of stone, distributed over the surface, when a total deflection was produced of 7 inches in the centre. On the removal of the test-load the centre of the bridge rose to its former position within one-sixteenth of an inch, but the middle of the southern half of the bridge did not rise again to its former height by an inch, while the northern side rose above its original position. This was probably due to the change in the direction and force of the wind before and after the testing.

The author stated that the most severe strain which the bridge had to resist was that resulting from heavy gales of wind, especially those from the north-west or south-east, being nearly in the direction of the deep gorge of the River Avon at the place where the bridge was constructed. On these occasions three effects were observed. First, there was a small horizontal deflection, which was just sufficient to be perceptible to the eye when placed in range with the suspension rods. Secondly, there was an undulation from end to end of the bridge, the maximum rise and fall being, in Mr. Airey's opinion, as much as 6 inches above and 6 inches below the mean level of the roadway. Thirdly, the land chains, between the piers and the land saddles, which carried no suspension-rods, were liable to be deflected laterally, notwithstanding their weight, the longitudinal strain upon them, and the comparatively small surface exposed to the wind.

The author remarked that, considering the facility with which suspension bridges could be constructed, and the comparatively inexpensive nature of the scaffolding or temporary staging required for erecting them, there appeared to be no reason why spans of much greater magnitude should not be accomplished. The spans already crossed by bridges on this principle far exceeded those of any form of girder. The largest girder ever built was that of the Britannia Bridge over the Menai Straits, which was 460 ft. between the bearings. The largest suspension bridge was that at Fribourg, which was stated to be 880 ft.; while the Niagara Suspension Bridge was 820 ft. from centre to centre of the towers, and it had been in daily use for nearly twelve years for the passage of railway trains. Suspension bridges had not hitherto been adopted in this country for railway purposes, under the impression that the principle of construction necessarily involved such an amount of flexibility as to render them unfit for the passage of trains; but it must be considered that the larger the bridge, and the greater the ratio of the weight of the bridge to the weight of the moving load, the less was the disturbance of form caused by a passing load. Moreover, it was quite practicable to stiffen a suspension bridge so as to render it nearly as rigid as a girder, of which the Lambeth Bridge, from the designs of Mr. P. W. Barlow, was an example. The subject of stiffening suspension bridges with the least quantity of material was one well deserving attention. In a detached girder the upper and lower booms must each be capable of bearing the strains produced by the weight of the bridge and its load, and the diagonals must be strong enough to transmit the whole of those strains; whereas, in a stiffened suspension bridge, the chain was the only member required to bear the strains produced by the weight of the bridge and its load; while the diagonal bracing or stiffening, need be no more than sufficient to prevent disturbance from the moving load. In relation to this subject the author stated he had found by experiments on solid bars, made in 1858, as well as from a theoretical investigation of the case as applied to

lattice girders, that, in a continuous girder, if, instead of using an equal depth throughout, a greater depth and an greater sectional area were given over the piers, an increase of strength was obtained in a much higher ratio than that of the increased weight of metal employed. Another point deserving of consideration was the best form of link and fastening for the chains of a suspension bridge, to which Sir Charles Fox had directed attention. But where the object was to construct bridges of very large span, another, and perhaps the most important consideration, was the employment of a stronger material. In this respect the introduction of steel was calculated to have a marked influence. Many of the properties of steel were at present unknown; but it had been determined by experiments that its tensile strength was nearly double that of wrought iron, and that it could be made quite as malleable. Its powers of resistance to compression did not show the same proportion of strength; but in the application of steel to the chains of a suspension bridge, it was the tensile strength which operated.

DWELLINGS FOR THE POOR.

LIVERPOOL ARCHITECTURAL SOCIETY.

At the last meeting, Mr. T. J. Kūpin, president of the society, in the chair, read a paper "On Dwellings for the Poor." He commenced by saying that many of the poorest artisans of the present day were better housed and fed than the noblest baron in the Norman age; which we altogether deny, by the way. He then proceeded to detail the horrible sty in which many artisans and labourers lived, and referred to the efforts that were being made to remedy that evil. He alluded to the bill of Mr. Torrens, as present before the legislature, and congratulated the town on the fact that the local legislature had preceded the imperial legislature, in proof of which he quoted the beneficial results that had accrued from the grand jury presentations in Liverpool. The corporation, he said, "recently directed the borough engineer to prepare plans for the description of dwelling-houses so much wanted, and to endeavour so to arrange and construct them if possible that they might yield a fair per-centage on the outlay. These plans were completed some months since, and the public attention has been directed to them; but considerable apathy, I am sorry to say, has been shown with regard to them. The builders have, to use a familiar expression, 'fought shy of them,' expressing the utmost readiness and alacrity to erect them if the corporation would build them and become landlords, but respectfully declining to incur the risk of doing so themselves. But it seems, from the bill introduced into the House of Commons, that where private enterprise falters, hesitates, or declines, the local authorities are to act in the matter, and when necessary, to be assisted by a loan. This the corporation of Liverpool would not want; but if the intended bill compels them to act in the matter, or they should do so of their own accord, I have no hesitation whatever in saying, after a careful examination of the plans, a calculation of the cost of erecting them, and of the income to be derived from the houses when erected, that a most ample remuneration would accrue for the capital expended. The plans are now being revised, and still further improvements are being made in their arrangements and construction, and will shortly, I believe, be again brought before the public notice."

DUST AND ASHES.

The Works Committee of the Vestry of St. Pancras have received tenders for the removal of the dust from the houses in the parish for the year ensuing, the lowest of which amounted to 1,770*l*., to be paid by the vestry to the contractor. The amount of the last contract was 1,050*l*., paid by the contractor to the vestry, making a difference in the terms of 2,820*l*.. The lowest tender for the removal of road sweepings and gully soil when swept to the sides of the streets was 6,150*l*.; the amount of the last contract 4,055*l*.; being an increase of 2,095*l*.. The committee thereupon determined to re-advertise for tenders, when the lowest of those sent in for the removal of the dust was 1,270*l*., and for the removal of road-sweepings 5,615*l*., which were accepted.

On the receipt of the first of the above-named tenders, Mr. W. B. Scott, the chief surveyor to the vestry, was requested to report to the vestry upon the advisability of the vestry undertaking the removal of the dust and road sweepings, and in his report he states,—

"The quantity of dust and refuse removed from the houses in the parish amounts to from 23,000 to 25,000 loads per annum, each load being about equal to 1½ chaldron. This dust is all screened, and picked over by hand, and converted into breeze, ashes, hard core, and soft core. The 'breeze' is composed of the finer particles of dust, and is used in brick-making for tempering and mixing with the clay. The ashes, which from many districts contain large quantities of coal, are used for burning the bricks. Hard core (otherwise dust-yard pickings) is used for the formation of roads. Soft core is composed of vegetable and other perishable refuse, and is burnt where the dust-wards are in open situations, and barged away into the country where the yards are in inhabited localities, and are on the banks of a canal. About a half-chaldron of breeze and ashes is required for 1,000 bricks, so that the supply from St. Pancras is sufficient for the manufacture of fifty millions of bricks. The price of breeze this time last year was from 8*s*. to 10*s*. per chaldron. It is now 3*s*. to 4*s*. per chaldron, and will probably be lower. A depreciation of 4*s*. per chaldron will represent a difference of money value of the parish of about 10,000*l*. to 5,000*l*.. The value of the hard core does not fluctuate much, and is not worth more in the dust-yard than about 1*s*. per load. The cost of barging away the soft core is about 2*s*. per load."

To enter upon the removal of dust, the vestry would require 32 carts for the average work, and to be provided for the heavy 40 carts. These carts would cost about 25*l*. each, equal to 1,020*l*.; for these, horses and drivers could be obtained as required. A large wharf would be necessary with a staff of foremen and clerks, and then nothing more would be required but purchasers for the manufactured article. The vestry, instead of being able to dispose of the breeze, would be unable to get rid of it at all. I of the breeze, would be collecting the dust would be about 6,000*l*. a year, without reckoning the cost of wharf or land. I am decidedly of opinion that it would not be advisable for the vestry to entertain the idea of dusting the parish. Profit is made in collecting the dust, and in most cases with that of speculative building also. If carried out by the vestry, the work would probably be done more to the satisfaction of the inhabitants, but it is entirely a matter of expense. The ever-increasing population of the metropolis produces an amount of the material much greater than the increased demand. Nothing could have kept up the price of breeze for the last few years, but the enormous public works that have been carried out

Upon this report of Mr. Scott, the Works Committee resolved not to go into the business of dust contractor.

The Works Committee of St. Pancras has accepted the tender of Mr. Culverhouse for the supply of road materials:—

	Per yard.
Loamy gravel	20 6 4
Hard core	0 2 10
Burnt ballast	0 11
Dust-yard pickings	0 2 6
Clear rough gravel	0 6 6

The tender of Mr. Crofts was accepted for,—

Hand-picked flints	£3 11 10
Pit flints	0 8 4

THE BIRMINGHAM SCHOOL OF ART.

The annual meeting of subscribers and friends to this school has been held in the Rotunda of the local society of arts. Lord Dartmouth, the president for the year, took the chair. The report stated that, notwithstanding the financial disasters and stagnant trade of the past year, the number of students has been 1,007, showing a decrease of only two from the numbers registered on the books for the preceding year. The amount of school fees has been 779*l*. 9*s*. 6*d*., showing an increase of 33*l*. 10*s*. 6*d*. over the receipts of last year from the same source. At the National Competition of Art Schools held at South Kensington in May last, under regulations of the new minute of Council, one gold medal out of ten awarded, one silver medal out of twenty, and two bronze medals out of fifty-one, were taken by students of the Birmingham school. The number of competing schools was above ninety. In addition to those, twenty-two prizes of books were awarded, and also fourteen prizes at the local examination in March last. Special prizes had been offered for the best designs in several departments, and the results had been very satisfactory. At the meeting the following list of the number of manufacturers, with the number who were subscribing to the school, was given by Mr. Aitken:—

	In Birmingham. Subscribers.
Brassfounders	250
Electro-plate and plated ware ..	54
Jewellers and gilt toys ..	350
Buttons ..	216
Glass trade ..	30
Paper maché and japaners ..	52
Die-sinkers ..	65
Engravers ..	168

He said he hoped that manufacturers would show their appreciation of ornamental art, as applied to industry, by subscribing more liberally to the school than they had hitherto done.

"FAIR PLAY FOR THE LAW COURTS."

SIR,—In your paper of last Saturday, the 2nd instant, you have inserted a letter headed "Fair Play for the Law Courts' Competition," and signed "A Member of the Solicitors' Committee," animadverting upon Mr. Field, the secretary to the Courts of Justice Commission.

The Solicitors' Committee, of whom the writer of that letter therein alleges that he is one, is a committee of members of the Courts of Justice Commission, and consists of Mr. Hume, Mr. Cookson, Mr. John Young, and myself.

I am expressly authorised by my three colleagues to deny, and for myself I deny, that we, or any of us, wrote that letter, or had any knowledge of it, before we saw it in your journal.

Mr. Field, the excellent secretary of the Commission, needs no defence by us, and we, therefore, confine ourselves to pointing out the imposition practised upon you and your readers by the writer of the letter.

ALFRED BELL,
Chairman of the Solicitors' Committee.

SIR,—My letter in your last number has caused a little hubbub, so I am told, and the architectural clerk's unhappy looks testify that my reference to Dr. Percy's private letter has opened his eyes to the painful results of allowing one's feelings to get too much control over one's tongue. The secretary's face is more inscrutable, but there is a hubbub, whatever his looks may say; and that being the case, my object, I consider, has been gained; for it may be presumed that "hubbub" means inquiry, and inquiry in this case is certain to result in "fair play." Never mind how I got my information: the doors of the Commission stand hospitably open, and I got it, and sent it you, and the facts it contains are still facts, though it happens that you dubbed me wrongly.

A MEMBER OF THE SOLICITORS' COMMITTEE.
* We misunderstood a postscript of our correspondent, and applied a wrong signature.

VANDALISM AT TENBY.

MR. EDWARD ROBERTS writes as follows:—In your last number, under this heading, it was stated, as a fear, that destruction awaited the ancient town gates. I am happy in being able to say that the Mayor of Tenby and others are alive to the necessity of preserving them, if possible. The subject was brought before the British Archaeological Association by Sir Gardner Wilkinson, and some correspondence ensued which resulted in an assurance that certainly one, if not both, of the doomed gates will be retained. I may add, that this appears to be entirely due to the exertions of Sir Gardner and the Association, aided by some local savans.

BUILDERS AND ARCHITECTS.

MR. NISBET, secretary to the Builders' Association, Edinburgh branch, writes as follows:—"I am desired to inform you, that the directors having sent a deputation to Messrs. Peddie & Kinnear with reference to the conditions proposed to parties estimating for St. Cuthbert's New Poor-house, the deputation have to day had a meeting with these gentlemen, when they agreed that the offers should be according to plans, specification, and schedules of measurement. In the event of a strike, additional time is to be allowed; and Mr. George Young, advocate, is named referee in the event of disputes." The tender is to be marked—"To the extent of the schedule of measurement."

SUGGESTIONS FOR IMPROVING THE SQUARES OF LONDON.

No localities add more to the melancholy aspect of the metropolis than its squares and public places. Who would be at all surprised to see tombstones in any of the railed plantations east or west of Tottenham-court-road? Can any one promenade in these dingy sooty shrubberies, overlooked by drawing-rooms and nurseries, with either complacency or advantage? Nor am I sure that the large trees in struggling and straggling upwards towards the light con-

tribute to the health of the surrounding inhabitants. Seeing, then, that these gloomy plantations are but the most miserable apologies for rusticity, would it not be better to adopt some other mode of laying them out more consistent with "in town" conditions? In the squares of the dullest Continental town there is always some life stirring about the central statue or fountain, and the very open airiness of the place is infinitely more cheerful than abortive attempts to convert similar localities into sylvan woods. I believe the right garniture of large intramural spaces to be fountains, statues, flower-beds, gravel walks, and a very moderate plotting of tree-shrubs, large wood being, in my opinion, altogether out of place.

With regard to Trafalgar-square, I would only suggest that the present water-jets should be removed, the basins filled with earth and set with flowers; that the entire expanse of sloppy and dusty asphalt should be taken up, and the area paved with dark slate or black marble, to be carried in a bay round the column and its adjuncts, bounded by a dwarf wall, and converted into a reservoir for clear water, which would reflect gallery, column, and lions with magnificent effect.

We require colour and water to enliven this dull city. W. CAVE THOMAS.

IRON MONUMENTS.

An "Old Founder" writes,—If any more large lions, or other savage beasts of colossal stature, should be required by the public, I think I can indicate a much less costly mode of obtaining them than paying Baron Marochetti 4000. per ton for casting them.

There is no more practical difficulty, the models being supplied, in casting a lion than a column or a girder, perhaps less than in an engine cylinder, and I shall be very glad to supply any number of lions, griffins, sphinxes, &c., &c., up to 10 tons each, for 500. per ton; and I will engage that after six months' exposure to a London atmosphere my cast-iron beasts or monster shall look as well and rather better than the bronze ones.

Bronze is very nice for a chimney-piece ornament, when you can preserve the rich colour of the metal, which is its great charm; but I appeal to any of the open-air statues in London whether it is not utter folly to put this costly material in situations where it so rapidly loses its colour and oxidises to a very considerable extent.

If cast iron be well soaked with linseed oil while the iron is hot, it takes a fine rich tone of colour, and will resist oxydation very much better than any bronze exposed to the open air that I have ever seen.

Sir Edwin Landseer is fully entitled to every shilling of his money for his magnificent models, but 11,000. for casting them is—well, never mind what!

"STARVATION WAGES." "WHO FIRST TO BLAME."

SIR,—Very painful accounts have for some time appeared of starvation wages, even for excessive labour, at Bethnal-green. Let us inquire whether the "outer" world may not have had for a long time something to charge itself with; and what might be the antidote. No aphorism of Napoleon I. was perhaps better than—"Impossible" is the word of fools.

A daily paper (I am not certain which) stated, from some correspondent, years ago, that there were two parties mainly answerable for this,—First, the "public," who have a craving—I hope more thoughtless than unprincipled—for cheapness, the actual effect of three-pennies starving the workers; second, the "vendors," who seem too often quiet acquiescers in the compact. Once, and once only, have I known a very leading suburban draper both remonstrating with (of course very politely) and informing some ladies who had murmured at a trifling rise in price in some article, by telling them the simple truth,—that the makers there were "just beginning to live," after long starving, through the small advance they objected to.

Surely this should be satisfactory, as I hope it was then, to all right-thinking persons. How far making and selling fewer things at a higher price would answer the purpose I cannot say; but would it not be better for all to be willing to pay more, even if they retrenched in some other point, that the labourer might have his due? Little need to exaggerate the picture; but I doubt not that the miserable "Song of the Shirt" is far from unparalleled in other branches of work.

If even some "houses" were to charge higher prices, and insist on knowing (with power of proof) that "living wages" were paid at the "fountain-head," I can but think that the conscientious public would rally round them. Nor need we, I think, doubt that even royalty might interest itself in the matter, after her Majesty's remonstrance with railway evils or shortcomings.

If these humble observations should lead to useful thought on the subject, I should be thankful to Providence. D.

BUILDERS' TROUBLES.

SIR.—A short time since an advertisement appeared in two papers (at least), one a local, the other yours, requiring tenders for the erection of a house at Fairfield, and stating that the plans and specifications might be examined at the office of the architect, Mr. J. B. Newton; and I, fully intending to join in the competition, sent two persons there (one from my residence, Margate), on purpose to examine the plans, &c., when they were directed to the surveyor's office (after having been requested to copy a piece of paper on which the particulars were stated, the first of which was that quantities would be ready in a few days, and would be forwarded to the builders free of charge). On getting there they could not see the plans for about four hours after, as they were out somewhere. However, after seeing them, they obtained a promise at this office that the quantities would be sent home all right.

To my surprise, a week ago, I saw the amounts of the tenders in the *Builder*, without having heard one word about the matter previously. I, therefore, wrote at once to the architect, who answers me that, since the advertisement, it was found desirable to have a select competition, and that he could not find any promise had been made to me of having the quantities, although I had it in the particulars. Can I obtain any compensation for my trouble? RICHARD PARSONS.

WHERE IS THE SANITARY INSPECTOR FOR ST. PANCRAS?

SIR.—The *Builder* being the promoter both of the sanitary and moral condition of the public, may I trespass on you to expose the unmentioned abuse, which is permitted under the very nose of the police and parish officials?

In a quiet street in St. Pancras, bounded on one side by the vestry-hall and by the police-station on the other, it is the practice nearly every evening for a number of horses (half a dozen at a time), filthy carts, and men, belonging to a contractor in an adjoining street, to halt on their return home from their daily labour, and in front of the windows of the houses, both men and horses, commit a most disgusting nuisance, to the great scandal of the inhabitants. The result in another respect is abominable. But few of the houses lately have been free from fever. The inhabitants have sent a written request to the contractor to stop it; one of the parish surveyors has been asked to interfere; the cartmen have been continually desired to move; but all to no purpose. Though decency forbids, still they come. To the *Builder*, therefore, they appeal to bring public opinion to bear on the authorities, to preserve the public health and morals, and induce the contractor to keep his business to his own stableyard. AN INHABITANT.

CHURCH-BUILDING NEWS.

Ashford.—The new church has been just finished, at a cost of 3,800. The church is to be a free one, and the sittings unappropriated. The committee have determined not to open the church until the whole of a remaining debt of 200l. is paid.

Eastbourne.—St. Saviour's Church has been consecrated. It is built from designs by Mr. George E. Street, architect. The materials employed are red brick, with Bath stone dressings. The style is Geometrical. The church consists of a nave, chancel, and side aisles, with organ-chamber, vestry, and west porch. The nave is 90 ft. long and 35 ft. wide. There are six bays, the last of which, as it joins the chancel, is placed diagonally, so as to form with the chancel-arch an apse. The nave is lighted by a clearstory, the windows of which are 10 ft. high by 5 ft. wide. The basement of these windows is about 25 ft. high, and is supported upon arches and stone pillars. The ridge-tile of the nave is at a height of 70 ft.; but the interior roof is boarded upon principals, which form an arch, the apex of which is 10 ft. below this. Tie-rods of iron are inserted, and bind the whole together. The chancel is 28 ft. deep, and terminates in an apse. It is lighted by four windows, 14 ft. high by 7 ft. wide, of which the base is 15 ft. from the ground. The roof is groined in brick, with stone ribs, these latter springing from shafts of Devonshire marble. The lower parts of the walls are left for future decoration. The floor of the chancel is laid with Godwin's encaustic tiles, relieved with white marble and Warwick stone. The glazing throughout is in three tints of green cathedral glass, and arranged in squares of different sizes. In the windows of the south aisle and nave apse, Powell's stamped quarries are introduced; these are marked with Mr. Street's patterns. The glass is very thick, giving a cool silvery effect. The side-aisles are narrow, and are covered with a lean-to roof. The windows are proportionally small, and are of two lights. The building is without the tower and spire, which are intended to rise from the west end of the north aisle. The plates on the roof are of three colours, and arranged in diamonds. The walls throughout are 3 ft. thick, with a hollow space of 4 in., and are bound together with iron clamps. The work has been carried out by Mr. Peerless, builder. The stonemason's work has

been completed under the superintendence of Mr. Patchett, foreman to Messrs. Parsons, of Eastbourne and Lewes. The sole cost of the building, about 8,000*l.*, is borne by Mr. George Whelpston, who, we understand, intends also to endow it, and wholly or in part to build a parsonage house.

Wombwell.—A meeting of the ratepayers of Wombwell has been held for the purpose of taking into consideration the formation of a cemetery for the township. The meeting decided that the Burial Board should be instructed to expend 3,500*l.* in the buildings and site. A piece of ground containing about six acres, belonging to the representatives of the late Mr. Joseph Eastwood, was selected. The cost of the site was stated to be about 1,200*l.* Three acres of land are proposed to be laid out at present, half of which is to be consecrated, and the other half appropriated to interments by the Dissenting portion of the inhabitants. Mr. Dobbs, of Rotherham, was appointed architect of the works.

Newbottle.—The church here has been reopened for divine service, after having undergone a restoration, rendered necessary partly by the lapse of time and partly by alterations made in the original structure. The chancel has now been restored, certain windows having been replaced by others, and various other alterations effected. In the course of the repairs of the chancel a sedilia, long walled up, was brought to light, as well as a Gothic window. The roof of the chancel, and the church generally, has been opened up, and the old pews, which were in a dilapidated and discreditable condition have been replaced by open seats. A new organ, built by Mr. Bevington, of London, has been added, and the comfort of the building has been provided for by Rimington's heating apparatus. The churchwardens and other promoters of the restoration did not think it necessary to engage the services of a professional architect, but they were subsequently glad to avail themselves of the assistance and advice of Mr. Hannaford, who was then engaged in superintending the improvements at King's Sutton Church. Messrs. Franklin & Son, of Deddington, were the builders, who also executed the carvings on the wooden screen. The cost of restoring the chancel has been mainly defrayed by Mr. W. C. Cartwright and Mr. T. L. M. Cartwright. The amount expended on that portion of the building is about 200*l.* The expense of the remaining repairs is about 600*l.*

DISSENTING CHURCH-BUILDING NEWS.

York.—The foundation-stone of a Baptist church has been laid here, in Priory-street, Micklegate. It is to accommodate 700 persons. The building will stand with its side to Priory street. The style is the Early Decorated. The plan consists of a nave and aisles, with transepts. The extreme length of the nave will be 78 ft.; the width 24 ft. 6 in.; height to the eaves above the clearstory, 32 ft. 6 in., and to the collar-beam of roof (where it is ceiled), 44 ft. 6 in. The extreme width will be 44 ft. between the aisle walls, and 49 ft. 6 in. across the transepts. The arcade below the clearstory will be of brick, with plaster mouldings, and supported upon cast-iron columns, with foliated capitals. A gallery will be erected over the aisles and across the ends over the vestibules. At the opposite end an arched recess will be provided for the organ and choir. The front of the galleries will be in pitch pine, with Quebec pine panels in the lower part, the framing being relieved with ornamental chamfering. The iron columns supporting the arcade will divide the gallery front into bays, as they are seen the entire height. The organ-gallery front will be in ornamental woodwork entirely. A platform will be provided instead of a pulpit, below the floor of which will be the baptistery, made in Ransome's patent concrete stone. The steps from the baptistery will lead direct into the vestries. The seats will be all open benches, with ornamental ends. Behind the church, with its end to the street, will be a lecture-room, 40 ft. by 21 ft.; minister's vestry, lobby, and staircase to school-room, which will be 45 ft. by 25 ft. The timberwork of the roof of both church and schools will be exposed to view. The roof of the church will have curved ribs below the collar-beam, and terminating upon ornamental stone corbels in the spandrel of the arcade. The exterior will be faced with stone, the dressings will be in Whithy stone, and the walling of Bradford sets, in thin beds. The side

being to the street will be the principal front. There will be a tower at the entrance corner towards Micklegate, containing one of the staircases to the galleries. The tower is to the top of the parapet 54 ft., and to the top of the pinnacles 61 ft. It will be covered with a high-pitched roof of ornamental slating, having iron cresting on the ridge. At the opposite end of the front will be two gables, the one being the school, and the smaller one the transept of the church. The former will have a porch in the centre, with a two-light window upon each side. Above will be a three-light window, having trefoil heads, with a single trefoil-headed window upon each side, while above this will be an ornamental circular window. The transepts will have a four-light trefoil-headed window in the bottom part, with a three-light traceried window to light the gallery. The aisle windows will be in two tiers, divided by a moulded string. The lower tier will have two-light tracery windows, and the upper tier narrow three-light trefoil-headed windows. The clearstory will be lighted by four circular windows. The end elevation will consist of three deeply-moulded doorways. The one doorway is in the tower. Above the doorway, at the opposite side, there will be an ornamental rose window lighting the upper part of the gallery stairs, which will be covered in with a high-pitched roof. Upon each side of the central doorway, which will be wider than the others, there will be a single-light trefoil-headed window, and above the door a three-light traceried window. The architect is Mr. W. Peachey, of Darlington. The contractors for the several works are, for the brick and stone work, Messrs. C. Bowman & Co.; plastering, Mr. M. Croft; slating, Mr. T. F. Wood; carpenter and joiner's work, Mr. W. Bellerby; plumbing, gasfitting, and glazing, Mr. J. Dickinson; painting, Mr. Fowler; smith and ironfounder's work, Mr. Bonsfield; and warming, Messrs. J. Longbottom & Co. The cost, including everything but school fittings, will be 3,538*l.*; and the total cost, including the land, will be about 5,000*l.* Of this 1,000*l.* have been contributed by Mr. G. E. Foster, of Cambridge, and 2,000*l.* more by other friends, leaving a debt of about 2,000*l.*

Books Received.

VARIORUM.

THE publication of the second volume of Mr. Fergusson's "History of Architecture in all Countries" (Murray, Albemarle-street) completes the work, the "History of Modern Architecture" already issued forming the third volume. We shall early give it that full review to which its importance and value entitle it. Compared with the "Hand-book," the volume now before us may be called a new work, the greater part of the matter and half the illustrations (which are above 650 in number) being entirely fresh. —The April number of the *Art Journal* will contain the first part of the Illustrated Catalogue of the Paris Exhibition. It will include 100 engravings, illustrating works of Froment Meurice, Hunt & Roskell, Sy & Wagner (Berlin), Elkington, Harry Emanuel, Weise, Benson, Rudolph, Odier, Christoffe (jewellers and goldsmiths, of Paris or London), Copeland, Minton, the Imperial and Royal manufactories of Dresden, and Berlin (porcelain), Durenne (cast-iron), Brocraux (fans), Servant, Charpentier (bronzes), Jackson & Graham, Gillows, Trollope (furniture), Dobson (glass), and others.

Miscellaneous.

CHIMNEY-POTS IN GAZES.—A correspondent suggests that chimney-pots might be sewed on to metallic collars secured into the brick-work, as the potter could easily form the working; and a few turns on the collar would permanently fix the pot.

EXHIBITION OF HISTORICAL PORTRAITS IN PARIS.—The Pompeian house built for Prince Napoleon, in the Avenue Montaigne, has passed into the hands of M. Arsène Houssaye, the well-known editor of the *Artiste*, who is now engaged in preparing an exhibition of portraits. It is said that the project has been well received, and that the collection is likely to be a highly interesting one, including many fine and curious works, especially of the revolutionary period.

TELEGRAPHIC.—The reduction in the tariff for messages sent by the Atlantic cable from a minimum of 10*l.* to 5*l.* will take place on or about the 15th of this month, and, as on the former occasion, official notification will be made only a day or so before the change.

THE ECLIPSE OF THE SUN.—The eclipse took place on Wednesday morning at the time calculated on, but the condition of the weather was such that few facts of any value were obtained, though elaborate preparations had been made in several quarters. A poetical correspondent got a fancy out of the appearance that was presented in the sky, and stated it thus:—"The clouds rushing past the sun give to it the appearance of a poor persecuted victim, striving to escape from the incubus that has fastened on it, and which, vampire-like, seems to be sucking away its life." Those who watched the eclipse will recognise at once the force of the "conceit."

INCREASED FOOTWAY IN FRONT OF THE MANSION HOUSE.—The railings in front of the Mansion House have been removed, and the space flagged. Although only about a yard in width is thus added to the footway, the whole length of the Mansion House front, the gain to the public is immense, as the traffic in this part of the City of London is very crowded. We noted a piece of bungling management on the part of those who had charge of the work. The paviers were busy finishing their work just at the moment the Prince of Wales and a large company were arriving at the Mansion House, to attend the meeting of the National Lifeboat Association, on the 28th ult. A little extra effort might have avoided the unseemly scene.

THE ROYAL POLYTECHNIC INSTITUTION.—The ordinary general meeting of the proprietors of the Royal Polytechnic was held on Saturday afternoon last, at the Institution. The Rev. J. B. Owen, chairman of the Board of Directors, presided. It appeared from the report that the receipts had been greater than in the corresponding half of last year, and although a large sum had been expended in repairs and improvements, there remained a handsome balance for dividend. The number of visitors to the Institution during the half-year exceeded 111,000*l.* The directors recommended the payment of a dividend at the rate of 4 per cent. for the half-year, making the dividend for the year 7 per cent. A vote of thanks was passed to Professor Pepper for the attention he continued to give to the interests of the Institution.

WORK IN THE PARIS EXHIBITION.—The earth-works of the Paris Exhibition, including all the cutting and filling in the park, have amounted to upwards of half a million cubic yards, according to *Engineering*. The ironwork of the building amounts to 13,200 tons, of which nearly 10,000 tons are in the great machinery gallery. The prices of the wrought-iron work have been, for the great gallery, 23*l.* per ton, with the exception of the sash irons, which were 31*l.* The corrugated plates were 28*l.* 10*s.* per ton, fitted. For the inner galleries the price of the cast-iron work, in columns, arches, consoles, &c., was 13*l.* 5*s.* per ton. The Coignet *béton* has cost 11*l.* 12*s.* per cubic metre, or about 24*s.* per cubic yard. The windows of the machinery gallery present a surface of no less than 53,700 square yards, and the other galleries have nearly 25,000 square yards of glass.

STATUE OF SIR CHARLES BARRY.—The accounts have been closed, and stand thus. The expenditure has been,—

	£	s.	d.
By amount of bills paid, 1861-1867, viz.:-			
Mr. J. H. Foley, for the statue, and for erecting it	908	15	0
Mr. W. Field, for the marble plinth, carving the background, and sundry extra works	169	10	0
Mr. J. G. Crace, for gilding and embellishing the architectural details of the arch, &c., adjoining the statue	46	9	0
Mr. J. Maber, for two small plaster models of the statue and the adjoining portion of the building	29	1	0
Printing, writing, advertising, postage, and sundry small disbursements	44	12	0
It was met thus,--	£1,198	7	0

	£	s.	d.
To amount of subscriptions	1,030	0	0
" additional subscription from Mr. J. Lewis Wolfe, being the balance of the account	168	7	0
£1,198	7	0	

Mr. Wolfe had previously subscribed 200*l.* The next largest subscribers were Messrs. Lucas, who gave 100*l.*

COUNTENANCED BY SMOKE.—The last scientific toy we hear of from America is in the shape of some cigar-holders made of paper and quill, each showing a blank medallion, on which, however, a photograph is developed in a few moments when the holder is used for its intended purpose. It appears from experiment that the ammonia of the smoke is the developing agent, but the exact nature of the action has not yet been explained.

THE SANITARY CONDITION OF LIVERPOOL.—In the Commons Mr. Samuelson recently asked the Home Secretary whether he would lay upon the table the report of Mr. Taylor on the sanitary state of certain parts of Liverpool, and on the condition of the dwellings of the poor in that town; and whether he had received from the local authorities any satisfactory assurance that the recommendations of Mr. Taylor would be promptly carried into effect. Mr. Walpole, in reply, said that the report was a very long and valuable one, and had only recently been delivered at the Home Office. He would go through it without delay, and would then state whether the report and the other papers on the subject could be laid on the table of the House.

DUNFERMLINE: THE PALACE RUINS.—Lord Provost Whitelaw has issued a notice to the inhabitants of Dunfermline, in which he says:—"As some misunderstanding exists as to the virtue of the decision of the House of Lords in this case, recently delivered, and as some ill-advised persons and boys have forced access into the palace grounds, the magistrates deem it their duty to announce that, until the judgment of the House of Lords is applied, the inhabitants have no legal right to force access to the grounds." In the same notice he says:—"The magistrates are at present taking steps to obtain permission from the Commissioners of her Majesty's Woods and Forests to open the grounds to the public, and also to make arrangements for the future preservation and management of the grounds; and until the judgment is applied, the magistrates earnestly trust that no attempt will be made to force an entrance to the grounds."

GAS.—The Canterbury Gas Company have declared a dividend for the last half-year at the rate of 6 per cent. per annum.—The Tunbridge Gas Company have declared a dividend of 7½ per cent. for the past year, besides placing 250l. to their reserved fund, and having a balance of 183l. over.—The Cardiff Gas-light and Coke Company have declared a dividend at the rate of 10 per cent. on their old shares, and 8 per cent. on their new, for the last half-year.—The following resolution, moved by Colonel W. Fatten in the Commons, has been agreed to:—"That it be an instruction to the Committee of Selection that it has power to refer every gas and water bill of the present session, excepting those relating to the metropolis, against which a petition endorsed for hearing before the referees has been presented, to the Court of Referees instead of to a committee of the House, with power to the referees to inquire into the whole subject-matter of the bill, and to report thereon to the House." The resolution was agreed to.

THE HUTTON VIADUCT.—The North-Eastern Company have made great progress with the works for the reconstruction of this large structure, which carries the main line to Scarborough across the Derwent in an oblique direction, and at a height sufficient to avoid interference with the Malton navigation. The new viaduct will be much shorter than the old wooden one, but will still consist of four openings of about 90 ft. each, the new viaduct being one half of the width of the present bridge higher up the river. One coffer-dam has been formed on the East Riding side, and two others on the North Riding side, all in the lacustrine and river deposits. These have been carried down some 16 ft. through layers of gravel, sand, clay, and peat. The bottoms of these coffer-dams have been "piled" with old iron rails, and among these a bed of concrete has been thrown upon which the piers for the superstructure are to be built. Owing to the depth of water, however, the two piers in the river could not be formed in coffer-dams. In lieu thereof three piles of hollow cast-iron are driven down to the rock, and these piles are bolted together on cast-iron plates laid on the top, and then braced by iron bands in all directions. Upon the iron platforms thus formed the piers are to be built, none of the masonry (except in flood) being in the water. The piers will be of stone and brick, and the permanent way will rest on sixteen huge girders of riveted iron plates.

BUNHILL-FIELDS BURIAL-GROUND.—The question of this last resting-place of four acres being given up to bricks and mortar at the end of the year is one now exciting the attention of the religious world, as also of the corporation of the City, which public body are most desirous that it should be preserved, but they cannot come to terms with the reverendees, the Ecclesiastical Commission. It behoves Churchmen as well as Dissenters to co-operate immediately in the carrying out to a good result of some plan for the preservation of Bunhill-fields.

THE ARTISANS' AND LABOURERS' DWELLING BILL.—The Metropolitan Board of Works have referred this Bill for consideration to their works and general purposes committees. The chairman at a recent meeting remarked that there could be no doubt that the principle was correct, that when a house become a source of annoyance or danger to the persons living in its neighbourhood, the owner or lessor should be compelled by law to permit its being taken down. A magistrate might make the necessary order on just cause being shown by witnesses on oath. Mr. Saunders said he approved of the clause giving the local authorities the power to open blind allies, a course which was most necessary for the health of many London quarters. He did not believe that the Bill would lead to any increase of taxation.

DEATH OF NINE CHILDREN BY FIRE.—A shocking catastrophe has occurred at Accrington. Bensch an infant-school, where about 100 children attended, were varnishing and head knitting works, with hot stoves and pipes, and only a wooden staircase to the school. A fire broke out suddenly in the varnishing shop while all the children were in the school, and the staircase immediately took fire, so that only a few of the children could with great difficulty be got out. Ladders were procured, and scores of the little creatures were thus saved from a dreadful death. Indeed, it is wonderful that only nine were destroyed, for the place burnt like tinder and was completely gutted. To have so many children collected in so dangerous a place as a varnishing shop was certainly wrong. A verdict of accidental death has been given.

CHURCH CONSECRATION.—The case of Parker v. Leach was an appeal from a judgment of the Chancery Court at York, to the Judicial Committee of the Privy Council, under a proceeding of "perturbation of a seat" in the parish church of Waddington, in the diocese of Ripon and province of York. The question raised and decided was whether a parish church, after alterations and part rebuilding, should be reconsecrated? The church in question was, in 1825, under the authority of a faculty, rebuilt in some of its parts, and had new buildings introduced into it by way of repair, but an important portion of the original consecrated structure remained untouched. The Judicial Committee held the church never ceased to be a parish church, and required no reconsecration after the above alterations. It was stated, also, that there was no authority for the doctrine that where the communion-table of a parish church has been taken down and replaced by a new one, it requires reconsecration, for the communion-table of a Protestant church is not analogous to the altar in a Roman Catholic church.

THE LATE MR. JOHN PHILLIP, R.A.—The remains of the late admirable artist, Mr. John Phillip, who died at his house, Campden-hill, Kensington, on the 27th ult., have been interred in Kensal-green Cemetery. Many members of his profession and some few literary friends were present. Mr. Phillip was born at Aberdeen on the 2nd of May, 1817, and had thus at the time of his death nearly completed his fiftieth year. His parents were in humble circumstances. He began life about the age of twelve as a painter's boy, and even in his boyhood his love for art showed itself strongly. Every hour of leisure he devoted to painting pictures. Mr. Pryce Gordon, an Aberdeen gentleman, was so much struck with some of these early efforts, that he brought the talents of the boy painter, Phillip, under the notice of the late Lord Panmure, who immediately took him most heartily by the hand; and, with the view of doing him all the good in his power, sent him to study in London under Mr. T. M. Joy. It was not, however, till after a visit to Spain—where he went in search of health—in the year 1851, that Phillip found his true field as a painter. His last pictures were his best. The English School has lost a great colourist.

WORKS OF ART FROM ROME.—Lately-published statistics of commerce in art inform us that, in the year 1866, the modern paintings exported from Rome represented the value of 138,841 scudi; modern sculptures, 311,387 scudi; ancient pictures, 7,305 scudi; and antique sculptures, 11,967 scudi; the total amount of such exports being 2,523,594 francs,—considerably above that reported for the preceding year.

PUBLIC HEALTH ACT.—This Act (11 and 12 Vict., c. 63), gives full compensation "to all persons sustaining any damage by reason of the exercise of any of the powers" of the Act. It was held by the Court of Common Pleas, in the case of Hall v. The Mayor and Corporation of Bristol, that this extends only to damage which would give a right of action if the works causing it were carried out without the authority of the statute.

PLAN OF THE CITY OF WORCESTER.—The Streets, Water, and Sewerage Committee have agreed to recommend for acceptance by the town council the tender of Mr. H. Webb, surveyor, of Foregate-street, for a map of the city, on a scale of 40 ft. to an inch, at a cost of 640l. The committee also ordered that there should be a constant supply of water to the city night and day. The new waterworks were reported as being in a satisfactory state of progress.

CRIPPLEGATE.—Amongst the improvements lately made in the City, is the removal of four old houses in Well-street, Cripplegate, and the erection on the site of an extensive warehouse, having a frontage of 90 ft., and an average depth of 35 ft. The height from paving to coping is 62 ft. There are seven floors in all, with staircase and lift at each end of the building communicating with each floor, and arrangements for supply of water, so that the building may be used for manufacturing purposes or otherwise. Mr. W. Henshaw has carried out the works, under the superintendence of Mr. George Grayson, architect.

PHOTOGRAPHIC PROGRESS.—The well-known "ghost" process Professor Mack now proposes to apply to anatomical preparations in an ingenious way. Taking the skull, for instance, says *Galignani*, he photographs it stereographically on the photograph of the articular apparatus, so that the whole interior of the ear is seen through the temporal bone. It is easy to conceive the immense advantages that may be derived from this system. Suppose it were required to show photographically the exact position of the heart and its immediate connexions in a given posture of the person, that part would then be photographed first from a model and the whole body over it. The latter would thus form a transparent outline showing the relative positions of the inner and outer parts. Might not the whole skeleton, too, be thus seen, clothed with its muscular and vascular systems? This would form a highly interesting sort of stereograph.

MR. RUSKIN ON "CO-OPERATION AND COMPETITION."—In a letter which has been printed Mr. Ruskin says on this subject:—"All mastership is not alike in principle. There are just and unjust masterships; and while, on the one hand, there can be no question but that co-operative partnership is better than unjust and tyrannous mastership, there is very great room for doubt whether it be better than a just and benignant mastership. At present you, every one of you, speak and act as if there were only one alternative, namely, between a system in which profits shall be divided in due proportion among all; and the present one, in which the workman is paid the least wages he will take, under the pressure of competition in the labour market. But an intermediate method is conceivable,—a method which appears to me more prudent, and in its ultimate results more just than the co-operative one. An arrangement may be supposed,—and I have good hope also may one day be effected,—by which every subordinate shall be paid sufficient and regular wages, according to his rank, by which due provision shall be made out of the profits of the business for sick and superannuated workers, and by which the master, being held responsible, as a minor king or governor, for the conduct as well as the comfort of all those under his rule, shall on that condition be permitted to retain to his own use the surplus profits of the business which the fact of his being its master may be assumed to prove that he has organized by superior intellect and energy."

EDINBURGH CO-OPERATIVE BUILDING COMPANY. The quarterly meeting of the shareholders of this company has been held. From the report it appeared that a number of houses have been sold during the past quarter at Leith. Sixteen houses in course of erection at Maryfield are nearly completed, and will be fit for occupation at Whit Sunday. The building of other six houses and a shop is being proceeded with at the same place. Twelve of these houses have been sold during the quarter. Since last general meeting of the company, fourteen houses have been sold at Stockbridge, where an additional block has also been commenced.

NEW TILE WORKS, BURSLEM.—The eucastic tile manufacture has recently taken another step in advance in the Potteries. Three or four years ago Messrs. Boulton & Worthington, of Burslem, took out a patent for the manufacture of inlaid eucastic tiles from powdered clay subjected to a great pressure. This patent was purchased by Messrs. Malkin & Co., who, in November last, commenced operations at works erected specially for the purpose at Newport, Burslem. The slip-house machinery is driven by an engine of twelve-horse power, and there are three kilns on which the slip is desiccated; after which it is ground to powder, and is then ready for the presses. Of these there are nine in all, some of which are used for making plain wall tiles and quarries, and others for ornamental tiles. The plain tiles are made in great numbers by means of unpatented presses. The stoves for drying the tiles are heated by steam pipes, and those set apart for the inlaid tiles are so arranged that the tiles are placed in on one side by the makers, and taken out on the other by the placers. From the produce of the first oven several pavements have been prepared for the Paris Exhibition. The designs at present produced are mostly Gothic in style.

THE SEWAGE QUESTION.—At a recent meeting in Liverpool Lord Robert Montagu delivered an address upon this question. His Lordship stated, that fifteen years ago he himself tried the utilization of sewage upon land, and so astonished was he with the results, that he then determined that if ever an opportunity offered he would do all in his power to urge the general utilization of sewage throughout the country. He spoke, therefore, from experience. After alluding to his well-known connexion with the Parliamentary Committee and bills on the subject of sewage, one of which, the Sewage Utilization Act, was passed in 1855, he went on to show, firstly, the absolute necessity of utilizing the sewage of towns; secondly, the enormous gain that might be expected to accrue from such a practice. After the address, Mr. J. F. Bateman, C.E., said the experiments made showed that where sewage had been utilized, the result had been a considerable improvement in the value of land. The work proposed to be tried in Liverpool was extremely simple. It was proposed merely to carry out a portion of the scheme, so as to enable the public to realise the fact that sewage could be utilized. The company formed in Liverpool intended to try 200 or 300 acres, or more, if necessary, at the north end of the town.

METROPOLITAN IMPROVEMENT RATE.—Mr. Ayrton's Bill, reciting that a portion of the charge for permanent improvements in the metropolis ought to be borne by the owners of rateable property therein, proposes to enact as follows:—That the Metropolitan Board of Works in assessing on the several parts of the metropolis the several sums to be charged thereon for defraying the expenses of the execution of the Metropolitan Management Acts of 1855, 1856, and 1862, shall distinguish as being assessed for a special rate, to be called the "Metropolis Improvement Rate," such parts of those several sums as the Board from time to time shall think fit, not exceeding in any year 4d. in the pound on the rateable annual value of the property in the several parts of the metropolis. The rate is to be applied towards permanent improvements authorized by Parliament, or to which the City Commissioners of Sewers, or any vestry or district Board, contribute out of rates at their disposal at least half the cost. The rate is to be borne partly by the occupier and partly by the landlord, or the several landlords or lessors; the occupier is to deduct from his next payment of rent $\frac{1}{4}$ for each pound thereof one half of the sum which he pays for the Metropolitan Improvement Rate in respect of each pound of rateable value, whether the rent is greater or less than the rateable value."

A FEATURE OF THE STRIKES.—The strikes of men engaged in the iron works and collieries of the district traversed by the Midland Railway have cost the company 10,000*l.* in loss of traffic alone.

THE MAIDENHEAD SEWAGE.—In reply to a letter from the town clerk to the Thames Conservators requesting to be informed whether the filtered sewage water of the town would be allowed to pass into the Thames, the Board of Conservators decline to sanction it, and refer to the chemical character of the water passed from the Ealing sewage works as analyzed by their analytical officer of the Board, Dr. Letheby. The Local Board have, therefore, requested to be allowed to send to the Board a deputation on the following question:—"Suppose the filtering process is carried out to a greater extent than at Ealing, will the filtered sewage water then be allowed to enter the Thames?"

NEW BRIGHTON PIER.—An ordinary general meeting of the New Brighton Pier Company, which has been incorporated under a special Act of Parliament, at a nominal capital of 30,000*l.*, in 3,000 shares at 10*l.* each, has been held in Liverpool. The company are now erecting an iron pile-pier at New Brighton, on the Mersey, with a promenade and saloons, the profits to be derived from tolls for usage. Mr. E. Birch, of Westminster, is the engineer. The report submitted stated that the first column of the pier was fixed on the 19th of December last. One-half the foundations for the whole of the columns are already fixed, several columns erected, and girders and other materials on the spot. Mr. Birch constructed the similar pier at Brighton, in Sussex.

BARROW-IN-FURNESS.—A correspondent says:—"A town of about 20,000 inhabitants, grown up from a village of scarcely one-tenth of that population in the short space of seven years, is a unique in European geography. There have been instances before this of quickly-grown towns in some of the iron districts of England, such as Middlesbrough-on-Tees or Morthyr Tydvil, but these precedents can hardly be compared, as regards rapidity and extent of rise, to the recently-commenced and still continuing increase of Barrow-in-Furness. The appearance of this now important town has a striking peculiarity. Its streets of newly-built houses, and others in course of construction; its gangs of busy workmen engaged in building, erecting, and fitting up new structures of all kinds; the bustling noise, and the visible tendency which exists everywhere to progress with the utmost speed, bear some resemblance to the hasty preparations for some enormous fair or other extraordinary occasion."

THE GREAT WESTERN STATION AT READING.—The new down station is now approaching its completion. The site has been found very troublesome on account of its being once a valley, which it was necessary to fill up with ballast, in order to form a roadway to the old station—the depth being from the surface of the original bottom, 25 ft. 6 in. The station is in the Italian style, very freely treated, with very low wings, and a tower in the centre of the building. The exterior walls are of white bricks supplied by the Coalbrookdale Company's brickyard in Shropshire. A close joint has been obtained, and they have been set in fine putty, and left a ruled joint. The dressings are of Bath stone, selected from a bed known as the Lodgestyle Bed, on account of its durability. The centre portion of the building and under the verandah are entirely of Bath stone, with moulded and carved panels and wreaths over the windows and doors. The windows generally throughout the building are designed with carved trusses supporting the shelf terminating with pendants of running foliage. The carving has been carried out under the superintendence of Mr. Charles Allen, of Birmingham. The chimneys are of Bath stone. The total length of the building is 221 ft. 2 in., and it is 46 ft. broad, and comprises first and second class waiting-rooms, refreshment-rooms, with kitchen, scullery, &c.; booking telegraph, parcels, inspectors' and engineers' offices, cloak-room, and superintendent's residence. It is proposed to approach the up-station by an underground passage. The plans were prepared from designs by Mr. Lane, the company's chief engineer, and have been carried out by Mr. H. Lovatt, of Wolverhampton, under the direction of Mr. H. Charlton. The clerk of the works was the company's local engineer, Mr. T. Blackall, of Reading.

RESTORATION OF WREXHAM CHURCH.—The scraping of the walls of the old church have brought to light over the chancel arch a large painting, which as far as it can be deciphered at present seems to be a picture of the Last Judgment. They have been directed to preserve it as perfect as possible, and some thoughts, according to the *Cheshire Courier*, are entertained of restoring it.

IMPROVEMENTS AT SANDRINGHAM.—During the absence of the Prince and Princess of Wales many improvements have been carried out on the Sandringham estate. The new model farm buildings, in which the Prince of Wales's prize and other stock will be fed, are progressing. They are situated on the Home Farm, at the back of the royal gardens, and comprise two yards, surrounded with feeding and fattening boxes, &c., the same principle being adopted in the ventilation as in the royal kennels. Seven additional labourers' cottages have just been completed, and are replete with every accommodation, the prince seeking to the utmost to discharge his duty towards the cottagers on the royal estate. The new wing of Sandringham House progresses, and will probably be ready for use by the autumn.

TENDERS

For the erection of two houses Nos. 24 and 30, Shepherd-street, Fair. Mr. S. L. Moye, architect. Quantities supplied.

Stoner	£1,857 0 0
Sapwell	1,764 0 0
Walton	1,682 0 0

For a pair of semi-detached residences at Fulham, for Mr. T. Cross:—

Stimpson	£1,610 0 0
Brass	1,490 0 0
Whitlock	1,450 10 0
Richards	1,414 0 0
Wigmore (accepted)	1,398 10 0

For a pair of houses in the North-end-road, Fulham, for W. Kitchen:—

Amos	£896 0 0
Smith	800 0 0
Wilson	795 0 0
Wigmore (accepted)	750 0 0
Johnson	739 0 0
Ward	735 0 0

For building printing-office, Bartholomew-close, Mr. John Bythe, architect:—

Gillet & Wisbey	£3,200 0 0
Mansfield & Son	2,906 0 0
Patman & Co.	2,686 0 0
Myers	2,688 0 0
Piper & Wheeler	2,600 0 0
Sewell & Sons	2,578 0 0
Webb & Sons	2,530 0 0
Brass	2,467 0 0
Pritchard	2,444 0 0

For house, Lime-street-square. Mr. Robert Walker, architect:—

Rodda	£3,200 0 0
Carter & Son	3,180 0 0
Bewell & Son	2,813 0 0
Turner	2,740 0 0
Kilby	2,683 0 0
Webb & Sons	2,568 0 0

For works at Enfield. Mr. T. J. Hill, architect.—Webb & Sons (accepted) £1,427 0 0

For wrought-iron fencing and hurdles for the Public Cricket Ground, Southampton, according to plans prepared by the borough surveyor, Mr. James Lemon:—

At per lined yard.										Quality of Iron.
No. 1 Fence.		No. 2 Fence.		No. 1 Hurdle.		No. 2 Hurdle.				
s.	d.	s.	d.	s.	d.	s.	d.			
Robinson	7	0	10	6	7	0	10	6	BBH Stafford.	
Ingram & Phil.	6	0	9	6	11	8	9		"	
Spence	5	11	7	12	10	11	3		"	
Godden	5	6	8	5	33	10	3		"	
Hodgkinson	5	6	8	5	33	10	3		BBKimberley's	
Greening & Co.	4	8	0	4	9	8	1		BBH Stafford.	
Howell	4	0	6	4	9	8	1		BBH Crown Staffordshire	
A. & S. Claydon	4	0	6	4	9	8	1		Newcastle	
Blatch	4	0	8	0	4	9	8		B Staffordshire	
Page & Wilkin-	3	11	7	3	4	7	5	4	No. 1 English	
son & Co.	3	10	5	6	8	7	5	4	Equal to BB Staffordshire	
Herdewicz & Co.	3	6	5	8	4	4	3	11	Thornycroft's	
Oliff & Bolland	3	6	5	8	4	4	3	11	Thornycroft's	
Matthews & Co.	3	6	5	8	4	4	3	11	Thornycroft's	
Maclean	3	3	6	3	3	10	5	2	Thornycroft's	
Simson & Co.	3	2	6	1	4	8	5	2	Good Stafford.	
Fletcher	3	1	6	1	9	8	5	0	Equal to Thornycroft's	
Morgan	3	1	6	1	3	8	5	0	BB Stafford.	
Frederick	3	1	5	5	4	3	5	2	B Crown Staff.	
Hill & Smith	3	0	5	5	0	4	5	4	B Crown Staff.	

* Accepted.

applies of 2,000 Wood Engraving, and the Mechanical Science has developed rapidly, the history of the first publication, in 1835, of the *Engineering*. The inventors and discoverers recently made have engaged the zealous attention of the Editor; for, as the value of each was tested by experiment, a description was accordingly prepared. By the selection of new articles, and by the revision of old ones, this edition has now become systematically enriched, so that it may be regarded as fully and faithfully expressing "the existing state of Engineering and Mechanism, adapted to the wants of Practical Men." In two large 8vo volumes, cloth lettered, price 30s.

The Builder.

VOL. XXV.—No. 1258.

Something about Indian
Appointments.



HE way in which matters are managed in India interests a large body of persons in England, so that many of our readers, besides those amongst them who intend presenting themselves in July next for examination, in response to the advertisement of the Secretary of State for India, may be glad to hear something about the Public Works Department in that country. What we are about to say must not be taken as the statements of outsiders and mere journalists. It is the result of combined experiences, and represents faithfully, as we believe, the opinions of a large body of persons competent to judge and entitled to speak.

It may be as well to mention at the outset, that the Government in India stand greatly in need of a reinforcement of civil engineers in the grade of assistant engineers. The altered economy of the native army, whereby every officer in it is considered a staff officer, and entitled to a staff salary, varying from 10*l.* to 60*l.* a month in the infantry, in addition to the pay of his rank, amounting to the fixed rates of 23*l.* a month on posting; 37*l.* after twelve years' service; 64*l.* after twenty years' service, and so on, tends to make military men undesirous of extra regimental employment. And as cadets are no longer sent out, and the Queen's regular army is being turned to, and expected to furnish volunteers for the native army, there will in a year or two not be a surplus officer to be had for a department like that of the public works, in which the staff salaries also range from 10*l.* to 60*l.* in the working grades, and there are no valuable prizes whatever, but plenty of disagreeable and laborious work to do.

A separate engineer service, as far as India is concerned, has been all but abolished, and we understand the conditions of the Public Works Department are not such as to render it particularly agreeable to officers of Royal Engineers. Accordingly, unless the Government are ready to pay a fair price, they will find it soon very difficult to carry on their public works efficiently for want of qualified engineers. There are two considerations that would naturally weigh with a young man on turning his thoughts towards an Indian career,—first, and foremost, the emoluments; and, secondly, the nature of the service. It is true, this is not quite the European way of judging of a profession; but as all service in a tropical and unhealthy country must be full of hardship and risk—as India is far off and by no means pleasant to live in—and as work has to be done in the midst of a population animated with a dislike to British rule and hatred of British ways, it would be insane in any one not

to weigh the subject of pay well before starting. The only branch of the public service in India that is really well paid is the Covenanted Civil Service; for we need take no count of the higher grades of the military services, which are only reached after spending the best portion of life in an inferior and most subordinate position. A young civilian on landing in the country is about the same age as the young civil engineer. Till certain examinations in the languages are passed he receives not more than 36*l.* a month. These over, generally in from six months to a year, he becomes assistant magistrate and collector, on 42*l.* a month. His duties are extremely light. He tries petty police cases, examines trifling revenue claims, issues stamp papers, and occasionally takes charge of the treasury. In three or four years' time he rises to be the head assistant, and receives 81*l.* a month, and disposes of business of a little more importance. When he has seen seven or eight years of India, he develops into a sub-collector or sub-judge, on 120*l.* a month; and by the time he has been twelve years in India, he can look to securing 230*l.* to 250*l.* a month for the rest of his official life as collector, commissioner, or sessions judge. All this period his duties have been such as call for very little special qualification beyond a knowledge of the Indian penal code and vernaculars, a gentleman's classical education, and a ready wit. The prospects of an engineer are very different. He joins as assistant, on 20*l.* a month, has to pass two examinations in the native languages, and through two grades, to reach that of first assistant, on 40*l.* a month. During this time he has had most harassing and disagreeable work to perform very often, in consequence of being called upon to keep accounts as well as superintend engineering operations, and in the incessant travelling in a country not in the least civilized that making his payments and looking after his works demands. In seven years after joining the Department he probably gets elevated to the charge of what is termed an Executive Division, equivalent in extent to districts for managing which civil servants draw not less than 120*l.* a month, and usually double that sum. There are four grades of executive engineers, paid at 50*l.*, 60*l.*, 75*l.*, and 90*l.* respectively; but of all the executive engineers 5-16ths are in the lowest grade, 4-16ths in the next, 4-16ths in the next, and only 3-16ths in the highest; so taking the average an executive engineer only receives 66*l.* all through. As he is seldom promoted to the administrative ranks of the Department before he is fourteen years in service, he is exactly half as well off as the civil servant of similar length of service. Nor has he anything approaching what they have farther to expect. There are hundreds of appointments in the Civil Service worth above 200*l.* a month, whereas in the Public Works Department of the three presidencies together there are only five such prizes in existence. The common plan is to give a first grade executive engineer 10*l.* to 20*l.* a month extra, and dub him superintending engineer,—a rank that in status and responsibility is fully equal to that of collector and magistrate, who draws double the salary. The Public Works Department, then, which is forced into the most intimate connexion with the civil servants, does not receive fair play in the matter of remuneration, and while this lasts the Government cannot expect its engineers to be satisfied with their position, or the Public Works Department to be attractive to any who are able to make their way at home or in the cooler colonies. It is not at all just to compare the Public Works Department with the Indian Army. An ensign gets 21*l.* a month, and has no travelling except his regiment marches, and has his mess and agreeable society, and need not possess any scientific knowledge. He has opportunities of rising, and in twelve or fifteen years may command an irregular regiment on 100*l.* a month.

Intermediately, he certainly is not quite so well paid as a civil engineer, but then he has little or no personal responsibility, and, in time of peace, the easiest of all easy occupations. But an ensign, it must be recollected, also can join the army at the age of sixteen, whilst the civil engineer scarcely ever comes to India under one-and-twenty, and is often older than that. So to put his value at 20*l.* a month, shows that there is a mistake somewhere, and that a professional training does not count for much in India.

Mr. Macrone, writing in the *Builder* for August 4th last, gives the statement, that 40*l.* a month is the lowest sum upon which a young man can live with comfort, unqualified denial. Mr. Macrone, however, writes from Calcutta, and has probably had no experience of the other presidencies. In Bengal, Oude, the Punjab, and the north-west provinces, which are the fattest portions of India, prices have not risen in the unprecedented manner they have done elsewhere. It is possible that there 200, or 20*l.* a month might suffice for a young man just beginning life in the department, though that is only a few pounds more than his European overseer begins with who gets 12*l.* a month as soon as he joins, after a ten months' superficial course at one of the Indian engineering colleges, being a full private in the army. In Madras, however, it is next door to impossible to keep up the appearance of a gentleman at 20*l.* a month if single, or on twice that amount if married. Bombay is worse; and the central provinces, Rajpootana and Burmah, are unhealthy to reside in, as well as expensive. What with the famines and cost of living, all Indian officials may be said, in those parts of the country at all events, to have been docked one-third of their incomes. On the Public Works officer high prices tell severely. He must have horses, or he is of no use; an assistant one, and an executive engineer a couple; and horses' food is generally the first thing dearth touches. If married, he must keep up two sets of servants, one to take out with him, the other to leave behind; and, besides having the disbursement of money, the rendering of accounts, and the management of gangs of labourers, he is constantly worried and perplexed in retaining at the lowest level rates that have a perpetual tendency to rise and upset his estimates.

Public Works officers have an additional claim to be respectably paid. They undertake not only the professional conduct of works, but also the duties of accountants. The latter is considered by most Indian engineers the least agreeable portion of their duty. It certainly absorbs an undue amount of their time. As a rule, perhaps full one-half of their attention is taken up with matters that do not necessarily appertain to their profession as engineers. This, in itself, is enough to disgust most men on first entering the Public Works Department; and, when they have been long in it, to render them less capable than if employed solely as engineers, and not half as engineers and half as accountants. This fact also accounts for the reluctance of the Government to increase the salaries of engineers to the civil service standard. If they did, unless the account work was shown under a separate head, the cost of their establishments would bear a ridiculously high proportion to the work turned out. At present, a very elaborate system of accounts is kept up at no expense, being debited to "construction" by the simple means of making the Executive Staff write them up. Even if it were fair to put down to "construction" the work of ascertaining what a building or road actually cost the State, it is scarcely so to make "construction" answerable for the sums being entered against one of the numerous budget grants, or twisted about into voluminous forms that are, when dis-

passionately examined, of no practical utility. There are no fewer than ninety-five different forms in current use in the Bengal Public Works Department. This is quite sufficient to show, without much further enlarging, what a difference would ensue in the percentage for establishments upon the cost of works, were all this Siaypahan labour paid for as a separate item, and not hid under the guise of "construction." It is well worth the while of the Government of India to see if their engineers cannot be saved much of this almost purposeless trouble which has to be taken at the expense of the work out of doors. It cannot be denied practical skill is at a very low point among the natives, who are, on the other hand, excellent accountants, though untrustworthy if underpaid. The system of accounts, according to high authority, is now "perfected," or, in reality, the departmental officers have been, at last, schooled into rendering whatever forms the Audit Office demands; and it is, we fear, not an exaggeration to say, that far more stress is laid upon punctuality in this respect than upon sound and creditable engineering, which is what India stands in need of. The management of the Department, then, is a thing which operates to deter competent persons from entering it.

But the Government may always rely upon candidates coming forward if their terms are liberal, seeing how easily ascertained defects of organization can be remedied; and as certainly may they make up their minds to see empty benches in the examination room if disposed to be the reverse. The East India Company were able to fill professional and scientific appointments at a very low rate, because they had an over-offered army, and a medical service held in great repute to draw from. The Secretary of State for India, on the contrary, must betake him to the open market. As far as we can judge, 20*l.* a month for a man of 22—an educated engineer—to begin upon in India, with nothing to look forward to except 66*l.* a month on an average till he has been fourteen years at the earliest in the service, and then to receive but half the remuneration of a civil servant of similar standing ever after, is not inducement enough to offer to men who have studied engineering to any purpose to cast their lot in such a hideous climate, and in such an artificial society as that of India. We are not far from the truth in asserting a shilling in England to be the exact counterpart of a rupee in India. An Indian family, on an income of 1,200*l.* a year, does not live one whit more comfortably than a family in Great Britain on 600*l.* a year, and not nearly so pleasantly. Besides, now that provident funds are abolished, engineers must resort to the Insurance Companies, who charge double premiums in India; they must also save money to enable them to send their families home for change and education, and for a holiday trip for themselves; so that after an executive engineer has paid his premium of insurance, laid by his quorum for a rainy day, and has paid for the keep of his two horses, he will not have very much over out of his 66*l.* a month; he will just have a bare livelihood. To counteract this weighty deterrent the Government should still further improve the position of their engineers. There is no justifiable reason for paying the men who improve and open up the country at half the rate of those who merely tax and enforce the law, in obedience to a fussy tradition. And if the complaint is rife that under the new system, which has substituted a delightful uncertainty for the solid advantages the East India Company always held out, the Civil Service of India fails to attract University men, and has to tap a lower stratum of society than that which used to yield civil administrators, who of any promise or experience in the engineering profession are likely to accept on very inferior terms a lengthy and most wearisome servitude?

If the higher grades of the Department were on superior allowances, we would not be disposed to quarrel with what the assistant engineers are valued at; but considering what is expected of executive engineers, and that in addition to their designing works they have to carry them out, and keep all the accounts, as things go in India, 50*l.* a month, the equivalent to 25*l.* a month in England, is too small a salary. If no executive engineer received less than 60*l.*, and there were but two more grades worth 80*l.* and 120*l.*, a pretty fair balance would be struck with the sister service. Superintending engineers should, according to all analogy, also have their salaries revised. One of the faults of the existing system also is, that this class is too few in number. Placed in

charge of enormous tracts of country, marching over which involves great loss of time and prolonged separation from home and family, hurried runs are frequently all that are made. The rest of the year superintending engineers are mere post-offices and auditors, and of much less real use than officials of their experience ought to be. The administration is one of the weakest points of the Department; but as intending candidates have it in their power to call for the information they require, they can each for himself pronounce a verdict upon the prospects of the Department, though they must be unfortunately in the dark as to the value of the Indian rupee until they cross the Isthmus of Suez, when its purchasing capabilities will dawn upon them all of a sudden. It is not so easy for them, perhaps, to decide what presidency to go to. On the whole, the Government of India which regulates the Public Works Department in Bengal, the Punjab, the North-west Provinces, Oude, Mysore, Rajpootana, the Central Provinces, Hyderabad, and Burmah, is the fairest and best. Promotion is maintained in a steady flow; and, except for the general low average of pay, there would be no call for complaint. However, prices are much higher in the central provinces, Burmah, Rajpootana, and Hyderabad, than in the other places, and that makes a serious hole in every salary. As a rule, perhaps, 1*l.* in Bengal goes as far as 30*s.* in the central provinces. The Bombay Government have an entirely distinct Public Works Department of their own. It is chiefly composed of Royal Engineers; and, as that presidency is the most like Europe of the whole, it is likely to continue to attract those military engineers who care to come to India. Madras, on the other hand, is a presidency both civil and military engineers should have nothing to say to, if they can help it. The Madras Civil Service detest the Public Works Department, and throw all their influence into the scale against it; and, as they have the practical control of the local finances, it fares hard with the engineers. The Madras Department of Public Works is being constantly reorganized, which gives an opportunity of reducing salaries and arresting promotion. A large number of military engineers have migrated in consequence to the territories under the supreme Government, and the conduct of the Madras Government has elicited strong remonstrances from the Civil Engineers in its employ, who have not been nearly so fortunate as their compeers in Bengal. If it is possible to withhold a benefit granted by the Government of India, the Madras authorities, we are told, seize the opportunity, and declare the beneficial ordinance "inapplicable to their presidency;" Public Works Department into the background. A civil engineer will, we can assure him, rue the day he goes to Madras, where even military engineers sometimes prefer regimental duty with black troops to service in an underpaid and wretchedly managed Public Works Department.

It is a great pity, for the sake of the country, that the Madras Government shows such marked animosity to its engineers, going so far as to, when it can, not scruple to defraud them of their allowances; because it is the very part of India which owes most to its artificial irrigation, and in which, from the peculiarity of its revenue system and land tenures, the quickest profits can be gathered from State improvements.

We have not time to discuss the leave and pension rules the Secretary of State for India places civil engineers under, at any length; compared with those of the Civil Service they are one-sided and ungenerous, and better suited to natives of India than to Englishmen of science. The numbers who will compete in July for the twenty-five vacancies in the Indian Public Works Department will give a tolerable indication of the estimation in which the profession hold the pay and prospects of an Indian Government engineer, and many out in India will be on the watch for the list.

It may be well for the Government to give prompt consideration to the statements we have made.

GREENWICH HOSPITAL.—A movement is organizing among the London merchant shipping interest to induce the Government to devote the now half-vacant halls of Greenwich Hospital to an asylum for aged and diseased men belonging to the mercantile marine, who at present have no other refuge than the old *Dreadnought* hulk moored in the Thames.

THE "REVUE GENERALE DE L'ARCHITECTURE."

READERS of the *Builder* do not require to be told of the scope and excellence of Mr. Daly's handsome serial.* It has now reached the twenty-seventh year of its publication. As in former years, the number and quality of the plates, the cosmopolitan character of the subjects, and the amount of matter in the letter-press, are striking. The works illustrated by our Parisian contemporary in the recent months are the new Palais de Justice, by MM. Duc et Domney; Asylum for the Insane, by M. J. Esquié, Bragueville (Haute Garonne); Tribunal of Commerce, Paris, by M. A. N. Bailly; a Priest-house for the parish church of the Immaculate Conception at Lyon (Rhône), by M. Bossan; a Maison de Commerce, by M. J. Cantagrel; a Jewish Temple at Lyon, by M. A. Hirsch; the Britannia Theatre in London, by M. G. Davioud; Siphon Bridges at Orleansville, Algeria, by M. Denfert-Rochereau; a Private Hotel, of the third class, Rue Balzac, by M. Azemar. These are all given with the fullest particulars; and besides these there are many sheets of minor objects, such as doorways in the Rue Saint Nicolas du Cardonnet, on the Boulevard Saint Michel, and on the Quai Voltaire; lucarnes, crosses in cemeteries, confessionals, balustrades, shops, magazines, a Strasbourg balcony, zinc coverings for roofs, gutters, and dormers, terminals in glazed terra cotta, details of St. Paul's Church, Paris, &c.

The restoration and aggrandisement of the Palais de Justice has been a work of time. M. Daly considers that the "Batiment des Assises" is without doubt the most important of its parts in a monumental point of view, and of this he gives plans of the first and second floors engraved on steel. Of the fabric generally our *rédauteur* writes: "The works of the artists as eminent as the architects who have directed for so many years this grand enterprise of the restoration and enlargement of the Palais de Justice deserve to be long and maturely studied. It is but with prudence and circumspection that one is able to appreciate talents of an order so elevated as those of M. Duc, recently named a member of the Institute; and of M. Domney, his early and faithful collaborator."

Although M. Daly has illustrated this important building in the exact and minute manner which distinguishes his "Revue," he announces in the same number that contains the plans the intention of M. le Baron Haussmann, prefect of the Seine, to publish a General History of the City of Paris, whence we may conclude that this building will be illustrated in a new form; and in connexion with the announcement of this important publication, M. Daly prints verbatim a remarkable letter of the Emperor, approving of the scheme. It is as follows:—

"Palace of Compiegne.
"My dear M. Haussmann,—I applaud the happy thought that you have of writing the General History of Paris."

This collection of monographs, of plans, and of authentic documents, destined to be augmented without ceasing, will permit you to follow across centuries the transformation of the city which, thanks to the intelligent concurrence of its municipal council and your indefatigable activity, is to-day the most splendid and the most salubrious of the capitals of Europe.

Receive, then, my felicitations, dear Monsieur Haussmann, and believe in my sentiments of friendship.
NAPOLÉON."

M. Daly adds,—The moment seems well chosen and most favourable. At the hour of the transformation, so to say, of our old Paris; at the moment when, one after another, those remains of the past which have resisted time, disappear, and the means which could yet, imagination aiding, reconstitute the successive physiognomies of the city in divers ages, and in the current of centuries, it appears to us good that the pen and the pencil should unite to preserve at least the remembrance of what was, and the trace of that which disappears so rapidly, so that from to-day to to-morrow the old city herself knows herself no more.

The Lunatic Asylum of Bragueville, near Toulouse, is illustrated by several plans and sections, and the nature of the institution fully explained in a practical manner, by two articles to the editor, on the subject, all by M. Esquié, the architect. The necessity for an increase in the number of these asylums in France is made

* "Revue Générale de l'Architecture et des Travaux publics," Journaux des Architectes, des Architectes, des Ingénieurs, et des Entrepreneurs, publié sous la direction de M. César Daly, Architecte, etc. Paris: A. Morel, Libraire, 5, Rue Bonaparte.

apparent by the statistics given. In 1836 there was 1 asylum for every 3,024 inhabitants; in 1841, 1 to 2,465; in 1846, 1 to 1,965; in 1851, 1 to 1,676. While the increase of the population in these fifteen years had been 6·68 in 100, the number of insane was augmented to a proportion nearly fourteen times greater; and although the proportion cured was 8·40 to 100, 13 in every 100 died, 1 dying in 44 of the inhabitants in the whole of France; the mortality of the insane had been, therefore, six times greater than in the population. The asylums of Bracquerville can receive 500 insane of both sexes, and is classified in four distinct quarters appropriated to the wants and conveniences of medical treatment, according to the nature, form, and degrees of the malady. It is divided into two parts.

The first is composed of buildings, or quarters, for the habitation of the insane of both sexes. The second comprises the buildings for the administration and general service, the latter being placed in the centre and at the entrance of the establishment. The buildings and dependences of the asylum proper are divided into quarters for the men and women, placed right and left of those for the administration, and include provision for the infirm, the idiotic, the epileptic, the insane undergoing treatment, the infirm, infants, and the aged, separate divisions being devoted to the violently mad (*malades agités*), and the destructively insane. Another portion of the establishment provides for imbeciles and the quiet insane (*aliénés tranquilles*). The construction, arrangements, and details of this establishment are thoroughly well studied, and merit attention on the part of those who are about to build lunatic asylums in this country. Full descriptions are given of the dormitories, single chambers (*chambres individuelles*), refectory (*salle de réunion*), staircases à l'italienne, constructed between two walls, and with steps entirely of stone, windows, cells for the violent, baths, latrines, promenade gardens, warming, and ventilation.

The priest's house, or presbytery, of the parish church of the Immaculate Conception, at Lyon, by M. Bossan, is shown by three small plans of the three stories, and an elevation of the principal front on one sheet and a side elevation upon a second sheet. The style of the building is an odd mixture of French-Greek and French-Gothic, an enrichment being produced by the use of various building stones. According to the architect's statement, he had to fulfil the following programme:—To find in the same edifice space necessary for a boys' school; apartments for the curé; lodgings for the curates and for some of the *employés* in the service of the church. These requirements are provided for in the different stories in a thoroughly novel manner. The site of the building is parallellogramic. In the ground-floor the entrance is in the principal front, the staircase being on the left, and the porter, or *concierge*, on the right; a large class-room occupies the whole width of the house next to the entrance-hall and staircase, whence it is entered in the centre. Beyond this is a central corridor with two class-rooms right and left. The first-floor has a parlour over the *conciergerie*, entered from the landing of the stairs; the building is then divided by a central corridor, entered from the same landing, having successively on the right a spare bed-room (*chambre d'ami*), a salon and chamber for M. le Curé; and on the left, a dining-room, office, and kitchen *en suite*, the whole terminating at the end of the corridor with a room for servants and a staircase for the service of the second story. In the second story, a parlour occurs over the one below; and the central corridor divides the building again into apartments for four curates, right and left bed-room and sitting-room alternately, and a room for the curé and servants at the end.

The different apartments are well lighted, as the building is open on the four sides, but the central corridor on each floor has no light except what may be borrowed from the doors of each room, and there is an objectionable arrangement in the plan whereby the door to the servants' bed-room is in the same small lobby at the end as that to the room of M. le Curé. The architect gives the following account of his building, and we add the cost of it. "The foundation of the presbytery dates from 1860. The stones employed are of different natures and from different provinces. For the masonry, the stone of Couzon (near Lyon). The ashlar of the interior is in stone from Saint Fortunat. The basement of the edifice, the staircase, the

steps, the thresholds, and the pillars in the class-rooms have been executed in Villebois stone (Ain). The white stone of Saint Just (Drone) has been employed for the façades. The jambs, heads, and cills, and the uppermost cornice go through the thickness of the wall; the others have but 0·25 m. or 0·30 m. of thickness, and only form a lining. The mullions of the windows of the first story requiring great resistance are made in stone from Cruas (Ardèche). The stone has been placed rough (*brute*) on the walls, and finished after being in position."

The expenses of the construction are:—

	f.	s.
Masonry	15,073	0
White stone (St. Just)	10,279	0
Stone of Cruas	930	0
Stone of Tournus	148	0
Stone of St. Fortunat	792	0
Stone of Villebois	4,121	0
Carpentry	6,013	0
Joinery	10,355	0
Ironwork	9,498	0
Plastering and painting	9,575	0
Tin work	2,472	0
Mosaic	680	0
Bitumen	132	0
Rough plaster	2,142	0
Sculpture	4,055	0
Honorarium of the architect calculated at 5 per cent.	3,627	00
Total expense	80,379	60

In the letter-press we get a general insight into the floating building news and talk in Paris, and note the importance given in it to some of our own public buildings. We are surprised, too, at the number of new books on ægean and Celtic subjects published in France and mentioned in the pages of the review.

It would appear that nearly every *accomplissement* in France has its explorer zealously taking account of all pre-historic relics. And, not content with examining every stick and stone in *la Belle France*, French travellers lose no opportunity of adding from other countries to the general store of archaeological information. Thus M. Perrin, who is a general in the army of the King of Siam, and a mandarin of the third class, recently communicated to M. Daly an account of some extraordinary ruins at D'Ankor-viat, in the kingdom of Siam. Our editor prefaces this new and interesting information with a reminder that this is an age of scientific and historical discoveries. Ancient Egypt has become better known to us during the last thirty years than it was to the Roman empire: not only can we read its hieroglyphs, but we can examine by their aid, and that of cuneiform inscriptions, the ancient writings of Herodotus and Diodorus, and those of the Bible. We know Nineveh and Babylon, we exhume the monumental history of the aboriginal Americans, and we familiarize ourselves with Indian antiquities in searching among the dead languages of the East, in their poems and their myths, as in their forests, their subterranean abodes, and their ruins scattered upon the soil; and now Siam presents us with ruins so vast and astonishing that to examine them is to open a page in a story in the thousand and one nights. And truly, the General's account of these ruins is marvellous. He says that none would believe the numbers of marble monuments, temples, palaces, columns, and staircases at D'Ankor-viat. "I assure you, believe me or not, that the most celebrated of ancient or modern monuments are but barracks near those I have seen here; our palaces, our basilicas, the Vatican, the Colosseum, are dog-kennels by the side of them." Marble was the material of all around. The natives informed the general that these magnificent ruins covered an area of ten leagues by twelve. He asks, "What city can this be? Of what empire was this the capital? I have seen temples in a good state of preservation, except the vegetation that has encrusted them, which do not measure less than a league around. They have forests of marble columns; the whole is of marble. All the walls are sculptured and ornamented. The first effect these monuments produced upon me was stupefaction. I wished to enter a temple which appeared well preserved. It had eleven flights of steps, and I know not how many flights each to arrive only at the first of the five peristyles!" Recovering, the General ascended the steps that led to a high tower, and then he ascended the tower, and thence surveyed the ruins, where he saw marble enough upon the ground, and below the ground, that could rebuild, in the fashion of giants, all the cities in the universe. He saw the leg of a statue, of which the toe measured eleven times

the length of his gun! This was also of marble like everything else, the only other stone visible being coloured agates used in borders, and for eyes of statues. The pedestals to some of the statues were pyramidal, higher and larger than St. Germain l'Auxerrois.

The educated natives know not to whom to impute this ruined city; notwithstanding that their literatures go several centuries back further than ours. In another part of the kingdom the General saw some enormously tall, massive, rude triumphal arches. They were made of seven huge roughly-hewn square-edged stones of different sizes, so disposed as to form a tall central way through them, and a lower one on either side of it. Four enormous monoliths stand in a line, the two in the centre standing the full height; the huge monolithic lintel thrown over all; the other two standing two-thirds of that height; the interstice between them and the lintel being filled with another stone which, passing over the passage-way below, formed a sort of secondary lintel below the principal one. In a rough sketch which the General sends of this, an elephant is represented passing under one of the side openings, which is three times his height. He asked his escort who has made these monuments. Ten voices reply,—"Les Gai." What are these Gai, he asks? They reply, barbarous white people, come from the country of the blacks, tall as three Siamese men, and whose fingers of hands and feet had scarcely any separation between them. They had large horses double the size of ours, of which they find the bones. "Behold," says the General, in conclusion, "what has taken me by surprise, but which has not satisfied me. I put it to the savans of the country to illuminate this question."

In another part of M. Daly's work, the theatres of London are treated, and an illustration is given, by three plans, of the Britannia Theatre in London; but we purpose dealing with this subject on a future occasion.

EXHIBITION OF THE ROYAL SCOTTISH ACADEMY.*

MANY of the most important works exhibited are stated in the catalogue to be the property of individuals, and it is satisfactory to observe that an unusual number of the best pictures, not so designated, have, since it was compiled, found purchasers, so that there is no lack of encouragement to artists of merit. Indeed, it would appear that the public taste is keeping pace with the progress of the artists; mere studies and still-life subjects do not now meet with the attention that used to be bestowed upon them; but it must, at the same time, be admitted that many works, the merit of which consists in a meretricious prettiness, find many purchasers.

Of the latter class are the works of Mr. R. Gavin, Nos. 265, 278, 510, and 840, all single figures of girls—badly drawn in several instances—placed in landscapes, the natural features of which seem to have been subjected to a process of boiling. Mr. W. Douglas exhibits three pictures of a highly dramatic character,—"No. 250, 'The Whisper,' 351, 'The Conspirators,' and 496, 'Waiting for the Last Interview.'" We shall take up the last subject, which displays both his merits and his faults. It is a page from the history of the Civil Wars. In the recess of a prison cell a young cavalier is confessing to a priest; and through the grated window of the cell we catch a glimpse of a scaffold and assembled multitude. At the door of the cell stands the jailer, and beside him the wife or sweetheart of the prisoner. With an uncalled-for degree of brutality the jailer is puffing the smoke of his pipe into the face of the lady; and this tendency of running into extremes is exhibited in the other pictures. The colouring is somewhat hard and flat, but the drawing is vigorous. No. 262, "Maud has a Garden of Roses," by Mr. E. Farrer, presents a marked contrast to the foregoing, being painted with much delicacy and grace. Mr. Sam Bough is forcible, as usual, seeking after effects and ignoring details. No. 161, "Twas when the Seas were roaring," is, we think, the finest water-colour in the rooms, and, in parts, exhibits delicate touches, which do not detract from the general effect of a wild sea. The dashing waves are even grand, and the very wind seems to have been painted. No. 832, "St. Monance," a pic-

* See p. 186, ante.

uresque fishing village, with fishers preparing to launch their boats.—

"Into the mist,
Out into the west, as the sun went down,"—

is a large oil-colour, poetically rendered. No. 253, "Willie Baird" by W. MacTaggart, is a picture which appeals to the feelings of every beholder. An old man is reading from the Bible to a fine little boy, who anxiously asks if the dog he is caressing will go to heaven. The head and figure of the old man are finely rendered, and the innocent, earnest expression of the child is touching. The flesh-tints are warm and natural; but the background is a little too brown. No. 430, "The Murmur of the Shell," where three children, amusing themselves on the sands, have discovered the mysterious tale of its abode told by a shell, shows a happy sympathy with and knowledge of the ways of children; and the same characteristics are exhibited in this artist's other three works, which are illustrative of childhood's sports. Mr. Keely Halswell is undoubtedly clever, but he is very erratic; his style is perpetually varying from year to year, and this year the transition is great as regards colour in his seaside studies of fisher-lasses, Nos. 288 and 438, which are rich, but subdued in tone, and remind us of the works of Hook. No. 863, "The Burgomaster," looks as if it came from quite a different hand, and emulates Petty in the production of broken colour and forcible modelling. No. 506, "Hawthornden, 1618.—Ben Jonson's Visit to the Poet Drummond," by James Drummond. The two poets have been strolling through the woods, when Drummond betinks himself of reading one of his poems to his visitor, who listlessly seats himself on the ground, with his back against a tree, to be bored. The conception is poor, the execution indifferent, and the colour raw and crude. Mr. Drummond deserves credit as a steady adherent to historic art, and we presume it is for this reason that he is so liberally patronized by the Association, who have purchased this work at a considerable price, while there are many others of far greater merit on the walls which could have been had at smaller cost.

No. 396, "The Eve of the Deluge," by W. B. Scott, is a work that displays much thought and originality of conception. Seated on the roof of his house, under an awning, is one of the great antediluvian family: his wives and attendants. Noah and his family are entering the ark, and some of those on the house-top are deriding them. The last sunset of the old world illumines the scene, and a square heavy portentous cloud is heaving up in the horizon, and this is only noticed by one of the attendants, who is wildly pointing to it. The principal group is characterized by an air of luxurious languor, and the semi-barbarous Oriental feeling is well sustained throughout.

No. 830, "The Grandmother's Crown," A. Tideman, represents a scene from Swedish life, in which an old woman is exhibiting to her grandchildren the marital crown in her possession, which she has taken from a chest, on the inside of the lid of which is pasted a print of a battle-piece and a portrait, leading to the conclusion that her husband had been a soldier engaged in active service. The technical qualities of this work are excellent, both as regards expression, drawing, and colour. Indeed, some of our artists might draw the lesson from it, that it is not requisite to harmony that the background in an interior should be devoid of lively colour, in order to give due importance to the figures, as seems to be the prevalent idea.

343, "Leonardo da Vinci at the Court of Ludovico Sforza, Duke of Milan," by Annibali Gatti, Professor of Painting, Florence, is a large picture with numerous figures, chiefly remarkable for the effect of light produced by two candle-lamps; the higher and more important qualities of expression and colour are deficient to an extent that is not compensated for by mere tricks of light and shade, although these strike one at first sight as wonderful.

391, "Loch Maree, Ross-shire," Horatio MacCulloch. The scene is a fine one, embracing a great extent of hill and valley, with the lake gleaming in the middle distance. Similar to this, and yet very different, is No. 413, "Ardini Lochmond," by Sir George Harvey, P.R.S.A. Mr. MacCulloch produces his effects by bold and strongly-defined lines of light and shade, the president by broad generalising and softening of detail. The similarity lies in the prevailing hue of brown which predominates in both pictures.

264, "Drugged," George Hay. A courier has been drugged by his entertainer, who is

eagerly perusing the despatches; the courier has fallen on his back on the floor, and upset a flagon of wine on the table. Through the open door is seen the alarmed figure of a butler, or other servant of the house. This figure, we think, would have been better absent, as it tends to distract attention from the main interest of the scene, and is not necessary to the understanding of the incident. The drawing is spirited, but the colour is somewhat weakly and sickly.

570, "Mountain Silence," John MacWhirter, reminds us of Mr. Peter Graham's picture of a blasted pine forest exhibited three years ago, in the general impression it produces on the beholder. Mr. Graham's picture was the product of his imagination; Mr. MacWhirter's is the realization of a scene from nature—Loch Corraisk, Skye. The gloom and silence of the lonely spot are ably rendered; the deep and sullen-looking lake lies surrounded by precipitous mountains, and the rays of sunlight are striving to pierce the overhanging mist and touching the sharp crags with spots of light.

612, "Young Girl of the Environs of Trieste," F. Portaels, from the collection of the King of the Belgians, is a work remarkable for beauty and softness of colour. The figure is arrayed in white, with red "facings" (the military expression conveys the meaning perfectly), and she is seated against a white marble wall; the prevailing colour, therefore, is quite relieved by small patches of red. A large bunch of blueish flowers stuck in the bosom of her dress forms a centre to the composition. The eyes are dove-like in their upturned devotional expression, and the flesh tints delicate and warm.

ARCHÆOLOGIC ITEMS FROM ROME.

IN the prosecution of the diggings in Trastevere, the buildings of the station for the 7th Cohort of Vigiles have been more extensively brought to light; and we are glad to hear that the Government has afforded pecuniary assistance to the parties who undertook those works, in order to provide means, which (it is said) were wanting, for their continuance.

Under the Republic, a special magistracy and a "Nocturnal Triumvirate," were charged with the duty of protecting Rome from the dangers of fires; the *Ædiles* being also responsible, and certain public servants stationed at the several gates to be ready with their implements wherever flames might break out in the streets. To systematize this body of firemen on better arrangement, Augustus created the seven cohorts of Vigiles, each of which had superintendence over two of the city's fourteen regions, and which were originally formed by *liberti*, perhaps emancipated expressly for enlisting, under tribunes, centurions, and a prefect; these cohorts being each 700 strong, and obliged to patrol at nights in their respective regions; an anecdote *apropos* of which practice is given by Seneca (Ep. 66). The prefect had jurisdiction over cases of simple theft, and such offences as the receipt of stolen goods; also over house-porters, and those runaway slaves who had taken the occasion of fires for flight, and whom he was bound, according to his ability, to restore to their masters; he had also to admonish householders to be careful against accidents from fire, and to keep water provided on every floor of their houses. By the time of Antoninus Caracalla, this fire-brigade had so far risen in respectability, that free citizens used to enrol themselves; and after the fall of the Western Empire, the force was still kept in existence, with its former duties, but now under the designation, *Mutricarii*. Their several quarters are mentioned by the *Regiones*, from whom we know the fact that one stood in the Trastiberine district; and the remains of their barracks, found in other parts of the city, were long since identified, in some instances proving rich centres of antiquarian curiosities. On the Colian-hill was found, long since, among such ruins, the basement for a statue of Caracalla, with the inscribed names of no fewer than 1,000 soldiers of the Vigiles, one with the title "Balnearior," a proof that the bath was among luxuries allowed to those troops in their quarters. Among those ruins on the Colian were traceable four great towns at the angles of a quadrade area, and in the midst a temple, with octagonal cellars and circular portico, presenting a perspective of porphyry columns,—splendours, however, no longer known to us in any extant remnant on the spot, but solely through the

description by Ennio Visconti, who tells of what he had seen as just discovered.

The works that have led to the discovery of the missing quarters in Trastevere were suggested to the two proprietors who undertook them, by their observations of a building in a wretched little court near the Church of S. Crisogono, supposed to be some classic antique, but now proved to be a Medieval remnant of some fortified mansion in brickwork,—perhaps belonging to the Anguillara family, one of whose gloomy brick towers, still called by their name, stands on the Tiber shore, not far from this spot. Hitherto, the most valuable details brought to light are the mosaic pavement of an ample area, apparently unroofed, overlooked on one side by a lofty structure in brick, of good, though not the best, antique character, with those constructive arches of large tiles, seen more or less conspicuous in all ancient Roman buildings of such material; this mosaic, in black and white, representing, on a large scale, figures of marine monsters and dragons, swimming in water, whose waves are indicated by horizontal black lines. In this open court stands, but not centrally, a hexagonal fountain with concave sides, its parapet-walls of the concrete known as *opus signinum*, quite unornamented, but showing that here also was the bath, an admitted enjoyment of the Trastiberine Fire Brigade. Along the walls of the brick front extends a wainscot of stucco painted deep red, 1½ metre high, covered with graffiti, or rude scratches, the amusement of the soldiers' leisure hours, but the purport of which, where coherent sentences are legible, is so curious that we may consider this series of scribbles in a barrack-court the best part of the treasure-trove hitherto secured on this site. They are in round letters, not *Italicæ*; some in Greek; and have served to enrich the language of epigraphy with a new term, yet unknown, *sebaciarium-sebaciaria*, i.e., tallow illuminations, such being recorded in most of the inscriptions here, in honour of the decennial or vicennial *vota* renewed in the tenth and twentieth years of reigning emperors, or to celebrate the creation of some "Cæsar," as adopted to the rank of heir presumptive by those who ruled the Roman world. Several are enclosed within a rough sort of cornice provided with triangular *ansæ*, or handles; and we transcribe one of the best written as follows:—*L. Passenius Rogatus Sebaciaria fecit Mense Junio Feliciter; on the ansæ, Fauste ut votis X.—votis XX.; i.e., "May the vicennial be as auspicious as the decennial vota."* But the most interesting for connexion with the moral facts of history is another, in the first line of which, after "Imp," we see the mark where a name has been erased, by scraping the surface, followed by another, "Alexander;" and in which example we have record of the abhorrence entertained for the memory of Heliogabalus, after whose murder, we are told, all his effigies and all public epigraphs bearing his name were ordered by the senate to be destroyed. This graffiti tells of the illumination in honour of his virtuous cousin, Alexander, when raised to the rank of Cæsar, A.D. 231; and curious, indeed, is this instance of strict compliance, even in the barrack-room, with the legally enjoined reprobation of that infamous Syrian emperor. On one wall of a chamber, for the greater part choked up with soil and debris, entered from this mosaic-paved area, are some remains of decorative paintings, now dimly seen by taper-light. Several fragments of painted stucco and wrought marble have been found, and among these some curious terra cotta vessels, shaped into grotesque little figures with large heads and bulging bodies, conjectured to be Penates, for the private devotions of the soldiery. The *signa*, or masons' marks, on tiles extracted, as usual in Rome, from among these ruins, are of the time of Hadrian. It may be doubted, however, whether such art-works as have yet come to light here can pertain to so good a period in artistic story.

In the formation of a road to the central railway station that runs along the valley between the Quirinal and Viminal Hills, have been opened, or rendered accessible, several small irregular chambers of brickwork in an extent of ruins along the Viminal slopes, supposed by Roman antiquaries to be the baths founded by the Empress Agrippina for her own sex. A few remnants of ornamental painting and stucco reliefs, on some of their walls, might faintly remind of Pompeii; and portions of mosaic pavement, in simple patterns, are also noticeable,—particularly one that covers a rather large

quadrangular area in a sort of kaleidoscope medley of coloured marbles on white ground-work, without any attempt at design. The works on the Palatine, ordered by Government, have been suspended, but to be resumed, and (we understand) about the present time. Those at Ostia, also carried on by Roman authorities, were recommenced, after long suspense, about, or soon after, the beginning of the year.

TUTBURY CASTLE.

The high broken ground of Needwood Forest, contained between the Trent and the Dove, is brought to a termination eastward by the union of those streams upon the confines of the three shires of Derby, Stafford, and Leicester. About five miles above this confluence, upon the right or Staffordshire bank of the Dove, stand the town and castle of Tutbury, once, according to Leland, a residence of the Saxon lords of Mercia, and named, it is said, from the god Thoth, who presides over Tuesday, and is thought to have been worshipped in the inclosure of the castle. The etymology is supported by Wednesday; but however this may be, Tutbury was certainly an ancient stronghold, and possesses in that respect unusual natural advantages.

The castle crowns the head or northern termination of a considerable ridge of new red sandstone rock, which projects from the high ground of Hanbury and Needwood, and forms an abrupt promontory above the broad level meadows of the Dove. On the south or landward side the hill is partially severed from its parent ridge by a cross valley, within and about which is built the ancient town of Tutbury, celebrated from the days of John of Gaunt until the end of the last century for its attachment to the barbarous sport of bull-running.

The natural position of the castle is strong and well defined, and has been turned to account from a very remote period, and materially strengthened by Norman and pre-Norman art.

Upon its west, south, and eastern sides the head of the ridge has been further protected by a broad and deep ditch, which thus covers about two-thirds of its circumference. Towards the north, where the hill projects upon the meadows, the ditch ceases, and this front, rising steeply about 100 ft., has been rendered steeper by art, and is further protected by a wide expanse of wet land, traversed by a very ancient and broad mill-leat, and by the sinuous channel of the Dove.

Upon the east and north-east fronts, where the area of the promontory was inconveniently large, two extensive semicircular spaces have been left outside the ditch. They are, in fact, outworks upon a large scale, useful for pasturing cattle in turbulent times, somewhat lower than, and commanded by, the main works; covering the ditch, and scarped though not reverted towards the field. They are separated by a deep ravine, up which the main approach to the castle ascended from the north-east, the direction of the Dove bridge, and probably of an earlier ford. On this, the east front, the contents of the ditch have been thrown inwards, crowning the scarp by an artificial bank about 15 ft. or 20 ft. in height.

Upon the south-west and west side the earth has been employed to form a large mound, about 40 ft. high, and 70 ft. across at its truncated summit, and which renders this front almost impregnable.

The space between the east bank and the west mound, forming the south front, is occupied by the castle buildings, which, built upon the natural soil, crown the scarp of the ditch, and overlook the town.

Opposite, also from the bank to the mound, is the north front, almost precipitous, and defended, therefore, by neither ditch nor bank. The space thus enclosed forms the base court of the castle, and covers about three acres. It is in plan an irregular circle.

The best view of these magnificent earthworks is from the summit of the mound, which not only predominates over the court of the castle, to its east, but westward rises very steeply about 140 ft. from the meadows. The counterscarp of the ditch is here seen to terminate on the north-west, at the base of the mound in a sharply defined faliform ridge.

The masonry which has been added to these earlier defences is composed of a group of buildings on the south front, flanked by curtains which run, on the one hand, westward towards

the mound, and, on the other, eastward, along the top of the bank by which that face is defended. This curtain is 6 ft. thick at the top of its plinth, about 6 ft. from the ground, to which level it is now reduced. There is evidence that it was about 20 ft. high, with a rampart accessible from its flanking towers, and by a double flight of open steps from within. At one point is the vault of a large *garde-robe*, marked in the "Yetusta" drawing by a bartizan turret. This east curtain is broken by a lofty rectangular mural tower, of which the interior wall with a square angle-turret only remains, and which faced the turn of the road up to the castle, on the opposite side of the ditch. The bank has been removed here, so that the tower is built upon the original soil, and its basement entered from the court on a level. This tower is Perpendicular in style, and has evidently been blown up by gunpowder.

At the north end of this curtain, at the north-east corner of the court, is the great gatehouse, a rectangular building pierced by a portal, and with lateral lodges. Above were other chambers of more pretensions and larger size. This gatehouse is almost all outside the wall. Its south face faces the ditch, and has a small projecting balcony at the first-floor level, communicating by a shaft with the basement lodge. Its north face looks towards the Dove; only its south and east walls remain. It had no flanking towers, the wall on one side of the gate being pierced by a loop. To it has been added, outside, flanking the gate, and blocking up the loop, two thick solid cheeks of wall, from the front of which the drawbridge fell, across the moat. The gatehouse seems to be of early Perpendicular date, but its window recesses have half-round heads, and a window above the portal has something like Decorated tracery still remaining, and rudely indicated in the "Yetusta" drawing. The portal has a flat segmental arch, and outside this is a low drop arch, part of the additions. The details of the drawbridge, to judge from the holes cut in the stone, were peculiar. Two portcullis grooves remain.

The masonry of the drawbridge has been removed, and the ditch here solidly filled up with earth. The road from below, to reach this gate, is continued for some way along the crest of the ditch, within reach of the walls. Lower down it is commanded by the two demilunes.

From the gatehouse westward the edge of the steep north front was crested by a curtain-wall, probably low and light, of which there are slight traces.

Upon the summit of the mound is a ruined round tower, evidently an erection of very modern times, probably as a summer-house, or an object in a view. There is said to have been an earlier building here, destroyed before the reign of Elizabeth, probably by John of Gaunt, and likely to have been a polygonal shell of masonry. It was called Julius Tower, a not uncommon name for such structures.

The castle buildings have been broken down, but what remains is as sharp and fresh as though lately executed. The outer wall and altered windows remain of the great hall, 61 ft. long by 29 ft. broad, and a group of state apartments at the east end. Here are two very fine crypts, no doubt cellars, entered from the court by handsome doorways and six or eight descending steps. They have been covered with barrel vaults, ribbed transversely and diagonally, with large carved bosses,—fitting receptacles for the very best of drinks. Above these are handsome rooms, with flush flat-topped chimney-places, with mouldings set with flowers and the "hart lodged," and what may be a conventional pomegranate. These buildings are in the best and purest Perpendicular style, and the profiles and details of the mouldings are admirably suited to that fine but sometimes rather friable material, the new red sandstone, here of very superior quality.

In the court is a deep well, still in use. At the west end of the great hall is a brick building, probably the work of some Crown steward or lessee, about the time of Queen Anne or George I.

So far as can be observed, the castle exhibits no trace of Norman masonry. All the structures, walls, tower, gatehouse, hall, and apartments are nearly or quite of one date, and are probably the work of John of Gaunt, who resided here very frequently, and in regal state. This is very remarkable, because Tutbury is mentioned in Domesday, was the caput of a very important Norman honour, and the principal seat of the great Norman family of Ferrars,

earls of Derby, from the Conquest to their ruin towards the close of the reign of Henry III., since which time it has been, for the most part, in the Duchy of Lancaster.

Shaw, in his "History of Staffordshire," gives two most exaggerated drawings of this castle. Another, on a larger scale, a view from the east side, taken in the reign of Elizabeth, is engraved in the "Yetusta Monumenta," vol. i., pl. 39. This, amidst much absurd perspective, shows the gatehouse and east tower, what may be a chapel east window in the state apartments, and a round tower at the east foot of and built into the mound, besides a west curtain with three mural towers upon it.

Tutbury was held for the king, and taken by the Parliament in the wars of Charles I., and subsequently, by order of the House, reduced very nearly to the condition in which it is now seen.

It may be mentioned that an addition to both the defences and the resources of the castle has been provided in the last, in part only, an artificial channel, known as the Fleam, which leaves the Dove about a mile above the castle, is led beneath its walls, where it still works a large and very powerful mill, and finally returns to the river some way down, after a parallel course of about three miles.

Although the temporal evidence of the splendour of the house of Ferrars has disappeared, the memory, as usual, of their ecclesiastical beneficence has been preserved. The parish church of St. Mary, once the church of the Ferrars Abbey of Tutbury, still stands a stone's throw from the castle wall, and seems anciently to have been included within the outer defences. It was founded by Henry de Ferrars, in the reign of Rufus, and has a Norman nave, clerestory, and aisles; and its west end is one of the most perfect and richest Norman fronts in existence. This structure, which had been much misused, has happily fallen under the judicious care of Mr. Street, who is now engaged in scraping and restoring the Norman parts, and in the addition of a large polygonal apse or east end to the chancel. This is probably the chapel of St. Mary within the castle, in which (18 Ed. I.), Edmund Earl of Lancaster founded a special mass.

Mary Queen of Scots was imprisoned in Tutbury Castle, under the care of George Earl of Shrewsbury, then constable. C.

PROPOSED MANCHESTER TOWNHALL COMPETITION.

The town council have issued the Instructions to architects intending to compete. As we have already intimated, from the designs sent in, not fewer than six nor more than twelve will be selected by the council, and the architects furnishing the designs so selected will be invited to send in finished and complete drawings in competition for the new townhall, upon the understanding that the author of the design eventually selected shall (subject to satisfactory arrangements being made) be employed as the architect of the building, and be paid the usual professional remuneration on the outlay. To each of the other competitors who may be so invited, and who may send in finished and complete drawings in the second competition, the sum of 300l. will be paid by the corporation. The council reserve to themselves the right to exhibit the whole of the designs for one month, either before or after adjudication, as they may see fit. Each competitor is to state the cubical contents of his proposed building, and to give an approximate estimate of the cost, based upon such measurement; it being understood that the such measurement is to be of a similar elevation to Lloyd-street is to be of a similar character to the elevation to Princess-street, and that the external walls are to be in ashlar stone from Yorkshire or Darley Dale, and the backing and internal walls of brick. It is probable that in the first selection of designs the council may seek professional aid; but, whilst reserving in their own hands the ultimate decision, the council wish it to be understood that it is their intention to seek professional aid and advice in the final selection of the best design, as it is the wish of the corporation to secure in the present important competition, so far as may be practicable, the full confidence of all competing architects. In the preliminary competition, the letter addressed to the mayor, together with the drawings, must be delivered at the townhall, Manchester, on or before the 1st day of July next.

ART, MODERN AND ANCIENT.

At the annual meeting of the Hanley School of Art, held last week, when several interesting speeches were made, Viscount Sandon, who presided, spoke of the value of the study of art as attaching men to their homes. The great foundation of society, he said, was the home feeling, and that being the case it was impossible for a right-minded man to see without regret the state of many of the dwellings of our town populations. It was almost wonderful that the love of home had not died out in the hearts of many, when they saw the wretched places to which large numbers of the artisan class were compelled to betake themselves when the toil of the day was over. He hoped that in the minds of the fathers and mothers of the future a higher taste was being developed, with a love for the pleasant picture, the graceful piece of furniture, and the elegant chimney-ornament; and that by the habit of self-denial and indulgence of the lower propensities of our nature, many things which might be almost called luxuries would come to be more generally possessed than at present. On this ground he felt that he was not doing a foolish thing in urging upon an audience composed in a considerable part of working people the cultivation of a love of the tasteful and the beautiful. Nor should it be supposed that the matter of female dress was a trifling one, for when a man got a more artistic eye he became more sensitive on this point, and it was a source of delight to a working man to see his wife prettily and neatly dressed. . . . One of the great principles to be borne in mind was that every article should be designed with special regard to its fitness for the use to which it was intended it should be put. To be very homely in his illustrations, a cup which upset the tea, a handle which it was awkward to hold, a spoon which poured badly, a plate from the rim of which the condiments ran into the gravy, were badly contrived articles; and, however richly they might be painted with birds, flowers, and butterflies, were mistakes and failures. Let a thing be first designed with true regard to fitness, and then decorated with refinement, and it was a good work; but to try to be fine before being useful, and to cover radical defects of design by gilding and painting were blunders. It had often been objected to the decorators of English porcelain that they were servile copyists of nature. There was no doubt they did copy natural objects admirably, but he was not quite sure whether this was the highest form of ceramic art. He was inclined to think that, in studying nature, the best course to take was not to imitate her servilely, but to see in a general way how she handled things,—to see how she combined beautiful colours, how she weaved geometrical forms in the boughs of trees, what beautiful lines she traced in the interior of pebbles, and in what a wonderful manner she harmonized the charms of landscape. The object of the decorator should be, not to copy line by line, but to throw into natural forms something of the human mind, something of man's creative spirit,—a course which would be found to be quite consistent with an observance of the harmonies of form and colour to be met with in nature. As a Staffordshire man he felt proud of the progress which had already been made in the special industry of the potteries, and was much gratified to hear that its productions were in increasing demand in foreign countries. Taking England as a whole, it was impossible not to feel that, during the last twenty years, the decorative arts had made substantial progress. Every house and every cottage bore evidences of the fact. The whole of the outside life of the people had become much more beautiful and graceful; for, while they could not be blind to the existence of much wretchedness in both town and country, it was impossible not to see that substantial progress had been made in the comforts and graces of life. That was surely a cause for rejoicing, and they might reasonably hope that the course of progress would continue. But when they imagined, as they sometimes did, that there never had been such a time in the history of the world as this nineteenth century,—that the conquests which in it had been made over the forces of nature, and the beauty of the works which it had accomplished had never been surpassed, it was well they should cast their eyes backwards and see what had been done in the far-off centuries of the world's life. Let them consider whether they could surpass the beautiful colours to be met with in Oriental porcelain made

hundreds of years ago, and preserved in some of our museums, and the result would be, that they would probably be less inclined than formerly to indulge in self-congratulation. He would ask them to accompany him in imagination to the tombs of Thebes, on the banks of the Nile, which he visited some five years ago. After descending for some time they came upon a series of chambers cut in the solid rock, and these they were enabled to examine by the light of torches. On the walls of one of these chambers they saw depicted in bright colours, laid on probably before the time of Joseph, but preserved to this day by the dryness of the atmosphere, the furniture of the period, with its carved arms, ornamental legs, and rich cushions and tassels. In these the polished life of the Egyptians was portrayed even as in a similar manner the polished life of to-day may be illustrated. On the walls of another chamber the culinary utensils of the Egyptians were painted; on the walls of the third the arms of the period; and on those of a fourth the gardening of the period; and in all these cases it was impossible to help feeling that the life led by the Egyptians very closely resembled that led by Europeans of the nineteenth century. Egypt was evidently, in her way, pretty nearly as civilized as modern Europe, and the impression was confirmed by a visit to the museum at Cairo, in which was preserved a large and unique collection of jewelry which had formerly decorated the embalmed bodies of the dead. All these beautiful objects were fashioned long before Greece and Rome began their tale, and the same might be said of the beautiful sculptures of Assyria, in which the richness of the robes rivalled those worn by the nations of modern Europe. The same remarks would apply to the discoveries made at Pompeii; and all these facts together seemed to warn them against being over-proud of the advances which had been made in art and civilization by the present generation. Other men had worked, and the moderns had entered into their labours. They would find by diligent inquiry that, as far as art was concerned, mankind had in these latter ages invented little that was new, but had very often contented themselves with appropriating and adapting the ideas of bygone centuries, on which account he thought they should hold in reverence these illustrious ones who had preceded them, and to whom they were indebted for many of the beautiful forms and devices which now decorated their homes.

NEW NATIONAL GALLERY DESIGNS.

The following is the Report of the Judges appointed to consider the designs for a new National Gallery. It is addressed to the First Commissioner of Works and Public Buildings:—

"My Lord,—We have the honour, in accordance with the instructions conveyed in your Lordship's letter of the 17th ult., to submit the following Report on several designs for the National Gallery sent in by the competing architects.

Our first step was to obtain clear and definite instructions as to our duties, and we subsequently inquired whether, in the event of our considering it undesirable to recommend any one of the competing designs for execution, it was expected we should specify which of the designs appeared to exhibit the greatest amount of comparative merit.

Our next object in examining these designs was to ascertain whether the competitors had in every respect complied with the instructions of the Office of Works conveyed to them in the circular dated the 15th of February, 1866; and with this view we obtained, through your Lordship, the valuable assistance of Mr. W. J. Gardiner, from whose report it appears, with one or two exceptions of minor detail, the instructions have been strictly adhered to.

We have minutely examined the several designs prepared under the two alternatives proposed in the circular above referred to, keeping carefully in view the relative importance of interior arrangement and architectural elevation; but while we readily acknowledge the architectural skill shown by the competitors, and the merit of the requirements in which many of the chief features of these requirements have been met, we are bound to say, after full and mature deliberation, that we are not prepared to recommend any one individual design for adoption by your Lordship.

We much regret that we are compelled to arrive at this conclusion, which, we may observe, is one to which we have unanimously assented.

At the same time we think it due to the competitors to point to the design for a new gallery by Mr. Edwards Barry, and to that for the adaptation of the existing gallery by Mr. Murray, as exhibiting the greatest amount of architectural merit.

Having thus far performed the duty assigned to us by your Lordship, we venture to submit for your consideration the following suggestions on the principles which ought to govern the building of a new National Gallery,— suggestions which we believe to be in accordance with the spirit, if not the letter, of our instructions.

We are of opinion that in the construction of a National Gallery the principle of simple and unobstructed light should be carefully observed. Thus, we believe, will be

most effectively done by lighting the principal galleries from the top, and by so regulating the space for the admission of light that it shall in no case be less than one-half of the superficies of the floor.

The height of these galleries to the ceiling light should, in our opinion, be equal to their width; and, as regards their length, long galleries without obstructions appear to us to be inconvenient to visitors, and ill-adapted to a proper classification of the pictures exhibited.

We consider, at the same time, that a National Gallery should contain one or more galleries of the width laid down in the instructions to the competitors, while other galleries might be constructed with a width of 40 ft. or 50 ft., which dimensions would be well suited for the exhibition of smaller pictures.

In these arrangements especial care should be taken that the higher galleries do not obstruct the light of the lower ones, and that the staircases should, if possible, be at the ends rather than at the sides of the galleries.

On the question of warming and ventilation, the appliances should be so contrived as to give out the heat in the centre of the room.

Bearing in mind the arrangements required for the upper galleries, we consider a matter of great importance that such access should be provided as will admit of the lower rooms being lighted from both sides, so as to fit them for the exhibition of the Turner collection and other large paintings.

The levels of the principal gallery floors should be so constructed as to admit of easy access by visitors. We would further observe that it is not, in our opinion, necessary to provide for the difficulties involved in the requirements of a national picture gallery by appropriating large spaces to the exhibition of sculpture.

These suggestions are submitted for your Lordship's consideration, and we do not require to express our views. As regards the exterior, the light conveyed through the glass roofs should be as far as possible unobstructed by terra-cotta or from domes, towers, &c. Any breaks, therefore, which may be introduced to relieve the sky-line should be subordinate to this practical consideration. Provision should be made for the shelter of visitors entering or quitting the galleries, so as to give ready covered access to their carriages.

We have ventured to tender to your Lordship these suggestions as *desiderata* in the erection of a gallery suitable for the reception of the national pictures. We are, at the same time, aware that they must be subject to local considerations, to the space placed at the disposal of the architect, and also to the architectural effect required in a public building of the kind under consideration.

We do not wish it to be inferred from the above suggestions that the designs which have been generally lost sight of by the competitors. We have already acknowledged not only the talent evinced in dealing with the question of architectural effect, but also the ingenuity and professional skill which have been brought to bear upon the difficulties of the task assigned to them.

Having, however, come to the conclusion already communicated to your Lordship, we should have failed in our duty as a Committee of advice had we not expressed our opinion upon the general principles which should be observed in the construction of a National Gallery, and are led to believe from the result of our investigations that such principles may be generally adopted, and be found not altogether inconsistent with those architectural effects which should characterise a building of such national importance.

With this view we beg to submit the above report to your Lordship's consideration.

Hard age,	Richard Redgrave.
Elecho,	William Russell.
A. J. B. Borensford Hope,	T. Gambier Parry.
W. Eozall,	William Tate.
David Braden,	
London, Feb. 23."	

We have received a communication from Messrs. Banks & Barry protesting against the report of the judges in this matter, and urging that the "principles" laid down in the Report are exactly the "principles" on which they have framed their design. They say, in conclusion:—

"We see from the reply of Lord John Manners last night to Mr. Goldschmidt, that the judges having given so indecisive a report, her Majesty's Government feel that the decision is, after all, remitted to them. We trust that that decision may be to remove entirely the present building, as the careful study which we, as competitors, have given to the subject has convinced us that any attempt to utilize the present building would be *financially* no less than *artistically* a failure, and any attempt to govern the design of a new gallery by the lines and levels of the present building would only too probably result in making such new building as unsatisfactory as the present one is, on all hands, acknowledged to be."

THE ROYAL GOLD MEDAL FOR ARCHITECTURE.

THE council of the Institute having been requested to take into consideration the rules as to the mode in which the gold medal shall be hereafter awarded, have reported that:—

"They are of opinion that, in the first place, all due regard should be paid to the intention with which the medal was originally bestowed by her Majesty; and next, to applying by its means the greatest possible stimulus to the progress of the art of architecture. These considerations seem to indicate the propriety of conferring the honour somewhat more liberally than heretofore, both on English and on foreign artists, or men of science, as well as on others, not being professional architects, who may be deemed worthy to receive the medal, as an analysis of the list of laureates shows that the tendency of the award has hitherto been to retain the medal somewhat too exclusively within the ranks of the profession. Of nineteen recipients, twelve have been English and five foreign professional architects; while only one English and one foreign architect (neither of them being a professional architect) have been honoured with the royal medal.

With respect to the rules, or practice, in accordance

with which the recommendation should be made, no other change is advised than the following, in regard to the order. It appears to the council that the rule most consistent with the principles just recognised would be to equalize the number of the English and of the foreign recipients, both professional and non-professional. The practical working of this arrangement would be, that once in four years honour would be paid,—

- 1stly—To an English architect;
- 2ndly—To a foreign architect;
- 3rdly—To an Englishman not a professional architect;
- 4thly—To a foreigner not a professional architect.

The council accordingly consider that (the last two awards having been in favour of English architects, and the one preceding of a French architect) the person to be designated by them for the honour this year should be a foreigner 'not being a professional architect.' The order of rotation would subsequently be,—

- 1868—An English architect;
- 1869—A foreign architect;
- 1870—An Englishman not being a professional architect;
- 1871—A foreigner not being a professional architect:—

the order being repeated so long as her Majesty may be graciously pleased to continue her bestowal of the medal.

They have since recommended that, subject to her Majesty's gracious sanction, the royal gold medal for 1866 be awarded to M. Charles Texier, of Paris.

SIR,—I earnestly hope that the rules hitherto acted upon in the disposal of this medal will now and henceforth be abandoned. Hitherto the medal has been a sort of thing monopolized, considered as a thing belonging strictly to the Institute, to be handed round to its members in rotation; and many, no doubt, there are, though mere art-factors, who expect the medal to come to them as a sort of right, as the right of the Fellows of the Institute. Many men who have worked in furtherance of art, as Britton, Pugin, Parker, and another worker for years, for the benefit of art, as well as in the profession, whom you would probably not let get the name in your pages,—men who have done good service, have received no recognition from the Institute. I hold it as a great disgrace to those who had the disposal of the medal that the two first-named men should have passed over without receiving the medal. They were, in my opinion, far more worthy than any who have obtained it. This, like other honours, will shine brightest by reflected lustre. The deeds of the men who receive it are what chiefly make the honour honourable. And what have some of the recipients of this medal done? Several, in point of talent, are not one bit above the general run of practitioners. In looking over the names of past recipients two noticeable things strike me,—that out of nineteen only one man, Viollet-le-Duc, can be strictly termed *Gothic*. Yet surely this is the style in which we have made greatest advance, and of which we have most reason to be proud. And only one English author is among them. The next men who ought to have the medal are the two I have indicated. For more than a quarter of a century these men laboured ardently and unflinchingly as art-teachers, and to them accrues one deep debt of gratitude. It may be necessary to say that personally I am a stranger to both of them.

F. E. MASEY.

ARTISTIC FURNITURE.

FOREMOST amongst the articles of furniture that have been prepared for the fast approaching Paris Exhibition, we must name those now completed by Messrs. Jackson & Graham, who, bent on maintaining the position they have long held in these tournaments of skill, have evidently applied themselves to the work, determined to come off victors. They send nine pieces in all, and these include an upright case of ebony inlaid with ivory, for works of art (part of the fittings of a room for Mr. A. Morrison, of Fonthill House), a charming little *dagherre* (the capitals capitol carved), and a table of amboyna wood inlaid with other woods, and forming a lovely piece of colour. In the ornamentation of the upright case, the hand-writing of Mr. Owen Jones is obvious. Panels at the bottom, below the glass doors, are filled in with his conventional foliage, in ivory, around the initials of the owner A. M. entwined.

The *capo d'opera*, however, is a cabinet in three divisions laterally, in the style of Italian works of the sixteenth century. This, like some of the other furniture mentioned, is of ebony inlaid with ivory, and includes a few *plaques* of jasper and lapis lazuli. The ornamentation is of the most elaborate kind, drawn, as well the griffins and human heads as the foliage, with great spirit, expression, and beauty.

The excellence of the inlaying, of the engraving on the ivory, and of the carving, is remarkable. Such metal work as there is, too, is admirable; and we are much disposed to consider the cabinet as a whole the finest modern work of its kind that has been executed in England. The entire credit of the design and drawing is given by the manufacturers to Mr. Lormier, who has been long connected with their establishment. The worth of the cabinet is understood to be 2,000*l.*, and it is satisfactory to know that it found a purchaser before it was finished.

THE PARIS EXHIBITION AND ART.

Now that the forthcoming Exhibition of all that the modern world can produce is taking up so large a part of public attention, I would ask you to allow me to say a few words about it, and on the principles on which it is based. A very few words will suffice; because when a great and leading principle of action is fairly at work, whether it be right or wrong, we see immediately by the results what its true value is, and whether or not it ought to be continued, and repeated, and persisted in. It must be borne in mind that this Paris Exhibition is the fourth great exhibition—the parents of so many other smaller ones all on the same principle of action and with the same aim.

All four exhibitions have had one common idea: they have divided themselves broadly into three divisions—*raw materials*, as grown or dug from the earth; *machinery* to mould these materials into useful forms; and *fine-art*, or art manufacture, to render these useful forms agreeable to the eye, and *mentally* useful; and the final idea of them, and, perhaps, the climax of the whole, the singling out and bringing into public notice, and in some way or other rewarding those who have personally brought about this last and final process—that of clothing the useful with the beautiful; in other words, the recognition of the work of the artist, and the artist himself. I say this has been the aim of these great Exhibitions, but it should rather be said it *ought to be* and *should have been* the aim of them. Unfortunately, however, for art and manufacture it has all resulted in almost the reverse of this true and legitimate aim: the artist has been completely lost sight of; the real producer of the work has been forgotten, and effectually hidden by the *shopman* or *seller*!

It is difficult to see how a greater iniquity and unfairness could or can be perpetrated, or one better adapted to crush out art action altogether. Indeed, has it not already accomplished its work? I will take, with your permission, sir, one single instance from the first of these Exhibitions, that of 1851; and a single case of art manufacture—that of the late Mr. Herbert Minton—and the china service manufactured by him for the Sultan of Turkey. Mr. Minton was, I consider, a fair and perfect type of our present race of art manufacturers; and as such, I think some of his opinions on art topics are worth recording: they will be found to bear, too, on the present vital subject. Minton often contended with me as a leading principle that it was now in the power of a country such as England to enlighten and teach artistically every other country in the world, with the sole exception of France. He said, "with our vast *mechanical* means, and new *chemical* processes and new materials, and improved methods of going to work, there is something which I cannot understand, and which seems to me truly absurd in your *opinion*, that we, with all at our command, have yet to learn of the barbarous Chinese." I quote this expressive sentence because it embodies that eminent manufacturer's opinions on art, and also because it is in reality the text of the Society of Arts and of these great Exhibitions. Minton did not, and could not, understand the old art action, nor the remains of it yet to be found in what are now called *barbarous* countries. I need not pause now to say what I urged in favour of that system; I will only mention the startling fact that Minton allowed, with great fairness, that in spite of all our immense advantages, all the means and skill of his factory could not produce a single square inch of common China ware,—I do not say equal to, but anything like, the specimen I showed him picked up for a few halfpence, and a mere piece of ordinary ware. Material, texture, colour, transparency, drawing, he fairly gave all up in succession. I mention these facts to show the position of the art manufacturer as an art judge of his own wares, and guide to those whom he employs, to bring them into existence.

Mr. Minton was an employer of art labour in all forms, but he was *nothing else*. He had no great taste of his own; he simply went with the world, and his trade instinct was so powerful as to completely nullify any real personal taste he doubtless naturally had. He was, of course, no draughtsman or painter himself. He was not a designer, nor was he a workman, nor could he, as is proved above, judge truly of the work of others. To use his own expressive language,—“I put it in the window, and the public advise me of the worth of it.” I say, therefore, distinctly that this fortunate employer of artistic labour, and out of which he made so large a

fortune and fame, was nothing whatever but a *shopman*; his artists and workmen, in cellar and garret, produced between them the art objects for sale, handing them to him, and he did nothing but pass them to the customer, and take the money, to—drop into a till. Yet do we all know that for this very service, in the production of which he took no part whatever, Minton not only received the Council medal of the first Exhibition for “artistic merit” (the artists themselves never being thought of for a single moment), and the medals and honours of the Society of Arts, but he was made, as well, a member of the Royal Institute of British Architects!—a member of the Institute on a level with the highest; while the working architects, like Minton's artists, of whom I could say much, can find temporary home nowhere but in the basement of that Institute, cannot look upstairs, and are now begging for books in a house full of nothing but books. Will the new Reform Bill alter this in any way—if not, what will be the good of it?

Sir, I name these curious things as facts, in the hope that some one will give them a few minutes' thought, and not at all to cloud Minton's memory. Some may, perhaps, be inclined to ask, why rake all this up, and what has it to do with the present business of the world, and the Paris Exhibition and art? I answer, because Mr. Minton is succeeded by others who are now running the same race he did, and will meet surely with the same rewards. 1867 is but a repetition of 1851. I, for one, though but one, protest against the way in which the art department of this Exhibition is being worked out, and against the broad and pernicious principle of exhibiting art objects under the names of those who have had nothing whatever artistically to do with their production, and who are themselves incapable of all work as artists or workmen, and who are but sellers and advertisers. I think some one in authority, as the Institute, and who will be listened to, should publicly protest against such a system, and that the world should at least be made to know what the position of those who are figure in this year's show, and that the public should be made to understand that it is at the world's *shopmen* they are looking and admiring, and not at either its artists or its workmen.

One other phase among many of this great coming Exhibition. We are told that architecture is but very indifferently represented in it; that no adequate idea of the doings and capacity of British architects will be forthcoming. Why not? Indeed, in the absence of all that ought to be seen, a large section, 60 ft. high, of the 1852 Exhibition building will be visible, and will afford to the European public some sort of idea as to what English nineteenth-century architecture has culminated in. I say nothing against it. It seems to me to be fairly representative of modern British architecture! But it may just occur to some poor mortals why the real working element in modern architectural practice is not to be somewhere or other visible, say by the side of the working man's department. No common workman, it may be presumed, will venture to send anything,—if any workman exhibit at all,—that is not really and as a matter of fact *his own work*, and not the performance of another man. If this be so, then this working-man's department will be the sole *true* spot in the whole building devoted to art. It may be rough, but it will be true. What a pity, therefore, it seems that the architectural assistants who supply these very workmen with their guiding drawings, and without which they could do nothing, should not have been encouraged,—nay, called on,—to contribute to this world's architectural display. A capital of a column by an architect's assistant, and a capital carved by a workman, would show all that architecture is now made up of. Like a brick from the chimney, it would show what the house is made of. I do not see how art and architecture can sink lower than they are sunk.

One other 1867 marvel. Somebody once said there is nothing so great as greatness on a low level. It is quite certain that when imperialism condescends to notice and feel interested in common folk's affairs and wants, it is a very sublime spectacle. The Emperor himself is an exhibitor, and is to show to the world a model working-man's house, plans, sections, and elevations, and we may suppose perspective views. It is a very difficult subject indeed; everybody has failed to produce the right thing. His Imperial Majesty may succeed, and whip the world of cottage builders. But is it at all con-

teivable that Napoleon III. will actually take up a T square, and pencil, and compasses, and hang over a drawing-board, and puzzle his mind, and rack his body, over the mysteries of the arrangements of a labourer's cottage; calculate dimensions, and go into the question of materials, bricks, and timber, and plaster? Why, it seems nothing short of treason to hint at it even. What, then, is even majesty to do for a cottage will not come together, though but on paper, without hands. We must depute it to somebody. The Minister of the Interior is said to have been consulted, and the Prefect of Paris, to whom we owe the New Paris, and the destruction of the Old. Will they try the square? The Imperial architect must be talked to, or the world would come to an end. Will he work? Who, then, will?—Why, his clerk? One cannot help almost pitying this unfortunate youth in his efforts to get at the proper dimensions of the working man's living-room, bed-rooms, how many are there to be,—any kitchen, and what good is a scullery, and how high are the rooms to be? And then, greatest of all, and deepest and highest of problems, what style of architecture,—English or French?—if Gothic, what phase of Gothic? One's head fairly aches. Unfortunate youth, when his Herculean labour is at last over, what is his next duty? Hand it to the master—from him to the prefect—thence to the minister—and finally into the hands of their Imperial Sovereign—to be exhibited to the astonished world. What next? Everybody is to be rewarded according to his deserts; and it is quite certain that his Imperial Majesty will be accorded by the Imperial Commission a ponderous medal, as big as a soup-plate, for this very cottage, thus brought into being. No one will doubt this, for such is present architectural practice. Has Napoleon considered this? Will he consider it? I hope he will, and that when the Imperial Prince hands this medal to the Emperor, he will in turn hand it at once to the above unhappy mortal who has been for weeks on the rack, body and soul, in trying to accommodate comfortably a working man and his family; and, simply, who has done all the work from first to last. There is nothing like Royal magnanimity, Shakespeare says. Surely the Emperor cannot retain that golden medal, in the face of Europe, France, England, and facts! Again, then, what is architecture and art when emperors can find fame in one, so produced, and more shopmen seize the other? Pray, sir, call public attention to it. C. B. ALLEN.

DWELLINGS FOR THE WORKING CLASSES IN IRELAND.

At a recent meeting of the Royal Institute of Architects of Ireland, Mr. Charles Geoghegan, architect, read a paper on the subject of dwellings for the working classes. In the course of it he gave particulars of some that had been built in Dublin.

"Each double house, having central staircase, affords four complete tenements, containing living-room, with bed recess, scullery, two bed-rooms, separate access being provided to all the rooms to admit of one or more being let off as may be required.

A yard or small garden having conveniences with ashpits provided for each block of building, the cost of each house being £201., or about 80l. each dwelling of three apartments and sculleries. They are all let at 4s. 6d. per week, the four returning 46l. 16s. per annum, from which sum deducting ground-rent, repairs, insurance, and all taxes, leaves 36l. 16s., or 11½ per cent. on the capital invested. And when the employer himself becomes the landlord, the trouble, risk, or loss in collection of rents will not form an important item in the calculation. These buildings have all been executed within the past twelve months, of entirely new materials of proper quality, and present a cheerful and attractive exterior, available at all times for ordinary letting property or workmen's houses as may be found most remunerative, thus reducing the chance of failure in the speculation to a minimum.

The Industrial Tenements Company, Limited, for whom I have the honour of being architect, are at present actively engaged in erecting extensive and commodious dwellings for workmen on their property in Meath-street, the general plans being much similar to those already introduced to your notice, but having four stories in height in place of two, the ground being more

valuable in a crowded thoroughfare: thus enabling the company to obtain eight complete tenements under one roof instead of four, as shown on former plans. The whole building containing 124 rooms, for which, calculating a very moderate rental for each apartment separately, would yield a very fair return for the capital invested in the undertaking. Each staircase landing is here provided with under-shaft, water-pipes, and foul-water sinks discharging into drains. The lavatories, drying-room, ash-pits, and conveniences being situated in the extensive airing-grounds in the rear of the houses, common to all. The ground-floor facing Meath-street being let off for shops, which let well in connexion with tenement property in this locality.

A very able professional writer, when alluding to the necessity of providing homes for the London poor, recently declared that as yet they had not been able to erect suitable tenements for working men at less than 160l. each dwelling, 48l. per room being the average outlay on each room in Cobden's buildings, Bagnigge-wells, while our first attempt in Dublin have shown what can be effected at 80l. each dwelling of three apartments and sculleries; and for their suitability, comfort, extent, and appearance, a visit of inspection will amply satisfy the inquirer."

"In adopting concrete in place of masonry for the walls of workmen's houses, as has been most effectively done in Kent and in other parts of England, the advantage of economy, dryness, warmth, and solidity may at once be gained; and as this mode of construction may be executed by any ordinary labourer by the use of shifting frames of timber, the saving of skilled labour alone forms an important element in its favour: when concrete is used in trenches, or above-ground raised on a course of masonry above the influence of alternate wind and water, it will be found a most substantial and durable material for building.

In the south of France, building *en pisé*—a superior sort of mud wall, or rammed earth mixed with straw—is much used, and I have seen two stories frequently built in this manner in farm-houses and out-offices, although frequently the quoins are formed of roughly-squared stones or brick; and there is no reason why we should not resort to this mode of construction in this country for similar buildings. Walls thus made are perfectly dry, warm, and impervious to air and moisture; and, when the customary clauses of leases do not insist upon the use of brick or stone dwellings being erected, advantage may be taken of this simple and inexpensive means of providing comfortable homes at small rents."

Mr. Geoghegan commenced his paper with obliging reference to the efforts, early and continuously, made in the *Builder*, to obtain improvement in the dwellings occupied by the labouring classes, and traced to these the endeavours now being made in that direction throughout the United Kingdom.

THE WELSH CHAPEL, GROVE STREET, LIVERPOOL.

The new chapel for Welsh Independents erected in Grove-street has been opened for divine service. The building is in the Byzantine style of architecture, adapted to the requirements of the present day and the mode of worship used by this denomination, the materials of the exterior being Yorkshire shoddes, with coloured bands and arches in other kinds of stone. The front has on the one side a campanile tower with belfry windows divided by stone shafts, forming a leading feature in the perspective of the street. On the other side of the gable finishing the roofs is the staircase with a row of narrow lights next its roof. The gable is filled in with a wheel-window, having round and coloured shafts in its tracery. Underneath this is the principal entrance doorway, having a round-headed, carved arch, and two polished red granite shafts on either side, with carved capitals. There are two gallery entrances also in the front, one being in the tower and the other in the staircase referred to. Internally the chief object is the large decorated rostrum or pulpit. The organ is decorated in colour with gilded ornaments; it was built by Mr. Rushworth, of this town. The rostrum is executed in pitch pine, varnished, and relieved with coloured panels. There is a gallery round three sides of

the chapel, having an ornamented wooden front relieved by red cloth: a number of iron columns with wrought-iron caps, decorated in colours, support the gallery. All the woodwork is lightly stained and varnished. The seats are all open, and of stained deal varnished. The extreme length of the chapel is 70 ft.; breadth, 48 ft.; height from floor to ceiling, 32 ft.; and it affords sitting-room for 880 persons. Attached to the chapel is the residence of the keeper. There are also schoolrooms under the chapel. The total cost of the building and land is about 6,000l.; the architect was Mr. C. O. Ellison, of Liverpool; and Mr. Evan Evans was the contractor.

THE SANITARY CONDITION OF LEEDS.

The exposures made some years since in the *Builder*, for which we got much less praise than blame, are now again justified by an investigation which the editors of the local *Mercury*, urged by repeated statements, have caused their reporter to make into the sanitary state of some of the streets and courts lying to the north of Kirk-gate; and, as the editors in a leader commenting on the disclosures characterize it, a "horrible report" it is; which, had it appeared in the *Builder*, at least a few years since, would have set a nest of hornets about our ears for scandalizing the sweet town of Leeds. The evils recounted are, of course, precisely those set forth in the *Builder*—bad drainage, bad paving, overflowing privies and ash-pits, cellar dwellings, and so forth. A flood of corroborative correspondence has since set in, in the columns of the *Mercury*; and now that the town is being ransacked by such evidence *ab intra*, let us hope that the town-council will be compelled to adopt efficient measures for the sanitary improvement of their town. Fever has of late been on the increase, and the summer is approaching; there is not a moment to lose.

THE BRIGHTON SANITARY ASSOCIATION.

The annual general meeting of the members and friends of this association has been held at the Royal Pavilion, Mr. Douglas Fox in the chair. Owing to a heavy snowstorm, the attendance was not numerous; but the Mayoress and several ladies, by whom the business of the association is conducted, were present. The association appears to be mainly supported by ladies, and established on similar principles to those of the metropolitan kindred association; having for its objects the spread of sanitary knowledge and the improvement of sanitary circumstances amongst the poorer classes, by visitation, distribution of sanitary tracts, and such-like means. The report which was read showed that the association, though far too stinted as to funds, were doing their best to promote the objects in view, and had already done some public as well as much private good.

THE NEW STATION AT CREWE.

This new railway station, of which we have before spoken, has now been opened. In the new station the main lines run straight through the centre, as at Stafford, and they are open to the sky. The lines by which stopping trains approach the two platforms are roofed over, as are, of course, the platforms themselves, and which are 950 ft. long and 34 ft. wide, the roofs leaving about 65 ft. at each end uncovered. In addition to these—the main lines and platforms—two bays with double lines at each end and on each side of the station to receive trains starting from it or arriving there and not going on, form part of the plan. At present the bays at the north end are not made, it being necessary first to remove the old station, which occupies their site. Between these bays are platforms 270 ft. long at the south end, and which are to be 360 ft. long at the north end of the station. The goods traffic is to pass entirely at the back of the station, on the west side, and the goods station is to be erected on that side and south of the passenger station. The platforms are paved with black and red quarries, the surface being considerably rounded to keep them dry. The roofs are very extensive, the main part 820 ft. long, whilst those which cover the south bays are 80 ft., and those across the north bays 70 ft.

span. They are supported by cast-iron pillars, on which rest cast trussed girders. From these the roofs spring. They are of wrought-iron with round tie-rods, and are painted in colours. They contain a very large surface of glass.

The station buildings extend from the bridge southwards for a length of 270 ft. on each side. The buildings are of white brick. The line of wall is broken, the chief features being two bay windows on each side. A stone cornice is supported by ornamental trusses in terra cotta, between which is a line of panelling alternately of buff and red in the same material. The windows are triple lights, the centre the widest, with semicircular cast-iron heads and columns. A segment arch of buff terra cotta, with sunk panels, and alternate red bands surmounts the three lights. There are on both sides thirty-one rooms for various purposes. The first-class refreshment-rooms are large—55 ft. by 26 ft. on the down side, and the other only 2 feet shorter—and are lofty and very light. The second-class refreshment-room is 46 ft. by 20 ft. on the down side, whilst on the up side it is at right angles to the front, and is 26 ft. by 22 ft. These rooms are paved with tessellated quarries, and to avoid cold and damp they are laid on boards. Beyond a little place on the down-line, within one of the bay windows, and which will barely hold half a dozen chairs, there is, strange to say, no gentleman's waiting-room whatever. Of course the large refreshment-rooms are available, but there by no means supply the want of a place in which persons waiting for trains may remain and spend the time in reading or writing.

The line is crossed, not by a bridge, but by an underground passage, which is reached from each platform by two inclines, instead of steps. It is 230 ft. long, 10 ft. wide, and 10 ft. high. A sub-passage has the advantage of diminishing greatly the ascent and descent, as it requires less elevation to pass under the line than a bridge must have for trains to pass beneath. The new station was designed by Mr. J. B. Stansby, assistant engineer, under Mr. Wm. Baker, the engineer-in-chief of the company. The work has been carried on under the superintendence, in the interest of the company, of Mr. George Jenner, of Stafford, as clerk of the works. The contract for the erection of the new station was taken by Mr. John Parnell, of Rugby, builder, now Messrs. Parnell, Son, & Bennett, and the amount was about 36,000l. The ironwork and the roof have been executed by Mr. P. D. Bennett, of Spon-lane, near West Bromwich; the terra-cotta has been supplied by Messrs. Gibbs & Canning, of Fazeley, near Tamworth; and the bricks were furnished by Messrs. Burton & Son, of Ironbridge.

WANTED, A SCHOOL OF ART FOR MACCLESFIELD.

REPORTS of a meeting of local ratepayers to consider as to the adoption of the Public Libraries Act of 1855, have been forwarded to us by Mr. Ford, the master of the local School of Art, at the request of the school committee. The ratepayers met in much stronger force to refuse the farthing per pound, which was all that their School of Art required, than they would have done to grant it; and when an amendment was moved to the effect that a voluntary subscription was better than a rate in aid, the alacrity of the ratepayers in supporting the amendment might have induced the simple-minded to believe that one and all were really anxious to become voluntary subscribers. The feeling of the meeting was so clearly against art, and for the retention of the farthing, that the resolution was withdrawn, and so the meeting ended. By what may be a coincidence, but much more probably with an appropriate significance, the *Macclesfield Courier* printed after its report an article quoted from the *Builder*, on "The Trade Value of Art," which reminds us that, while some of the more enlightened amongst the speakers at the meeting were appealing to the self-interest of the ratepayers as citizens of a town engaged in the silk trade, as well as in various other businesses in which a knowledge of art was of practical value, it was repeatedly intimated that the silk trade itself was so much on the decline that an Art School was not needed, and there would be no use for it soon. Now, we should like to have so intimated a knowledge of the causes of the decline of the silk trade in Macclesfield as to be able to judge how far the want, or the inadequate support, of a school of art has had to do with that very

decline. We are much mistaken if it has not had something considerable to do with it. It was not to the remaining silk manufacturers now in Macclesfield that the appeal seems to have chiefly been made, but to all and sundry connected with the trades of the town and interested in its general prosperity. One branch of the declining staple or silk manufacture, it appears, has been preserved and is in a flourishing state solely owing to the art and skill engaged in it; and out of a list of 23 subscribers to the School of Art 20 were connected with the silk trade. Nevertheless, out of 87 young men of the artisan class in the school only 6 were connected with the silk trade, a fact which seems of itself to throw a significant light on the decline of that trade; but which also goes to show that there ought to be other subscribers besides those connected with the declining staple trade of the town. Let us hope the ratepayers of Macclesfield now really mean to subscribe to their School of Art; and that, though "a penny wise," they are not quite "pound foolish."

WHOLESALE MANUFACTURE OF OZONE.

It has long been an idea of ours that ozone might be manufactured on a great scale for the purification of close courts, and other cholera and fever haunts; and we pointed attention to the enormous electrical power of Sir W. Armstrong's electric boiler, in order to show the possibility of this being done. It is interesting now to note, in connexion with our idea, that a sugar-refining firm in Whitechapel is setting up one of Wilde's extraordinary electric machines on their premises for the bleaching of sugar; and we do not despair of seeing the same power soon applied as we originally suggested. Wilde's machine has recently been exhibited to the Royal Society at Burlington House. It is worked by a 15-horse power steam-engine, and possesses wonderful power. The form is magneto-electric; and it has coils 4 ft. high and 10 inches thick, containing 14 cwt. of copper wire. The armature rotates 15,000 times in a minute. The intensity of the light produced by this machine is something almost appalling. It required, like the sun, to be gazed at through coloured glasses. By means of lenses the mere rays of light set fire to paper, and its heat could be felt 50 yards off. It melted the refractory platinum as if it were lead! Various uses for it are being suggested. The total cost of its light is said not to exceed 6d. or 8d. an hour, cost of the machine itself included. The same sort of machine is used in Manchester for photographic purposes, being preferable, it is said, to the sun for taking photographs! It can also, of course, be made available by night as well as by day.

OLD PARIS.

THE new Rue Turbigo, now opened out, has completely disengaged two ancient buildings of considerable interest, which we mentioned some time ago, expressing, at the same time, a hope that they might be preserved, viz., the Hôtel de Bourgogne and the Tour de Jean-sans-Peur. This tower, gloomy and dilapidated, concealed for so many centuries, and the existence even of which was unknown to most people in Paris, seems like some old stern giant suddenly risen from the ground. It was completely enclosed and hidden from view by lofty houses in the Rue Pavée, now demolished. Its style is of that peculiar character which reminds one strongly of the Medieval castles and fortresses, and it is side by side and perpendicular to the Hôtel de Bourgogne. Its form is rectangular; it is roofed with bricks; and it has an embattled projecting platform. The height from the ground to the ridge of the roof is about 131 ft. The entrance into the court of the hotel and the corridors of the tower is through the porte-cochère of No. 23, Rue du Petit Lion. The ascent of the tower is gained by a spiral stone staircase, of bold design and exquisite finish. There are 148 steps up to the top of the staircase, six landings on the way, and a chamber at each landing. That occupied by Jean-sans-Peur is on the second story. In the thickness of the walls there are issues communicating with subterranean passages. There are no windows, and the door is very low. Historians say that here Jean received the headman, Capeluche, and his faithful

men-at-arms. Facing this room is the door of the chapel, which has nothing remarkable but the height of its sole window and its ceiling: both are pointed. Some objects of art which were formerly in this chapel are now in the Museum of Cluny.

The Duke of Orleans, brother of King Charles VI., was assassinated on the 23rd of November, 1407, about seven p.m., in the Rue Vieille du Temple, as he was leaving the Hôtel Barbet. That day Jean-sans-Peur shut himself up in this room with a gentleman from Normandy, named Raoul d'Oquetonville. He had been to hear mass at the chapel; and in the evening this gentleman, escorted by eighteen armed men, met the Duke of Orleans, whom he politely saluted by splitting his skull with a hatchet. Jean himself was the victim of a gracious reception at Montreuil by the Dauphin Charles, who granted an interview, which Jean had solicited, and then killed him. The Hôtel in the Rue du Petit Lion is a little older than the tower, having been built about 1320, whereas the tower dates from 1390.

The Hôtel de Bourgogne, the facade of which is exposed by the demolitions, is only half what it was when it bore the name Hôtel d'Artois. The Rue François, under the reign of François I., cut off a portion in 1542, and the rest was used for theatrical representations up to 1783. Here Corneille and Racine played their best pieces; here the comedies of Marivaux*, Favart, and Sedain, the comic operas of Gretry, Philidor, Montaigny, &c., were represented. The Hôtel de Bourgogne was afterwards transformed into a leather hall.

COMPETITIONS.

New Offices for the Sunderland Gas Company.—Fifteen designs were sent in, out of which the directors selected one bearing the motto, "Nothing venture, nothing have," by Mr. G. G. Hoskins, architect, Darlington, as entitled to the first premium. This design, which is intended to carry out, is for a Gothic building of red brick, with stone dressings, and the building will occupy a site at the head of Fawcett-street, facing the railway-station and new extension park.

Baths: Birkenhead.—At the monthly meeting of the Birkenhead Commissioners, on the 5th instant, the report of the Baths Committee in reference to the new baths was presented. It appeared that Mr. W. H. Weightman, architect, of Liverpool, reported that, after examining plans marked No. 17, they could be carried out for the sum stipulated by the Board, viz., 8,000l. The proceedings, including the recommendation of the committee to award the premium of 100 guineas to plan No. 17, were confirmed by the Board. The designer was found to be Mr. Edward Holmes, architect, Birmingham. There were eighteen competitors.

Bangor Hospital for Infectious Diseases.—The Board have selected one of the designs sent in, under the motto "Avisé la fin." The architects are Messrs. Kennedy & O'Donoghue, of London, Bangor, and Glasgow.

Workhouse, Barnsley.—Messrs. R. K. & W. H. Blessey's plans have been, on the report of two architects called in by the committee, accepted by the Board of Guardians for the new workhouse at Barnsley, Lancashire.

PASTORAL STAVES.

THE two of which we give illustrations this week have recently been made by Messrs. Peard & Jackson, of High Holborn.

Fig. 1 was designed by Mr. A. W. Blomfield for the late Bishop Cotton, of Calcutta (whose melancholy death by drowning became known in this country just as the work was at the point of completion). The entire work is of sterling silver beaten from the sheet, parcel gilt and set with two onyx pendants; the Lamb in the centre is a beautiful ivory carving by Collette, made movable by the bishop's desire, to be replaced by a jewel, because in some parts of his diocese the meaning of the emblem is liable to be misunderstood. Behind the lamb is a cross, enriched with ornament in lapis lazuli enamel, the cusping of the quatrefoil being set with crystals. Immediately under the crook is engraved a trilingual inscription, "Feed my Sheep; Feed my Lambs," viz., in English, Bengalee, and Hindustanee. The large boss beneath this is

* Pierre Carlet de Chamblain de Marivaux was very conceited in his style, hence the term *marivaudage* given to affectation in literature at the present day.

of sheet silver, overlaid with flagree work, parcel-gilt, and set with twelve stones, comprised of amethysts, garnets, cornelian, lapis, malachite, and chrysoprase. The knob in the centre of the stem has four richly-chased bosses, the eyes of three of which are enamelled, and the fourth bears a shield containing the arms of the late bishop. The stem is of ebony. We understand the late bishop's representatives have presented to the see of Calcutta this beautiful work of art, and that it has been taken out by his successor, Bishop Millman.

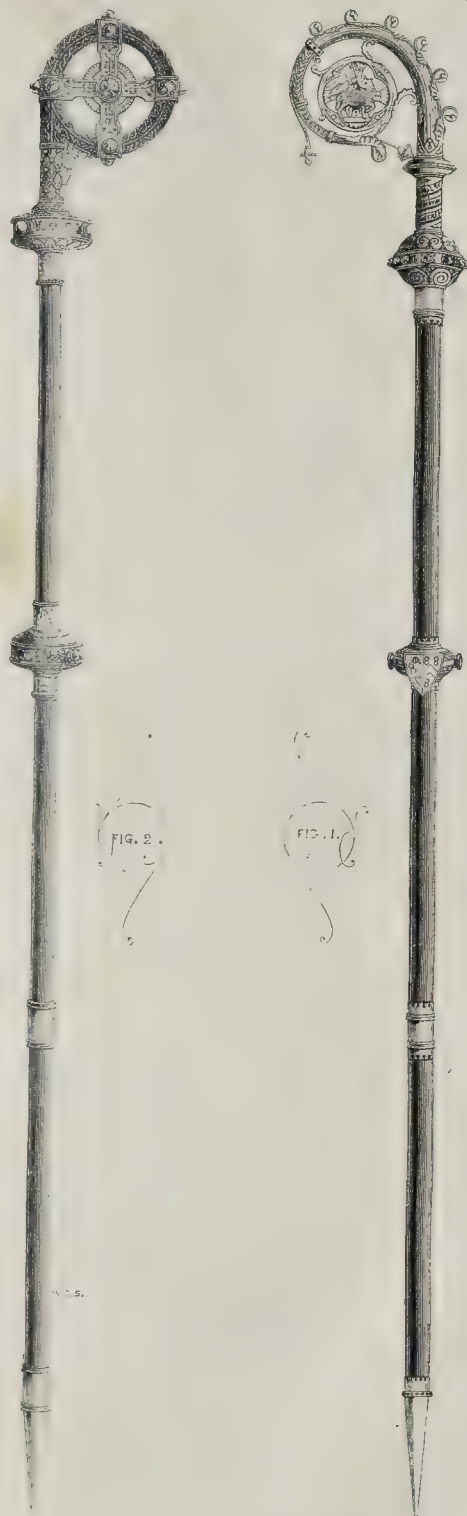
Fig. 2, made for the R. C. Bishop of Elfin (Sligo), was designed by Mr. George Goldie, who studied it for execution in Irish bog-oak. It is mounted with silver, parcel-gilt, and studded with precious stones. The cross is of silver, with a large malachite setting on each side; the arms being enriched with ornament in enamel, and the bosses terminating the arms of the cross are set with the same variety of stones as enumerated in description of Fig. 1. The crook is excellently carved as Celtic knot-work, by Hayball, of Sheffield, the diaper-work of the stem being set with small crystals: the band of the top boss is also enriched with Celtic ornament in ruby and green enamel, immediately with which are large crystal settings. The collar of the knob is set with cornelians and enriched with engraved ornament. Above and below the knob are engraved the arms of the bishop and appropriate inscriptions. Care has been taken in the execution of these designs to adopt the legitimate treatment applicable to metal work.

THE DESIGNS FOR THE LAW COURTS.

IN previous numbers of the *Builder* we have given a block-plan of the arrangement proposed by Mr. Edward Barry, and descriptive particulars of his design generally.*

The illustration in our present issue shows the front of his building towards the Strand. The architect has excluded all the Courts from this necessarily noisy thoroughfare, and has placed them, as before described, in the central mass of the building. Provision for the Wills belonging to the Probate department is made in the raised portion forming the base of the dome which surmounts the Central Hall. The angle octagon turrets contain staircases and lifts for this department. The four louvre turrets mark the staircases for the public, and the upper portions of the turrets are proposed to be used as ventilating shafts from the Courts. The side entrances in the centre of the wings are special entrances for the public only to their staircases leading to the public galleries in the Courts. The central entrance is reserved for the Bar, the professional public, and other persons whose business leads them to the Courts. New Temple Bar is shown on the right, in connexion with the clock-tower; and in the front of the latter an open staircase gives access to the bridge from Fleet-street. The open arches at each end of the front lead into the inner street, which separates the offices from the central building containing the Courts. This street is uncovered and open throughout, for the purpose of affording light and air to the interior of the building. Iron gates within the arches would secure its privacy, and its exclusive use by those frequenting the building. The side buildings at the extreme ends of the front contain the various offices, which are arranged on the outer side of the internal street, exactly opposite to the Courts with which they are connected. Bridges across the street give ready access from the offices to the Courts, and in all cases there is provided a private passage of communication for the judge. Thus, opposite to the Courts of Queen's Bench are placed the Queen's Bench Judges' Chambers, the Queen's Bench Master's Office, and the Associates' Office; and at the other side of the building each vice-chancellor has his court placed opposite to his chambers, with a bridge of connexion, giving a central corridor for the public, and a separate passage for the vice-chancellor. The central portion of the front contains the principal entrance (which might well be made more prominent), staircases, and the Bar accommodation, consisting of library, refreshment-rooms, robing-rooms, and so on. Jurors and witnesses would not enter by the central entrance, but would pass through the inner street, in which at different places they would find special staircases leading to their destination.

* See pp. 53, 105, 112.



MODERN PASTORAL STAVES.



DESIGN FOR PROPOSED LAW COURTS.—By MR. E. M. BARRY, A.R.A.—View to the Strand.

SOMETHING LIKE A CELLAR.

WE have just now looked into a large wine-cellar recently formed for a large seller of wine, Mr. Basil Wood, in New Bond-street, a situation where one would scarcely expect to find an opportunity for such a construction. The premises (numbered 34 and 35, New Bond-street) stand upon the site of a hostelry once famous as the "Black Horse." In excavating for the cellars the workmen came upon the remains of the conduit from which the neighbouring Conduit-street derives its name; also a number of land springs, not to mention adjoining cesspools, which must have greatly increased their salubrity. The red gravel having been removed to a depth of about 10 ft., 13,000 loads of clay were carted away to the Thames embankment, and cellars were formed which cover more than a third of an acre. A second story of cellars is formed above, covered with the "Dennet" arch; and over these is a large gallery, which will probably be taken as an exhibition-room, or by some society wanting a large meeting place. The subterranean premises are lighted with gas, and heated with stoves, so as to retain an equable temperature. The "lifts" for raising and lowering casks are worked by hydraulic pressure, supplied from the main, so that it is always "on." The cost is very small, the quantity used being regulated by meter. The bins are all of iron, and contain upwards of half a million bottles of wine.

Mr. Henry Christian, who was the architect, has adopted the Lombard style, giving next Bond-street a handsome porch with pillars of red granite from Mull, polished at Peterhead, surmounted by capitals of Bath stone, carved *in situ*, with appropriate devices (the fox and the grapes, &c.). Messrs. Jackson & Shaw were the builders, and have done the work very well, spending about 10,000l.

THE WORKS OF A WILTSHIRE BUILDING FIRM.

THE widow of one of the firm, Mrs. Daniel Jones, writes to us thus:—I consider it my duty to ask you to permit me to record in your ever-valued journal the close of a firm which has for the last forty years stood quietly and without ostentation, and has received the patronage of our noble families in Wiltshire and elsewhere.

The beautiful estates of Lord Lansdowne at Bowood; the Pembroke estates at Wilton; the Beaufort Badminton estates; Mr. Walter Long's, at Longleat; Savernake and Tottenham Parks, all contain monuments of the skill and industry of these three brothers, Messrs. Daniel, Charles, & Bryan Jones, who were men eminent for their strict integrity and good taste. Mr. Daniel Jones survived his two younger brothers, and the works, from after 1852, were wholly performed under his direction. November 27th, 1866, was the day of his departure from the scene of his labours, deeply regretted by all his workmen and all who intimately knew him.

1837. At Dorking, for Mr. Hope, his mansion at Deepdene.

1839. For the Marquis of Lansdowne, Derry Hill Church, Mr. T. H. Wyatt, architect; Churchill Obelisk; Calne Church; Studley Church; Wilton (Wyatt); Tetbury; Newton; Bridgewater, for the Rev. Mr. Capes; Winsley Church restoration.

1841. Wootton Church (Wyatt); Infirmary, Salisbury.

1842. Christ Church, Bradford Wilts, Messrs. Manners & Gill, architects; Lansdowne Tower; Derry Hill Parsonage; Tarrent Hinton Church; Tarrant Gunville Church (Wyatt); Barbage Church (Wyatt).

1843. Newton Toney Church (Wyatt).

1844. Horningsham Church (Wyatt), for Lady Bath; Chittoe, Spey Park; Keevil Church; Road Ashton, for Mr. W. Long; Steeple Ashton Church.

1845. Coombe Church, near Salisbury.

1846. Hilperton Church (Wyatt); Wilsford (Wyatt).

1847. Melksham Market-place and Town-hall. 1848. Mansion at Frankleigh, for the Misses Bailward, Mr. Clutton, architect; Upton Scudamore Rectory (Wyatt).

1850. Freshford Schools, Penally, near Tenby, Wales; Thatcham, Manners & Gill, architects, bath.

1851. Savernake Church, for Lord Bruce, alias Christ Church (Wyatt).

1853. Chippenham Church, Mr. Scott, architect.

1856. Mansion at Orchardleigh, near Frome, for Mr. Duckworth (Wyatt).

1859. Memorial Church, Tottenham Park, for Lady Ailesbury (Wyatt).

1861. Woodborough Church, for the Rev. Mr. Wyld (Wyatt); Lullington Church, Orchardleigh, for Mr. Duckworth (Wyatt).

1862. Longleat; Leigh House, Bradford-on-Avon, for Miss Poynder.

Appealing to Mr. Wyatt as to the correctness of parts of this list, that gentleman writes,—"I should be gratified if you would allow me to add my tribute to the worth of these brothers, as they worked for me for twenty-five years, without one misunderstanding, on the estates of the Duke of Beaufort, Lords Lansdowne, Ailesbury, Bath, and Pembroke, and built or restored eighteen churches for me."

We are glad to have the opportunity of recording such an honourable career.

THE NEW NATIONAL GALLERY.

MR. J. GOLDSCHMID, in the House of Commons, asked the First Commissioner of Works whether the following statement, contained in a letter addressed to him by the architects competing for the New National Gallery, was not correct, viz., "We agreed to enter the competition on the distinct understanding with your lordship's predecessor, the Right Hon. W. Cowper, that one of the competing architects would be selected for employment," and whether he did not therefore intend to entrust the erection of the new building to one of those gentlemen?

Lord J. Manners: I do not well understand the objects of the hon. member's question, nor in what sense he expects me to answer it. If he means whether I place implicit reliance on a statement made by ten gentlemen of high honour and great professional eminence, I answer decidedly in the affirmative, that I do place implicit reliance on their statement. But if he means to ask if I find in the records of the Office of Works any corroboration of that statement, I am bound to say that on looking at the papers I do not find any corroboration of that statement. With respect to the second question of the hon. gentleman, he is no doubt aware that the judges, in their report, do not give any recommendation as to the reconstruction of the existing National Gallery or the building of a new one. That question, therefore, is left to the consideration of the Government. It is now under their consideration; and I cannot, therefore, say what course may be adopted with respect either to the reconstruction of the old building or the execution of a new one. When that decision is arrived at, I cannot doubt that Government will give every consideration to the agreement stated to have been entered into with the right hon. gentleman opposite by the competing architects.

GAS.

At a recent sale by auction two of the 50l. shares in the Rochester and Chatham Gas Company realised the sum of 465l., or 232l. 10s. per share.

The Bromley Gas Company have declared a dividend equal to $\frac{7}{8}$ per cent. on their whole share capital. From the report it appeared that the gas rental had increased about 14 $\frac{1}{2}$ per cent., as compared with last year, notwithstanding the reduction in the price from 6s. 3d. to 5s. per 1,000 ft. for the last three quarters. The directors recommended that 290l. 13s. 6d. should be added to the reserve fund.

The Boughton Bleas Gas Company have declared a dividend of 5 per cent. at their annual meeting, and the chairman said that they proposed to lower the price of gas from 8s. to 7s. 6d. per thousand cubic feet, as it was time that they endeavoured still further to increase their consumption by reducing the price.

The Belper Gas Company have declared a dividend at the rate of 10 per cent. per annum. The Birmingham Gas Light and Coke Company have declared their usual maximum dividends. The directors congratulate the shareholders upon the continued increase in the consumption of the company's gas. Such increase they say must be attributed in a great measure to the improved quality and low price of gas in Birmingham. They have contracted

for an additional gas-holder, No. 10, to complete the storage power of the works in Windsor-street, the tank for which is already constructed. They call attention to the present state of the reserved fund, now amounting to 27,219l. 9s. 7d., which they say is closely approximating to the amount limited by their Act of Parliament, and is still increasing from its accumulating interest and compound interest. The directors, therefore, contemplate the necessity of making further reductions in the prices of gas during the ensuing summer.

FAIR PLAY FOR THE LAW COURTS' DESIGNS.

WE have received a second letter from the Solicitors' Committee, signed by Mr. A. Bell, Mr. Cookson, Mr. G. Hume, and Mr. J. Young, repeating their statement that we were imposed on as to the position of the writer of the letter signed "A Member of the Solicitors' Committee." As we have already shown distinctly that this signature was incorrect, and have fully exonerated these gentlemen from the supposition that any one of them was the author of the letter, it seems quite unnecessary to print their present communication. Acknowledging that we were to that extent imposed on, or, at any rate, misled, the facts remain uncontradicted, and have been repeated to us from four separate quarters since. The excellent secretary of the Commission had been led by excess of zeal to adopt a course that was not thought strictly fair to some of the competitors, and an outcry at once arose, to which we were bound to give expression in our pages.

POSTAL TELEGRAPHY.

A PAPER on "The Economy of Telegraphy as Part of a Public System of Postal Communication," has been read at the Society of Arts by Mr. Edwin Chadwick, C.B., of which we may here give the conclusions arrived at, viz.:

"They are, that cheap and complete telegraphic communication, with the speedy and punctual delivery of telegrams, next to the cheap, speedy, and punctual delivery of letters, is of the highest importance to the manufacturing, commercial, and agricultural services of the country, as well as to the service of the state, for the army, the navy, and the police. That the present telegraphic communication of the country is made unnecessarily dear, by the charges of several incomplete establishments, to perform a service that might be better performed by one. That there are in the United Kingdom ten thousand post-offices, and a service of twenty thousand persons engaged in the collection and delivery of letters, available for the collection and delivery of telegrams, as proved by the example of Belgium and Switzerland, and other well-governed continental states. That the private telegraph companies have only some nineteen hundred telegraph stations—a little more than one to five of the postal means of ready collection and speedy and cheap delivery. That, by reason of the charges for separate establishments, rents, and payments for separate services, with local taxes and extra charges, to which trading telegraph companies are subjected, they cannot adequately multiply their existing stations and means of speedy delivery except at double rates of cost, and at extra rates of charge, which are practically prohibitory to the habitual use of telegraphic communication by the great mass of the community. That, by the use of the existing postal establishments pervading all parts of the country, the postal service may—as is done by the postal establishments of foreign states—convey telegraphic messages at low rates of charge at a profit, which private companies can only convey at the same low rates, at a loss. That, by reason of the existing conditions of the burthens of multiplied and separate capitals, and of the restricted number of stations, and distant and dear portages, with consequent high rates of charge, and in many cases slow deliveries, the habitual use of telegraphic means of communication is chiefly confined to the few; to certain classes for large transactions, such as those of the money markets, to large manufacturers, bankers, and professional persons, and to domestic uses on extraordinary occasions. That telegraphic communication in this country has not been brought within the means of habitual use by the great body of retail traders, nor of the agricultural or middle classes, nor of labourers throughout the country. That it has not yet been brought into complete and proper use for the public by the police, by the navy or the army for the purposes of internal defence or for the action of the chief administrative departments of the State, as it is by responsible constitutional Governments on the Continent. That out of the economy of the charges of the separate establishments of separate private companies produced by consolidation, together with the increased traffic obtainable by telegraphic communication through the post at reduced tariffs, fair compensation may be made to the trading interests in public telegraphy which have been allowed to be formed, and that the proper responsible duties of the Government for the maintenance of the safe and free use of all public means of communication, as a service, may be advantageously resumed without direct expense to the revenue, and with large indirect advantage to it by the augmentation of the commerce and production of the country."

In the discussion which followed Mr. Scudamore, of the General Post-office, took part. He said he might state that the officials of the Post-office had, some time since, proposed a plan,

which was now under the consideration of the Government, relating to this question, but he was not at liberty to describe it in detail. If the Government had come to a decision upon the subject, he would have been most happy to have submitted the full details to such a meeting as this. Though he had no claim to all the good words Mr. Chadwick had said in reference to the management of the Post-office, he thought they could do more to facilitate communication throughout the country than the existing telegraph companies were able to do. By being able to work with one establishment, with one set of electricians, and with one set of wires, and by reason of their having in every little village of the country an office at which some one must remain stationed throughout the day, he had no hesitation in saying they could do the work more effectively and more cheaply than any telegraph company could do, unless they incurred greater cost than they did at present. If the scheme now before the Government were carried out, he should be disappointed if towns with a population of 5,000 were to be the only places to derive the contemplated benefits. It was intended to go, without loss to the State, to much smaller populations than that; and he did not despair of seeing the time when, supposing the administration of the telegraph was handed over to the Post-office, the lines would be as closely extended throughout the United Kingdom as they were at this moment throughout the whole of London.

HENHAM HALL, SUFFOLK.

HENHAM HALL, the seat of the Earl and Countess of Stradbroke, lately burnt, is situated in Suffolk, near Langford, and about twelve miles south of Lowestoft. The old hall, which was built of red brick of the Elizabethan style of architecture, was burnt down about 80 years since; and the present house was built in 1793-1796, from the designs of James Wyatt, whose instructions seem to have been to design a comfortable house without any pretensions to architectural effect. The building, as left by Wyatt, consisted of a parallelogram 100 ft. by 70 ft. The interior arrangements are spacious, and the principal suite of rooms, which are on the one-pair floor, are handsome and stately. These rooms have lately been re-decorated at great expense. In 1868 and the following years some additions were made to the exterior of the house with a view to giving it some architectural character, from the designs of Mr. Edward M. Barry, who also laid out an Italian garden, with terraces and balustrades. Further additions have been projected in the shape of wings, and a tower at the north-east angle, but these have not yet been carried out. The damage done by the fire is confined to the south-east corner of the house, in which are placed the billiard-room, the state drawing-room, and a few bedrooms. These are entirely destroyed, and the parts adjoining are also injured, but it is hoped that the main walls of the house will prove to have sustained no serious injury.

LOCAL GOVERNMENT RETURNS.

A PARLIAMENTARY paper has just been issued containing returns in a tabular form of districts where the Public Health Act, 1848, or the Local Government Act, 1858, or both of them, are in force; of the date when such Act or Acts were adopted, and (as far as may be practicable) of the population according to the census of 1861, and of the rateable value in each case. The paper also contains returns of the districts or places where any public Act relating to such district or place, or any local and personal or private Act, is in force, with the date of the passing or adoption of such Act, as the case may be; and the population and rateable value in each case. The return distinguishes those localities where the Public Health Act was applied by Order in Council, where by Provisional Order confirmed by Act of Parliament, where local Acts have been obtained which incorporate parts, at least, of the Public Health Act, and where the Local Government Act has been wholly or partially adopted. The paper, it will be seen, contains a large amount of useful information; and it comprises about 575 towns and districts. A few towns have refused to give information. They are Dresden (Staffordshire), Stockport, and Wallasey. Some of the Acts now in force are of considerable

age, Worcester being partially governed by an Act passed in 1704; Plymouth, 1708; Bridport, 1722; York, 1782; Guildford, 1769; Bath, 1766; Reading, 1767; Windsor, 1769; Barnsey, 1777; Wells, 1779. The Public Libraries Act, 1865, is in force at Burslem, Canterbury, Cardiff, Ipswich, Leamington, Norwich, Oxford, Sheffield, and Warrington. Burton-on-Trent and Kendal return the Bakehouses Regulation Act amongst the public Acts in force in those towns. There appears to be some misunderstanding on this point. The Act applies to all towns of upwards of 500 inhabitants, so that there is no question of "adopting" it. The only two other towns included in this return where this Act is to our knowledge carried out conscientiously are Bristol and Plymouth, who very properly do not include it amongst the special Acts in force in their towns.

COMPENSATION CASES.

LAST week, at the Mayor's Court, Mr. Thomas Chambers, M.P., Common Sergeant of the City of London, had before him a claim for compensation from the Metropolitan Board of Works in respect of a dwelling-house and warehouse situated in Aldermary-church-yard and Cannon-street. The premises were required by the Board for the purposes of the proposed new street from Blackfriars to the Mansion-house. The claimant was the executor of a wholesale stationer, who, in 1856, obtained a lease of the property from the parish for 31 years, at a rent of £160. The testator, by his will, made in 1859, directed that his sons should be at liberty to occupy the premises (paying a rent to his executor of £401 a year) "as long as they should continue to carry on the business of wholesale stationers thereon." The sons had carried on the business together since their father's death in 1861, and they had made a separate claim against the Board of Works for compensation in respect of their interest in the premises. After the peculiar circumstances of the case had been explained to the jury, a verdict was taken for £224 as the full value of the term vested in the executor, without reference to the interest taken by the sub-tenants under the will. Mr. Hawkins, Q.C., and Mr. Cowie represented the claimant, the executor; Mr. J. H. Lloyd represented the Board of Works.

PROVINCIAL NEWS.

Taunton.—The new place of business for the West of England and South Wales Bank, which is being erected in this town from a design by Messrs. Fosters & Wood, of Bristol, architects, is now nearly completed. The building is in the Italian style of architecture, and will cost about 3,000.

Wellington.—The new Town-hall, completed by the Wellington Markets Company, has been inaugurated. A commodious room for public purposes has been a greatly felt want for a long time in the town. The space over the already erected market-house was taken into consideration, and the architect (Mr. Bidlake, of Wolverhampton) adapted his designs to this suggestion, thus saving the cost of a site and foundations. Entrance to the room and adjoining ante-rooms is obtained by a wide stone staircase. The ceiling is panelled and decorated with coloured ornaments. The size of the room, clear of the orchestra, is 59 ft. 6 in. in length, 41 ft. wide, and 20 ft. 6 in. high. At the one end is an orchestra capable of accommodating nearly 100 performers. Below is a platform for lectures, concerts, &c. Beneath the gallery are retiring-rooms, which are approached by private stairs. These rooms will serve as retiring-room and robing-room for the use of the County Court Judge and advocates practising in the Court, the Courts being shortly to be held at the Town-hall. The offices in the basement are for the use of the Registrar and High Bailiff of the Court.

Malvern.—Owing to the number of new pupils at Malvern College, the present three masters' houses, each capable of accommodating forty boys, have proved insufficient for the requirements, and rendered the erection of others indispensable. Plots have been laid out for nine additional houses, two of which are now in course of erection. These new houses have been designed by Mr. W. J. Hopkins, diocesan architect, and are drawing near completion. They are situated upon rising ground, on the north side of the college, and are built of brick, having a few plain free-stone dressings. The buildings are plain in character. Each house is divided into three main compartments, one being appropriated to the servants, another to the boys, and the remaining one will be the masters' residence. The boys' compartment contains twenty private studios, a dining-room (33 ft. by 18 ft.), butler's pantry, matron's room, lavatories, wardrobe, box-room, bath-room, and dormitories, having separate sleeping apartments for forty boys. Both the

ground and chamber floor of the masters' residence are connected with the boys' compartment, so as to allow of easy supervision. The contract for the houses was £3,391, exclusive of fittings. The contractors are Messrs. McCann & Everal, of Malvern; and the clerk of the works is Mr. Brayshaw.

Odham.—For some time past a building has been in course of erection in King-street, at the expense of Mr. Henry King, who resolved to build an Assembly-room at his own cost. The work has been done by Messrs. Hellis & Lee, of this town. The room is about 65 ft. long, 24 ft. wide, and 20 ft. high; a cloak-room forms part of the building, and other conveniences are also attached. At one end of the room is a gallery, capable of holding fifty persons, and altogether about 100 people may be accommodated with seats.

Waverley.—The Waverley Baths Company have recently erected a large plunge-bath, and a commodious lecture-hall, and purpose to add private baths in a short time. The hall has just been formally opened. Its measurements are 60 ft. long by 37 ft. broad, and about 30 ft. high.

Swansea.—The foundation stone of the new hospital for Swansea has been laid. The architect, Mr. Abraham, at the laying of the stone, explained the plan of the building, from which it appears that it will provide for 100 in-patients, and for a large number of out-patients. In connection with this latter department will be a bath establishment, the object of the institution (which is supported by voluntary contributions) "being to afford warm and cold sea-water bathing, and medical and surgical relief, to the sick poor from every part of the kingdom." The building may be considered as divided into four distinct parts, viz.—the out-patients' department, the men's wards, the women's wards, and the administrative offices, communication being effected by a corridor on the ground-floor, and by an open terrace over, affording access to the wards on the upper floor direct from the matron's department. The ward arrangements are the same for men and women, and consist of a large and small ward under the same supervision. The cubic space per bed is 1,600 ft.; the floor space per bed, 100 ft.; the wards being 16 ft. high. The wards will be warmed by open stoves, placed near the wall, so as not to interfere with the symmetrical arrangement of beds and windows. The ventilation of the wards will be effected by inlets for fresh air placed near the ceiling, and by outlets at the ends of the wards, the shafts being carried up separately into the towers, and terminated by louvers. The wards will have sash windows, 5 ft. wide, opening from 9 in. below the ceiling line to within 2 ft. 9 in. of the floor, the sashes being hung in two widths on account of excessive size and weight. They will have, externally, the appearance of French casements. There is a basement containing a kitchen and necessary stores. The upper story is appropriated entirely to dormitories for the nursing staff. The building will be constructed of coarse rubble limestone of the neighbourhood of Swansea, with dressings of Bath stone. The roofs will be of slate.

ACCIDENTS.

As one of the foremen employed by Messrs. Wheeler, of Reading, contractors, was passing in front of a house which is being erected at Wargrave, he was injured by a piece of timber thrown from the roof, which struck him near the right eye with such force that he fell to the ground insensible. Had the blow been a straight one it must have proved fatal.

An inquest has been held at Walsall on the body of a well-sinker, who came by his death at Field-gate. From the evidence of Mr. Hughes, contractor, it appeared that the deceased descended into a well, and was in the act of scraping away some sand, when witness, who was watching him, observed the brickwork giving way, and called to the man at the windlass, for your life to the windlass! At the same time the deceased called out, "Oh, Lord! Good God!" and grasped at the windlass rope; but in an instant the sides of the well fell in, and buried him at a depth of about 40 ft. The jury returned a verdict of "Accidental death."

At an inquest respecting the deaths of four men who were killed by an accident with a hoist, which happened on the 28th of January at the locomotive and carriage department of the Lan-

cashire and Yorkshire Railway Company, at Junction-street, Miles Platting, evidence was given by Dr. Fairbairn, who said the hoist was of the usual construction, and was very well constructed so far as he could see; but the most important feature in hoists was that they should have self-acting catches. All hoists were now made with catches, and the one in question ought to have had them. He would earnestly recommend all railway companies to have catches put upon their hoists, as the catches were the great safeguards. The jury, after some deliberation, returned a verdict of "Accidental death," but severely censured the Lancashire and Yorkshire Railway Company for not providing other and better arrangements for the safety of the workmen.

RESTORATION OF THE CRYSTAL PALACE.

THE directors, in their report read on the 14th instant, say,—

"That the full amount of 99,600*l.* claimed from the insurance offices, in respect of the portion of the palace destroyed by the late fire, has been received. The damaged materials have been disposed of by public tender on satisfactory terms, and it is probable that a sum of 2,600*l.* will be realised from this source. A new insurance to the amount of 20,000*l.* has been effected over the part of the building north of the centre transept, which was no longer covered by the previous policies. The portion of the building extending from the screen to the north end of the Alhambra and Byzantine Courts (which, though only damaged and almost was not destroyed), is being substantially repaired, and the courts themselves covered in. The timber screen alluded to in the recent circular has been completed, and the directors are confidently assured by Mr. Edwin Clark, the eminent engineer, that the nave is now perfectly protected against the attacks of wind and weather. The directors, having carefully considered the advisability of more effectually providing against risk of fire, have determined, under the advice of Mr. Clark, their engineer, on the execution of certain protective works in the basement of the palace, consisting principally of substantial partition-walls of brickwork, filled in with earth, crossing the whole width of the building at four places in its length, and carried up from the ground to the under side of the floor. The centre transept will further be similarly divided into separate sections with the same object."

Specifications for the rebuilding are being prepared, and will be submitted at an early date to public order. The directors applied to the House of Commons to suspend their standing orders, so as to admit of the deposit of a Bill empowering the company to raise a sum not exceeding 100,000*l.* by the issue of stock bearing a preferential dividend not exceeding 7 per cent. per annum, and ranking next after the existing debenture and preference stocks. The Standing Orders Committee have complied with the application, and the Bill will accordingly be proceeded with immediately after the sanction of the proprietors has been obtained.

A CHEAP ALARM.

I HAVE fitted an excellent alarm-bell to my bed-room clock, which I find of great use, and which I will describe, if you will allow me, for the benefit of any who may feel disposed to follow my example.

The clock is one of the old-fashioned kind, with long pendulum and chains, that necessitate its being hung up high on the wall; and the whole alarm apparatus consists of a bell, a stick, and a few nails. If the striking-weight is wound up at (say) ten o'clock p.m., it will be down the wall about 2 ft. at five a.m.; then make a mark on the wall, level with the bottom of the weight, or half an inch lower. Here, a little on one side, drive a nail, with a stick (say 8 in. long) held on it as on a swivel, the nail working freely in its place, about 2 in. from one end. Your bell must be put together thus:—drive one end of a steel stay-busk to the bell; bend the busk into a half-circle; nail the free end of it to a piece of wood 6 in. or 6 in. square; then nail this wood to the other wall (the clock being in a corner of the room, and with another wall to the one it is on running at a right angle with it). Let the bell be secured so as to be, when at rest, 3 in. or 4 in. below the short point of the stick, when the stick is horizontal; raise one end of the bell and hang it delicately on this point; then drive a nail over the long end of the stick, so as to counteract the tendency of the spring to cock it up, and the alarm is made and set. When the clock strikes (say) six, the striking-weight displaces the stick and so liberates the bell, which rings with a loud noise.

This simple contrivance is, I believe, quite

original, and few things can surpass it for efficiency,—none for cheapness. It may, with a little adapting, be fitted to almost any clock, and set for any time (the time being regulated by the hour at which the weight is wound up over night), and, if properly gauged, will never disappoint. To use a homely simile, it is as gingerly set as a mousetrap, and a slight touch of the clock-weight sets it ringing while the clock is striking, and for some seconds after, emitting a thrilling noise that will awaken the soundest sleeper.

J. GIBBS.

A NOISY CHIMNEY.

SIR,—I write to you for the purpose of complaining of an intolerable nuisance. I live in what is termed a quiet, genteel neighbourhood; but the party next door to me has recently put his chimneys into the hands of a professional "doctor," and the result is, in the first place a horrible gaunt serpentine figure, like a ghost with a broken back, superimposed upon our common gable. Perhaps I have no right to say a word about this distortion; but in the second place there has been a revolving funnel fixed to one of the chimney-pots, which, during a high wind, or almost any wind, twirls about and revolves with such speed, that it causes a screeching noise exactly like a railway whistle; and this noise lasts often the whole night; and not only does it keep me awake, but also terrifies my children from sleeping. I have already made a polite but ineffectual remonstrance. Have I no recourse under the law?

AN ARTIST.

SUBMARINE RAILWAY TUNNEL ACROSS DOVER STRAITS.

SIR,—The subject of communicating with France by railway appears to gain ground in professional opinion, and eminent men are engaged in propounding plans for the great undertaking. Pamphlets have been published, Mr. Chalmers claiming as a novel idea of his the laying down iron tubes on the bed of the Strait as a practicable scheme. Now, Sir, may I ask the favour of a small space in your valuable columns, as I believe it can be proved that the first information offered to the public of iron tunnels for railway communication across rivers or straits as a proposition scheme originated with myself, and was published in 1841, when our then young Brunel was engaged in laying down Clegg's atmospheric railway tubes on the South Devon line as a main trunk to Cornwall and the Land's-end.

The Hamoeze harbour had to be crossed, and as far south as possible, connecting the two counties, and which that great engineer effected by erecting his celebrated bridge, at a point named Saltash, about four miles from Morrice Town and Torpoint.

Now, it was my proposal to cross the Hamoeze at these two points and towns, where the breadth of the river is about three quarters of a mile, and a sloping bottom to ten fathoms of water, a favourable river for my scheme, which appeared in the *Independent Newspaper* of Devonport in 1841, and also again in 1856, and was noticed in your columns at the latter date, when M. de Mondéy, an eminent French engineer, was pursuing the object in question,—a submarine tunnel across the Dover Straits,—and published his scheme. I then claimed, as I claim now, all priority of iron tube laid on the bed of the Straits. A brief outline of my scheme is as follows:—

I build cast-iron tubes in about 1,000-ft. lengths, of 33 ft. interior diameter, and of a gravitating power to float when sealed at the ends. Some ten divisions or partitions in the whole length, forming as many compartments, as a means for prosecuting the design; and these bulk-heads, fitted with manhole-doors and valves, admit of the intended operations of partly being fitted with water as a sinking weight, and of also being exhausted of water by pumps when sunk on the bottom of the strait or river, and the building in of some 3 ft. thick of brick walls in cement throughout the interior will give the necessary amount of gravity to the structure to keep it base. The removal of these bulk-heads in succession as the brickwork is proceeded with simplifies the practical part so far, and the workmen are made secure.

With regard to the jointing of the tubes, a very important part of the work, I see no difficulty, nor in securing the connecting parts

together; these lead to a matter of detail and mechanical engineering already considered of; and by simply making the tubing with its temporary load to sink only, it can be hauled on as required with little power. Anchors being laid down along the line on each side of the berth, and wire ropes used as guides, the tube could be adjusted with ease, and divers assist in the work; and those inside, the first part completed, can act on wire ropes working through stuffing-boxes on the drum-head, and be perfectly safe.

Ventilating towers form the greater difficulty—in that some engineering obstacles would offer; but it is possible they may be overcome: the lifting power of the water hydrostatically considered, the resistance to the sea, and the connecting the towers to the iron tube, almost exclude the practicability of air-shafts. Ventilation is, however, imperative; and a twenty-mile tube is a long one for the atmosphere to be pushed forward in, occupying an hour's trip, probably, in a single transit of the train. A better head than that on my shoulders may clear the difficulties connected with this point of the question.

J. S. MORRIS, Engineer.

THE DON VALLEY DRAINAGE.

WATER SUPPLY.

I OBSERVE in your journal of March 2nd, that the authorities of Oxford, Tunbridge Wells, and other places, are making good progress in a plan for the disposal of the sewage of those districts, and I am glad to see they are sensibly alive to the importance of the subject, and have a wholesome dread of the law as laid down by Vice-Chancellor Wood, in the case of *Heath v. The Local Board of Health, Leamington*.

It is very clear from that decision that local Boards of Health have no more power or authority to turn sewage into the rivers to foul them, than they have to turn it into the drawing or other rooms of houses situated on their banks; and what is the use, I would ask, of Parliament making laws, if those who are entrusted to carry them out are permitted to make them a dead letter, or absolutely and unblushingly to violate their enactments?

It appears to me that more stringent measures are required on the part of Parliament to put down this one of the most crying evils of the present day, as pure water is a necessary of life, and the source from which it is generally derived ought to be placed beyond the possible reach of taint or impurity of any kind. Something more than heavy penalties would be required to meet the justice of the case, as few are disposed, like Mr. Heath, to fight the battle and incur the expense even of the difference of taxed costs in carrying them into courts of law, it being one that may be dealt with more effectually and promptly by imperial measures.

Sheffield and other towns still persist in making the river Don their outfall sewer, irrespective of all warnings and the consequences; and as it is more than probable that we may have a dry summer, and foul accumulations will again encumber the river, and line its seething banks with black and fetid abominations. The last summer having been wet, the repeated floods cleansed them away, and aided thereby materially to preserve the health of the district through which it flows.

I observe that a gentleman connected with the Health Department of the Home Office is called in to advise with the Corporation of Doncaster as to the best remedy, and I cannot understand how it is that a salaried public officer can act professionally in such a case; and here let me enter a protest, on the part of the profession, against the system by which many men with fine "nest-eggs," in the shape of good salaries, are allowed to practise privately in this way, to the injury of their less fortunate brethren,—not because they are more expert or competent, for if you look through the list of engineers you will see very few of our leading men who have the opportunity afforded them of throwing any "new light" on the sanitary movement.

And this may account, in a great measure, for the difficulties that now prevail relative to the water-supply and the sewage of our towns: the beaten track is blindly followed, reckless of the results, and regardless of the consequence, landing us in a maze of doubt, uncertainty, inextricable confusion, and miserable failure.

There are but few of our towns in which the system of water-supply is perfect and incapable

of amendment, as the necessity of the new "Water Commission" demonstrates; and I think there is still less number of towns where the disposal of sewage is even now efficiently conducted; yet, in this state of things we have been floundering on for the last twenty years, with but little, if any, amendment; and unless bold steps are taken, and stringent measures adopted, we may remain in that happy state for another twenty years. Thus thousands of innocent lives, generation after generation, will be swept away, sacrificed by these "Juggernauts" that preside over the destinies of our unhappy towns.

B. B.

THE "BUILDER" FIRE.

MR. F. W. F. WOODMAN writes.—Having read the recommendation of this grate by Mr. Recorder Warren, I told a poor man to get one, try it, and I would pay the cost (1s.) for it. He found it excellent. The plan I designed is, to cut a piece of paper $\frac{1}{4}$ in. smaller than the bottom of the grate; get a smith to make a plate of iron the size of paper pattern, of the thickness of a halfpenny, with three small holes in it the size of a straw. One hole in the middle and one hole 1 in. from each end; the burr to be filed off level. These holes prevent the plate from warping with heat, and being small, and covered with fuel, do not allow cold air to pass up, nor hot air below it to escape. On this principle wooden straight-edges have seven small holes bored in them, one in the middle and three holes in each end, to keep them from twisting. If in round wooden bread-plates a hole the size of a small pin were bored, they would always be flat.

WANTON DESTRUCTION.

Sir,—There is a sense in which all boundary fences, walls, gates, posts, piers, iron railings, &c., may be regarded as public property. Each one is, as a rule, set up to please the eye—with what success depends much on the taste and judgment of the beholder, whether he be the owner or a stranger from afar. It will therefore be conceded that the preservation, in its full integrity and completeness, of any one of the above-named works, is to be desired not for its owner's sake only, but also for the sake of his neighbours. I had occasion lately to walk from Lever Norwood to West Dulwich. The south side of that road is bounded by the inclosing wall of Norwood Cemetery for a distance of about 400 yards. In this length there are fifty-seven massive brick piers, each one surmounted by a moulded cap; the piers are terminated at the offset by a splayed and mitred Portland stone, and above is a splayed and mitred subbase, also of Portland stone. Of the whole number of piers, one only has escaped the hand of the destroyer. In most cases, all the four mitres to each pier are more or less mutilated, and from my observation it appears to have been effected by a sharp instrument or edge-tool, such as a lashing-hammer.

There are many minor offences of a similar character with which we are too familiar; but what I have stated may suffice to draw attention to this iniquitous and brutish wantonness, that henceforth, in addition to imprisonment, a little taste of "the cat" may be administered to the backs of the perpetrators.

W. H.

BLACK BRICKS.

In answer to your correspondent "B. A." in a recent number:—

Never having met with any black bricks of a satisfactory quality, I have for years adopted the following system, which I have always found to answer well; and though I will not state positively that it is original, I believed it to be so when I made the experiment, and have now no cause to think otherwise.

Select bricks of even texture and smooth surface, and of true outline and sharp arris on the one face, according as they are required for "headers" and "stretchers." Place them with the selected face exposed round an open fire, and when nearly red hot dip each brick singly into a caldron of boiling cold tar, to a depth of about one inch from the face to be stained; hold it in the tar for a few seconds, and then place it to cool and dry with the stained face upwards.

If this be properly done, the surface will be found of a deep bright black, the stain will extend to a depth of half or three-quarters of an inch from the face, the surface will be without gloss, the stain will not rub off on to a dry finger with even strong friction, and the weather will have no effect on it. If, however, the brick is not hot, and the tar boiling, the stain will rub off, and in hot weather the tar will sometimes run. The success of the operation can always be tested by the appearance of the brick when cool.

Always reject those with a glossy surface, as they are only coated, and not properly stained. In jointing for ornamental work, the surface of the brick should only be wiped, and not touched up or painted with tar or any other medium. In axed or gauged work, the brick is, of course, cut to shape before staining. When no cutting is required, picked stocks can be used; but for good work a good kiln-burnt red brick is best, and for axed and gauged work it is best to use the same bricks as the other work is done in.

I do not agree with your correspondent in either of his hypotheses, that of coarse black bricks are the best, or that it is desirable to black the bricks when up.

Manufactured black bricks are, firstly, very expensive; and, secondly, they are so soft and brittle, that after loading, unloading, and stacking, it is difficult to find a true face in a dozen; and in cutting and rubbing for gauged work, there is great waste from the same cause, and when dressing and pointing are used, they generally smear and discolour the other work.

As to painting or staining when fixed, I should never allow it except in extreme cases to correct omissions or mistakes in the pattern. In such cases I use lamp-black, mixed with varnish and turpentine, and used thin; but to me such a process as a substitution is reprehensible in principle, and is sure to produce a hard, crude, and piebald appearance, and is one of a system of dodges which has brought coloured brickwork into bad repute, by producing a glaring, vulgar, and meretricious effect when new, and a sickly and washed-out appearance, when the newness is worn off. It also generally happens that these dodges are practised in combination with the worst taste in design and arrangement of colour, and have done much to debase ornamental black treatment.

BASSETT KEELING.

CHURCH-BUILDING NEWS.

Whitburn.—A public meeting of the inhabitants of Whitburn parish has lately been held, at which it was resolved to enlarge and restore the village church, and also to build a chapel at Cleadon, to take the place of the small school-room, in which, on Sunday afternoons, divine service is now performed. Plans and drawings of the proposed alterations have been submitted to the committee by Mr. Johnson, of Newcastle, who has been appointed architect. The principal features of the scheme are the widening of the aisles, which will provide sittings for about 250 additional persons; the substitution of an open roof for the present white-washed ceiling; the replacement of the pews by open seats; the addition of a chancel arch and an organ chamber, and various other alterations and additions. It is calculated that the cost of these improvements will be about 3,000*l.*, and that of the Cleadon Chapel about 600*l.* To these objects liberal subscriptions have been already promised. It is expected that the improvements and alterations will not be completed before the summer of 1868.

Liverpool.—A new church, built at Everton, at a cost of 14,000*l.*, by Mr. T. D. Anderson, a local merchant, has been consecrated by the Bishop of Chester.

Kingswinford.—St. Mary's Church, Kingswinford, has been re-opened for divine service. The church has undergone great internal alterations, including the removal of the north gallery, and the substitution for the pews of open sittings. The only vestige of the really ancient church (a window in the chancel) shows that the style was Early English, and this has been followed in the restoration. The chancel is furnished with stalls and a stone pulpit has been placed on the north side, at the entrance into the chancel. The cost of the alterations will altogether amount to 1,650*l.*

Newcastle-upon-Tyne.—A short time ago it was announced that a movement had been originated amongst the butchers of Newcastle, to obtain funds for the purpose of erecting a new altar-railing in St. Andrew's Church. The efforts thus made have proved successful, and a brass railing has been fitted up. By a telescopic contrivance the rail is made to open in the centre, for affording access to the altar. The whole has been fitted up by Messrs. Mather & Armstrong, of this town.

Stanhope-in-Weardale.—The contracts for carrying out the restoration of the ancient parish church at Stanhope-in-Weardale have been let to Mr. George Graddon, builder, and Mr.

J. Thornton, mason, Durham, and the work will at once be proceeded with.

North Shields.—A new organ, built by Messrs. Hill & Son, of London, has just been opened in St. Peter's Church, North Shields. It is fitted with illuminated pipes and a stained deal case.

Brinsop.—The parish church here, which has recently been undergoing a renovation by Messrs. Welsh & Son, of Hereford, under the architectural supervision of Mr. W. Chick, also of Hereford, has been re-opened for public worship. Previous to the restoration the old building was in a deplorable state. The face of the masonry externally has been renovated and repointed. The stonework with which the windows had been partially filled up has been removed and the dressings cleaned and restored, thereby restoring the windows into their original condition. The roof is entirely new, and a new belfry has been also built, whilst the entrance porch has been restored. Internally, the walls have been cleared of all the old plaster and whitewash, excepting here and there where faint traces of ancient paintings have been discovered; these, together with some fragments of old stonework, and some ancient raised crosses, have been preserved on the walls. The flooring of the aisles has been re-laid with Godwin's tiles, as also of the chancel and sacristy. The floor of the nave has been raised to its original level. The old plaster ceiling of the aisle has been removed, and the roof restored to its original boarded state in union with the roof of the nave, the whole roof being covered with asphalt before the tiles were put on. The foundation of the triforium was in an unsound state, but has now been under-pinned and secured. Stained and varnished deal seats have supplied the place of the original old-fashioned pews, whilst the chancel is arranged with carved oak stalls moulded with cusped traceried points and poppy-headed ends. The pulpit is entirely new, being of oak and shaped octagonally, having arched and cusped traceried panels resting on responds, with caps and faces and carved spandrels. The church is now warmed by Gurney's stove, provided and fitted by Messrs. Bennett & Brown, Hereford. One thing wanting to complete the exterior of the fabric is the spire, and the erection of this the funds in hand would not allow of. The sum of 710*l.* has been expended up to the present time, and it is calculated that 250*l.* will be required to complete the work.

SCHOOL-BUILDING NEWS.

Worcester.—A new schoolhouse for the Queen Elizabeth's School at the northern entrance to the city is about to supersede the old and insufficient premises now used for this school close to St. Swithin's Church. The new building will be erected on a portion of the land at the White Ladies', Tything, having its frontage to the road, from which it will be separated by a strip of ground some 15 or 20 ft. wide, and a dwarf wall, iron railing, and entrance gates. Mr. Perkins, the architect, has chosen the style of architecture which prevailed at the time when the school was established—the reign of Queen Elizabeth. The front elevation presents three three-light windows, square-headed, with stone mullions and transoms, and in each end wall is a large five-light window. Ornamented gables surmount the front windows, with a statue of Queen Elizabeth in a central niche. Stepped gables, with finials, are on the end walls; and on the centre of the crest of the steep-ridged roof is a characteristic bell-cot, which also serves for ventilation. The walls are to be of brick, with stone dressings. Entering by a porch at the south-west angle of the main building, a good-sized vestibule presents itself, on the right of which will be a class-room, with lavatory, robing-closet, and offices; on the left, the great school-room, 45 ft. by 25 ft., having an opened-timber hammered-in roof, resting on corbels. This roof will be a termination, looking from either end, to the great windows in the north and south walls, no part of which will be hid by the roofing timbers. This school-room will be readily capable of elongation should the circumstances of the school at any future time require it. At the back of the main building will be a five-court, with offices; and surrounding the eastern side of the premises will be a large play-ground. The plans are before the Charity Commissioners for approval, but it is not yet known when the work will be commenced.

Yarmouth.—The new school of the Church

South-end Mission has been opened. The new building cost 500*l*, including the boundary wall. The architect was Mr. J. T. Bottle. At present it may be described as a central block; the addition of wings is contemplated, in which boys and girls of riper years will be educated. The style is Gothic, red brick with red and white arches. Internally the walls are of red brick, with white brick bands and an open timber roof, lighted by four single windows on the south, and by ornamental dormers on the north, underneath which is an open arcade. The school will accommodate about 120 infants. The ground, about a quarter of an acre in extent, will be enclosed by a boundary wall. Mr. Howes was the builder of the school.

GRINDING MONEY.

Colman v. Minard.—The plaintiff, a joiner, residing in Crimscoot-street, Grange-road, Bermondsey, sued the defendant, a builder, of Eynsford-road, Camberwell, for the sum of 1*s*. 4*d*. for time for grinding tools.

Mr. Odv appeared for the plaintiff, and stated that his client has been employed as an assistant in the construction of some stairs in a house in the Albany-road, Camberwell; and that on a certain Saturday at noon he was paid off, and now sued the defendant for the sum in question, to which he was justly entitled, according to the custom of the trade, to prove which he had several witnesses in court.

The plaintiff and his witnesses then at great length stated the custom of the trade, some of them contending that if a man were employed but a single hour, he would be entitled to some compensation for grinding-time and tools.

The defendant said that the plaintiff worked for him only from the Thursday to the Saturday, and hence he considered that he was not entitled to grinding-money. Moreover, the work upon which he was engaged did not require sharp tools which were ground.

His Honour remarked that cases of that description came before him frequently; and rather than confide in his own judgment, he had recently consulted some of the most extensive and influential building firms in the metropolis. The parties in that case desired him to determine under what circumstances that which was known by the name of "grinding-money" could be claimed by carpenters or joiners, and he had sought to discover what rule, if any, was now observed by the trade on this subject. The result was that there did not appear to be any fixed or established practice, but a different one in different establishments, more or less liberal to the men, both as to the amount and as to the conditions necessary to earn the allowance. Thus he found there were those who allowed, upon discharging their men, if carpenters and joiners, as much as a quarter of a day, or two hours and a half; others who allowed two hours to joiners and one hour to carpenters; others who considered one hour's allowance sufficient in all cases; and others who contested the claim altogether. So also there was a difference of practice with regard to the length of employment necessary to justify a claim to this allowance. Under these circumstances, it was impossible to say that there was any certain custom or usage to be incorporated in the contract, and to regulate the rights and liabilities of the parties to it. When the question arose before him in a different form he should probably be prepared to decide that some allowance was ordinarily made, notwithstanding the prevalence of the hour-system; but in this particular instance, being asked to do so to the satisfaction of the employment, and its duration, he did not think that the plaintiff had established his claim to any further allowance than that which he had already received. He could not, for the reasons above stated, consider it desirable if employers took care to make known the system of their establishments, either individually to each man engaged, or generally, by means of shop notices, conspicuously displayed. He should rule judgment for the defendant in the case.

Books Received.

The Report of the Armstrong and Whitworth Committee, with a Letter thereon to Earl de Grey, and Appendices. By JOSEPH WHITWORTH, LL.D., F.R.S. Manchester: Jos. Thomson & Son. 1866.

The report of the committee "appointed to examine and report upon certain facts which require to be carefully ascertained before any satisfactory opinion can be pronounced upon the different descriptions of guns and of ammunition prepared by Sir W. Armstrong and by Mr. Whitworth," has been reprinted by the latter competitor. This report, or rather the record of the experiments which it contains, involves matter of too grave importance to be summarily dealt with. We trust shortly to give to a question so deeply involving the character of our land and sea defences, and the efficiency of both navy and army, the consideration which it merits. Meantime we call the attention of those interested in the subject to a record of facts, which tells a very different story from the easy-going accounts of the Shoeburyness experiments to be gleaned from the political newspapers. The committee have thought, it is charity to suppose, that the facts spoke so loudly that it was un-

necessary for the report to give a very definite utterance on some of the most important results of the trials. We intend to translate some of their principal facts into very plain English. The question of the character of the "dogs of war" to be employed, as the house and yard dogs of Great Britain, is not one to be handled in kid-gloves.

Miscellaneous.

THE ORNAMENTAL WATER IN REGENT'S PARK.—In reply to a question in the Commons, Lord J. Manners has stated that it is proposed to commence the works at this water in the autumn, and it is calculated that they will occupy about six months.

THE HOLY SEPULCHRE.—The *Monteur* says,—"The work of construction of the provisional protection under the great cupola of the Holy Sepulchre at Jerusalem has been satisfactorily accomplished. The first floor is finished, and all the ceremonies can now be performed without any danger either to the priests or the faithful. The workmen brought from Paris by M. Mauss, the architect delegated by the Emperor, fulfil their task with a calm order and respect for the Holy Place which the clergy of all the worshipers unanimously recognise."

A TELEGRAPHIC PECULIARITY.—An endeavour to establish telegraphic communication with underground workings at a mine in Lake Superior, has disclosed a curious difficulty. Since the discovery that by placing each end of a telegraph wire in the ground the circuit is made as completely as when two wires were used, but one wire has been employed. The wire used in the Pewabic Mine is a 1-16th copper wire. After the line was set up, to the surprise of all, no signals could be transmitted; and though the operator of the line examined the wire, and tried numberless experiments, all was of no avail. So says our authority, the *Mining Journal*.

THE CHURCH OF ST. MARTIN, LEICESTER.—The Messrs. W. Neale & Sons, of Leicester, builders, have commenced the erection of scaffolding for the building of the intended spire to this church, without competition, the firm having done other works there. The summit of the spire, when completed, will be 203 ft. from the floor line of the church. Restorations at this church have now been going on at intervals for more than twenty years, under Mr. R. Brandon and his late brother, architects, and some 10,000*l*. have been raised by voluntary subscriptions, and expended upon them. Much yet remains to be done.

A STATE SYSTEM OF TELEGRAPHY.—At the monthly meeting of the council of the Liverpool Chamber of Commerce a special committee presented a memorial they had prepared, pointing out that in order to secure low charges and a full extension of the telegraphic system, it has become necessary that Government should take the control of the whole telegraphic system. They urge that such a course would be a great advantage to commerce; that in Belgium such a system has been very successful. They believe that under the control of one board a uniform rate of 6*d*. a message would yield a substantial profit.

PLASTIC SLATE.—Alluding to the application of plastic slate to render woodwork fireproof, Mr. A. Morehouse, writing to the *American Petroleum Standard*, states that the slate is better if mixed for some time before it is used, and observes that it may be conveniently made in old kerosene (petroleum oil) barrels, which are strong, and can be bought second-hand very cheaply. A specimen from a burned building was exhibited to the Farmers' Club, and, although exposed to the full action of the fire, it was neither consumed, charred, nor weakened. It was a soft mastic when the building took fire. Now it is strong, solid, and thoroughly petrified. The roof was upon a wooden lean-to against a brick building. It was so perfectly fire-proof, and so tightly joined to the brick, that it prevented the smoke rising to blacken the wall above the junction, while at the side of this roof and around the corner the high brick building was blackened clear to the top. The superheated steam and air could find no egress. The room was filled with most inflammable materials, yet with all the fire and heat none could escape through the roof. It blackened and stood until all support was burned away; when it fell it broke into large sheets several feet square.

A NEW FIREPLACE LINTEL.—"Gibbs's registered fireplace lintel," is a simple and useful mode of increasing the draught of a chimney so as to lessen the necessity for disfiguring buildings with zinc and other abominations on the roofs. It consists of an iron plate (in place of the ordinary chimney-bar), with an opening in the middle, narrowing the width of the flue when set in the brickwork. That such a plate must have a tendency to prevent chimneys from smoking seems obvious.

THE METROPOLITAN TRAFFIC REGULATION BILL. A meeting of ratepayers of the Holborn district has been held to consider this Bill, and the measure "to be taken energetically to oppose the same." The meeting was numerously attended, and it was resolved that in the opinion of the meeting the Bill then pending in the House of Lords, would interfere with the free trade of the metropolis to such an extent, that if its provisions were to be enforced, it would amount to a total prohibition of business in several instances; that the execution of the Act would place in the hands of the police arbitrary and unjust powers, and prove a step in the direction of centralization which could not be too strongly deprecated; and that whilst the meeting admitted the necessity for a measure for facilitating the traffic of the metropolis, they deemed it desirable that the execution of the law necessary to effect that end should be entrusted to the local authorities, in whom the management of the thoroughfares was already vested. It was then agreed that a petition should be presented to Parliament against the Bill.

APPREHENDED STRIKE OF TWENTY THOUSAND ENGINE-DRIVERS AND FIREMEN.—The entire engineering staffs of the London and Brighton, and the North-Eastern Railways have given notice of resignation of their posts in consequence of the directors not agreeing to their demand of increased wages and shorter hours; and the like result is feared on all the other lines of railway throughout the country. Associated as they all are with their clubs and societies, they have expressed their full determination to stand out, as they "ask for nothing that is unjust or unreasonable, but that to which they are entitled." The men require,—"That 10 hours a day, or a run of 150 miles, be reckoned a day's work; and that overtime be reckoned two hours and a quarter. That engine-drivers in London and districts receive, for the last six months, 6*s*.; 2*nd* six months, 6*s*. 6*d*.; end of twelve months, 7*s*. 6*d*. per day. Firemen: 1*st* six months, 3*s*. 6*d*.; 2*nd* six months, 4*s*.; end of twelve months, 4*s*. 6*d*. per day. Engine-drivers in country districts: 1*st* six months, 6*s*.; 2*nd* six months, 6*s*. 6*d*.; end of twelve months, 7*s*. per day. Firemen: 1*st* twelve months, 3*s*. 6*d*.; end of twelve months, 4*s*.; and after three years' service, 4*s*. 6*d*. per day. That firemen be promoted to be drivers according to seniority or length of service; and that Sunday work be paid as a day and a half." Other things are asked for in various ways on different lines.

THE NEW STREET TO THE MANSION HOUSE.—At the last ordinary meeting of the Metropolitan Board of Works, Mr. Tite, M.P., said he wished to ask the superintending architect, Mr. Vulliamy, what progress had been made in the purchase of the property on the site of the proposed street from Blackfriars to the Mansion House, and if there was any probability or prospect of that street being opened up before the Thames Embankment was finished. He should like to know, also, how many houses the architect had got hold of which he could pull down between the present time and Midsummer. The superintending architect said an order of the Board had been passed for the pulling down of 120 houses, and he had accordingly given instructions to Messrs. Pullen, Horne, & Eversfield to sell the property for that purpose; and he should soon be in a position to sell the whole of the property between Earl-street and Cannon-street, except the Probate-office and the Equitable Life Assurance building, which they had not yet got. He saw no reason why the entire line between Earl-street and Cannon-street should not be cleared by Midsummer next, with the exception of the two buildings named which stood in the line; and with regard to that portion between Cannon-street and the Mansion House, the Board had purchased the whole of the freeholds and nearly all the leaseholds, the remainder being in course of treaty for. By the end of the year the Board would be able to see its way clear to the speedy opening up of the entire line.

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The Builder.

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The Age of Limited Liability.

we have had the age of reason and the age of faith: the bronze age and the stone age are also things of the past. When the history of the present century is written it will be possible to invent an epithet which shall correctly describe its prevailing feature, and, commercially, it may be described as the age of limited liability. It is this aspect of to-day with which we propose to deal. Society is more deeply indebted to limited liability than is generally supposed. The Infants' Food Company takes care of us at birth, and when the drama of life is played out

we are provided for by the Patent Metallic Air-tight Coffin Company. At every step in life's journey limited companies are ready to supply our wants.

Amongst the last Parliamentary papers of the session of 1866 was a return giving the names, objects, number of shareholders, nominal capital, &c., of the limited liability companies registered from the 1st of June, 1864, to the 31st of May, 1866. The second paper issued during the present session was a return of the number of companies registered during the years 1864, 1865, and 1866, with the amount of capital proposed to be raised in shares. We propose to omit the consideration of the companies which existed previously to the passing of the "Companies Act, 1862," and afterwards registered as limited companies; and also the associations formed on the "unlimited" principle, and to confine ourselves strictly to the "limited" companies. From the last-mentioned return, we find that the total number of limited companies formed during the years 1864, 1865, and 1866, was 2,738, with a nominal capital of 510,000,000*l.*, in round numbers, or more than half the national debt. In 1864, the number of companies was 972; and the nominal capital, 234,600,000*l.*; in 1865, 1,011, capital, 201,500,000*l.*; in 1866, 755, capital, 73,300,000*l.* The rapid decline in the number of companies, and especially in the nominal capital during the last year, is very remarkable. It will be seen from our figures that the sum proposed to be raised in 1866 was little more than one-third of that asked for in 1865; and in all probability next year's returns will show a similar falling off. The other return which we have referred to is a paper of more than 100 pages, of which we have taken the trouble to make an abstract, a task which should have been performed in the Registrar's office. The paper, as published, is a mass of facts conveying very little information. We have not attempted to form any estimate of the average life of a company, since winding-up petitions succeed each other so fast that an average cal-

culated up to one day would be materially modified by the proceedings of the next. Many limited companies do not seem to get beyond a door-plate, whilst some advance to the dignity of palatial offices and a large staff; but only to dwindle down as quickly as they rose up. The recently-appointed Select Committee will doubtless be able to collect some interesting particulars with regard to this and other parts of the subject.

During the two years included in the report now before us, no less than 1,931 limited joint-stock companies were established in Great Britain and Ireland, viz., 1793 in England, 83 in Ireland, and 55 in Scotland. The sum which was proposed to be raised amounted to the trifling of 331,721,000*l.*, in sums varying from 12,000,000*l.*, the capital of the General Bank for the promotion of agriculture and public works, and 180*l.*, the capital of the Wolverton Market Company. Between these two extremes we have the National Credit Mobilier with 10,000,000*l.*, four companies with 5,000,000*l.*, five with 4,000,000*l.* each, and twenty or thirty with 1,000,000*l.* odd and upwards. Financial speculations are far ahead of all others, both in the number of undertakings and the capital asked for, and no less than 146 companies of this kind were formed during the period under review. The total sum proposed to be raised was 108,299,000*l.* This includes the humble office where the needy may be accommodated at twenty-four hours' notice with "loans without security," and "no inquiry fees," in such a pleasant, easy, and gentleman-like manner, at least on paper, that there is no longer any excuse for a poor man to trouble his friends. It includes also banks and "loan-offices" on a larger scale, where no applications are attended to unless the sums take at least four figures to write them down. These call themselves by the high-sounding names of "Mercantile Credit Associations," "Finance Companies," "Finance Corporations," or "*Credit Mobilier*," a title which has an unpleasant foreign sound to English ears. It is a curious feature of these undertakings that the smaller the capital the bigger the name; thus we have the International Bank, which suggests a million or two at least, proposing to commence business with the modest sum of 2,000*l.* The Mutual Bank of England might be taken as a sort of rival to the establishment in Threadneedle-street; but it is nothing more than a loan society with a capital of 2,000*l.* Another company, with the high-sounding title of London Bank of Madras and Southern India, undertakes the business of "banking generally in Madras and Southern India" with a like sum.

Thirty-eight companies for making railways, tramways, and roads were formed, the aggregate capital being 26,135,000*l.* The construction of a railway in this country requires, in most cases, the powers of an Act of Parliament, but we find that some of these companies relate to railways in England. Amongst them are the Charmouth and Bridport, Snowdon and Portmadoc, Isle of Man, and the Belfast and Bangor Railway Companies. The object of the last-named association is not, as might be supposed, to connect North Wales with Ireland, but simply to make a railway from Belfast to a place in the vicinity. Of foreign speculations the largest is the San Francisco and Atlantic, with a capital of four millions, the object being to construct a railway from the port of San Francisco to Roseville, California. Nearly six millions are proposed to be spent by three companies on Peruvian railways; and the public have been invited to subscribe to undertakings for making railways in China, Rome, Antwerp, British Burmah, South Australia, and Venezuela. Only one road company was registered, and that for the purpose of making a road between Pont-street and the Brompton-road.

British enterprise has not, however, stopped at the construction of railways abroad; for we find that thirty-four companies, possessing an aggregate capital of 19,385,000*l.*, have been formed for dealing in land and erecting buildings in various foreign countries. It is rather a significant fact that half the capital proposed to be thus invested goes to Italy. Thus we have the Italian Land Company, with a capital of a million and a half; the Public Works Credit Company of Italy, capital, a quarter of a million; the Italian Building Society, 280,000*l.*; City of Milan Improvements Company, 600,000*l.*; City of Florence Improvements Company, 2,000*l.*; City of Naples Improvements Company, 600,000*l.*; Anglo-Italian Public Works Company, 10,000*l.*; Naples Public Works Company, 1,200,000*l.*; and Florence Land and Public Works Company, 5,000,000*l.* The remaining companies undertake projects in France, Spain, Jutland, South Africa, and other countries.

In the United Kingdom the number of land and building companies amount to 296, the aggregate capital proposed to be raised being 29,758,000*l.* The details may, perhaps, be of interest:—

	Number of Companies.	Nominal Capital.
Lands and Building generally.....	80	£16,312,000
Miscellaneous Buildings.....	20	4,585,000
Chambers, Clubs, and Offices.....	24	3,882,000
Hotels.....	71	2,677,000
Halls, Exchanges, Markets.....	60	1,589,000
Theatres and Music-halls.....	20	509,000
Labourers' Dwellings.....	11	214,000
	286	£29,758,000

Amongst the miscellaneous building speculations are two Pantechnicons, two grand stands, six baths and washhouses, an auction mart, a horse repository, a racket-court, a working men's club, and a church spire above all other things. The last is rather a curiosity in its way, but when we know that the head quarters of the company are in Fermo, we cease to wonder. The title is the "Fermoy Catholic Parish Church Company," the object being to erect a spire upon the Roman Catholic Church at that place. The nominal capital is 3,000*l.*, in 5*l.* shares. We do not remember to have seen the name of this company in the share market, and we are at a loss to understand where the dividends are to come from. Shareholders, we suppose, are content to invest their money on earth, in the hope of receiving their dividends in heaven. Of the hotel companies the most ambitious are the Crystal Sanitarium Company, and the London, Windsor, and Greenwich Hotels Company, each of which proposes to raise a quarter of a million. Then we have the City Terminus Hotel, at the Cannon-street Station, with a capital of 140,000*l.*, and seven others with 100,000*l.* and upwards. The Emerald Isle has long enjoyed a reputation for hospitality, whilst the Scotch have, whether rightly or wrongly, we will not attempt to determine, been accused of failing in this respect. England occupies a position midway between the two. Let the lovers of statistics listen to this: one-ninth of the companies formed in Ireland were hotel or dining-hall companies. In England the proportion was about one in twenty-eight, whilst not a single hotel company was formed in Scotland. It is to be noticed, with regard to the speculations classed under the head of "halls, exchanges, and markets," that with the exception of two schemes for building an exchange at Manchester, one for the erection of a Hop Exchange at Southwark, and three others of 50,000*l.* each, they are all very small affairs. The six named companies absorb more than a million of the proposed capital. The titles of the companies are a little puzzling. What, for instance, is the meaning of a "Secular Hall," which appears both at Sheffield and Bradford?

The theatre or music-hall companies do not all belong to this class, inasmuch as some of them were only formed for the purpose of ac-

quiring existing establishments. One company wishes to "acquire and carry on the two Italian Opera-houses, and other theatres if found desirable," with a capital of 2,000.—hardly enough to pay the salary of the *prima donna*. In point of capital the music-halls are far in advance of theatrical speculations; but if matters go on as they are now, it will be difficult to establish a difference between the two. We should have been glad to see the number of companies under the next head very much larger. The names of the schemes are as follows:—Highgate Dwellings Improvement Company, capital 5,000.; Southampton Improved Dwellings for the Industrial Classes, 10,000.; Hereford Cottage Improvement, 30,000.; London (City) Baths and Dwellings, 50,000.; Croydon Labourers' Improvement, 5,000.; Operatives' House Building, 100,000.; Bournemouth Cottage Building, 5,000.; Eton Society for the Improvement of Cottage Accommodation, 3,000. Ireland had, then, done nothing in this way; while Scotland comes out very well with the Aberdeen Sanitary Reform Company, 2,000.; Aberdeen Co-operative Building, 3,000.; and the Dundee Working Men's Houses Association, 1,000. Two other associations have also been formed with the same object in view, but, as they are on the unlimited principle, do not appear in our table. They are the Cleckheaton Building Association and the Liverpool Labourers' Dwellings Company, capital 25,000.

Seventy-six companies were established for the purpose of promoting inland and marine navigation. The total capital asked for was 19,138,000., and nearly the same amount was proposed to be raised by seventy-two life, fire, marine, and miscellaneous insurance companies. Amongst the latter class are no less than eighteen companies for insuring cattle against *rendapest*, two are for insuring plate-glass, one with the singular title of the "Burglary, Robbery, Fraud, and Guarantee Insurance Company," one for the insurance of crops against damage by hail, and we are glad to see three boiler insurance companies. The National Boiler Insurance Company, which was registered in July, 1864, comes before the public with a capital of 100,000.; the United Kingdom Steam Boiler Insurance Company, registered in September of the same year, has a capital of 2,000. only; whilst the Boiler Insurance and Steam-power Company, which dates from February, 1865, proposes to raise a quarter of a million. It is not quite clear whether these companies make periodical inspections of the boilers insured, as the Manchester Association does, or whether they simply receive the premiums and leave the owners to work the boilers as recklessly as they choose. If the former is the case, we wish the companies good luck, and trust they may be the means of preventing many an "inevitable" accident.

The number of companies formed for manufacturing, dealing in, and treating textile fabrics and growing textile materials, amounts to 110, the nominal capital being 11,423,000. The largest of these is John Crossley & Sons, Halifax, the capital being 1,650,000., which is followed by the International Wool Company, with a million. Projects of this kind appear to find most favour in Ireland, where twenty-four (nearly one-third of the whole number of companies registered there) have been formed. Only four cotton-growing companies have been established, viz., in Bolivar, Greece, Africa, and Georgia, whilst three have been formed for spinning and growing cotton in foreign countries. A company established in Yorkshire, apparently for the manufacture of shoddy, is nearly described as the Leeds Woolen Extract Company. "Shoddy" has an awkward sound, but "woollen extract" is faintless.

Mines, especially foreign mines, have always had a mysterious charm for the speculator; but we do not find that they occupy a very prominent position in our list. One hundred and thirty-one companies, having an aggregate capital of nearly 10,000,000., were established for the purpose of working mines, other than collieries and quarries, in the United Kingdom; whilst forty-four, with a capital of nearly 7,000,000., related to foreign speculations. The locality of most of the English mining companies is Cornwall, thirty-three having been registered "as the office for the registration of joint-stock companies formed for working mines within the jurisdiction of the Court of the Vice-Warden of the Stannaries." Scotland and Ireland each furnishes one company. The foreign division includes speculations in Norway, Spain, Switzer-

land, Italy, South Australia, Russia, and America. The enormous mineral wealth of the New World still continues to dazzle the sight of those who wish to get rich in a hurry, much in the same way that it did in the palmy days of Spain. The largest of the foreign ventures is the Mexican Silver Mining Company, with a capital of 1,000,000.

During the period under notice 60 colliery companies were formed, with a total capital of 6,454,000., whilst 68 stone and slate quarries proposed to raise a capital of 3,395,000. We have also engineering, iron founding, rolling, and working iron, 67, 9,737,000.; trading, 30, 6,567,000.; tea, coffee, sugar, and rice, 34, 6,470,000.; smelting and refining metals, 27, 3,381,000.; timber and saw-mills, 17, 1,688,000. Nine telegraph companies proposed to raise a total capital of 5,892,000. Three of these enterprises were for the purpose of connecting England and America. One hundred and thirty-four gas companies, with an aggregate capital of three millions and a half, were registered. Some of them related to foreign localities; and these, as a rule, possess the largest capital. The City of Moscow Gas Company, to whose operations we have referred several times, is the largest, the nominal capital being 875,000. Next, we have the Rio de Janeiro Gas Company, with a capital of 600,000.; and the Imperial Austrian, with 350,000. The home projects do not present any remarkable features, and are mostly for small amounts. The number of water companies is small, amounting only to twenty-three, with a total capital of a little more than half a million. The disproportion between the number of gas and water companies is not to be wondered at, the manufacture and supply of gas being a comparatively simple affair, and not usually requiring the compulsory powers generally necessary to the establishment of a water company.

The supply of wine, beer, and spirits is the object of forty-three associations, with a capital of 3,747,000. The rage for converting private firms into limited companies does not seem to have had much effect upon the great brewers of the metropolis, and we only find one of any note, that of Messrs. Goding, on the list. The most ambitious project is the Licensed Victuallers' Brewery Company, with a capital of a million. With regard to distilleries, neither Ireland nor Scotland does anything in the way of supplying the beverage for which they each enjoy so much renown. Twenty-two companies contend for the honour of providing provisions of all sorts. Amongst them we find the Australian Meat Company, which hails from Hounsditch,—a most unfortunate association. There is a good deal in a name, in spite of what the poet says, and no judicious tradesman would think of establishing a sausage-shop in Cateaton-street. Fifteen companies, with 732,000. capital, were formed for trading in fish and oysters. As regards the commercial success of such undertakings, it may not be out of place to quote the opinion of the fishery commissioners on the subject:—

"Once in the year an acre of good land, carefully tilled, produces a ton of corn, or two or three cwt. of meat or cheese. The same area at the bottom of the sea, on the best fishing grounds, yields a greater weight of food to the persevering fisherman every week in the year. When we consider the amount of care that has been bestowed on the improvement of agriculture, the national societies which are established for promoting it, and the scientific knowledge and engineering skill which have been enlisted in its aid, it seems strange that the sea fisheries have hitherto attracted so little of the public attention."—(Report, p. xvii.)

Mineral oil has now become a very important article of commerce; and we find accordingly that it forms the subject of twenty-nine of the companies contained in our return, the aggregate capital being more than two millions and a half. The largest is Young's Mineral Oil Company, with a capital of 600,000., established for distilling hydrocarbon oils from shale. Several others have also the same object; but some are for working natural wells of "ile" in Moldavia, Trinidad, Hanover, Italy, and Canada; and two native sharmess, in America. With regard to the continental deposits of petroleum, no sooner has the discovery been announced to the local Academy of Sciences by some learned professor, than a few enterprising persons draw up a circular embodying the paper, and straightway form a company for purchasing the concession. The *savant* may be well known, or not, it makes no difference, the company is formed, and it lasts just long enough to answer the purpose of the promoters. These remarks

apply to all companies in whose formation it is possible to use the name of a scientific man.

The fine arts, if we are allowed to include photography, have been encouraged by eleven companies, with a capital of nearly half a million. The International Society of Fine Arts proposes "to develop and encourage the fine arts," with a capital of 100,000.; and the British and Foreign Modern Fine Art Exhibition erects "a gallery for the exhibition of pictures, &c.," with the same sum. Graphotype forms the object of two associations, with 75,000. each; and photosculpture of one with 50,000. The Mutual Photographic Association might be supposed to be established for the purpose of taking every member's *carte de visite*. The object of the Blackburn Photographic and Fine Arts Company is "carrying on the photographic and fine arts business." The italics are ours. What the "fine arts business" is we do not exactly know.

No less than thirty-three associations have been formed for publishing newspapers and periodicals, the total capital being 228,000. What sort of a life the editor of a "limited" paper must lead we can hardly realize. Under the most favourable circumstances—that is, where editor and proprietor are one and the same person—it is not always an easy thing to keep matters going smoothly. But where the editor is at the mercy of a board of directors, composed probably of printer, publisher, contributors, and a few outsiders, the poor man must become a cypher, and be content to see the policy of the paper vary with the opinions of the majority of the board. For a journal to consistently advocate any decided views, it is necessary that it should be conducted on autocratic principles. Unless the control be vested in one individual who is able to rule with somewhat absolute power, the result is generally a bloodless and boneless thing, which advocates one view to-day and the opposite one to-morrow, and resembles the same author with mad or adulation, as the case may be. The largest of the newspaper companies, in point of capital, is the Yorkshire Conservative Newspaper Company, with 50,000.; this is followed by the *Western Morning News* and the *Correspondent*, with 20,000. each; next come the *Hampshire Advertiser*, with 12,000.; and the *Hertfordshire and Bedfordshire Newspaper Company*, *Northern Daily Express*, and the *Fortnightly Review*, with 10,000. each. Following these we have the *Shoreholders' Guardian* Company, 8,000.; *Carlisle Conservative Newspaper Company*, 6,000.; *Family and Servants' Newspaper Company*, 5,000.; *Reader*, 5,000.; *Weekly Advertiser*, 5,000.; and five others for a like sum. The most modest scheme is one with a capital of 150l. for publishing a weekly newspaper at Alcester, a small town in Warwickshire. The *Fortnightly Review*, by the way, is now a monthly publication; but the contradiction is in reality not much greater than in the case of a "weekly journal," since the word "journal" is strictly only applicable to a daily publication.

People who are continually regretting the "good old coaching days" may find a crumb of comfort in the fact that a company was formed for running coaches between London and Brighton. Nine companies were established for the manufacture of carriages, carts, and wagons, with a capital of upwards of a million and a quarter, and twenty-one for carrying goods and passengers by horse conveyances. Improving the breed of horses was the object of the Palmarston Association, the Bosthorpe Stud Farm Association, and of the National Stud Farm. Agriculture does not seem to have met with much favour, and only eighteen companies were formed for its promotion, including the three above mentioned. Only one appears to contemplate farming operations, the remainder being mostly for the preparation of manures, and the manufacture and letting of agricultural implements.

The recent Board of Trade regulations have called into existence six companies for testing cables. We find among the miscellaneous schemes a Dollar Recovery Company, which is not, as might be imagined, a Debt-collecting Association, but proposes to raise sunken treasure from wrecks. The Universal Company for the Promotion of Industry and Commerce, appears to be nothing more than a company for getting up other companies. Then we have a Merchandise Marks Registration Association for protecting trade marks under the Act of 1862, but it is not quite clear how the company proposes to effect its objects. We may take this opportunity of

correcting a very prevalent misconception, viz., that trade-marks may be registered at Stationers' Hall. It is true that the authorities receive trade-marks, but only when they are printed, and it is simply as printed matter, and not as trade-marks, that they may be registered. There is no office for the registration of trade-marks as such, although the Bill of the Act above quoted contemplated the establishment of such an office.

The names of some of the companies are amusing. Thus we have the Gothic Mining, Homoeopathic Provident Assurance, Prosperous Life Assurance, Unpickable Lock, Galen Chemical Works, and Planet Assurance. The feeling which gave rise to the cry of "Ireland for the Irish" is also noticeable in the Irish joint-stock companies, inasmuch as they relate with only four exceptions to local undertakings. It is worthy of remark, that of the three companies formed for utilizing sewage, two are in Ireland. As a set-off we may mention that there are no water companies; whilst Scotland shows two out of a total of fifty-five companies of all kinds.

We have throughout refrained from entering into the merits of individual schemes. We will only remark that the passage from the cradle to the grave is in most cases singularly rapid. For the causes of this high rate of mortality we must refer our readers to the reports of winding-up cases *passim*. The brutal crime of infanticide appears to be no longer confined to the physical world, and in many instances the newly-born company is destroyed by the hands which should have fostered and protected it.

THE HEALTH OF THE IRISH PUBLIC.*

DR. MAPOTHER has just issued a second and enlarged edition of the course of lectures on public health delivered by him to the Royal College of Surgeons, in which is contained a large amount of information respecting the habits and condition of the population of Ireland. This eminent physician bases his views upon the conviction that every battle-field in Europe, the prairies of the West, and the Australian bush, prove that the physical type of the Irishman is inferior to no variety of our species, and that his powers of endurance, freedom from crime, and resignation to trials, entitle him to a cordial effort to raise the particular social and sanitary condition into which indifference has allowed him to lapse. Over this groundwork Dr. Mapother does not spare his lancet, but deliberately lays bare the causes of many Irish evils. These are identical with those in many another part of the world, overcrowding, impure water, imperfect drainage and sewerage, and the absence of either, choked intramural graveyards, insufficient ablutions, improper diet, and a general apathetic negligence as to the effects of external agencies on the health of the human body. In these particulars Ireland and the Irish are by no means despairingly behind other civilized communities. On the contrary, Erin has advantages that are not recognised to their full value. The green island knows no plague of toads and serpents, and her sons are nearly exempt from some of the distempers that rack the limbs and frames of other countrymen. Malarious and aguish diseases scarcely visit Ireland. Dr. John Brown has said,—"If an Englishman is ill, all the trouble is in his stomach; if an Irishman is ill, it is in his heart, and he is killed entirely; and, if a Scotsman, it is in his head." But this seems scarcely true, for many Irish ills seem due more to errors of understanding than of the heart.

According to the last census there are 89,374 mud or sod hovels in Ireland, containing only one room, and 487,668 mud houses with more than one room in them. In the large towns high houses in narrow streets, with every room let out to different families, furnish another type of Irish homes. Dr. Mapother thus describes a house in Dublin—56, Bow-lane, West:—

"Hall and stairs covered with 3 in. of crested filth, first flight so rickety as to be unsafe; second without a banister; floor of second landing broken into two holes about a square foot each, dangerous to life and limb;

ceilings of both top floors broken, and let in rain; no lower ash in window of back room, so that it had to be covered with a petticoat nailed over it—such state would produce colds and rheumatism; filthy privy and back yard without a sewer—prolific causes of diarrhoea."

In Cork, from thirty to sixty human beings crowd into similar houses, which, when built, were destined for the occupation of a single well-to-do family. In Sligo there is misery of the same character. Dr. Tucker paints an Irish interior with a few bold strokes:—

"Some short time since, I noticed the homely hovel of a small farmer (the tenant of a nobleman), which may be taken as the prototype of many in country districts. It was about 12 ft. wide and 24 ft. long. The domestic circle, happy family, or menagerie, that dwelt therein, consisted of a sick man, his wife, four daughters, one son, three cows, one horse, two calves, two pigs, and poultry, all in one common undivided house—no partition. Generally, the pigs dwelt beneath the beds, the people in them, and the poultry over head."

In various parts of the country evictions and the demolition of cabins have driven agricultural labourers into the small towns, where they often find homes in lanes of cottages built back to back, without any sanitary accommodation; and whence, too, the men labour under the additional disadvantage of having to walk great distances before they can reach the scene of their long day's toil. Dr. Mapother owns candidly that in British and American cities the term "Irish" or "Irish town" is the just synonym for wretched and filthy, and that good houses in such places depress in value when let to his countrymen; but he considers the disregard of neatness and cleanliness to be the fruit of the neglected condition of the habitations of the poor, and that were the younger people to be differently educated the reproach would cease.

Acklow, in Leinster, is the picture of misery. The cabins there are usually back to back, and filthier and smaller than any seen by the doctor elsewhere. In one of these places, he records—12 ft. long by 5 ft. broad, with a roof slanting from 5 ft. to 8 ft. high—a woman gave birth to three children last autumn, and received "the Queen's reward." An old coach with a broken roof, drawn to the edge of an open sewer, formed the residence of another human being. The cholera took up its quarters here, as in too many other towns.

Irish graveyards are nearly all intramural; and no inquiry has yet been made into their state, although many of them are in a condition the very reverse of that which is required for the conservation of the public health. Dr. Mapother says he has visited the churchyards of a great many Irish towns, and has generally found them placed on the highest spot near the most central part, whence of course all percolations must descend into the wells. One churchyard he particularly describes, however, as differing from this site, for it lies so low that the water from the river overflows it in wet weather; notwithstanding which circumstance, from 30,000 to 40,000 people are supplied from it. Frequently he found these graveyards overcrowded, and the boundary-walls of others so imperfect that the bodies of infants buried near the surface have been uprooted by dogs. He pleads for the appointment of a public inspector, removed from local influences, who should judge of the suitability of sites for cemeteries with reference to their soil, drainage, and position with respect to prevailing winds. Evidence was recently given by the doctor and others before the Privy Council for the purpose of closing one such graveyard that had been in use 1,200 years, in which it appeared that the soil of it had been raised by interments to the second floor of adjoining houses, that half-decayed bodies were frequently exposed in it, and that coffins were only placed a foot below the surface owing to the number of interments. Need we add that fever and cholera raged round this death-bed?

Typhus is picked out by our author as Ireland's greatest epidemic enemy. He states that it is still four times as frequent in Dublin as in London, in proportion to the population, and that the class of residences of the persons attacked prove that it is defective sanitary arrangements, and not destitution, that cause it.

That this poison is more virulent when introduced into the system in impure water, is shown in the fact, that typhus fever prevails most intensely in towns watered by rivers, such as Limerick, Rinnis, Boyle, and Sligo. How much is yet required to spread a proper knowledge of the means by which it can be eradicated from the ills to which the human family is liable, we may glean by observing how a typhus patient was treated in Irish cottage homes in a former epidemic. As soon as seized, that portion of the

cottage in which he lay was built off, and food and medicine handed to him through a small aperture left for the purpose. The Folkestone people of old time have gained immortality by proposing to throw a net over their town to prevent the importation of small-pox; this Irish mode of confining typhus is equally ingenious and calls for a division of honours. Wherever there is an Irish-peopled quarter, there, curiously, typhus occurs. He who would do good service to his fellow men should endeavour to disseminate knowledge of the causes of this arch-destroyer,—overcrowding and defective ventilation, impure water, bad drainage, personal dirt and squalor, and a low state of the system due to improper diet. This doctrine we have preached in these pages for a quarter of a century, and glad are we to see the word taken up in the sister kingdom by other voices. Different people with different sympathies have urged other requisites as of the first importance to health. Thus, John Hunter's receipt for rearing healthy children was, "plenty of milk, plenty of sleep, and plenty of flannel." The Duke of Wellington's first provision for the soldier was a good pair of shoes, the second a spare pair of good shoes, the third a spare pair of soles. The French physician's legacy to the public was a recommendation of air, diet, and exercise. Moses and Mahomet, in the words of Mr. Disraeli, made cleanliness religion. Benjamin Franklin considered that the colour of our clothing was not without influence upon our health; but it is noticeable that none of these things would be of avail to those doomed to live in an ill-conditioned house, or even in a clean house if it were situated in a town in which unsanitary conditions existed.

Although the Celt is attracted towards the West, with a power as strong as that which draws the magnet to the pole, and the wealthy in nearly all the principal European cities exhibit the same preference for the west end of them, the opulent residents of Dublin have taken up their position in the south and south-east portions. The chemical factories are at the east end, where cholera has prevailed in excess beyond other districts. The soil is gravel and strong yellow clay in the low levels, and calp limestone in the higher. A company has been recently established, called the Industrial Tenements Company (Limited), for the purpose of acquiring, by purchase or lease, old but substantial houses in the localities which fashion has deserted, and fitting them up as dwellings replete with every sanitary requisite for the working classes. There are 9,000 houses already let out in tenements in the city, but no provision whatever is made for the common decencies of life in many of them, and they are, moreover, let at exorbitant rents. Improved dwellings have also been thought of in other quarters, and a block containing 120 rooms was commenced in December, as recently recorded. Our author considers there are yet four things needful before dwellings for the poor can be improved to an extent likely to make any perceptible difference to the public health. These are, in his own words:—

"1. The constitution of a complete controlling authority for directing local government and sanitary improvements.

"2. The enactment of a comprehensive building code: the passing of local Acts, being expensive, is often avoided.

"3. That our sanitary laws should be compulsory in cases of flagrant neglect; the permission to act is still very generally construed as permission not to act.

"4. A generally diffused desire on the part of employers and landowners to provide for the healthful wants of their dependants; and this will grow according as the masses are educated in the knowledge of the laws which regulate the well-being of their own bodies."

Dr. Mapother agrees that there are seasons to diseases, and thus apportions them: inflammations of the breathing organs, rheumatism, dysentery, and scarlet fever to winter; these, with the addition of croup and whooping-cough to spring; bowel diseases, typhus fever, and small pox, to summer; and autumn he considers, with Tertullian, is the most fatal of all seasons. English statistics do not quite corroborate this theory, the three winter months appearing to be the most fatal to life. He is of opinion that consumption is more frequent in Ireland than in any other country. This affliction, scrofula, rickets, ophthalmia, and rheumatism, are all traced to the potato. It is generally allowed that the last-mentioned complaint is due to an acid in the blood; some authorities naming

* Lectures on Public Health, delivered at the Royal College of Surgeons by R. D. Mapother, M.D., Professor of Hygiene, Honorary Member Metropolitan Association of Medical Officers of Health, Member of Council of Surgical and of Sanitary Societies, Medical Officer of Health, City of Dublin; Surgeon to St. Vincent's Hospital. Second edition. With numerous illustrations. Dublin: Faunin & Co. London: Longman & Co. 1867.

lactic, but by our author stated to be carbonic acid; which is the result of a long-continued starchy or saccharine diet. Seeing how our navy has been relieved from the fearful scourge of scurvy by the simple introduction of lemon juice, we cannot but look forward to a similar rescue from other diseases by a like attention to the deficiencies in the fuel with which the frame is supplied to maintain its powers. As one means of improving the diet of the labouring classes, Dr. Mapother advocates the use of Monte Video beef, when prepared according to Professor Morgan's plan, as an ingredient in the popular dish called Irish stew; and as another, the establishment of dining-rooms where working people can procure a cheap and well-cooked dinner. Rye-bread he recommends as containing twice as much lime and three times as much phosphoric acid as wheat, and banishing dyspeptic complaints, and at the same time doing away with all inducement to the use of alum, which produces dyspepsia and constipation. It was Cobbett's opinion that for every man who died of starvation, there were seven who died from overfeeding. Our author does not find this to be the case on his side of the Channel, but rather follows in the steps of Dr. Erasmus Wilson in advocating a much more liberal diet for children and young people than is generally believed to be necessary. The effect of good food upon the adult Irishman is seen in the extra physical power and mental quickness he displays when from home. If the agricultural labourer at home could live as he does in America, upon tea and coffee, fried pork and mutton, sausages, curds, buckwheat-cakes, fried vegetables and sour krait for breakfast, with similar choice and plenty for luncheon, at ten, dinner at twelve, and supper at five, he would be as efficient in Kilkenny as he is in Kentucky.

On the subject of baths our author gives new information. He says he has frequently asked the poor at hospitals when they had last bathed their whole bodies; and the answer was nearly always "never," or "not for years," the exceptions being young men who have taken an occasional plunge in the sea. He then mentions that the law agent of the Health Committee is the advocate of an endeavour to organize a system of female sanitary sergeants, who shall have power to enter humble houses and wash the women and children in them, whether they approve of such ablutions or not, as he finds the system of washing the boys admitted to a certain ragged school to have had the best results, the foul smell in the school-room being banished and contagious disorders checked in their ravages. Notwithstanding this perception of the benefits of bathing, there is but one institution in Dublin which places a frequent bath within the means of the poor man. Eighteen thousand persons avail themselves of the privilege per annum, a number which would be doubtless increased if there were more baths.

It seems almost a fashion now to take up the subject of sanitary reform as though it was quite a new idea, and that nothing has been hitherto done to help on the wheel of progress. We have seen works in which no notice whatever has been taken of previous labourers who have reclaimed the land and made it ready for others to plant. Discouraging, indeed, often, is the work of the pioneer, for he bears the brunt of the burden and yet may not stay to see the results that follow in his footsteps. But Dr. Mapother is not a writer who avails himself of the labours of others without acknowledgment: upon his pages may be found the names and words of most of our sanitary reformers. Neither is he one of those who think they can dispense with the experience, skill, and learning of the architect. Directly he approaches the domains of architecture, whether in the construction of hospitals, houses, or huts, he stops and points to the proper authorities. When we add to this acknowledgment of his candour and reticence that he has sprinkled his lectures with striking facts we shall have given our readers a fair idea of the way in which he has treated this department of Irish rights and wrongs.

LIVERPOOL ARCHITECTURAL SOCIETY.—At the eleventh annual meeting of the present session of this society, Mr. T. J. Kilpin, the president, in the chair, Mr. J. A. Picton read a paper entitled "Notes of a Sketching Tour in France and Belgium, with illustrations." The paper was illustrated by reference to numerous drawings.

MANCHESTER FREE LIBRARIES.

AMONG the civic and municipal institutions, and educational agencies of Cottonopolis there is none that more brightly displays the enlightened liberality of the inhabitants, or that is more worthy of imitation by other communities, than the Manchester Free Libraries, now five in number, which were established in 1852, under Mr. Ewart's Library and Museum Act of 1850, since amended by the Act of 1855.

It is not our object herein to descant upon the glories of the inaugural ceremonies, although the subject is very tempting. The auspicious occasion brought together a brilliant galaxy of intellectual lights. Dickens, Thackeray, Bulwer Lytton, Charles Knight, Sir James Stephen, Monckton Milnes, Shaftesbury, Frank Stone, John Bright, Dr. Vaughan, the Bishop of Manchester, and numerous other distinguished men, "assisted" on the occasion with hearty good will.

In a characteristic speech, Mr. Charles Dickens referred, at the opening meeting, to the phrase, "the Manchester School," which had by that time become established in the national vocabulary, and which, he said, had very contradictory interpretations,—some persons maintaining that the doctrines of the school were very broad, and some that they were very narrow; some that the school was all cant, others that it was all cotton. "I have solved this difficulty," said he, "by finding here to-day that the Manchester School is a great free-school, bent on carrying instruction to the poorest hearths. It is this great free-school, inviting the humblest workman to come in and be a student—this great free-school, munificently endowed by voluntary subscriptions in an incredibly short space of time, starting upon its glorious career with above 20,000 volumes of books, knowing no sect, no party, and no distinction, nothing but the public want and the public good—that shall henceforth represent to me the 'Manchester School.'" Before proceeding to notice the "school"-houses of the Manchester free libraries, it may be mentioned that the 20,000 volumes with which the first free library was opened, little more than fourteen years ago, have quadrupled in number, there being now above 80,000 on the shelves of the Reference Library, or in the hands of readers in that department, or of borrowers from the lending libraries. The first library school-house has had four affiliated district libraries added. In three of these the business is carried on in buildings erected at the public cost, for the special purposes to which they are devoted, and the fourth branch is having a new house erected for it.

It is to be regretted much that a project so great and so deserving as that with which the Manchester Free Libraries' Committee have been entrusted should have been marred, to a considerable extent, and have been restricted in public usefulness, by serious mistakes from the first step—it may be truthfully added, to the last—in their provision for the housing of their noble institutions.

The nucleus of the Manchester Free Libraries was formed at Campfield, where the collection is still known as the chief library. This was the first library established under the Act referred to, and the first free lending library maintained at the public cost, out of local rates, opened in the kingdom. If the late Sir John Potter and his co-labourers in the grand initiatory steps could have anticipated the experience of the last fifteen years, we venture to think that the chief library would never have been located at Campfield, and that the temptations of a cheap, but ultimately dear, purchase, would have been resisted. Several considerations operated as instigations to the purchase of a site unsuitable, and of a building ill-adapted for a Central Free Library of Reference, and for circulation. The "Hall of Science," founded by Robert Owen and his disciples, was a large, hideous, unfinished brick building, in which various "educational efforts" were made on week-days and on Sundays, for the elaboration of a "new moral world."

In its later days the educational efforts became degraded into orgies, indulged in by promiscuous dancing parties of boys and girls and young people—factory operatives chiefly. These were not satisfactory to the more punctilious inhabitants of the district, nor considered creditable to the general community. They were resorted to probably more as a means of meeting the liabilities of the concern than as moral agencies. The "hall" went a-begging for a buyer, and was bought for a very small price by the founders of

the Free Libraries. The site is anything but central, or suitable for the deposit of such a large collection of rare and valuable works for study and reference. It is quite on the outside of the business part of the city; and even as regards residential passers-by, can scarcely be said to be on the road to anywhere. The gaunt unfinished building required more money for its, at best, imperfect adaptation, and has required more money since for its maintenance, than would have sufficed to have erected a new specially adapted building in a suitable situation. The structure had to be almost entirely remodelled; the window spaces were all re-adjusted, and the walls thereby greatly weakened. To gain an additional room, the walls were raised, and a heavy roof placed upon them,—much too heavy for their shattered condition. The side front of the remodelled building, which is in the Italian style, was faced with Portland cement, which is constantly shaking off, and necessitating repainting of the two fronts, side, and entrance, every few years, at a large cost each time. Heavy expenditure has also been incurred in the various attempts, under the most disadvantageous circumstances, to warm, ventilate, and light the rooms of a radically defective building. Notwithstanding all the disadvantages presented at the outset, the late Mr. Picard, of the Architectural Department of the Manchester Corporation, contrived to plan and fit up a noble room for the purposes of the Reference Library. This apartment is above 80 ft. long by 54 ft. wide, and has a coved and panelled ceiling, the height being about 20 ft. to the spring of the cove, and to its top, 27 ft. It is lighted by twelve windows—six on each side, which are 15 ft. 6 in. in height, by 5 ft. 3 in. wide. The lower room, used as a free newsroom and lending library, is of the same area as the Reference Library, but considerably lower in the ceiling, and very difficult to keep sweet, crowded as it constantly is with newspaper readers and visitors to the lending library. The serious disadvantages resulting from the inconvenient situation and other causes of the Free Reference Library of Manchester, are likely to be remedied by the resolution which has been adopted by the city council, that accommodation shall be provided for the department in the new town-hall; always provided, of course, that the protracted discussions concerning the site and the extent of the proposed town-hall should end more tangibly and sensibly than the lively debates and voluminous documents devoted a few years since to the new Post-office question, which ended in the Government order,—“As you were,”—and in failure to obtain upon either of the sites fought for a building worthy of the city.

The outgrowths of the chief library have been, in succession, a branch library in Hulme, for the use of the inhabitants of that district; another in Ancoats; a third in Rochdale-road; and, lastly, a fourth in Rusholme-road. With the map of Manchester before us, and noting the localities in which the branch libraries are planted, we conclude that one more, to serve the inhabitants of the Strangeways and Cheetham-hill district, on the north side of the town, will complete the system, and satisfy all reasonable requirements for some time.

With limited means at their disposal, the library committee, in opening the first two branch libraries, Hulme and Ancoats, adapted the most suitable existing buildings they could secure for temporary occupation. These premises,—ordinary shops and dwelling-houses,—were, as may be supposed, very difficult of adaptation to such special uses as news-rooms and libraries, and the accommodation so extemporized is not fairly open to criticism. The inconvenient occupation of these make-shift places had its use, however, in the negative sense of giving experience "how not to do it," as regards premises, and indicated the essential requisites that should be provided in buildings specially erected for free news-rooms and libraries. A wise use has been made of the experience thus acquired in relation to two of the new branch libraries that have been built by the committee, but it has been utterly disregarded in relation to two others, one finished and the other in course of erection. The two former are the new branch libraries at Hulme and in Rochdale-road, which were built to the plans of the late Mr. Richard, of the Manchester corporation; the others are the Rusholme-road branch, recently completed, and the Ancoats branch, in course of erection upon the plans of Mr. Waterhouse. Whether the architect had *carte blanche* from the library committee we do not know, but

the news-room at Rusholme-road is certainly ill-fitted for the uses to which the room is applied.

The sententious counsel once given, on the eve of battle, "Put your trust in God, my boys, but keep your powder dry," contains the essential elements of the instructions upon which the officers in charge of public reading-rooms require to act, "Have confidence in your visitors, but keep your eye upon them." All such places of resort, from the great reading-room of the British Museum—with its radiating desks all raked and commanded by the officials in the centre of the room—downwards, require to be under surveillance throughout their entire area. Even in the British Museum the abstraction of books, parts of books, and prints, maps, &c., is not an unknown crime. The news-rooms connected with each of the five free libraries of Manchester are open to all comers, absolutely free and without the necessity for introduction or qualification of any sort, other than freedom from an offensively filthy or an inebriated condition. It is no great detraction from the glory of these institutions, nor a thing to be wondered at, that papers are occasionally pilfered, partly through ignorant, partly through criminal, cupidity; neither is it to be wondered at that these offences should be numerous in exact proportion to the laxity of attention on the part of the officer in charge of the room, and to the hinderances that its construction and arrangements may throw in the way of his complete surveillance. The public room in Livesey-street, Rochdale-road, is the first new building which was erected by the Library Committee. The one public room, 42 ft. by 32 ft., serves for both reading-room and library, the lending books being shelved across one end of the room, with a short return of shelving within the librarian's counter on each side. The entire area of the room is constantly within the range of his vision. The library has a handsome dressed stone front, and, adjoining it, a rather shabby house—also built by the Corporation—and occupied by the librarian. The room has a lantern-roof, and is lighted at night—as are also, we ought to have said before, the rooms in the chief library, at Jampfield—by gas sunlights, with arrangements for carrying off completely the products of combustion, and the vitiated air exhaling from the visitors.

This branch serves its purpose well in all respects than this, that it is about half the size it should have been. A small fact may seem, but it is worth being kept in mind in the discussions as to the first provision, and the expediency of the proposed new town-hall for the city.

The second new branch library built by the committee was for the important township of Hulme, in the Stretford new road. The accommodation here is on a much more extensive scale than at Rochdale-road. The library occupies the wing of the finest building in the township, the Hulme Town-hall. To the right of the entrance is the lending library, with an area of 17 ft. by 29 ft. within the counter. The news-room, to which there is a wide passage in front of the library counter, is a fine light and lofty apartment, 47 ft. long by 44 ft. wide. The plan is simple and unpretending, the result admirable. The arrangements for the shelving of the books in the library are most convenient; wings being thrown out from the walls carrying double-lined shelves. The division between the library and the news-room is by a partition, raised in the under part, by which the librarian can command a view of every visitor in the room. This he does by the help of the simple arrangements in the reading-room. Along the walls on one side and one end are reading-slopes for the accommodation of about forty papers. The main portion of the area of the room is occupied by four long and wide tables, with seats round them; such tables being covered with weekly newspapers, magazines, and other periodicals. This branch has worked very successfully from its opening; the success being fully attributable, doubtless, to the efficiency of the librarian, Mr. B. Chadwick, but not less so to the constructional internal arrangements.

The next branch library opened was that at Rusholme-road, a few months since, when Lord Shaftesbury and other notable men lent their aid to the occasion. In this building there may be excess in the way of art; bricks and stone, and boards, and skirtings, are certainly left to what they are, but there has been retrogression as regards the fitness of the room for its usual use. It would seem to us that the

owners of the land upon which this building is erected might have made it almost anything within a reasonable limit in form and arrangement that they could have desired. It presents a frontage of about 80 ft. to the street. The lending-library, in the front part of the building, is 58 ft. by 30 ft. wide; and is arranged as regards shelving on a similar plan to the Hulme Branch. Above the library is a large room available for a district lecture, meeting, or concert-hall. With these provisions we have no fault to find. A back building is run out at a right angle from the front block. This back portion is the free news-room, and is 60 ft. long by 30 ft. wide. It is lighted in the day-time by ranges of clear-story lights, and by a seven-light wheel stained glass window in the gables. The walls are sufficiently lofty, 24 ft. to the wall-plate above the clear-story. The glass screen exists, as at the Hulme branch, between the lending-library and the news-room, but here the standing reading-boards are ranged across the room; and, unless the librarian can see through several files of readers, and as many deal boards, he can have no oversight of the occupants of the room. But this is not all. To the right and left of the clear-story wall are, on the ground-floor, series of alcoves recesses 9 ft. deep from front to back. These are each fitted up with a four-sided reading-slope in the centre, and are sealed all round; and are, it need not be added, quite out of the reach of the librarian's eye, and even, for the most part, out of sight of the occupants of the body of the room. In these recesses the wicked of the visitors may play all sorts of pranks without fear of detection. It should be mentioned here, in connexion with these institutions, that the visitors may not only read the newspapers, but they may also obtain books to read "on the premises," and returned to the librarian when they leave the news-room. Revisiting the room, after the gas is lighted, that is, when the room is most used, it seemed to us that the gas-jets, which are arranged round the walls in brackets, throw a fine light upon the principals and ties of the open timber roof, but put the papers, for the greater part, into shadow. The alcoves must either be bricked up, and the space wasted, or the main wall must be taken down and rebuilt to enclose all the area to be used as a news-room.

The new branch library at Ancoats is upon the same plan, in its main features, as that we have been referring to; but the committee have determined to give up the alcove arrangement.

We have dealt rather lengthily with this subject, from the belief that it is important that the municipalities which have adopted, and are adopting, the Free Libraries' Act, may have information that may be of use for their guidance in providing the necessary buildings.

AN EARLY ENGLISH DOMESTIC ARCHITECT.

JOHN THORPE.

In this well-encouraged age of architecture in England, when the Tudor or Elizabethan style is the prevailing fashion among the successors of Inigo, Sir Christopher, and Sir William Chambers, some account of the ablest architect who flourished in England, whose works are now again in fashion,—and of whom, unhappily, there is little known,—will not be deemed out of place. I trust, in the columns of the *Builder*. The skilled thousands who admire Wollaton Hall, near Nottingham, Hatfield House, in Hertfordshire, and Holland House, in Middlesex, will be pleased to have told them all that is publicly known:—

"How nothing's that!"

of the great High Priest of this old revived, patched, yamped, picturesque, and truly English style of architecture,—more especially so when infinitesimal is relieved with a little (however

A certain John Thorpe (one Thorpet), an architect and surveyor,—I may safely call him,—was largely employed in England during the latter years of the reign of Queen Elizabeth and the opening years of the reign of King James I. He practised,—if, indeed, he did not invent,—a Domestic style of architecture dear to the

hearts and hearths of England. Yet, oddly enough, we may safely assert that his name was unknown to Wren, to Vanbrugh, to Gibbs, to Kent, to the Earl of Burlington, and Batty Langley. His name escaped the diligence of George Vertue, and was only revived or resuscitated by an accident.

When (about the year 1772) Walpole was busy with his *Anecdotes of Art*, in England, the then Earl of Warwick (a Greville), attracted by his book, considerably placed at his disposal for future use an atlas-sized volume of designs, elevations, &c., the work of one John Thorpe, of whose existence the diligent George Vertue was not aware (for he had collected nought about him), and of whom, a pains-taking inquirer like the Lord of Strawberry-hill (that romance in lath and plaster) knew nothing, or at least had nought to tell. And yet what nothing Walpole has preserved and set in gold by the imitable artifice of his pen. "Pretty in amber," &c.

That Walpole valued the atlas-sized volume we may readily understand; that he coveted it we may safely assert; that he returned it to Lord Warwick is certain, for the volume was sold 10th April, 1810, at the sale (as Mr. Dallaway tells us) of the library of the Hon. Charles Greville, and bought by no less a person than Mr. Soane, R.A., afterwards Sir John Soane. Mr. Dallaway adds, that the fortunate purchaser "offered it to Lord Warwick for the price he had given, when it was declined with a merited compliment."

I have been fortunate enough to discover the price that Soane gave. It was *twenty-seven guineas and a half*. What would it sell for now? But our precious folio is past all human probability of coming again under the auctioneer's hammer. Collectors who annotate Walpole's "Anecdotes," should insert in ink, and neatly, the price that Soane gave.

Walpole's brief account of Thorpe may be in part transferred, with advantage, to the *Builder*. The words in square brackets [] are mine:—

[From Walpole's Works, vol. iii., pp. 144-5, 4to., 1798.]

"SUPPLEMENT.

By the favour of the Earl of Warwick, I am enabled to bring to light a very capital artist, who designed or improved most of the principal and palatial edifices erected in the reigns of Elizabeth and James I., though even his name was totally forgotten. I am empowered by the same condescension to point out a volume of drawings of that individual architect,

JOHN THORPE,

who has left a folio of plans, now in Lord Warwick's possession. There are not many uprights, but several ground-plans of some of the palaces, and many of the nobility, extant, erected, or altered at that period. Of some he names himself the author; of others he either designed, supervised, or proposed alterations; though, according to the negligence of that age, he is not circumstantial in particulars. There are ground-plans of Somerset House; of Buckhurst House, in Sussex, an immense pile; of Woolton [Notis]; Copthall [Essex]; Burleigh House ["by Stamford town"]; Sir Walter Cope's, now Holland House, at Kensington; Giddy Hall, in Essex; Audley End; Amphil (now called Houghton); and Amphil Old-house [Beds], another spacious palace in which Catherine of Arragon sometime resided, and of which he says he himself gave the plan of enlargement; and Kirby [Middlesex], of which he says he laid the first stone in 1570. . . . He appears also to have resided at Paris, and even seems to have been employed there; at least he gives alterations for the 'Queen-Mother's house, *Faber St. Germain*, which I suppose means the Luxembourg in the Faubourg St. Germain, and a plan of the house of Monsieur Jammet (Zamet).

There are several other smaller seats and houses in the book, some with the names of the gentlemen for whom they were built. One which he calls *Cannons*, is Father Lake's house [Cannons, Middlesex]; and another is a whimsical edifice designed for himself, and forming the initial letters of his name, I . . . T., conjoined by a corridor (which I have expressed by the dotted lines) and explained by this curious triplet:—

"These two letters, I and T,
Join'd together as you see,
Is meant for a dwelling-house for me,
JOHN THORPE."

* Tennyson.

* Ben Jonson of William Camden,
† Bishop Burnett's "one Prior" (the poet) and the epigram thereon must be in the ready recollection of many.

The volume, however, is a very valuable record of the magnificence of our ancestors, and preserves memorials of many sumptuous buildings of which no other monument remains.*

Of Thorpe I have a fact or two new to his biography to tell. He is referred to in print by Henry Peacham, a well-known and voluminous writer of the reigns of James I. and Charles I. See the last page of Peacham's "Gentleman's Exercise." Henry Peacham was a popular book-maker (not unlike James Howell, the letter-writer), of the reigns I have mentioned. Walpole has an account of him in his Catalogue of Engravers. He was Master of Arts of Trinity College, Cambridge, and travelling tutor to the sons of the Collector Earl of Arundel,—consequently no common man.

But to make good my promise of a fact or two about Thorpe new to his too brief biography. First of all, after a long and expensive search in the Prerogative Will Office of the Archbishop of Canterbury, I failed in detecting our architect. I found a John Thorpe—a likely one—and my cheeks flushed with hope; but this John Thorpe unhappily was a "mariner"—not a master-mason, a surveyor, nor an architect—and so my money was lost. That our Thorpe was a "surveyor" is evident from a short "survey" of his printed in the Parliamentary Reports of Fordyce of the Land Revenue Office. Others may still exist. Let me hope, therefore, that I may set others on the right scent for facts, however small, "touching" our great Elizabethan architect—our ablest architect in the Domestic and Jacobean from 1665 to the accession of Charles I., in 1625. His Strand front of Somerset House, in the Soane volume, is fine, and well deserves to be engraved.

Before parting with our architect, let me hint how I more than suspect that the fine house of Loseley, near Guildford, in Surrey, is by Thorpe. In the Soane volume is "Sir Geo. Moore's house." Now, perhaps, some skilled surveyor will kindly tell us if the happily still standing house of Loseley is identical with the design in Thorpe's volume?

Loseley is in the hundred of Woking. There is an excellent engraving of the drawing-room, with its rich chimney-piece, in the first series of Mr. Joseph Nash's "Plates of the Mansions of England in the Olden Time."

PETER CUNNINGHAM.

THE LATE HERBERT MINTON.

I FEEL deep regret that in your number for the 16th inst. Mr. C. B. Allen should have sought, in his advocacy of the claims of the artist and art-workman in the production of works of art to distinguished rewards, to depreciate ungenerously the claims which the late Mr. Minton had to the honours conferred on him for the works which his firm produced, and which Mr. Allen considers as an instance of great "ingenuity and unfairness." I know not on what authority he states that Mr. Minton considered it absurd to suppose "that we had yet to learn of the barbarous Chinese." From a close intimacy of many years with my late valued friend Mr. Minton, from many conversations with him on the subject of art as applied to manufactures, and inspecting with him different collections and objects of art, my impression is firm that he neglected no source of information and improvement, but sought out each with an acuteness of intelligence in reference to his own pursuit peculiar to himself; that he not only highly esteemed the skill and taste of the French, but that he held in the utmost value those of the Italians; and he instituted experiments upon tesserae of gold mosaic, given him by my friend the Signor Foscati, from the ceilings of the Mosque of Sa. Sofia at Constantinople, in order to understand their composition and manufacture. Your correspondent says, "Mr. Minton was an employer of art-labour in all forms, but he was nothing else." In this the writer is most unjust; for he was a man of great taste, and no one ever had a greater tact in appreciating the style of art and execution best adapted to his peculiar class of manufacture, a skill much beyond that of the mere artist or artisan. If he could not compose or draw, he knew how to direct the artist, both as to subject and treatment; for it rarely

happens that even a good artist, unless with great experience and practice, can know the special conditions, which belong distinctively not only to every class of art manufacture, but to the different objects themselves. This Mr. Minton possessed in the highest degree; and to the full extent of his powers he cultivated those qualities in the artists he employed, and thus rendered their talents available for his special purpose. He had a noble ambition, superior to the idea of mere profit or loss, for he was animated by the spirit of a master of the olden times, as of a Pallissy, to produce the best and noblest work of the kind, and to encourage all employed under him; as witness the body of his men that were sent to the last Paris Exhibition for a week, at the cost of the firm, to instruct and improve themselves. All, therefore, should agree that Herbert Minton was a distinguished man, and deserved the honours that were bestowed upon him.

THOS. L. DONALDSON.

THE PRESIDENCY OF THE ROYAL INSTITUTE OF ARCHITECTS.

THE two years' term of Mr. Beresford Hope's presidency being now about to expire, we understand that the names of Mr. Tite and Earl Grosvenor are being mentioned for the office. We cannot possibly be wrong in expressing the hope that whatever nomination may be decided upon, the election will be kept clear of everything like contention, and especially of that kind of contention which becomes partizanship. With regard to the two gentlemen above alluded to, it may be said that on the one hand the members of the Institute cannot but remember gratefully the noble way in which Mr. Tite, on a former occasion, filled the office; while on the other hand, the distinguished credit which is understood to be due to Lord Grosvenor in respect of the architectural operations on his father's estate at Piccadilly may be held to entitle him to early honour at the hands of the profession.

If a single word may be permissible on "the Battle of the Styles," we would say that Mr. Beresford Hope's active presidency, and that of Mr. Tite, have both proved the utter groundlessness of all apprehensions of partiality founded on the mere personal tastes of whatever gentleman is entrusted with the honourable position of President.

PRIZES FOR ART-WORKMANSHIP.

A LARGE number of premiums will be again offered by the Society of Arts to carvers, metal-workers, bookbinders, painters on china, and others. A committee met at the South Kensington Museum last week, and selected a number of fresh objects for reproduction.

The Yorkshire Architectural Society, with a view to encourage the art-education of workmen residing in Yorkshire, propose to offer prizes, accompanied by certificates, to the producers of the best examples of stone-carving, wood-carving, modelling in clay, or metal-work. For the present year the prizes will be for subjects worked in wood.

CARDIFF LADIES' SANITARY ASSOCIATION.

A PRELIMINARY meeting has been held to form an association on the principles of the London Ladies' Sanitary Association at Cardiff. The Mayor occupied the chair; and Major Page, for his sister, Miss Page, who convened the meeting, explained the objects of the association. His sister, he said, was induced some years since to take an interest in the proceedings of the London society, which had many branches formed in different towns in the kingdom. She thought that no better means of doing good were afforded her than by establishing a similar association in this town. It was at present proposed to limit the operations of the Cardiff association to the distribution of the admirable tracts published by the London society, which contained popular information on sanitary matters, and to the aid that would be rendered by Bible women and others who were interested in the matter. They had annual subscriptions for the present year which amounted to 40*l.* and 25*l.* in donations. He believed that they would be able to increase their donations to 50*l.*, and then they would be

enabled to accomplish a surprising amount of good. The meeting then proceeded to frame rules and appoint office-bearers, Mrs. Olivant as president, and Miss Page as honorary secretary. Gentlemen of the medical profession and clergymen had offered their assistance, and a committee of gentlemen was appointed to aid the ladies, who also appointed a committee.

ENIGMA.

1. Aloft in the air, and beneath in the ground,
2. Both in fire and water I'm commonly found;
3. With women display'd, in old books, in a tree,
4. Wherever you gaze you may recognise me.
5. Look under a hood and examine a face,
6. My lineaments there you may probably trace;
7. In the reign of King John, though so gracefully framed,
8. A spiller of blood I was pointedly named.
9. While Edwards I flourish'd, became very rich,
10. And rose under them to an eminent pitch.
11. In the time of the Tudors, though gaudily dress'd
12. And in canopied state, I was sadly depress'd
13. Connected with Churchmen, with bishops, and peers,
14. Even seen with a monarch, yet often in tears,
15. Under me have been marshall'd the great and the proud,
16. Yes, to me all the greatest and proudest have bow'd.
17. These wide-spreading honours soon banish'd my glory.
18. My head being fill'd with the brightest ideas;
19. The brave and the royal I welcome; in short,
20. Do myself wear a crown, and can boast of a court.
21. Having once been a Roundhead, the king, you'll agree,
22. Was forced from a palace to prison through me.
23. In old Greece and old Egypt you'll seek me in vain;
24. At Rome, in vast heaps, you may find me again.
25. Across the wide waters, far over the sea,
26. View my glorious form in its full symmetry.
27. On many a stage have I acted a part,
28. Still of shape bent, askew, rarely straight as a dart.
29. I am waggle and mirthful, yet surely, like man,
30. It must be admitted my life's but a span;
31. Two a share in each line, no railway could stand
32. Without me and my capital at their command.
33. In groves and in arbours I oft vegetate,
34. Or inhabit a cavern, so varied my state!
35. In cities I revel; without my support,
36. What would come to the Church, the Senate, or Court?
37. Broad-shoulder'd, and firm in the joints, be it known,
38. I can carry a load weighing many a stone.
39. With members so securely, for one of my mould,
40. And so solid in my shape, every rib may be told;
41. No obstacles stop me, so well built and strong,
42. By spring after spring I am carried along.
43. Far removed from the base, it must now stand confessed
44. That my friends may be rank'd with the firmest and best;
45. A wide sweep of adherents, of varied degree,
46. Whose very assistance is central in me.
47. United with such, ever close at my post,
48. Mine is clearly a proud elevation to boast.
49. To sustain the union, to enable the face,
50. To enlighten and edify,—this is my place.
51. On my work let no evil construction be laid,
52. While my course is so even, the rule well obey'd.
53. Those who my rule may not be to your mind,
54. But for these lofty purposes I was design'd.
55. The secret's unlock'd when my key is once grasp'd;
56. In a month you will certainly find me at last.

SOLUTION OF ENIGMA.—ARCH.

1. The vault of the heavens, &c.; tunnels, &c.
2. Furnaces, piers, bridges.
3. Archers; arches; larch.
4. Broodmoulding; eyebrows; nose.
5. Lancel arches.
6. The Decorated style.
7. High-pitched roofs.
8. The depressed Tudor arch.
9. Archdeacons, archbishops, piers.
10. Monarch; tiers.
11. Under roofs.
12. Low Gothic doors.
13. Stained glass.
14. Triumphant arches.
15. The Crown of an arch; the Court of Arches.
16. Circular Norman arches.
17. Through gates and doors.
18. Rainbow.
19. Building stages.
20. A skew bridge; straight-sided arch, or stone-looked in a straight line on the principle of an arch.
21. The adjective, "arch."
22. Capital of pillars.
23. The shoulders of an arch; joints of stones.
24. An arch is said to be "saggy."
25. The members of an arch.
26. The ribs of vaulting.
27. The spring of an arch.
28. The haunches.
29. Being bricks, the slang term.
30. Sweep of arch; at different angles.
31. Centre of arch.
32. The posts of an arch.
33. Elevation of a building.
34. With windows.
35. Courses of bricks; the square.
36. Stories of houses.
37. The key of an arch.
38. March.

C. P. T.

* Compare Wornum's Dallaway's Walpole, p. 202, with Dallaway's own Walpole, vol. i. p. 336. The woodcut of "Burleigh House, Lincolnshire," is omitted by Mr. Wornum.

COMPETITIONS.

Bristol Assize Courts.—The Finance Committee have considered the subject of procuring plans for the new Assize Courts, now that the property in Small-street, intended for the enlarged site, has been secured. It is determined not to advertise for plans generally, but to send to the six previous competitors to request them to give designs. The mayor, as chairman of the committee, moved that they should refer to the council for fresh instructions before taking any important step, and Mr. Phippen seconded him; but the majority eventually decided to invite the six former competitors only. The plans are to be sent in by the 28th of May.

Schools, Liverpool.—In a local competition of nine architects, for schools, to be erected at the sole cost of a benevolent lady (Miss Wright, a member of the congregation of Holy Trinity Church), the designs of Mr. J. F. Doyle were selected.

Burnley New Workhouse.—Local critics have pointed out considerable deficiencies in the accommodation provided by the selected design, nor do the objections seem to have been successfully got rid of. However, the guardians appear to view the design as merely the groundwork for some architect now to work on, and we find in the local *Gazette* the following extraordinary advertisement:—

"The Guardians of the Poor of the Burnley Union are desirous of receiving Tenders from Architects willing to undertake the preparation of the detail and working Drawings, and the requisite specification of the new Workhouse, and also to superintend the erection thereof for at least two days per week, and give the usual certificates of work done or materials supplied by the respective contractors. Sealed Tenders to be sent in to me, endorsed, 'Architect's Tender,' not later than," &c.

This seems a new phase of competition. What was the object of the competition just closed, if not to obtain an architect? Who so fit to carry out the design as the designer? And if the design is not a good one, what business had the Board to select it? We shall be glad to have the names of the architects who "tender" under this precious advertisement.

ARCHITECTURAL NEWS FROM GERMANY.

Prussia.—The war of last summer, short though it was, could not fail to make a marked difference in all peaceful pursuits—in building operations amongst the rest. Large factories, iron-works, and builders' yards were partially, in many cases entirely, closed, in consequence of the conscriptions going on throughout Germany, in order to bring the various armies up to the required standard of a war-footing. That, under these circumstances, public and private buildings in course of erection should have been mostly stopped in their progress towards completion, was only a natural consequence of this wholesale calling-in of all able-bodied workmen. And even for months after peace was restored, and the men had been dismissed from the armies to resume their various vocations, the effect continued to be felt throughout Germany. Gradually, however, confidence was again restored, and at this moment most of the factories and other operative establishments throughout the kingdom, are in full swing again.—At Berlin, the new National Gallery is rapidly progressing towards completion, after-hours by gas being kept up throughout the building. This is, however, the only public erection of any general interest, now in progress in that city.—The annual prize of 750 dollars (about 100 guineas) for two years, to be applied by the successful student in travelling, is this year open to architects: it is for Prussians only.—A new weekly architectural journal has appeared here, called the *Wochenblatt des Architekten-Vereins zu Berlin*. It contains the proceedings of architectural societies, original articles on arts generally, notes and queries, Competitions, and other matter of special interest to the profession, and is edited by Baumeister Beckmann.—The city of Breslau intends to commemorate the Prussian victories by the erection of a Hall of Arts and Sciences, the estimate for which is about 45,000*l*. They hope to raise two-thirds of local subscriptions, and propose applying to the Majesty for the other third.—At Cologne a tower of the Church of St. Maurice has been entirely rebuilt, reaching a height of 218 ft. The top of the spire is to be surmounted with a colossal statue of the patron saint,—a somewhat questionable proceeding, which reminds us of

St. George's, Bloomsbury, where, contrary to the good old loyal axiom, that the king is the head of the Church, he is made the head of the steeple. On clearing some ground not far from the Dom, and on the eastern side, the workmen engaged discovered an old Roman bath, octagonal in plan, and about 7 ft. across. The corners are vaulted, and two sides are longer than the rest to contain stone benches. It will be impossible to remove this relic to the Museum, partly from its depth (the top of the vaulting is 14 ft. below present street level), but chiefly from its constructive material, which seems to be brass, with a coating of very hard cement.—At Frankfurt a competition for a large Gothic church has resulted in the adoption of a plan by Mr. Franz Schmitz, of Cologne. Mr. Schmitz was a pupil, and is the successor, of Professor Schmidt, as architect to the Cologne Dom.

Austria.—The eight marble groups intended to have been placed on the parapets of the Elizabeth Bridge at Vienna, should have been delivered in November last, but the course of events last summer delayed their execution, and we are now informed that they will be formally inaugurated on the 24th of April next, being the anniversary of the marriage of the present Imperial couple.—Count Wickenburg, formerly Minister of Commerce, is, by command of the emperor, engaged at the head of a committee to consider the most feasible method of executing a building designed to contain the different collections of objects of art belonging to the Imperial family, but now dispersed over many parts of the empire.—During his late visit to Prague, his Majesty gave 10,000 florins towards the rebuilding of the Bohemian Museum in that city, as also 5,000 florins in aid of the National Bohemian Theatre.—Mr. Fr. Stache, architect, of Vienna, has received the "gold medal for arts and sciences" from the King of Württemberg.

Northern States of Germany.—The palace at Brunswick, which, as our readers will remember, was almost entirely burnt down one cold winter's night, two years ago, whilst a court ball was going on, has been so far rebuilt that its completion may be expected next autumn. The central portion and the right wing are entirely restored, leaving only the left wing and the dome over the rotunda to be completed. Professor Howaldt, whose celebrated labour of ten years, the "Quadriga," melted in the flames, is busy on a second edition, which he hopes to finish in another two years. He has already completed one horse, and is far advanced with a second.—At Bremen the erection of a new hotel de ville has been determined on. The site is one side of the square called the "Domshaide," in the rear of the statue of Gustavus Adolphus. This statue, by the way, had a little history of its own, before it found a resting-place amongst the Bremer. It was originally intended for Berlin, and was modelled and cast by Swedish artists about the year 1854. The ship which was to take it round from the Baltic stranded on the shoals off Heligoland, and sank. The Heligolanders fished it up, and, claiming the right of stranded goods, refused to give it up. Here we saw the great hero, fresh from the mould, lying prostrate on the beach, with his sword and one finger broken. Prussia refused to re-buy him, and so he was ultimately bought by the Bremer, and hoisted on a pedestal in their principal square—the champion of Protestantism in a Protestant city. But, to return to the projected building. It is to contain two large halls for meetings, and eighty-two smaller rooms, and is to cost 280,000 dollars, or about 42,000*l*. The architect of the building, which will be Gothic in style, is Mr. Schröder, city architect.—At Hamburg, the Senate has voted another 62,000 dollars towards the completion of the "Kunst-halle," or hall of arts and sciences. This makes up, besides the free grant of the site, a total cost of 254,000 dollars, or about 38,000*l*, of which some 20,000*l* were raised by voluntary subscriptions.—The old round-arched Dom of Lubeck is terminated at its western end by two square towers and spires, each 400 ft. high. One of these towers has at last become dangerously unperpendicular, and is now surrounded by scaffolding preparatory to being partially taken down. The spire will be rebuilt when the tower is brought back to a vertical position.

Southern States of Germany.—The well-known influence held by Richard Wagner, the composer, over the King, has manifested itself lately in an order for the erection of a theatre at Munich, larger and handsomer than any now in existence in that city. The original idea was to place it upon some high ground, known as the Gasteig-

anlagen, on the further side of the river Isar, and to connect the building with the palace by opening up a new street and throwing another bridge across the bed "of Isar rolling rapidly." This plan has, however, been abandoned, and the new theatre will stand on the site of the present "Hogarten" barracks. Professor Semper, of Zurich, is the architect engaged; and the estimated cost is three millions of florins, or about 250,000*l*. The style will be Italian Renaissance, and one of its features will be the entire absence of galleries or balconies; the seats rising one behind the other, on the plan of the ancients. In its elevation next the street, the theatre will be flanked on either side by concert-rooms, &c.

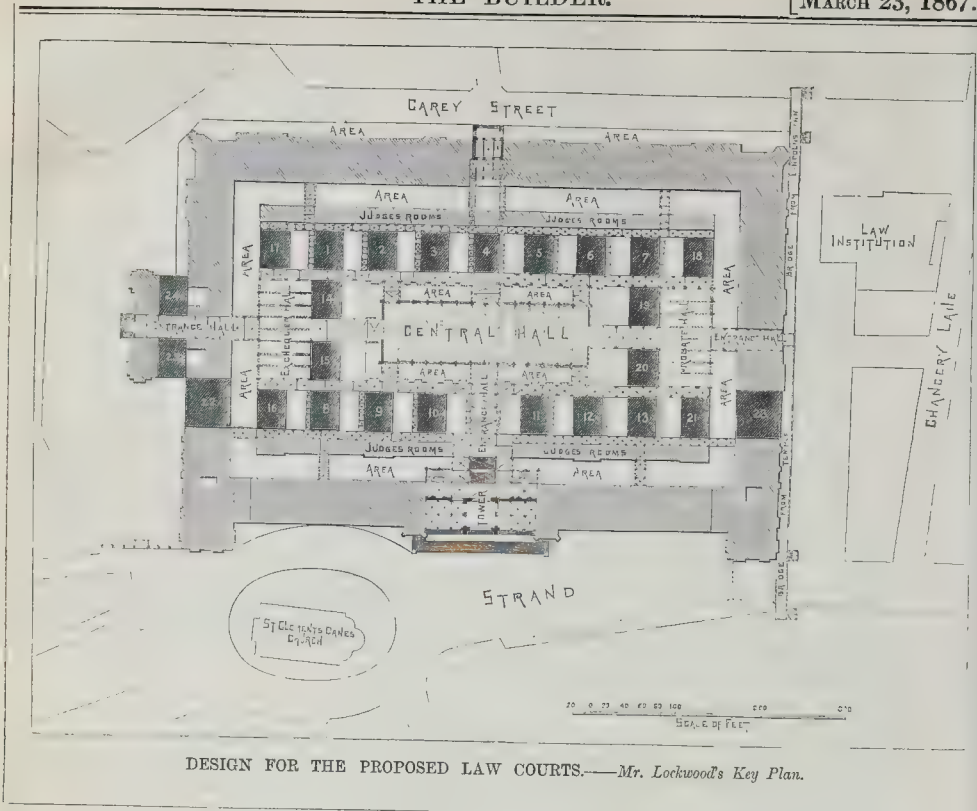
—That indefatigable erector of statues, old King Ludwig I., has ordered three more. One of these is for Regensburg, in memory of his old tutor, Bishop M. von Sailer, and is to be 10 ft. high; Professor Widmann, of Munich, is now engaged upon the model: the casting is to take place next year. The other two statues are those of the two architects, Gärtner and Klenze, and are to be erected on the Gärtner-platz, immediately in front of the Volks Theatre, at Munich. The execution of both these figures is entrusted to Professor M. Widmann.—According to the audited accounts of the architects engaged upon the Minster at Ulm, the sum expended on restoration and repairs between 1844 and 1866, amounted to 305,500 florins, to which must be added a new organ and loft, which cost 60,700 florins more, making a total of 366,200 florins, or about 38,000*l*, over a period of 22 years. About half of this sum was raised by voluntary subscriptions in 14 years, whilst the Government and city contributed the remainder.—At Heidelberg a Society has been formed having for its object "the preservation and right treatment of the ruins of Heidelberg and its neighbourhood, and study of their history and artistic value." We are glad to hear it.

BRADFORD EXCHANGE.

THE new Exchange for Bradford, the style of which may be called Gothic of the period, rather Italian than English, was opened on the 13th inst. The first stone was laid in 1864, on which occasion we gave a view and plan of the design.* The site upon which the exchange is erected is in the form of a triangle, with the narrowest point towards the principal front. The front hall is 80 ft. long and 56 ft. wide, and in addition has a large semicircular projection, on the north side. The room is divided into three those on each side being 10 ft. in width, and forming as it were an ambulatory round the room. The centre compartment is supported by eighteen large polished shafts of red granite, 2 ft. in diameter, with carved capitals. From these columns arches spring which are fitted with glass. The roof is entirely open, and the spars and timbers exposed. The principals or main supports are double, and fitted between with allegorical figures, bearing shields. There are large windows at each end, filled with tracery, and dormer lights in the roof. The walls of the hall are of stone work, with moulded plinth, above which, 3 ft. in height, is a lining of encaustic tile. The floor is also covered with tiles.

The great hall is lighted by ten large gaseliers in hammered iron and copper, illuminated in various colours and gilded. The news or reading room is 68 ft. by 23 ft., and is furnished throughout in oak. The front of the building in Market-street is divided into eight shops, with cellar and mezzanine floors to each. The first and second floors throughout are arranged in suites of offices. At the east end, and forming the principal entrance, is placed the clock-tower, which rises to a height of 150 ft. The windows in the principal front have coupled shafts of serpentine marble, and the building is crowned by an open and pierced parapet, terminated at each angle by corbelled turrets. On each angle of the tower are statues, on one side Bishop Blaize, the patron saint of woolcombers, and on the other King Edward, who granted the trading charter to Bradford. Between each of the large windows on the ground-floor are circular medallions, containing heads of those who have contributed to the commercial enterprise of the country and the prosperity of the town. The principal contractors are Messrs. Bealand, of Bradford. The building has cost about 30,000*l*, and has been erected from the designs of Messrs. Lockwood & Mawson, architects.

* See vol. xxii., pp. 800, 801.



DESIGN FOR THE PROPOSED LAW COURTS.—Mr. Lockwood's Key Plan.

THE DESIGNS FOR THE LAW COURTS.

CONTINUING our selection from the designs submitted in competition, we illustrate in our present number Mr. Lockwood's project. It will be seen by the plan that in this design, instead of one vast hall, or the entire omission of such provision, three halls are made to form the nuclei of the different sets of courts. The objection is raised by the designer, whose own views we will set forth in these particulars, that if one hall be made the centre of the whole of the various departments of judicature, it would be so vast in extent that, for the purposes of a rendezvous, it would be perfectly useless. It is urged that by subdivision the courts are so arranged that the northern side of the central hall may be appointed as the place of meeting for all those who have business in the equity courts; and that the southern side of the same hall would form the rendezvous for the common law courts. The western hall, being that nearest Clement's-inn, is made the centre of the exchequer courts and the exchequer chamber; the latter being so placed as to afford private access to it for the Lord Chancellor. The eastern hall, being that next Chancery-lane, is the nucleus for the Probate Court, the Ecclesiastical Court, the Admiralty Court, and for a spare court, which may be used by any of the last-named departments, or for the purposes of common law. It is thought that this subdivision materially aids in classifying the departments, and in simplifying the arrangements; so much so that the merest indication on the part of a solicitor would direct a client or a witness to the immediate locality in which he should be found. If the area of these halls be calculated, it will be seen that they do not occupy so large a space as many single halls in other plans. To these halls there are three principal accesses,—the grand entrance in the centre of the south or Strand front; a second from the Clement's-inn or western end; and a third from the Chancery-lane or eastern end of the building.

Around the central hall is a continuous open court or quadrangle, to afford direct light to the windows of the central hall; and, at the

same time, to the corridors for the barristers and solicitors on the opposite side of it. These are 14 ft. in width, and, in addition, there are twenty-four bay windows, which give the means for retirement and consultation. The courts generally are arranged contiguous to, and on the outer line of, this corridor. Between the courts are the jurors' and the jurors' waiting-rooms, being one story in height above the level of the courts.

Still proceeding on the outer line are the judges' private corridors, out of which, immediately opposite their respective courts, are the judges' private retiring-rooms. The latter might be attached to the courts themselves, but this would necessitate the adoption of a skylight, and would produce what the architect considers would be a series of dull and cheerless rooms, giving the window, and outer air and light, merely to the corridor; whilst by the arrangement adopted in the plan, windows would open into a wide quadrangular street.

The consulting-rooms for the barristers and solicitors are immediately over the judges' rooms, so as to obtain the same cheerful aspect. Private staircases, of a single story in height, conduct to the court, the barristers' corridor, and the halls. The barristers' library, robing, and refreshment-rooms, are upon the same level, and are approached by corridors and grand staircases entirely appropriated to themselves. The witnesses' rooms are upon the floor immediately below the courts, and this department is entered by lateral corridors on each side the principal entrances. Easy provision is made for their access to the courts.

The general public (mere lookers on) are admitted by two archways in the Strand front, and these give access to corridors and staircases leading to the galleries of the court. It is claimed that the spectators are thus precluded from entering the halls, or from making a tour of the courts.

The outer quadrangular area is surrounded by an outer shell or range of buildings, entirely appropriated to the offices of the various departments. Care has been taken to place the respective sets of chambers contiguous or imme-

diately opposite to the respective court or sets of courts to which their business immediately appertains; thus, the Probate Court is connected by a covered bridge with the Probate Department; the chambers of the Master of the Rolls are connected in the same way with his court; the Vice-Chancellors' chambers are closely connected in a similar manner with their courts, and this system of arrangement is carried out through the various departments.

The object sought to be obtained in this design is the avoidance of skylights, borrowed lights, and balconies,—of skylights particularly on a large scale, because, if of wood, they must be constantly subject to decay and repair; if of iron, to contraction and expansion, and consequent fracture of the glass; the cause of great heat in summer and of cold in winter, and always obstructive to the admission of light and air. Balconies have been avoided from the feeling that they are injurious to the light of the rooms below them, and that, from the number of persons traversing them, they would be productive of annoyance to those in the rooms on the same level.

This design provides for twenty-five courts and the several sets of rooms required in the Instructions. Of these, two courts are appropriated for the Bankruptcy department. They are placed at the western end of the building.

Looking now to the elevation, it will be noticed that the type of this design may be found in Flanders. It is decidedly municipal in character, as distinguished from ecclesiastical or feudal architecture. The general outline is good, and the unity and harmony sought to be attained in the plan have been observed in the outer forms.

REFERENCES.

- | | |
|--|---------------------------|
| 1. Spare Court. | 10. Common Pleas Court. |
| 2. Vice-Chancellor Wood's Court. | 11. Queen's Bench Court. |
| 3. Vice-Chancellor Stuart's Court. | 12. Ditto. |
| 4. Lord Chancellor's Court. | 13. Ditto. |
| 5. Vice-Chancellor Kindersley's Court. | 14. Exchequer Court. |
| 6. Lord Justice Court. | 15. Ditto. |
| 7. Rolls Court. | 16. Ditto. |
| 8. Common Pleas Court. | 17. Probate Court. |
| 9. Ditto. | 18. Ecclesiastical Court. |
| | 19. Spare Banco Court. |
| | 20. Admiralty Court. |
| | 21. Admiralty Court. |

&c., &c.



DESIGN FOR THE PROPOSED LAW COURTS.—By MR. LOCKWOOD.—View to the Strand.

NARROW ESCAPE OF SANDON HALL.

SANDON HALL, the residence of the Earl of Harrowby, has narrowly escaped destruction by fire. The old hall was totally destroyed by fire eighteen years ago, and the present mansion was reared upon the same site, only a few months having elapsed since it passed out of the hands of the contractor. It appears that the fire from the furnace which heats the conservatory passes into the basement at the east end of the house, and then rises perpendicularly to the roof, passing through the small corridor and a bed-room immediately above, and it was in the latter room that the fire was first discovered. Lord Sandon was passing from the house to the conservatory, and on perceiving a strong smell of burning wood at once communicated his fears to a domestic. Upon removing the boards a large beam was found to be on fire, the end resting close to the fire being an incandescent mass. A good supply of water having been procured it was soon extinguished. Attention was at once directed to the floor of the corridor below, when a similar discovery was made almost identical with the other, the beam end next the fire having been completely charred, and upon its exposure to the air began to throw out sparks. When the fire had been extinguished workmen set about removing a casing from the wall near the fire in the corridor, behind which it was discovered that the wooden bricks which had been placed in the wall for the purpose of fastening the casing were also on fire. The fire was no doubt owing to the fire becoming over-heated, and the wooden beams, having been placed too near the fire, had ignited.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE ROMANS IN ENGLAND.

On Wednesday, 13th of March, Mr. H. Syer Cuming in the chair, further arrangements were announced for the Ludlow Congress; and letters from the Duke of Cleveland, Mr. Mayer, and others, were read. Donations for archaeological purposes and excavations at Wroxeter were announced, and thanks returned.

The discussion on the assumed sacred monogram on the Cirencester Roman pottery was resumed. The discussion was continued by Mr. Levein, Rev. Dr. Giles, Rev. W. S. Simpson, Mr. J. W. Grover, Mr. G. M. Hills, and Mr. Roberts, but the conclusion arrived at was against the sacred nature of the stamp or incision, the information not being complete on that point.

Innumerable antiquities from London were exhibited, comprising, from Mr. Grover, two keys of the fourteenth century, found at the Foreign Office; also two keys from Hitcham Rectory, Bucks; from Mr. Wimbles, a rare Roman lamp recovered from the Thames; Mr. Tennyson, a Roman lamp of ordinary form (with the potter's mark of two sandals beneath) from Cannon-street; from Mr. Gunston, a Dupondius of Nero, counter struck with the S.P.Q.R. from the steel-yard; Mr. Gunston, four leaden brooches of the fourteenth century from the Thames; Mr. Blashill, a Nuremberg token and a medal of Frederick the Great, from Holborn Valley; Mr. Bailey, twelve daggers, fifteenth and sixteenth centuries, from Queenhithe; Rev. W. S. Simpson, a minute of council of July 1st, 1675, relative to Saint Paul's, with signatures of Sir Christopher Wren, Sir Thomas Viner (Lord Mayor), Edward Stillingfleet, and others; two crucifixes, in bronze, of the thirteenth and sixteenth centuries; several hoop and serpent bracelets, and three rosary rings.

Mr. Planché presented a drawing, by Mr. Hillary Davis, of a thirteenth-century sepulchral slab, found beneath the pews of Aitcham Church since the visit of the Association. A paper by Mr. Berghie was read on an important "find" of about 2,500 silver coins, six of which were exhibited as types. They were found near the old Roman-road in the parish of Washington, in Sussex, in a crock which was cut to fragments by the plough in breaking up an old pasture, one single piece only being preserved, and now, with 1,650 of the coins, in the British Museum. They appear never to have been in circulation; and, being all of a date prior to the Conquest, are conjectured to have been buried by the owner on the Norman invasion, and that he did not live to reclaim them.

They have all the moneyers' names on them, and show they were struck in the South of Eng-

land. The locality Stæning and Stæni on some serves to correct the error that has previously existed, that it was meant for Stamford, it now being clear it was Stæning, in Sussex.

The six moneyers and coins are as follow:—
1. "Harold Be Ang," "Dermon on Stæni";
2. "Eadard Rex Anglor," "Anderboda on pinc." The others are of Edward, and the moneyers are "Norman on Stæning," "Godric on Lund," "Leofrine on Hæling," "Ælfard on Lunde."

Another "find" of coins was communicated by the Rev. E. Kell. They were discovered at the back of Netley Hospital, and Dr. de Chaumond has catalogued 1,700 of them. These are all Roman.

ARCHITECTS' BENEVOLENT SOCIETY.

The following report, read at the general meeting held on the 13th inst., when Mr. Sydney Smirke, R.A., presided, will serve as an appeal for the assistance needed:—

"The council beg to submit to the general body of subscribers, the financial statement for the past year, and to report generally on the progress of the Society. In doing so, however, they regret not being able to congratulate the society on any very satisfactory progress. The number of members remains the same as last year; for although seven new members have been added to our list, a like number has been lost to us through death or otherwise."

The amount paid to applicants has been materially in excess of last year; for the cries of distress are ever increasing upon us, both in numbers and urgency. Hence, the balance remaining in the bankers' hands will be found to have become less than it was at the corresponding period last year.

The council have been able to relieve thirteen cases of severe distress, viz.—two architects of very great age, nine widows, and two daughters of architects.

These cases completely exhausted our means, and we have been enabled to relieve nothing.

Thus, although in the midst of most urgent and distressing demands on our sympathy, the profession does not appear to be moved as it ought to be.

Great fortunes are being accumulated by the comparatively few who have drawn the prizes in the lottery of life, whilst poverty and want continue to oppress the hapless throng who have failed to do so.

Why should the kindred societies, whose special aim it is to relieve the distresses and privations endured by the families of painters and sculptors, be burdened by the claims of a profession like our own, which probably numbers its thousands, and whose average means ought to place its members at least on an equality with the professors of the sister arts?

Let not the generous warmth that animates the painter and sculptor be for one moment supposed to be wanting in the architect! Indeed, the long, unwearying, untiring, zeal of many of our members, both old and young, nobly vindicates us from such an unworthy imputation.

Let us, therefore, never cease to urge the claims of this society upon our brethren, especially upon those practising in the great centres of provincial industry. Surely we may be permitted still to indulge in the hope that ultimately a more cordial feeling will prevail, and induce those who still keep aloof from us to join our ranks in greater numbers. A very moderate enlargement of our circle would suffice to place the Architects' Benevolent Society in a position to do that amount of good which its complete organisation and its long experience eminently fits it to do, and which it is our duty, as members of a liberal profession, to strive unceasingly to do."

THE TRADES MOVEMENT.

The Trades Union Commission are now holding their meetings at 2, Victoria-street, Westminster.

At a recent meeting of this Commission, Messrs. G. Potter, Conolly, Kane, and Proudfoot, attended as a deputation from the Trades' Conference Committee for the purpose of expressing the dissatisfaction of the committee with the decision arrived at by the commissioners, not to allow any member of the trades' committee to be present while the witnesses were under examination. The deputation urged that such decision was disrespectful to the trades of the kingdom, who were on their trial. The commission having considered the subject, consented to allow one member of the committee to attend, thus virtually acknowledging the committee.

There seems to be a likelihood that the threatened strike of engine-drivers and firemen throughout the kingdom will be averted. It appears that all the memorials have been sent in, and that deputations of drivers have been appointed to meet the directors of the various railway companies on appointed days, at the request of the latter. It is said that many of the companies are desirous to meet the men in the most friendly manner, and, if possible, to come to a mutually satisfactory settlement of the matters in dispute.

Birmingham.—At a special general meeting of masters and men employed in the building trade held in the Town-hall, Birmingham, under the presidency of the mayor, the following resolution was carried:—"That we, the employers and operatives connected with the building trade

of Birmingham, do mutually and severally agree to abide by, and conform to, all trade regulations which shall be made and agreed to by the delegates we are about to appoint, or which shall be settled by the casting vote of the chairman they may appoint." The following delegates were then unanimously appointed:—Bricklayers (for employers): Messrs. Hilton, Hardwick, Briggs, Naden, Wilson, and Smith. Carpenters and joiners (operatives): Messrs. James Lewis, John Michael, George Edge, John Price, James Thorneloe, and William Davis. Ditto (masters): Messrs. Jones, Jeffery, Webb, Hardwick, E. Barnsley, and Cresswell. Painters and glaziers (masters): Messrs. Whitworth, Mann, J. Parker, Nicholls, Heape, and Hardwick. No plasterers being present, the masters only appointed delegates, namely, Messrs. Bassett, Hardwick, G. Holmes, Cresswell, E. Barnsley, and Pritchard. For the same reason, the master plumbers only appointed delegates, viz.: Messrs. Whitworth, Stokes, Nicholls, Edwards, Wilcox, and Hardwick. No operative masons were present, and the following delegates were appointed for the masters: Messrs. Jones, Cresswell, Hardwick, Barnsley, Smith, and W. Briggs.

The following letter, which had been addressed to the mayor, was read to the meeting:—

"White Swan Inn, Navigation-street, March 12, 1867. Sir,—I am instructed to forward you the following resolution, passed at a special general meeting of the Operative House Painters' Association, held this evening. The secretary read a circular from the General Builders' Association, calling upon us to attend a public meeting of the building trades to appoint delegates to arbitrate upon the proposed alteration of trade rules.—Resolved that we, having taken no action in convening, and failing to see the necessity of such public meeting, do not attend the said meeting; but that we are willing to appoint six operatives to meet six employers of our branch to settle the question, by conferring upon us the said rules, or by arbitration. I am, &c., THOMAS GRANT, Secretary."

York.—A long notice which had been given by the masters to their workmen of the various branches of the building trade, to the effect that future payments would be made by the hour, having expired, the masons, bricklayers, plasterers, and labourers have struck work. The joiners, however, have accepted the hour system, and the plumbers of the city, who had struck for an advance of wages, have gone in on the old terms.

OMITTED NAMES.

Our paragraph describing the Bond-street cellars made no pretence to a complete account, or we should have added, as we now willingly do, that the wrought-iron wine-bins with which they are fitted up are those of Messrs. Farrow & Jackson, to the goodness of which we are able to bear witness. These bins are adapted either for brick-arched vaults or cellars with flat ceilings, the mode of fixing in either case being so simple that they may be put up by any ordinary workman. The shelves are formed of plates of iron laid on bars, which rest on the cross-bars of lattice uprights, and are removable at pleasure. Then, as to the stone carving, we are asked to mention that the front was carved by Mr. L. T. Carter. The heads in the caps represent Ariadne, Bacchus, and Pan.

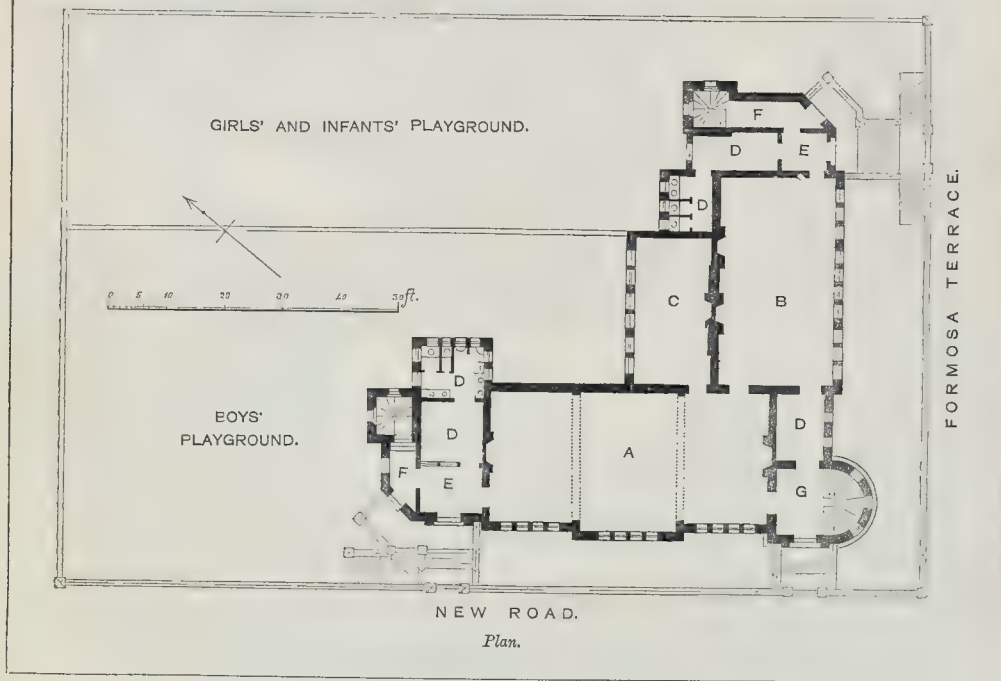
It is a curious fact, but a fact nevertheless, that it is only the persons connected with an event or building who are not mentioned in an account of it, who manifest any interest in what is said. The other day an architect wrote us a very serious letter to show the injury done him by the omission of his name in connexion with a building with which he had had something to do. It had been our privilege to mention this gentleman say once in six weeks for the last dozen years or more, and we had never before learnt, by word or sign, that this was of the slightest consequence. But, omit to do so, and—good gracious!—what soundrels we are!

THE INTENDED PARISH SCHOOLS OF ST. SAVIOUR'S, PADDINGTON.

EVER since the formation of this parish, and of the church, there has been a difficulty in obtaining a site for schools. To some extent, schools of this kind are looked on as objectionable neighbours, and in this locality, where high-rented houses are built, and covenants against schools and trades are inserted in the ground-leases, the occupiers naturally desire to be free from the proximity of schools of this description.

The committee have at length overcome the

INTENDED PARISH SCHOOLS, ST. SAVIOUR'S, PADDINGTON.—MR. EDWARD ROBERTS, ARCHITECT.



obstacles which have hitherto prevented their obtaining a site for the erection of a school-house, and, through the influence of the Bishop of London, an eligible plot of ground on the north side of Formosa-terrace, at the corner of the new road in continuation of Bristol-gardens, has been offered to them by the trustees of the Paddington Estate. It has a double frontage of 100 ft. on the terrace, and 150 ft. on the road, and affords ample space for a building, not only sufficient for the present number of poor children, but for any future increase which may take place. The trustees are willing to grant a lease for about ninety years, at a nominal rent, as soon as a suitable building shall be covered in.

Plans and elevations have been prepared, and

they have been approved by the trustees. The building, when the whole plan shall be carried out, will be sufficient for 300 children, and will contain a boys' school-room, 48 ft. by 23 ft., and 16 ft. high, and class-room, 25 ft. by 13 ft.; a girls' school-room, 48 ft. by 23 ft., and 18 ft. high, and class-room, 24 ft. by 19 ft.; an infants' school-room, 36 ft. by 19 ft., 16 ft. high, and three or four rooms each for the master and mistress. The play-grounds will be in the rear. The total cost, including the roads and enclosures, is estimated at 5,000*l.*; but it is intended to complete, at present, so much only as will suffice for 200 children, leaving the master's and mistress's houses, the class-rooms, and some other portions, for future consideration. The

building has been studiously designed with a view to economy, and, although plain and inexpensive, is proposed to be of sufficient architectural character not to bring discredit on the parish. The estimate for this portion is about 3,000*l.*, including the roads, enclosure, and drainage of the whole ground. The building is to be of pale yellow bricks with stone dressings. The inside of the school-rooms is to be of similar bricks banded with red. Hitherto the teaching has been carried on under every possible disadvantage. The number of children attending the school is 200, and they have been from necessity crowded into rooms in private houses temporarily engaged, at a rent of between 80*l.* and 90*l.* per annum. These, from their inadequate

size, are close and ill-ventilated, and compel the distribution of the children in separate apartments, thus withdrawing a large number from the eyes of the master or mistress, and seriously interfering with the necessary discipline. Besides this it is found impossible to secure those accommodations which common decency requires. Now, however, the parishioners have the opportunity of at once removing all these hindrances, and of placing St. Saviour's district on an equality, in this respect, with the neighbouring parishes.

Mr. Edward Roberts, F.S.A., is the architect.

REFERENCES.

- A. Boys' schoolroom, 48 ft. by 23 ft. (with Girls' schoolroom over it).
- B. Infants' schoolroom, 36 ft. by 19 ft. (with Girls' class-rooms over it).
- C. Boys' class-room.
- DD. Cloak and hat rooms.
- EE. School entrances.
- FF. Master's and mistress's entrances.
- G. Tower, bell turret, and staircase, and water supply and ventilation.

PRESENTATION OF TESTIMONIAL TO THE DEAN OF NORWICH.

As being connected with church news, the following account of a very interesting ceremony which has just taken place in Paddington may, perhaps, be considered not unsuitable for your pages, and is, therefore, offered by

A MEMBER OF THE CONGREGATION.

On Saturday, March 16, a large number of members of the congregation of St. John's, Paddington, assembled in the school-room of that church, to present a testimonial to their pastor, Dr. Goulburn, on occasion of his parting from them to enter upon his duties as Dean of Norwich, to which appointment he has recently been nominated.

The testimonial consists of a fine edition of the "Benedictine Fathers," together with "Baronii Historia Ecclesiastica, omni Continuatione," eighty-nine folio volumes in all; and a handsome tea-service of silver, by Garrard, which includes a very elegant urn and a noble salver, the latter bearing the following inscription:—

"To the Rev. Edward Meyrick Goulburn, D.D., Dean of the Cathedral Church of Norwich, this Salver and an accompanying Tea-service, together with sundry theological works, are presented by members of the Church of St. John, Paddington, on the occasion of his resigning the Incumbency of that Church, in token of their admiration of his great learning and ability, their deep sense of the value of his ministrations as a Pastor and Guide, and in affectionate remembrance of the personal courtesy and kindness which so greatly endeared him to all amongst whom he laboured.

19th March, 1867."

A modified form of this inscription has been placed in each of the volumes, all of which are in an admirable state, and most of them still wear their original handsome binding. The dates of the editions range from about 1730 to 1740.

We could have wished that a little pains had been taken to make the schoolroom look more worthy of the occasion, by some endeavour to disguise the rampant ugliness of the bare walls, roof, benches, and floor. A very small amount of decoration, temporary or otherwise, would have been an immense relief to appreciators of the beautiful; and why should not moral and physical beauty be more frequently allied? Nothing could exceed the moral beauty of the scene; but the physical—so far, at least, as the room itself was concerned—was nowhere. Possibly the *coup-d'œil* presented to the Dean of Norwich on his entrance, may have been very different from that which met our own offended retorts of vision when, after climbing up a narrow stone outside-stairway, in a driving storm of hail and snow, they encountered the bare, dirty-smoking chamber we have indicated. By the time of the dean's arrival, the bald interior had become filled with a well-dressed crowd, whose beaming kindly faces might well render any room beautiful, in the eyes of the good and worthy man whom they had assembled to honor. Still, a little decoration could not have detracted from the scene.

Dr. Goulburn has been deservedly beloved and appreciated by his parishioners, during the seven years he has laboured amongst them, and their

regret at parting from him is proportionately great.

Sir George Baker, churchwarden of St. John's, and chairman of the committee which had so admirably carried out the desires of the subscribers to the testimonial, read the valedictory address, in a sadly tremulous and tearful voice, to which Dr. Goulburn, in his well-known earnest tones, responded in a touching and affectionate speech, which evidently came, as he said, "direct from the heart." In spite of changing colour, and the biting of the lip to keep down emotion, he endeavoured to infuse a little fun into his remarks, so as to brighten up his hearers, if possible. "Your present of books upon the shelf," he said,—"though they shall not always lie upon the shelf, but shall be my esteemed companions on the table—may remind me that you expect a clergyman to be studious; and in giving me not a dinner but a tea-service, I may understand you to suggest that a clergyman should also be temperate." After thanking his congregation for the never-tiring sympathy they had always shown him, and the loving manner in which they had borne with his "failings" and excused his "short-comings" in words of modest self-abnegation, all the more touching when uttered by one so universally admired and esteemed, and which went to the hearts of his hearers, he resumed his seat, and the proceedings speedily terminated.

Shortly afterwards we observed an enthusiastic lady step on to the platform, and, producing a sheet of paper, petition the Reverend Doctor for his autograph,—a request which we need not say was at once granted; and then the crowd withdrew—but lingeringly, as if loath to look their last upon their revered pastor, their tender guardian, guide, and friend.

AN APPEAL TO THE CHARITABLE.

A FATAL accident occurred, a few days since, to an old and industrious parishioner of mine, a master bricklayer, named Charles Warr, of the Liverpool-road, Islington, who fell from a scaffold, opposite my house, and sustained such severe injuries that he died within two days. He has left a widow and nine children, many of them very young, entirely unprovided for. A committee has been formed for the purpose of raising a fund to enable the widow to enter into some business, for the support of herself and her large family. I can confidently recommend the case to the sympathy and benevolence of your readers, and I shall be happy to receive any contributions, as will also the chairman of the committee, Mr. Joseph Surr, 19, Miller-square, Islington, and the treasurer, Mr. D. W. Hill, 378, Camden-road, Holloway.

DANIEL WILSON, Vicar of Islington.
9, Barnsbury Park.

A RESPIRATOR FOR NOXIOUS FUMES.

SIR,—Can any of your readers inform me if a sort of respirator (specially constructed) and worn some distance from the mouth, filled with a disinfectant, such as chloride of lime, would be of benefit to workmen engaged in the cleansing of sewers, &c. I have frequently found men suffer from such occupations, and, as I am about to commence a work of this nature, would like to know if a protection could be provided in any way against the noxious gases?

W. J. M.
* Chloride of lime is out of the question. Animal charcoal might probably be useful so applied.

THE SCIENCE OF MODERATION.

SIR,—In the notice you were pleased to bestow on my book, "The Science of Moderation," in the *Builder* of February 2nd, there are some misconceptions of its intent and scope, as well as of those of a former work, which I have no doubt you will allow me to correct.

The two books to which you refer are but portions of one design, and not exponents of two different doctrines. The one "The Conformation of the Material by the Spiritual," was intended to trace the moral science revealed in the Scriptures; the other, "The Science of Moderation," the moral science revealed in phenomena, and to show their perfect correspondence in a scientific point of view. In the former, moreover, I stated, to prevent misconception, that I believed a scientific code of morality to be inert, the dead letter, unless breathed into life by the Holy Spirit: these are my words.—But it has been many times confessed by philosophers that knowledge alone is insufficient to convert theoretical into active formative virtue. Hence the triumphant superiority of the Christian faith, which awakens a holy spirit in the soul of man, and quickens his knowledge. This passage, which appears in the preface, scarcely justifies, I think, the following remarks, "Ah! Mr. Thomas, there is a mystery here, the depth of which your 'mere' moral plummet of 'righteousness' cannot fathom."

"Let your moderation be known unto all men," is a Christian injunction, mine only by conviction and acceptance. I have merely attempted in "The Science of Moderation," to set forth the full and wide import of the moral measure which it discloses. We can only know the nous, animus, or Holy Spirit of Truth, and Goodness, through His works; I have, therefore, not presumed to define how a man becomes possessed by the Holy Spirit; but I have attempted to determine the outward and immutable sign, or measure, of his working in creation, as

contradistinguishable from the outward signs and mutable measures of the working of evil.

That physical and moral perfection are simultaneously attainable is the logical sequence of the Scriptural doctrine of the conformation of the material by the spiritual; therefore, the very frequently received interpretation of some passages in Isaiah, viz., "There is no beauty in him that we should desire him," "neither form nor comeliness," "his face marred more than any man," is inconsistent with the spirit of Christian teaching, erroneous, and one from which art on its best days revolted; besides being, as it is, at variance with numerous other texts directly favouring the opposite and more consistent view, viz., that the incarnation of the Word was not "marred" by holiness, but by sacrifice, by scourge, nails, thorns, and spear.

I believe, sir, my views are both orthodox and scientific, and that they appear to differ from those commonly held only because I have traced some familiar truths to deeper and more important conclusions than others will trouble themselves to do; and which, for this reason, must for some time appear obscure. "Per se mouet!" "Le cours va!"

W. CAYN THOMAS.

THE PARIS EXHIBITION AND LAW COURTS COMPETITION.

SIR,—It is a great pity that with two such beautiful collections of architectural drawings as those for the New Law Courts and the National Gallery, we should be so ill represented, as I fear we shall be, at the coming Paris Exhibition; and I consider that as these drawings cannot be sent to Paris, first-rate photographs ought to be taken of them, or at least of those considered the best, and sent, in order that foreigners may have some slight idea of what we can do. As one who has done much for English architecture, I appeal to you, and ask you to use your best endeavours, in order that architecture may be as well represented as possible in Paris. ADELPHI.

CONCRETE FOR COTTAGES.

SIR,—I should be much obliged if any of your readers will inform me the proportion of cement, gravel, &c., necessary to make concrete suitable for the building of cottage walls, and the best mode of preparing it.

J. S. W.

MILDEWED HAIR.

It is to be sincerely hoped that the horrible new fungoid disease of the hair brought to notice by Dr. Beigel may not become prevalent in this country. It appears to be quite distinct from a similar parasite recently described by Dr. W. Tilbury Fox, under the name of *zoogloea capillorum*, and, of course, is in no way connected with the now notorious gregarious of Russian hair. The new affection of the hair may be at once detected by a sharp eye without the aid of a glass, as the hairs are blistered and apparently knotted; under a moderate glass they are irregularly swollen, and appear to be affected with *mildew*, which is really the case, as a veritable fungus has found a suitable matrix for its growth; and should it only prove as difficult to destroy as the fungi found infesting our vines, potatoes, &c., it may be a long time before we hear the last of it.

In the volume of the *Builder* for 1865 we published a list of the vegetable parasites peculiar to man and his habitation, and there we referred to an affection of human hair "as a grim sequel to the dry rot in the house-roof." The disease indicated was *Plica Polonica*, but it has been recently proved that though *Plica* supports a fungus (*Trichophyton*), it is really not of fungoid origin. It is just now not easy to say how long Englishmen and Englishwomen are to remain exempt from these and other botanical and entomological affections of the hair and head, common enough on some parts of the Continent, but, at present, rare or altogether absent here.

W. G. S.

THREATENED BLOT IN THE NEW STREET, BLACKFRIARS.

It is from a knowledge of the deep interest you take in all matters affecting our great and wonderful city, especially when relating to the improvement of its thoroughfares, that I am induced to bring under your notice the subject of the proposed new street from "Blackfriars" to the "Mansion House."

It is laid down on the plan to be 70 ft. wide (except a very small portion, as you will see on the plan forwarded herewith), and will undoubtedly form a fine entrance to the heart of the city from that quarter; but, Sir, I find, to my utter amazement, that (from some cause or other) it is intended to leave a block of buildings about 230 ft. long, and projecting about

22 ft. into one side of the street, standing in New Earl-street; thus not only diminishing the width of the street by nearly one-third, but actually perpetrating another Middle-row, Holborn, in the broad light of the latter part of the nineteenth century, with this very material difference, that in the one case it is "Mansion House-street," and, in the other, "Holborn." Surely the Metropolitan Board of Works and the City authorities must have overlooked this serious error in their scheme.

My professional engagements in connexion with New Earl-street have led me to make inquiries on the subject. The only explanation I can get, however, is, that New Earl-street, having been formed by the City authorities, is not scheduled in the present Bill, and neither the Board of Works nor the City authorities have any power to alter or interfere with it; though every one to whom I have spoken on the subject agrees in thinking that it is only a question of time, and, if left as it is for the present, it must sooner or later be widened, in deference to the outcry which is sure to be raised about it.

It is to avert this outcry, and to get the thing done properly, as well as to prevent "the ship being spoiled for a h'port of tax," that I am induced to bring the subject before the public through the medium of your widely-read columns, and thus cause the question to be well ventilated.

JOHN TARRING.

DISSENTING CHURCH-BUILDING NEWS.

Sheffield.—The foundation-stone of the new Congregational chapel, in Garden-street, has been laid by Mr. John Crossley, of Halifax. The new structure will stand upon the site of the old chapel, but as the proposed building will be much larger than the old one, it will be brought nearer to the edge of the road. The new edifice will seat 1,020 persons, and the work has been let by contract for 1,685*l*, which includes warming apparatus, ventilation, gas-piping and fittings, pewing, pulpit, boundary walling, and gates. The portion in front will have four arches, and the floor will be paved with coloured tiles. There will be double doors to the chapel, so as to intercept draughts. The pews will have moulded frame-ends, close boarding to backs and under-seats, book-boards, and hat-rails. All the wood-work will be of red deal, varnished. The organ-gallery will be placed behind the pulpit, and there will be vestries, &c., for the minister and deacons. The pulpit will be an open platform, with a raised desk, which can be seen from every part of the interior. The gallery will rest upon iron columns. The interior of the chapel will be spacious and comfortable, and the exterior will be of coursed wallstone, with ashlar dressings, in the Gothic style. The architects are Messrs. C. J. Innocent & Brown, of Sheffield; and the contractors for the various kinds of work are the Masons' Co-operative Society (Limited), Mr. John Hayball, Messrs. Harrison & Chadwick, Mr. J. T. Taylor, and Mr. E. Langton.

Bromsgrove.—The newly completed Baptist Chapel for Bromsgrove, the foundation-stone of which was laid in April last, has been formally opened for divine service. The site is on the right of the new road leading to the railway station. The chapel is a Gothic building, of brick, with stone dressings. It is 70 ft. long by 38 ft. wide within. The front is supported by buttresses: at the north-west angle is a turret and spirelet 63 ft. high. Between the buttresses are three single-light windows, and underneath is the principal entrance. The sides of the chapel are each divided into five bays, with alternate single and double-light windows. There are side aisles, and the total accommodation is for 550 adults and children, including the north gallery, and when side galleries are added there will be accommodation for 750. A choir and organ apse is arranged at the south end, and a minister's vestry on the south-west. The carpenters' and joiners' work is stained and varnished, and the ceiling is scalloped in patterns. The architect was Mr. Bidlake, of Wolverhampton, and the work has been carried out by Mr. Thompson, of Kidderminster, builder, for 1,800*l*. The fittings were provided by Mr. Thomason, of Birmingham, and the heating by Mr. Blakemore, of Wednesbury.

Liverpool.—The English Presbyterian Church and Schools, Vauxhall-road, have been opened. The building is erected in the Gothic style, treated freely with brick bands and relieving arches of blue, white, and red bricks, the whole

faced with pressed bricks tuck pointed, and having stone dressings to doors and windows. The ground-floor contains schools for accommodating 350 children, allowing 80 cubic feet for the boys and girls, and a little less for infants. These schools are divided by movable wood framings, so that the whole can be thrown into one room for meetings or school parties, leaving a clear space of 68 ft. 9 in. by 31 ft. 6 in. Above the schools is a church 68 ft. 6 in. by 27 ft., and 20 ft. in height, with gallery at one end, the whole capable of seating comfortably 430 people. The end opposite the gallery is octagonal in shape, containing pulpit and precentor's pew. There is also a vestry, 10 ft. by 9 ft. The whole is lighted on both sides, and end fronting Vauxhall-road, and well ventilated. There is a playground on the basement for children, 41 ft. 2 in. by 27 ft., the ceiling of which is 4 ft. above the side street, from which air and light are obtained. There are latrines and conveniences also in the basement. There is a staircase fronting Vauxhall-road, leading to the church, and converted into a belfry above. All the schools are entered from the front street, the boys' school having a gabled porch thereof, 7 ft. 6 in. by 4 ft. The whole has been built by Messrs. Nicholson & Ayre, of Toxteth Park, under the superintendence of Mr. James N. Crofts, of this town, architect. The total cost, including gasfittings, &c., is about 1,900*l*.

Books Received.

The Year-Book of Facts in Science and Art. By JOHN TIMBS, F.S.A. London: Lockwood & Co. 1867.

This volume of Mr. Timbs's interesting summary of the year's progress in fact and science is preceded by a memoir of Professor Wheatstone, with a finely-executed portrait of him. The vignette is a bird's-eye view of the Paris Exhibition building. The volume, we think, is even more interesting than usual, and has less of the appearance of a mere compilation. By re-writing and condensation of the matter compiled, increased value is given to such a work as the "Year-Book of Facts."

VARIORUM.

"A New Idea for the Water Supply of Towns. By A. S. Ormsby, C.E. Metcabin & Son, Parliament-street." The idea referred to in the title of this pamphlet is the construction of non-absorbing collecting grounds, to hold and supply natural and pure water for drinking and cooking purposes only. The pamphlet is in the form of a letter addressed to the secretary of the Royal Commission on Water Supply, and is worthy of their consideration.—*Fraser's Magazine* for March (Longmans) contains an interesting paper on "Costume in Sculpture" by F. G. Stephens.—"The Twin Records of Creation;" or, *Geology and Genesis*; their perfect Harmony and wonderful Concord. By G. W. Victor Le Vaux. Lockwood & Co., Stationers' Hall-court." Although the idea that the six days of creation mentioned in Genesis may have been six aeons or great eras, such as the geological, is not new, nor is the attempt to show how they harmonize so original as this author may imagine, the hypothesis is a convenient one for a renewed endeavour to reconcile the two records; and Mr. Le Vaux very feebly does so. The idea which he tries to work out is, that the first creative "day" was concurrent with the Cambro-metamorphic era; the second with the Silurian; the third with the Devonian, old red sandstone, and carboniferous; the fourth with the Permian; the fifth with the Liassic, oolitic, Wealden, and cretaceous; the sixth with the tertiary-pleistocene; and the seventh, or sabbatic, with the alluvial formations and the current period. The idea is ingenious, and there is much to countenance it in the order of the days and eras, in which there are certainly curious coincidences. We should not wonder shortly, however, to find the Vestigians and Darwinians crowding these coincidences by maintaining that the Scriptural intimations that animal life was made out of the dust of the ground, that the earth brought forth, and that all the lower animals were brought to the man, may really mean that during those long eras or days the lower orders of life were created by development from the mineral, and so brought, as a man-child in the womb of nature, by degrees, during successive eras, to the high

state of manhood as "Sons of God" who can be "raised up" from the "very stones." In saying so, nevertheless, we do not mean to give any decided opinion, either *pro* the Vestigians, or *con*, the Scripturalists: we would only indicate how these opposing forces may perhaps finally come to terms in a peaceable and mutual understanding.—"A Dictionary of Chemistry and the allied Branches of other Sciences. By Henry Watts, B.A., F.R.S., F.C.S., &c. Longmans & Co.—This standard work, which we have often favourably noticed during its serial progress, has now reached the word "Stillbite." "Specific Gravity," and "Spectral Analysis" form a considerable portion of the 38th Part now before us.

Miscellaneous.

"BUILT TO SELL."—The following suggestive advertisement appears in the *Stoke Newington Observer*:—

"100,000 Carpenters and Bricklayers Wanted to Strike against 'Slop' or 'Duffing' building in the suburbs.—Apply to 'Built to Sell.'"

CONISBOROUGH PARISH CHURCH RESTORATION. Progress is being made in the restoration of this church. Several ancient windows exist in the nave, proving the antiquity of that part of the building; one occupies a position above the chancel arch, and will probably be re-opened. The floors under the seats were in a state of decay seldom equalled. Care is being bestowed in the removal of the whitewash, and none of the stonework will require to be re-cut. Several coins have been found, one of Henry VII., one of Elizabeth, one of James II., and others apparently Dutch.

DESTRUCTION OF WAKE'S OAK, STONY STRATFORD.—We learn with regret that one of the finest old oaks in England has come to the pitiable end of being burnt down by a party of mischievous schoolboys. This tree stood in Whitewood Forest, in the vicinity of the Duke of Grafton's seat, Wakefield Lodge. Its name, age, and situation made it extremely probable that it existed when Wao or Wako the Saxon possessed the domain. The tree was much valued by the people of the neighbourhood, and seemed likely to flourish for many a generation yet to come, although the trunk was hollow. A fire had been lighted inside, which completely dried up and set fire to the tree, and brought it down before the Duke's fire-engine could extinguish the flames.

CONSTANT WATER SUPPLY AT LYNN.—It was prognosticated that the attempt to convert the water supply to the constant system would be physically impossible and financially disastrous, but it turns out that the twenty-four hours' supply is being given with less than half the consumption of coals that used to be incurred in the ten hours' supply; that the profit in the shape of balance of rates over expenditure, is as great, or greater, than it was under the old system; and that the physical difficulties are all nonsense. Under these circumstances, Mr. Saddleton Marsters (to whom is due the largest share of the credit for having compelled the adoption of the constant service) has proposed to the town-council that they should lower the charge for water supplied by meter for manufacturing purposes to 7*d*. per 1,000 gallons—a reduction of 2*d*. per 1,000. The proposal was referred to the waterworks committee.

EDUCATION OF THE CLASSES EMPLOYED IN AGRICULTURE.—A deputation from the Council of the Society of Arts have met a deputation from the Council of the Royal Agricultural Society, in order to seek the co-operation of that Society in promoting the education of the working classes engaged in the cultivation of the soil. Mr. Chester said that the object the deputation had in view was to ask the Royal Agricultural Society to exert its influence for the improvement of primary education among agricultural labourers, and to induce the higher class of such labourers and mechanics to avail themselves of the advantages offered by these examinations. After a conversation, Mr. Thompson expressed, on the part of the Council of the Royal Agricultural Society, their willingness to consider what could be done to aid the Society of Arts in this matter, and promised that the subject should receive their most favourable consideration. The object sought is of the greatest importance. It is much to be hoped that some course of action will speedily be determined on.

A MAN TORN TO PIECES IN A SAW MILL.—At the Wenlock Saw Mills, City-road, of which Mr. J. Shepherd, J.P., is the proprietor, a workman must, whilst unobserved, have gone down into the ash-pit, where the furnace of the boiler is fed, and in walking down the steps slipped, and fell against the cog-wheel of the drum, the result being that he was literally torn to pieces. The accident occurred at breakfast time, and was not discovered until the man's wife went to the mills, and was one amongst the first to learn her husband's sad end.

THE DESIGN FOR THE THAMES EMBANKMENT. A petition has been presented to the House of Commons by Mr. F. Webb Shields, C.E., praying that inquiry may be made into his claim to remuneration as the successful competitor in the plans, fifty-nine in all, sent in to the Royal Commissioners for the Thames Embankment. Mr. Shields sustains the prayer of his petition by extracts from the evidence given by Mr. Cubitt, M.P., then Lord Mayor, Captain Bursall, R.N., Mr. J. R. McClean, C.E., and Mr. H. A. Hunt, a member of the Royal Commission, all showing that Mr. Shields's plan was the basis and origin of the works as being executed. The petitioner states, with reason, that if he had supposed that he would neither have the carrying out of his design nor receive any remuneration for it he would not have competed. We gave a diagram of Mr. Shields's plan at the time of the competition. There can be no doubt that he is entitled to remuneration.

MACHINES FOR STONE-BREAKING.—Blake's stone-breaker, of which Mr. H. R. Marsden, of the Soko Foundry, Leeds, is the English patentee, has been adopted by the Leeds corporation, for breaking up blocks of Skipton metal in suitable size for either macadamizing or ordinary road-making purposes. The machine, according to local papers, performs its work in a satisfactory manner. It is of a simple character, but its action is rapid, breaking from 20 cwt. to 26 cwt. in six minutes. The saving is estimated at 75 per cent. on the old process of breaking stones by manual labour. Every revolution of an eccentric machine causes the lower end of a moveable jaw to advance towards the fixed jaw about 2 in. and then return. Hence, if a stone be dropped in between the convergent faces of the jaws, it is broken by the next succeeding bite. The fragments then fall lower down, and are again broken. This process is repeated until the chipped stones are small enough to pass out of the hopper into the cart beneath.

MONUMENTAL.—A mural tablet to the memory of the late Sir Richmond Shakespeare has just been erected in the cloisters of the chapel at the Charter-house. He was a Carthusian with Thackeray, the Havelocks, &c. The tablet is of Carrara marble, in Gothic form, quatrefoil, and richly wrought and illuminated.—A duplicate tablet has been sent out to be placed in St. Ann's Church, Indore, Central India, where Sir E. C. Shakespeare closed his career. The sculptor was Mr. Richardson, of Harewood-square.—In St. Leonard's Church, Shoreditch, a monument has been erected to the late Mr. Appold, F.R.S., whose centrifugal pump in the Great Exhibition will be well remembered by many. The monument has been erected by the vicar, churchwardens, and principal residents in the parish. The inscription states truly that "he dedicated his intellect, time, and means to the application of the laws of nature, to important mechanical inventions," and adds that "he was ever ready to do good, but he would have no man know it."

WORKHOUSE INFIRMARY REFORM.—The *Lancet* Commission has again visited the different London workhouse infirmaries for the purpose of ascertaining the changes that have been effected in their condition since the commencement of the agitation. The improvements found are sufficient to show that giving publicity to the condition of the London workhouse infirmaries has been productive of much good; but the *Lancet* commissioners point out that in none of the infirmaries has the improvement effected been anything approaching to the amount of change which was really needed; and, worse than this, they state that some of the most flagrantly bad infirmaries have not been altered at all. The story of the half-measures adopted by one set of guardian-boards, and the total inaction of others, affords the strongest argument which could possibly be offered for at least as comprehensive a measure of Poor-Law Reform as that which Mr. Hardy now proposes to Parliament.

THE LATE GALES.—A house has been unroofed at Haggerstone, and two persons much injured. A house in course of erection at Battersea was partly blown down; and a large stack of timber fell at Vauxhall.

THE PROPOSED CORN EXCHANGE AND COVERED MARKET FOR YORK.—The City Council have appointed a committee to consult with a deputation from persons desirous to erect a corn exchange at their own cost, as to a site, and as to the formation of a covered market adjoining the exchange.

THE PATENT FOOTLIGHTS.—With reference to our remark recently on the necessity for improvement in the new footlights as used in Liverpool, Messrs. Defries wish to state that in that instance they had scarcely time to make the necessary experiments previously, and that such drawbacks as became observable "have since been completely remedied." We are very glad to hear it.

DESTRUCTION OF NOTTINGHAM MECHANICS' HALL BY FIRE.—Nottingham has lost one of its principal public buildings by fire. Of the edifice in Milton-street, the Mechanics' Hall, nothing now remains but the roofless and windowless walls. Nearly all the extensive library, however, has been saved as well as the contents of the Museum, and other property, and the fittings of portions of the premises. At one time the Baptist chapel adjacent was thought to be in danger. Among the property destroyed was an organ worth 1,300*l*. It is supposed that the sum for which the building and its contents were insured will cover the loss.

CHATHAM DOCK WORKS.—The progress of the contract works at the dockyard extension in St. Mary's Island has been much retarded by the very wet and oozy nature of the soil in which the men have to work. The works now in hand are situated in what was the bed of St. Mary's Creek, a channel formerly used as a short cut by many of the vessels navigating the river Medway at high water. Attempts have been made to get rid of the water by cutting channels in the muddy soil, but the mud is so loose that the channels rapidly fill up by the ooze flowing into them. Wooden drains have been tried, but the soft soil would not sustain them. It is now thought of sinking a capacious shaft to collect the water, which would then be pumped by steam power into the river.

FOOT BRIDGES OVER THOROUGHFARES.—We have often urged the formation of foot-bridges over crowded and dangerous thoroughfares; and, although little progress has as yet been made towards so useful an improvement, we are glad to observe that the idea has been realised in the erection of one over Broadway, New York, by Messrs. Rich & Griffiths, at a cost of 4,000*l*. The bridge has been proved capable of sustaining 101 tons, and 100 men tramping over it at the same time produced no perceptible vibration. It stands where Fulton-street crosses Broadway. There is a space of 17 ft. 8 in. clear under the bridge, which is approached by four flights of thirty-four steps each, each flight having three landings. When is the Ludgate foot-bridge to be finished and opened? It was laid across Ludgate-street before the Broadway one was probably ever thought of; but nothing is being done towards its completion.

ROYAL ITALIAN OPERA.—So far from expecting with some that the Paris Exhibition will interfere with the goodness of the London season, Mr. Frederik Gye anticipates in his programme quite the reverse. Paris will this year be a centre of attraction to the whole world, and will doubtless present the most extraordinary assemblage of different nations ever congregated in a European capital. The contiguity of London and Paris, and the ease and certainty with which the journey is now performed, he thinks, and with reason, will cause an influx of strangers, from all parts of the world, to the metropolis of Great Britain; as few of those who have travelled from distant parts to Paris will return to their homes without first having paid a visit to London. Accordingly, he is preparing at the Italian Opera-house to make it, as usual, one of the great attractions of the season. He has obtained the exclusive right of representation of Verdi's new opera "Don Carlos," and Gounod's "Romeo et Juliette," and retains Patti, Pauline Lucca, Maria Vilda, Fricci, Mario, Naudin, Graziani, and other old favourites, besides naming several new competitors for English approbation.

GREENWICH HOSPITAL.—In reply to a question put in the Commons by Sir C. Bright, Mr. Du Cane said the Government had sanctioned the loan of a portion of the unoccupied part of the hospital to the Seamen's Hospital Society, on condition that the Government should have power to resume it if the accommodation was needed for the seamen of the Royal Navy. It was thought that the mercantile marine had a strong claim for some share in the benefits of Greenwich Hospital, to the funds of which it had largely contributed. The Government would not be likely, however, to sanction a grant of any portion of the building as an hospital for sick residents of Greenwich.

MEMORIAL OF THE LATE HENRY HOARE.—Amongst various propositions, Mr. Joshua W. Butterworth writes—"What more pleasing, more permanent, more practical, more consistent memorial to the late Henry Hoare, could there be than the founding one or two fellowship-endowments for poor curates, in connexion with the Curates' Augmentation Fund, of 100*l*. a year each, bearing his name for ever? Say one for the diocese of Canterbury, and one for London, in each of which he resided, and by the prelates of which sees he was much appreciated. To use the quaint words of old Fuller, it would be 'a good name as ointment poured forth,' if perpetuated in connexion with a work of such practical usefulness; and, moreover, one which, during life, had met with his distinct approval."

PROPOSED NEW STREET TO THE MANSION-HOUSE.—Mr. Tite, M.P., has received, in answer to a question addressed to the architect of the Metropolitan Board, an assurance that "directions had been given to the Board's auctioneers to sell the materials of 120 houses in the first portion of the new street to the Mansion-house, between Earl-street, Blackfriars, and Cannon-street, with a view to their demolition; and that he thought, during the ensuing summer, the ground between these points, with the exception of the Will Depository in Doctors' Commons and the Equitable Insurance Company's building, at the corner of Earl-street, would probably be cleared; and that, as to the remainder of the line, from Cannon-street to the Mansion-house, the negotiations for purchasing the unsettled interest were being proceeded with as rapidly as possible, in order to clear the ground."

THE LONDON LABOURERS' DWELLINGS SOCIETY (LIMITED).—This society has held its half-yearly general meeting, when the report for the six months ending December 31st was presented by the secretary, Dr. Greenhill, of Hastings. From this it appeared that the capital had increased to 28,000*l*, and that the net revenue for the half-year was sufficient to pay the members a dividend at the rate of 5 per cent. per annum free of income tax, which dividend was accordingly declared. The profit arising from a forced sale of some property to the East London Railway Company had been realised, and (according to a resolution passed at the preceding half-yearly meeting) carried to the reserve fund. It was unanimously resolved that 500*l*. of this profit be invested in the society's shares, and that the dividends be devoted towards the relief of the deserving poor tenants in times of special sickness or distress, and to the support of useful and charitable institutions in the localities where the society's properties are situated. After this transfer the reserve fund still amounts to 3,960*l*.

GALLERY OF ILLUSTRATION, REGENT-STREET.—Mr. W. Telbin has painted a charming view of the Piazzetta from the Dogana, for Mr. and Mrs. Reed's new entertainment, "A Dream in Venice." The water, the boats, and the buildings are all admirable; the sky on the left side might be improved—it suggests mountains that do not exist. There is also a very pretty view of the Bridge of the Rialto, by Mr. O'Connor; and the dresses and general getting up are brilliant. The entertainment is written by Mr. Robertson, of "Ours," and cleverly written, too, though its story, a midsummer madness, will scarcely interest so many people as some previous doings in the Gallery. Mrs. Reed is excellent as an old lady, and, with Mr. Reed, Mr. Parry, and Miss Galton, sings admirably a number of opera airs with travestied words. Mr. Parry's appearance and personation of the doge is artistic in the extreme—it deserves to be called great. It is pleasant to be taken,—

"So swiftly to Venice, the land of the free,
Where the cabman's transom'd to the gay gondolier,
And the stones of the streets are the waves of the sea,
And you feel when at home that you're out on the pier."

THE NATIONAL GALLERY.—Lord John Manners has introduced a Bill to make further provision for the enlargement of the National Gallery.

WESTMINSTER PALACE AND THE THAMES EMBANKMENT.—Notice has been given by Lord John Manners, of his intention to bring into Parliament a Bill to authorise the Commissioners of her Majesty's Works and Public Buildings to acquire lands for the purposes of the New Palace at Westminster, and to construct an embankment on the north shore of the river Thames, in the parish of St. John the Evangelist, Westminster.

LONDON PROPERTY.—The premises at the corner of Birch-lane and Lombard-street, occupied for a period of thirty-six years by Messrs. Overend, Gurney, & Co., have been sold by auction at the Mart, for the sum of 29,500*l.*, to Messrs. Glyn, Mills, Currie, & Co., the private bankers next door, to whose premises they will be forthwith added. The property is held under the parish of St. Edmund-the-Martyr, at a ground-rent of 600*l.* per annum, for a period of which thirty years are unexpired.

LEAD-POISONED WATER.—Dr. Lankester, medical officer of health for St. James's, Westminster, has reported to the vestry of that parish that he has analysed the water found in the butts and cisterns in various parts of the parish, and found a large quantity of the water to be rendered unfit for drinking purposes by exposure to the atmosphere and want of cleansing of the receptacles in which it is contained. Certain of the waters also gave indications of containing lead, and he warns persons against drinking such waters, stating, "I have no doubt but that this is one of the most common causes of obscure and unexplained illnesses in families."

CHESTER TOWN-HALL.—The works appear to have been set going again, Mr. Gargan, the clerk of the works, having at length been dismissed. For the last nine months he has been paid by the committee (though not allowed to do anything) a salary of three guineas a-week, and as a further testimonial of their favour and support he has been voted a gratuity of 50*l.* Mr. Gargan was at the expense of bringing his wife and children to Chester, and has had to remove again to his former place of residence in Ireland. The in-coming clerk of the works is an Englishman. The workmen, too, must have paid pretty smartly, we should think, for their refusal to work so long as Mr. Gargan was clerk of the works.

THE SANITARY IMPROVEMENT OF NEWCASTLE.—After a careful inquiry into the causes which may be supposed to have led to the excessive mortality amongst the population of Newcastle, the local public health committee have acquainted the council with the results of their labours, and those of the gentlemen who have been associated with them. Their report was a mere abstract of one of a very voluminous and comprehensive character, which they thought it probable the council would decide on printing, in order that all the data upon which the recommendations contained in the document are founded might be preserved in a convenient form. This mode of procedure was one adopted by Liverpool upon the occasion of a similar inquiry. This report has, in fact, now been submitted to the council, and ordered to be printed, with the report of the town improvement committee.

GAS EXPLOSION AT MANCHESTER.—At the Corporation Gasworks in Rochdale-road, an explosion took place last week. It happened in one of the purifiers. The men were engaged in changing the lime and other purifying materials. Of six men engaged, all were thrown down and more or less injured or burned. The immediate effect of the explosion was to destroy the whole of the roof of the building, and to make a wreck of the foundry adjoining, the intervening wall being broken through, and the outer wall, fronting to Gould-street, being much shaken. Fortunately, occurring on Sunday, there was no one at work in the foundry. The bricks of the walls, the slates from the roof, and the machinery and appliances were laid in a thorough mass of ruin. All the doors and windows of the building were blown out, and in the adjacent houses in Gould-street the windows were broken. Engaged at the retorts there were twenty men, but all escaped without injury. The committee failed to discover the source from which the fire which communicated with the leak of gas proceeded. The buildings were old and doomed to early removal, at any rate.

TENDERS

For schools, residences, almshouses, &c., at Newington, for the Metropolitan Tabernacle Committee. Mr. James Cubitt, architect:—

	In Red Brick.	Less for Picked Stocks.
Quinell	27,223	289
Collis	5,149	169
Sawyer	945	69
Jackson & Shaw	4,890	90
Croaker	4,855	77
Downs	4,800	50
Coleman	4,792	—
Rider & Son	4,770	92
Tarrant	4,725	55
Thompson	4,530	130
Hart (accepted) ..	4,480	50
Wells	4,480	45

For constructing a reservoir on Portsdown-hill, for the Borough of Portsmouth Waterworks Company. Mr. J. Quick, engineer. Quantities supplied by Rake & Rawlin:—

Light (Brothers)	25,800	0
Lawrence	5,500	0
White	5,490	0
Furniss (accepted) ..	5,185	0
Pince	5,030	0
Simms & Marten	4,973	0

For building a residence at Haywards Heath, Sussex, for Mr. Frederick Willard. Mr. E. J. Collins, architect:—

Farr	21,006	10
Loxley	957	16
Stuberfield	847	0
Harrison	795	0

For the erection and completion of nine houses in West End-lane, Hampstead, for Messrs. Langridge & Streeter. Mr. John Butler, architect. Quantities supplied by W. B. Hays:—

Welch	22,377	20
Francis & Sons	2,374	0
Lathey, Brothers	2,347	0
Neale	2,168	18
Johnson	1,986	0

For erecting a new college, at Brecon, South Wales, for the Independents. Mr. T. Thomas, architect. Quantities supplied by Messrs. Curtis & Son, in conjunction with Messrs. Rake & Rawlin:—

Williams	29,950	7
Watkins & Jenkins	8,850	0
Griffiths	8,400	0
Jones & Sons (accepted) ..	8,000	0

For rebuilding warehouse, 127, Aldersgate-street. Mr. W. Smith, architect:—

High	25,789	0
Summs & Marten	4,865	0
Johnson	4,819	0
Nightingale	4,611	0
Newman & Mann	4,435	0
Bennett	4,339	0
Perry	4,300	0
Manley & Rogers	4,287	0
Mann	4,187	0
Kelly, Brothers	4,075	0
Warne	3,945	0
Hughes (accepted) ..	3,910	0
Stephenson	3,333	0
Webb & Sons	2,989	0
Crabb & Vaughan	2,850	0
Nutt & Co.	2,681	0

* An erroneous statement of the selected tender was sent us last week and published. If we did not believe it was sent through misconception, we should state whence it came. Ed.

For building the Falkland Tavern, Kentish Town, for Mr. G. E. Watkinson, architect:—

Hoare & Postlethwaite	21,796	0
Manley & Rogers	1,690	0
Ellacott	1,675	0
Edwards	1,594	0
Langmead & Way	1,623	0
Mann (accepted)	1,575	0

For the erection of a villa residence at Barking, Essex, for Mr. Fill. Mr. J. W. Denison, architect:—

Martin	2,919	10
Stokes	815	0
Arnold	755	0
Withers (accepted) ..	720	0

For the erection of a store for the Submarine Telegraph Company, Dover. Mr. Rowland Rees, jun., architect:—

Hearn & Godden	21,083	16
Tunbridge	1,025	0
Page	916	19
Adcock	890	0
Matthews	840	0
Sniff & Co.	845	0
Richardson (accepted) ..	815	0

For rebuilding the Donagel, Dover, for Mr. Alfred Kingsford. Mr. Rowland Rees, jun., architect:—

Adcock	4,939	0
Tunbridge	519	10
Perry	513	17
Vener	502	3
Page	458	0
Matthews (accepted) ..	452	0

For altering the Sarsen's Head Inn, Dover, for Messrs. Holmes & Style. Mr. Rowland Rees, jun., architect:—

McKenzie	2,282	0
Adcock (accepted)	224	14

For a new infirmary in connexion with the Newport Workhouse. Mr. A. O. Watkins, architect:—

	Infectious Wards.
Francis	23,840
Whitaker	1,800
Williams	3,775
Richards	3,687
Griffiths & Thomas	3,200
Holkins	3,008

For the erection of Trinity Church, Huntingdon. Mr. John Tarring, architect, London. Quantities supplied:—

	General Estimate.	Separate Estimate.
Dove, Brothers	29,885	0
Ball & Sons	8,668	0
Newman & Mann	8,300	0
Simpson	7,955	0
Saunders	7,665	0
Myers & Sons	7,563	0
Pattinson	7,618	16
Maile & Richardson* ..	7,377	0

* Accepted.
For the erection of a new Synagogue, Carter-street, Houndsditch. Messrs. Thomas Smith & Son, architects:—
Ennor (accepted)

For national schools and master's house, Frimley, Surrey. Mr. T. Goodchild, architect:—
W. & T. Swaine (accepted)

TO CORRESPONDENTS.

H. M. W. (shall receive proof).—W. R. (shall appear).—T. R. (no opportunity afforded).—Passenger (next week).—*the laborer* (next week).—R. W. T. (next week).—Judge Jefferys (next week).—W. D. S. (write to publisher).—P. M. S. (too wide a question. Tell an architect the amount available, and let design be made in accordance).—A. & K. (we cannot "correct" comments we believe to be correct already).—C. H. (write to J. Conduit-street, for "form").—H. B. A. O. W. W. A. R. D. J. P. E. & Son. W. T. C. & V. D. W. R. T. J. W. D. R. R. jun. H. F. The Rev. D. V. P. W. C. H. L. W. H. C. L. J. G. W. S. R. T. J. N. H. H. M. T. R. R. T. L. D. M. S. S. L. T. C. P. A. J. R. W. A. R. F. W. A. T. A. P. L. A. B. T. G. W. R. W. H. G. & B. We are compelled to decline pointing out names and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication. Nor.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m., on THURSDAY.**

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J. W. BENSON, having erected steam-power and improved machinery for clock-making, at the manufactory, Ludgate-hill, will be glad to furnish to clergymen, architects, and committees, Estimates and Specifications of every description of Horological Machine, especially cathedral and public clocks, chiming tunes on any number of bells. A descriptive pamphlet on Church Clocks post free for one stamp. Watch and Clock Maker by Warrant of Appointment to H.R.H. the Prince of Wales, and maker of the great clock for the Exhibition, 1862. 25, Old Bond-street, and 83 & 84, Ludgate-hill, E.C. Established 1749.

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The Builder.

VOL. XXV.—No. 1260.

*The History of Architecture.**

THE history of all architecture in all countries through all times, is a large title indeed, and to do justice to it is a daring undertaking for one man, whatever may be his accomplishments and

however abundant the materials at his command. Still it is by one man that such a work has to be

undertaken if at all; for the subject is essentially one and owes its highest interest to its unity, and must be taken in from a single,—the very best obtainable,—point of view, of course. Only thus were there a chance of obtaining a history, a much better thing if deserving the name, than a bundle of histories at cross purposes continually one with another, or still worse, so thoroughly under the discipline of overstrained editorship, as to be destitute of any resolute purpose or individual colour whatever. The work had to be done, and would have been done, though better left aside if grasp and independence were wanting; as it is, both students and lovers of architecture may hold themselves fortunate that the lot has fallen well. In these our days of constantly extending and accelerated intercourse, architectural contributions flow in from the ends of the earth, and the multiplication of explorers and the thickening footsteps of men who become explorers but by accident of leisure or of labour, cause the turning over of records that are recovered last for the very reason that they were covered up earliest. And architectural discovery is still running only a parallel course with geographical researches,—with geological, ethnographical, philological; is stimulated to exertion, encouraged in sanguine hopes by their successes, gathers hints of enterprise from their combinations, and still remains under no obligation that it does not amply repay. The tendency of all these studies has been for some time sufficiently declared to establish a sequence of development in art and civilization throughout the general human race, and a connexion of almost magnetic universality, by action and reaction, between its wide-spread families, such as aforesaid was contentedly traced only within the limits of independent sections. The age of concurrent expositions of the arts and industries of all nations as contemporaries, has curiously enough been the first to fully apprehend that even from the earliest appearance of our race, such an effective concurrence has been unconsciously proceeding, and thus the time has arrived when history may take in hand to review all lines of progress and make an estimate of general result and of what has been severally contributed,—to distribute her honours and honourable notices, and deduce if it may, encouragement no less than instruction for the future.

It is, therefore, with consistent philosophical appreciation of the scope and dignity of his theme, that Mr. Fergusson devotes the half of this Introduction that follows a sketch of "Tech-

nical Principles of Architecture," to an outline of "Ethnography as applied to Architectural Art." "The one great fact," he says, "which it is essential to insist on here is, that if we do not take into account its connexion with ethnography, the history of architecture is a mere dry, hard recapitulation of uninteresting facts and terms; but when its relation to the world's history is understood, when we read in their buildings the feelings and aspirations of the people who erected them, and above all through their arts we can trace their relationship to and their descent from one another, the study becomes one of the most interesting as well as one of the most useful which can be presented to the inquiring mind."

The conciseness, which is a condition of the whole work, presses especially hard of course upon an introductory section; but the characterization of the four great groups of building races is replete with happy combinations, and even the less convincing have a value in opening questions which it is almost as high a mark of intelligence to entertain as to answer.

For the races themselves, they are classified as the Turanian, the Semitic, Celtic, and Aryan.

In the separation of the Celts from the Aryans, and still more in their co-ordination, we see a divergence at once from the conclusions of the philologists, who bracket Welsh and Gaelic with Greek and Sanscrit as Aryan co-equals, without a hint of hesitation. Again, in subdivisions, Mr. Fergusson comprises among Turanians, not only the accepted Turks, Hungarians, and Finns, but the ancient Egyptians, who rank with the philologists as Semites, to say nothing of his inclusion of the modern Chinese and Japanese. The Semitic division is thus left to the Arabian, the Hebrew, and the Phœnician.

In all this there is provocation enough for cavil and for controversy, but the challenge is a fair and a frank one; the claim is no less than that architectural language should be taken in evidence on the same level with linguistic, and have a right to tender no less than to receive illustration; if this be disallowed, the philologist will but damage the value of his instrument of analysis; for the evidence will then be complete that the most interesting and important affinities of races have deeper roots than those of their language.

The world has had a long history, and most things that have happened in the last two thousand years happened several times before in the many two thousands antecedent. He were a shrewd philologist who should demonstrate the Celtic blood of the French nation from an analysis of Parisian language; but a comparison of the genius of the Gauls, as described by Cæsar, and as put in evidence by a file of last week's newspapers, is decisive, as decisive as Mommsen's acute parallel between the ancient Gauls and the modern Irish. The basis of Mr. Fergusson's argument, therefore, must be conceded, and we welcome the examples he provides throughout the work of its cogent application.

We cannot do better than speak here of the general tone of the work, and do so with unqualified commendation. He must, no doubt, have very callous architectural predilections indeed, who does not very frequently, as he goes through the pages, stop short to protest against a dictum, not to say a dogma, to appeal against a judgment, or even a principle; but there is always the satisfaction that the meaning is so clear that there is no difficulty in framing a counter assertion;—it is an assertion that has to be encountered, and not a shifty insinuation.

By distinctness of expression, absence of equivocation, by boldness, therefore, of the best kind and above all things, the author thus lays himself open to attack on all sides at the present moment, and by possibilities of future discoveries; but a bold conjecture is at least a

guide to direction of inquiry. Sometimes, doubtless, we are taken rather suddenly by a positiveness in assertion as a fact of what it would seem much to claim even as a plausible solution of an open question, but further reading usually shows clearly that this positiveness is no more than the author's way of giving the highest expression to his conviction; it is not an overbearing imposition of it on those who have fair claim to suspend their judgment, if not to be pretty positive the other way. Still less is the positive statement palmed off upon ignorance as an obligatory conclusion. It is positive in one clause, "almost certain" in the next, and "almost quite certain" very soon after; and it would be to be wanting in the amenities of interpretation to decline accepting the enunciation in its totality. In an age of so much timid self-mistrust, it is good to find a writer who is bold to be of his own, however seemingly paradoxical, opinion, and who elects to take the risk of sometimes proving wrong rather than be false to the pregnant suggestions of study, and cares less to be safe than he fears to forfeit the rewards of sagacity by half-hearted qualifications.

Probably the last words in the publication that were written were those that, below the vignette on the title-page, assert that in the manner so illustrated it was that the Greek temples were lighted. Should it prove hereafter most certainly that this was not the case, as we think it very easily may, no one who has read the book will be entitled to say, after the pages in which the subject is discussed, that the author's assurance went for more than his most settled conviction, with full notice of differences of opinion existing and recalcitrant, under recognition of the very same evidence.

On another subject of special predilection with the author,—the Christian foundation and design of the Dome of the Rock at Jerusalem,—he has certainly carried such independent judgments with him as at least to vindicate his pertinacity. Upon another point, which, as pertaining to technical military architecture, is not included in this history, Mr. Fergusson has lived to see the recognition, practically as well as theoretically, of his broad and bold anticipations.

Let the reader, then, be not merely indulgent, but by our advice he will moreover be alert, to what independent views he may find somewhat startlingly enunciated from time to time. It is open for him always to take them with whatever grains of salt he pleases, and he will find the salt in most cases placed conveniently to his hand.

The autobiographical notice,—we had almost said of the book,—that is found in the preface, is instructive enough. It may be said to have begun in the publication of a treatise on "The Principles of Beauty in Art," which, rejected by booksellers, and simply a pecuniary loss to the author, would be called a failure by those who are unaware of the lively reaction it produced among selecter students, or who decline to recognise the teaching of the teachers as compensation for loss in an attempt to supply the multitude with a text-book.

And so the project for a time died down; but the warmer sun that rises in Albemarle-street revived the germ, and the result was the "Handbook of Architecture," in two volumes (fully reviewed in our pages at the time), that vindicated the value of its materials and the wisdom, if not precisely the skilfulness, of its plan, by a popularity, both with architects and the public, that all are familiar with. After this success it appears that there was no longer an obstacle to the author doing justice, with ripened knowledge as well as experience, to his own idea. We miss with pleasure the label of the Handbook, which in its purport is as inappropriate to volumes,—not unwieldy, it is true, but still of 800 pages,—as by its associations unworthy of the reach and copiousness of their contents.

* "The History of Architecture in All Countries, from the earliest Times to the present Day." By James Fergusson, F.R.S., Fellow Royal Institute of British Architects. 3 vols. London: John Murray, Albemarle-street, 1865.

The History has no cause to be ashamed of the Handbook from which it sprang, and sufficiently acknowledges this by what it retains, both literally and recast; but the recasting has been so extensive, the developments and additions so important, that the book is in truth a new book; and what we have now to say of it, after deliberate consideration, will be to the general effect that it is a very good one.

The superposition of topographical by historical sequence has been effected in part by the rearrangement of the singularly confusing order of the chapters of the Handbook, each chapter or book being, however, still restricted to a particular country; and then by adopting with more persistency an historical point of view, without the local limits. There was, in truth, no other way; the provincial development of styles, of which the leading features are most widely diffused, must have its historical acknowledgment; and the stories of different provinces have thus to move on, each upon its own ground; and the lines often quite distinct, often only irregularly parallel, must need be explored consecutively. The claim to first treatment belongs presumably to the first corner; but even history demands its dramatic interest, and must put in a privileged and conspicuous place the subject that is of highest interest by vigour, variety, and artistic import. It will therefore be enough if the intelligence of the student is warned, is aided in keeping up from time to time his sense of the sympathy and note of the insouciance, local influences notwithstanding, of all the leading lines. The Doric architecture of Sicily had a local development that demands a history of its own concurrently with that of the happier development in Greece proper; and notwithstanding the active intercourse and personal interchange of Mediæval ecclesiastics, even the mighty stream of Gothic invention did not overcome all tarry eddies and back streams. Salisbury Cathedral, as compared with Reims or Amiens, asserts its topographical distinction no less than, and even far more vehemently, than its historical synchrony.

On the whole, the questions of this class affecting distribution, that rose up to be arbitrated on, appear to have been decided with remarkable—as regards another class, we would say, with surprising—judicial discretion. The proportion of space to be devoted to various styles, and periods, and countries, is a consideration that more impartially might easily be at fault in, while it is of all others the most fatal trap and temptation for a writer who has enthusiasm enough for a partisan. Limed twigs spread themselves in every direction of this many-branching architectural story; but still, to the great comfort of those most interested, the bird flies free. It seems to be one of the advantages of the detailed study of a large range of contrasted styles—but given, we must add, a worthy student—that the virtues of those which are least after his own heart make themselves known, and make known, at the same time, the shortcomings of his own style of predilection. It will surprise some who read—as one is apt to do—the preface last, to find that the author recognizes the possibility that he may be thought cold towards the beauties of Gothic, which, in section after section, he has given such effective help towards understanding and appreciating. On the other hand, those who may be alarmed by some enthusiastic expressions lest the author's familiarity with the East and its monuments should have vitiated his taste and overloaded his chapters with elaborated deformities, will assuredly be comforted when they find that the space assigned to Orientalism is the very least that could be conceded to joint claims of novelty and real artistic value; that not one page is misapplied; and that the severest criticisms, even when most sweeping and unwelcome, of the structures of the West, in no case betray an alien relish that smacks repugnantly of tope, and mosque, and pagoda.

Of the three volumes which constitute the work, the third, published as it has happened first, contains the history of modern styles, including the revival, which was in many a better form and promise, a true development of classicism, and touches—not without some caustic lines—the revived Gothic, in which, sooth to say, the author finds more of archeology and manufacture than of art and architecture,—works that it is clear have, in his apprehension, but the same parity with their models that repentance, questionable at best, can claim to innocence.

The History in the volumes that number 1.

and 2 is divided into the three parts,—Ancient Architecture, under the four heads of Egyptian, Assyrian, Grecian, and Etruscan and Roman. In these the local transitions fall in readily enough with historical consecutiveness. But in this part, as it appears to us, a place should have certainly been given to the chapter on Celtic, or so-called Druidical architecture, which deferred for the second volume, was ultimately, by stress of space, fairly hustled out of time; and stands over now with promise of a niche in a future reprint of volume 3. No antiquarian, and no historian, will assuredly date Stonehenge lower than the Colosseum, and it has an architectural value that makes a history of English architecture, which commences with no reference to a foregoing account of it, strangely acephalous. Even to this day there have been those who have passed from restoring the missing and setting up again, in imagination, the prostrate masses on the lonely moor, with an impression of the majesty of the original conception, that has soon after seemed strangely to harmonize with the fundamental tones of Salisbury and ancient Winchester. At Winchester it may be that it is merely the sentiment for grandeur of mass that reappears; at Salisbury it would seem as if the artificial gradation of projection and magnitude of the double transepts, and again subordinate porches, of nave and chapels, were designed by a master who had gone to school on the bleak plain, and had there learned the secret how the concentric circles and symmetrical trilithons gained scale and effect, by artfully accentuated progression. From the larger ethnographical point of view no less, the masterwork of a race which spread so wide upon the almost unoccupied map, and stretched so far, would fall into true perspective in the ancient section. Indeed, when we remember the wild theories of Dracontia by Stukely and the rest, and then consider the analogy of Stonehenge with the monuments of the snake-worshipping Easterns, revealed in this very book, we marvel at the self-control that, from any consideration whatever, left the theme alone.

Part the second is devoted to "Christian Architecture," by no means an unexceptionable title, considering that, as currently employed, it excludes both Santa Sophia and St. Peter's, and as here employed it excludes the latter, to neither of which did any earlier non-Christian temple ever bear the slightest resemblance. But as usual, p. 76, the difficulty is candidly admitted. France takes of right the first place in the historical sequence of Gothic development, and books are given in order to Belgium and Holland; Germany, by a precedence due to her Romanesque monuments, that should have given her a place even before France, but for her less lively evolution, and Scandinavia; England commences the third volume, and is followed by Spain and Portugal, under many acknowledged obligations to Street,—Italy; and, lastly, Byzantine.

To this last collection we again take serious exception—an exception not unanticipated, but, we think, by no means unperceived. Byzantine architecture may, it is true, have lived down to the present century, but all its most important—all its really important—productions were anterior to Gothic, and even to Romanesque; moreover, after the fully recognized additions to our knowledge of the style by Texier and Pullan, it cannot escape us how importantly, by its inventions and adaptations, it entered as a factor into the novel developments that were familiar to Crusaders in the West, and carried along with them in their Eastern conquests.

Pagan architecture—or Oriental, as we would rather call it—occupies the last book of the volume last published, and this is a veritable mine of new information quite worthy of the number of pages devoted to it.

Saracenic, Eastern and Western,—and it is Oriental even in Sicily and Spain, occupies the first book of this part; followed by Persia, India, Hindu architecture, Indian Saracenic,—a section of the highest artistic value,—Naga architecture, of which more is to be said, China, and, lastly, Mexico and Peru.

This it is, indeed, to—

"Let contemplation, with extensive view,
Survey the world from China to Peru."

Panting space, so far as a reviewer can command it, if not time, must toil after such a contemplative philosopher in vain; sit we down and breathe and make some more special note of certain "things of fame that do renown" the regions we have been carried over. The review

of an encyclopedical book,—of any book that ranges on a line with this, or claims, indeed, in such degree the honours of originality,—makes never, or only impudently, a pretence to supercede it, and spare any worthy reader the necessity of studying the book itself: it was an hallucination of our younger days, induced by a prevalence of a different view, that only by some perversity of fate could it happen that it always seemed to fall to the lot of those writers to review books who, from their better knowledge of the subject, ought to have written them,—the authors, as unluckily, having missed their function as reviewers, for which they might still, weak as they were, have been just sufficiently qualified.

Multifarious as the manifestations are of Asiatic architecture as contained in this half volume, it is marvellous how very few can be noted as simply barbarous by a term that fails of the dignity of the more appropriate term, Barbaric. We confess to a certain feeling of awe when we reflect on the subordination—the subjection,—though for the most part we must qualify it as the deserved, to which the races have fallen who were capable, we will not say merely of executing, but of conceiving such designs. When we look at these ruins we remember how Scipio muttered over the Carthage that his legionaries were burning, the Trojan anticipation of the day,—

"When Priam's sons and Priam's self should fall;"

and admitted to the Greek beside him that he was mistrustful, if not prescient rather, of the fatality of Rome. Whether as matter of art or of national prosperity, we read the moral, not alone of the accidents of history, but that of the incumbency of unrelaxing energy, vigilance, and a resolution which shall rescue the germ of life in fainting art by unsparing sacrifice of untangling routine,—of hardening tradition, by daring tolerance of innovation, when it is the innovation of genius. There is a superstition and a fatalism in art and architecture as in cult, and those of us in these our modern times and nations who cannot break through it will have to lament fruitlessly over formalism nipped in its intended bud, or unprolific bloom, as infallibly as ever was the art of the mighty architects of Nakhon Wat.

And who were they, and what their works? In some five-and-forty pages of the second volume the extraordinary tale, so far as it has been recovered, is told by Mr. Fergusson.

Beyond the long Malayan peninsula, on the east of the Gulf of Siam, is a broader peninsula, of which the eastern seaboard is Cochin China, and the central portion, traversed throughout its length by a great river, is Cambodia, and here, in a plain, about 103° 50' E. and 13° 30' N., are the ruins that have excited these reflections. Their date has still to be sought and settled, somewhere probably within the four centuries between 951 and 1357 A.D. This, however, is one of the many cases where questions of definite date will be better left aside until evidence to the point, which must come in, can be taken into account. The temple of Nakhon Wat is but one, though the chief, of several. Both in arrangements and ornaments it declares itself as dedicated to the snake worship, the emodication of which by the sword or by conversion, or by both conjointly, explains their present desertion. The country lent itself kindly to the natural and artificial swamps, favourable to the objects of veneration; and the temple is a series of concentric rectangles, of which the central one, and also an intermediate pronaos, was occupied by four tanks; while it is probable that even a large moat-surrounded area in which the temple stands was at least occasionally turned into a lake.

Of the scale of the works we will speak presently. Of their execution we read,—their walls are built of large stones, without cement, and so beautifully fitted that it is difficult to detect the joints between two stones; hence some pillars have been mistakenly described as monoliths, and junctions cannot be detected even in law-declaring photographs, until their known places are pointed out.

To masonry worthy of the best Hellenic times is added the Hellenic characteristic, that neither proper arch nor vault is employed throughout the buildings, but pure trabeation or the Pelægic arch of projecting stones always. Still further, the architectural members and details are so distinctly pronounced that an interpreter of architectural language will no more doubt their derivation from Greek and Romanized Greek models than a philologist doubts the historical dependence of Portuguese and Latin. The pillars, rectangular

though they be, have proportions of diameter, diminution, height, and spacing, that are as characteristic of such derivation as their details of base with its plinth, capital and abacus, and distribution, as well as details, of epistylia. The pillars are surmounted by a very proper architrave, a frieze, which within the temple receives elaborate sculpture, and a cornice, of which infinite rows and repetitions of seven-headed serpents only take us from Greece to remind of the cornices of disk-crowned asp in Egypt. To the wood-cuts, which reproduce photography with delicate veracity, it must be left to spare further description.* Let a few words be given to the extent of the remains. The rectangular walled enclosure of the temple measures 1,080 yards by 1,100 yards, and is surrounded by a moat 230 yards wide, which completes an outer rectangle of nearly an English mile each way. A splendid causeway across the western moat, adorned by pillars on either side, leads to the great gateway, itself a structure of five stories in height, and having, with its wings included, a façade of 600 ft. Beyond, a second raised causeway 370 yards long, leads to a cruciform platform, in front of the proper temple. "The temple itself consists of three enclosures, one within the other, each raised from 15 ft. to 20 ft. above the level of that outside it, so as to give the whole a pyramidal form. The outer enclosure measures 570 ft. by 650 ft." To this we must confine ourselves,—it has three portals on each face, adorned with towers, and externally is surrounded entirely by double open galleries or verandahs, more exactly peristyles. These have very much the relative proportion of a nave and aisle, the wider, 104 ft., being next the wall. The inner and larger pillars have elegant capitals, but no base. A design is carved on the flat at the lower part, and an incised ornament carried up the edge of the shafts; this is the case also with the outer pillar, which has base and plinth. Of such pillars there are 400 or 500; and we have not yet penetrated to the temple, where there are hundreds more. Moreover, the walls of the colonnade are sculptured, to the full length of some 2,000 ft. from top to bottom, and Mr. Fergusson estimates the number of men and animals represented from 18,000 to 20,000. His authority is the photographic collection of Mr. J. Thomson, to whom the revelation of these details is due. Numerous female statues appear on the pilasters, but no male; and as a last analogy we remember the caryatid of the Erechtheum, where the Attic priestess tended the sacred serpent, of which Herodotus has so much to tell, and that is seen in the graceful bas-relief coiled round Minerva herself, and feeding from her hand.

There is a parallel appearance of quasi-Classical forms on Indian ground, comparatively insignificant in extent, in Cashmere, much nearer their original seat; but they are here employed with some faculty of adaptation, it is true, but with inferior taste, and seem to have been propagated from a baser stock, reminding of the degenerate style of a Roman Christian sarcophagus, or the bride's silver toilet set of the Blackas collection.

Further suggestions and elucidations will be found in the book; it is enough here to have adverted to an example of the strange power of diffusion in architectural ideas, and to the task which is set by its indications for the interpreters of language and literature to work out. The astonishing discoveries in Siam recently extracted in the *Builder*, announce that we are not yet at the end of our wonder or our history. For the rest,—of the snake-worshippers and their repulsive superstition, the world, no doubt, is well rid, so far as it is rid; yet it must be with a certain respect that we regard their strenuous resolution, and, indeed, success in making architecture with its accessories an exponent of their purposes and sentiments. Wherever the elements of their architecture came from, and by whatever road, they made it speak their own language, express their own thoughts, and spared neither labour nor expense in the endeavour; and so, though the thoughts may have been little worth, the dignity of the purpose remains. Our own civilization, which we hope relies on a sounder vitality, and boasts above all things to be rapidly and continually progressive, may not disdain to emulate even Cambodians in prosecution of a mighty work, by developing both plan and elevations in subjection, no less to purpose and to technical art, than to the most original characteristics and definite expression of the current time.

WANT OF HARBOURAGE AT NAPLES.

THE Bay of Naples is famous for its beauty. Second only, in the opinion of most who have had the opportunity of making the comparison, to the Golden Horn, when the domes of Constantinople first rise to view, its shores are the very cradle of classic romance, and of history more marvellous than fable. The syren's rocks recall the voyage of Ulysses, and the precipitous bluff of the "Salto di Tiberio" awakens the imagination to the truth, how little effect the lapse of eighteen centuries has had on the physical features of the landscape. The figures, the dress, the craft, of the sailors who navigate the bay are all alike things of the past. Except by the occasional presence of some Catholic emblem amid the quaint pagan representations painted as amulets on the prow, a *marinaio* boat on the bay of Naples might be a vessel either of the present day, or of one, two, or three thousand years ago. Basking in the sun soon as their nets are drawn or their boats run on shore, the lazzaroni eat, and chatter, and slumber, beneath the very shadow of the canopy of smoke which escapes from the crater of Vesuvius, and denotes the constant activity, and the very close neighbourhood, of the mysterious subterranean fire. The giant moves at times, throws forth furlongs of red hot lava, showers of scoræ, or clouds of fine ashes, obscuring the sky with a darkness more impenetrable than that of night, and which has been known to speed over the narrow peninsula and reach the Adriatic coast within less than two hours from the time that the eruption took place. Sharp shocks of earthquakes are not rare, and although the people of Naples are wont to console themselves when these are slight with the theory that it is only a disturbance of the volcano, and not a *real* earthquake, the movement at times causes sufficient terror to keep the whole population for three nights in the streets, and to crowd every church with the suppliants of St. Januarius.

For people who are exposed to the danger of volcanic eruption, and to the still more fearful peril of earthquakes,—people who live between the buried cities of Pompeii and Herculaneum, and the ruins of Cumæ, Posilippo, and Baia,—it might be thought that the feminine fury of the angry Mediterranean would have but little terror. The reverse, however, is the fact. So calm is the usual surface of the bay, that a very slight rise in the wind is sufficient to drive, or to keep, the mariners ashore. A steady Sirocco, the damp southern wind which blows most roughly over the bay, prevents both sailing and the daily passenger and parcel traffic which is carried on by open boats. The steamers lie snug at the pier if a water-spout is sighted. For a people who, in the hot weather, are semi-aquatic in their habits, it is wonderful to note how afraid the Neapolitans are of the sea.

It has just given them good cause for alarm. On the 16th and 17th of January, a hurricane, such as has been hitherto unknown in those waters, swept over the Bay of Naples. Curiously enough, the very day had been predicted, probably by the astrological almanac of *Barba Nera*, which has great popularity in Southern Italy, as the date of a great storm. An eye-witness gives a graphic description of the scene. The streets of Naples were in all the alarm, and presented many of the features, of the wildest revolutionary times. Barricades of boats arrested the passengers; the troops were under arms, and, with the National Guard, patrolled around the shore. The Prefect, the Quasior, and other authorities were all on the scene, helpless in presence of the storm. Thirty vessels were dashed together, or drifted on the shore, under the very eyes of the excited populace. The road that skirts the bay from the quay of the Custom-house, past the lofty brick tower of the church famous in the history of Masaniello, stretching towards Portici and Torre del Greco, was covered with oranges, caruba, grain, and other portions of the cargoes of the driving and foundering craft. Nothing could be done to arrest the disaster. Authorities and people, seamen and landmen, could only look on in helpless dismay at the fury of the storm.

It is true that the hurricane now recorded is exceptional in its violence; but the damage exceeds in degree only that which occurs from time to time with no inconsiderable frequency. While Europe, for good or for evil, has been going so fast a-head, Naples has, in this respect, been out of Europe. Africa, it might almost be said, commences at the Tronto. It is hardly credible that the port of Naples, now a city of

420,000 inhabitants, was constructed by Charles of Anjou, the first of the Angevin kings, who died in 1285. The people who look to Naples as their emporium and their harbour have been hitherto content with the arrangements planned by a monarch in the thirteenth century. Not content, perhaps—content is not a southern virtue,—but passive and acquiescent; talking incessantly about the want of a port; debating whether it were better to enlarge the old one or to construct a new one; expatiating on the magnitude attained by the city, on the requirements of its commerce, on the unsafety of the anchorage, and on the ample return which would be ensured on the capital invested in docks and piers; but doing nothing but talk; and, unfortunately, the Sirocco is not to be lulled by conversation, even when carried on with such gesticulatory violence as to leave the talkers no energy and no time to do anything but chatter.

So deficient is the accommodation afforded by the moles of Naples, and so exposed is the anchorage, that English ships of war, when at anchor in the bay, are accustomed to get up steam and stand out to sea when the wind gets up. From Civita Vecchia, itself an inaccessible port, round to the very heel of the boot, to Otranto and Gallipoli, there is not a single point of shelter. We have just seen what occurs at Naples. Amalfi, once the rival of Venice, is now reduced to a miserable village of a few scattered houses perched on a precipitous cliff. Salerno, the third city of the old Neapolitan kingdom, has no quay, no pier, no protection from the wind. The commerce of Italy can never thrive or prosper while the shores of the peninsula are thus devoid of any sort of shelter for sea-going or even for coasting craft.

One effect, we doubt not, the storm has already had. It has set all the tongues of Naples in motion, to the effect that now, at all events, the construction of the port can be no longer delayed. Another result we venture to predict, and that is that before long it will blow some Italian deputation, bankers, deputies, projectors of some kind, to our shores. So soon as the rise which is now fitfully indicated by the commercial barometer tends towards set fair, all sorts of kind and loving court will be addressed by foreign suitors to our disengaged English capital. We have before referred to the subject of foreign investments. We are far from wishing to say that at all times, and under all conditions, such investments are undesirable. Many projects of foreign enterprise might, if properly handled, prove highly remunerative. But certain precautions are absolutely necessary, precautions the importance of which has been learned by English capitalists at the cost of tens of thousands of pounds. The first idea of a foreign concessionaire is to obtain English capital to work his concession. For that purpose nothing that is fair and tempting, as far as promises are concerned, will be withheld. But when the capital is once obtained the tables are turned. If we say that English engineers or English architects, who are eagerly consulted, and, in the first instance, obsequiously deferred to, are apt, somewhat later in the day, to drift into the condition of the *tulcan* bishops in Scotland, or to feel that they have been used as the handle of a pump, neglected so soon as water has been drawn, we fear that neither the engineer of the Cavour Canal, nor the engineer of the Brindisi Railway, will be disposed to contradict us. We do not wish to make invidious remarks,—to blame individuals for the result of centuries of misrule, and for the evil inheritance left by political and sacerdotal tyranny. But, be the fault their own or not, our Italian neighbours have not yet learned that honesty is the best policy; in fact, that old-fashioned virtue is regarded as senile and out of date.

The sole conditions, then, under which either a port for Naples or any other of the numerous public works which Italy so sorely needs can be aided by English capital without risk amounting almost to certainty of loss, are these:—The concession, charter, or grant from the Government, under which any such enterprise is to be carried out, must be originally made to English subjects alone, in their own names, and without any provision as to their merging any of their international rights in accepting the grant. Any association of native capitalists or shareholders must come in as subversive to the English constitution of the society. An English engineer or architect must have absolute control of the works. Any municipal or local grants that may be requisite for carrying out the scheme must be guaranteed by the royal Government, so that the

* See p. 224.

directors of the company shall have no requisite official relations excepting with the minister of public works. Finally, considering the present state of Italian credit, the price of *rente*, and the little hope that even so able a financier as Signor Scialoja, one of the ablest and most upright men in Italy, held out of cutting down the greedy array of officials that are eating away the very entrails of the country, we should recommend that no Government guarantee be asked for, unless it takes the form of a grant of land, but that such security as to the right of imposing rates and tolls, and the mode of collecting them by the officers of the company, as may insure the permanence of the income earned by the expenditure incurred, be substituted for a State guarantee.

Under conditions such as these, openly and fairly stated in principle, and embodied in an agreement to be approved by an English lawyer acquainted with foreign law, we have no doubt that a fair and remunerative return might be derived from the investment of English capital in a Neapolitan port, mole, and docks, or from other similar undertakings. It is possible that other conditions would become necessary under special circumstances, but no one of the guarantees we have named can be disregarded with safety. Englishmen will be assured that it is the same thing to purchase a foreign concession and to receive one direct from a foreign Government. Englishmen who have tried know the difference, and bitterly to their cost have they acquired the experience. Foreign engineers, we shall be told, must know the resources of their own country, the run of prices, the rate of wages, the quantities of several kinds of work, far more accurately than a stranger can be expected to do. The estimates of such foreign engineers—foreign, that is, to us Englishmen,—native, and often wide awake in their own country—are therefore proposed as the basis of a contract. Any error in such estimates can be easily rectified. How such rectifications take place, there are men in London who would gladly have paid many thousands never to have learned by experience. In a word, if anything is left open, anything uncertain, anything to be rectified,—if any legally requisite formality is left at the charge of the concessionnaire,—if there be any hole at which to creep out, we do equal justice to Italian astuteness and to English blundering good faith in saying that loss more or less heavy will be the result. Our countrymen have a fertile country before them, the soil is virgin, the crops will be large; they will be asked to settle, to plough and to sow, they will have every facility afforded them for so doing—there is every rational probability that the crops will be large—the great point to make sure is, that they shall reap themselves, that they shall garner themselves, and that they shall keep the key of the barn. They will require early risers and sharp watchdogs to do this. It is to be done, and more than that, unless it is done we see no prospect of such a development of the great natural advantages of Italy as can alone prevent national bankruptcy, and, perhaps, the return of Southern Italy to a state of barbarous anarchy; but to do it well will require some of the hard-earned experience of the burnt dog who dreads the fire.

When the majority of the Chamber of Deputies voted for the imposition of an income-tax on the foreign holders of Italian *rente*, in spite of the most precise and solemn compact to the contrary, in virtue of which that *rente* was issued; when they did this on the express plea that it was for the advantage of Italy to tax foreigners, it is not the fact that in the Senate there was found a majority of members sufficiently honest or sufficiently long-sighted to negative the iniquitous vote of the popular Chamber that will satisfy the prudent English investor. It is not without some good reason that people are not tempted by the very large return that a purchase of Italian *rente* at the present price seems to promise. The wisest of the Italian ministers are aware of these rocks ahead; but if this wisdom has descended very far in the innumerable grades of the official hierarchy it has made better speed than would have been expected. Sooner or later, no doubt, it will become evident that it is very costly to be unreluctant. The sooner the Italians arrive at this conclusion the better for themselves and for all who have to do with them. Until such is the case, the best service that Englishmen can render to the Peninsula, in any commercial dealings with its natives, is to keep them out of the way of temptation.

HEALTH OF LIVERPOOL IN 1866.*

We were recently enabled by the publication of the Registrar General's Annual Summary of the Births and Deaths in London in 1866, to review the result of the ravages of cholera in the metropolis last year. Dr. W. S. Trench, the Medical Officer of Health for the borough of Liverpool, has just published an able and comprehensive report of the health of that town in 1866, and having naturally devoted a very considerable portion to the origin, progress, and decline of that epidemic in the borough, we are thus afforded the means of comparing the loss of life sustained from cholera in the two largest towns of England and Wales, which together contributed in the year 7,359 deaths, or more than half the total number referred to this cause throughout the country.

Liverpool has long enjoyed an unenviable notoriety among the large towns of the United Kingdom for an excessive rate of mortality, and consequent waste of life and energy; for a high death-rate is by no means the sole consequence of a disregard of those laws, only now beginning to be generally understood, which govern the public health. It has been calculated that there are at least five sick persons to every death; and sickness among the poor and labouring classes, the principal sufferers in an unhealthy town, not only produces poverty and swells the rates, but removes from the arena of activity the very sinews of our commercial prosperity. In Liverpool, in the year 1865, when the births registered within the borough exceeded the deaths by 2,077, the death-rate was 36·4 per 1,000 of the population, or 9·2 per 1,000 above the average rate in eleven large towns of the United Kingdom, with an aggregate population of above five and a half millions. During 1866 a still more disastrous mortality prevailed; Dr. Trench's report shows that 19,099 births and 20,198 deaths were, during the last year, registered within the borough of Liverpool; this gives an actual loss of population in the year, by excess of deaths over births, of 1,099. The annual death-rate to 1,000 persons living was 41·7, whereas the average rate in thirteen large towns of the United Kingdom for the year was only 28·6, showing an excess of 13·1 per 1,000 upon the average death-rate in more than six millions of our largest town populations.

Dr. Trench, in a note to the opening of his report, dwells at some length upon what he styles "the manifest unreliability of the births' record," with a view, in some measure, to account for the balance of deaths over births in Liverpool during 1866. This charge has often before been made against the completeness of our record of births, and there is little doubt but that through the want of a compulsory clause in the Registration Act for England, a certain number of births, more especially of illegitimate children, do escape the vigilance of the local registrars. The number of omitted entries has been at times largely exaggerated to serve the purpose of partizan statisticians, but, on the most trustworthy authority, it is estimated that the births which escape registration do not now exceed two or three per cent. of those duly recorded. The very fact that the general birth-rate of England is largely in excess of that in almost any other European nation, is alone strong evidence against any serious default; and the remarkable manner in which the birth-rate in our large towns (where the principal omission is supposed to take place) exceeds that of the rural districts, may also be taken as some proof of the correctness of our recorded numbers. Dr. Trench urges the fact of the large proportion of Roman Catholic residents in Liverpool, principally composed of the lower class of Irish, as a special reason for the "unreliability" of the record of births in Liverpool; the priestly influence upon this class of persons may militate against the complete civil registration of births, but the charge is unsupported by satisfactory evidence, and although all must agree with Dr. Trench when he advocates a compulsory clause in the Registration Act, we cannot take for granted, that even in large towns generally, or in Liverpool in particular, any large proportion of the births is omitted from registration; the registrars in town districts, themselves most valuable witnesses in this matter, have often expressed their belief that very few escape them. That the record of births in Liverpool during 1866, should have been more incomplete than in

former years, and thus have accounted to ever so small an extent, for the excess of deaths over births, is a thoroughly untenable argument. The birth-rate in Liverpool in 1866 was 39·4 per 1,000, or 2·5 above the average rate in the thirteen large towns, and higher than those which prevailed in London, Manchester, Birmingham, and several other towns in the list; it was, however, somewhat below the rate in 1865, as was the case in nearly all the other towns.

Cholera having been severely epidemic in both London and Liverpool last year, the fatality of this disease will not account for the large excess of mortality in Liverpool. Diseases of a zymotic character caused 7,720 deaths, or 15·9 per 1,000 persons living, whereas the number in London gave a rate of only 7·8, or less than half; those diseases affecting the respiratory organs, and including phthisis, were fatal in 4,983 cases in Liverpool, or at the rate of 10·3 per 1,000, while in London the mortality from the same causes was only 7·4. These two groups of diseases, therefore, account for 11 per 1,000, of the excess of 15·2 in the death-rate of Liverpool over that of London during last year; the rest of the excess being spread over the other classes of diseases, from which resulted the remaining 7,495 deaths. The number of deaths from the various zymotic diseases forms the most accurate gauge for estimating the comparative sanitary condition of a town; but all other causes of death are invariably affected more or less by those unfavourable conditions of the public health, which favour the ravages of epidemics, and by lowering the general tone of the human frame, render it a more easy prey to the infinite variety of diseases to which it is liable. Space will not admit of our here examining in detail the results of any but one class of diseases dealt with in Dr. Trench's Report; we naturally choose the zymotic as affording the best index of that sanitary condition of so large a portion of Liverpool, which has long made that town notorious for its excessive mortality.

Of the 7,720 deaths which were last year referred in Liverpool to all classes of zymotic diseases, 1,782 resulted from cholera, 1,523 from typhus, 1,145 from diarrhoea, 991 from whooping-cough, 986 from scarlatina, 641 from measles, and 102 from small-pox. Of the two first of these diseases we shall speak presently; the deaths from diarrhoea scarcely exceeded those in the previous year, but the nearly a thousand deaths each from whooping-cough and scarlatina had been only 187 and 506 respectively in 1865; both these diseases were more or less epidemic throughout 1866, and whooping-cough was twice, and scarlatina three times as fatal, in proportion to population, in Liverpool as they were in London. The 641 deaths from measles were nearly double the number returned in the previous year; but the fatal cases of small-pox had fallen from 459 in 1865 to 102 in 1866.

The most interesting, and at the same time the most valuable, portion of Dr. Trench's comprehensive report deals with the ravages of typhus and cholera, their origin, rise, and decline; and, for local purposes, invariably definite information is given as to the localities, streets, courts, houses, and even the very numbers of the houses, in which these diseases were most fatal. Here we can only touch upon a few of the more general features in his graphic description, which are useful in their application to the case of other large towns, which, from defective sanitary arrangements, have suffered from, or are liable to, the ravages of similar epidemics. We learn from the report that typhus has been constantly epidemic in Liverpool during the past five years among the over-crowded and indigent classes. From the 1st of January, 1862, to the end of December, 1866, it destroyed 7,620 persons, of which considerably more than half were between the ages of twenty and fifty, and, "therefore, in all probability the parents, props, and bread-winners of families." This gives us some idea of the amount of poverty, distress, and suffering which the actual deaths from typhus must have entailed upon the labouring population of this town, without taking into account the losses sustained by those families whose main support, although attacked by the disease and rendered helpless for weeks or months, eventually recovered. Dr. Trench appears to have over-estimated the number of attacked, when he places them at ten times the number of deaths; but this does not essentially weaken his picture of the debilitation arising from the ravages of typhus during the past five years. In the report for 1864, Dr. Trench attempted, with apparent

* Report of the Health of Liverpool in the year 1866, by W. S. Trench, esq., M.D., Medical Officer of Health for the Borough. Hewson & Procter, Liverpool.

success, to attribute the fatality of the disease in some measure to the commercial distress arising from the cotton famine, and indirectly from the civil war in America. Doubtless, anything which tends to impoverish the diet and clothing, renders them more liable to the inroads of an epidemic, which their crowded and unhealthy dwellings at all times unfit them to rebut. The 1,523 deaths from typhus in 1866, although 461 above the corrected average of the previous ten years, were 815 less than the number in 1865. In 1862, the first year of the epidemic, the deaths from typhus were only 730; this increased to 1,804 in 1863, 1,774 in 1864, and 2,388 in 1865. The 1,523 deaths during last year give a death-rate from this cause alone of 3.1 per 1,000, whereas in London it was only .9 per 1,000. In support of the theory that the "epidemic causation of typhus is invariably to be found in the debased and indigent condition of the people," Dr. Trench gives the following significant facts:—of the 1,523 deaths from typhus in 1866, 1,433 occurred among that class of families dependent for their subsistence upon weekly wages, while of the remaining 90, 66 were of the families of master tradesmen, and only 24 of the mercantile and professional class. With regard to the localities which have during recent years suffered from typhus, it is remarked that there is a "wonderful unvarying identity in the districts, blocks, and streets forming the fever districts."

We must now briefly notice the epidemic of cholera in Liverpool, which broke out almost simultaneously with that in London, and was of very similar duration. It resulted in a loss of 1,782 deaths, or 8.7 per 1,000 persons living; the 5,577 deaths in London did not exceed the rate of 1.8 per 1,000. The disease, therefore, in proportion to population, was more than doubly as fatal in Liverpool as in London. In May the outbreak of cholera on board the *Helvetia* and other emigrant ships, mostly German, in the port of Liverpool, filled the country with well-grounded alarm, lest the disease should take root in a town which the fatality of typhus proved to be in but too favourable a condition for its reception. Singularly, however, no case of epidemic cholera occurred among the townspeople by contagion from these ships; and from the 28th of May, when the *Helvetia* finally left our shores, to the end of June, although a few deaths were returned as cholera, Dr. Trench convinced himself that none of them presented the true features of the virulent Asiatic cholera, but mostly resulted from coarse and improper feeding. In one of the worst of these sporadic cases the deceased, a girl of 16, had, at a post-funerary supper, partaken heartily of "ale, pork, perriwinkles, and greens." On Sunday, the 1st of July, at No. 2 Court, Bisham-street, occurred the death which Dr. Trench believes to have been the first of the real epidemic. Of the locality he says,—"It is one only too well known to the sanitary officers, being inhabited by the lowest of the Irish population, and situated in what may be justly described as the chief fever district of the parish. The court itself contained three straight up-and-down houses and one open midden. It was altogether so close, confined, and unfit for human habitation, that the grand jury had, in July, 1865, confirmed my presentment, and ordered the demolition of two of the houses, and the conversion of the common cesspool into a water-closet, and thereonly awaited some legal or other formalities, to have the order carried into effect." The houses were, however, reserved to form the nest in which was hatched the cholera epidemic of 1866 in Liverpool. Fully estimating the alarming consequences of contagion from a death bearing evidence of the worst cholera type in such a locality, Dr. Trench, as medical officer, and the relieving officers, used all their efforts to induce the relatives and friends of the deceased to allow the body to be buried forthwith; but they insisted upon keeping it until Tuesday morning, in order that a barbarous, and in crowded neighbourhoods a highly dangerous, relic of the customs of the Irish peasantry might be carried out. A wake was held on the Monday night, during which scores of persons smoked and drank, and many slept a drunken sleep in the room with the corpse. Is it a matter for astonishment that, before the end of the month, 48 persons "died from cholera within a radius of 150 yards from the court which had been the scene of the ill-timed revelry?" Such was the beginning of the cholera in Liverpool. In the week ending the 7th of July, 11 deaths occurred, and the numbers rose rapidly till they reached

their maximum, 193, in the last week of August, from which time, with some fluctuations, they declined until the middle of November, when the epidemic may be said to have ceased. The ravages of the disease were, as a rule, confined "to the lowest, dirtiest, most crowded, and most squalid streets of the borough." Of the 1782 deaths, 754 occurred in court houses and 910 in houses of streets where the families are, from occupation and social relations, in intimate communication with the residents of courts. The conclusions arrived at from the results of the cholera epidemic in London in 1849 were borne out in Liverpool last year, as all the streets in which the disease was most fatal are situated on the low-lying ground.

Much valuable information is contained in the report upon the subject of contagion. One fact alone, however, can find space here. During the epidemic no medical man, clergyman, or priest of the borough appears to have died from the disease, although Dr. Trench bears witness to the unfinching and zealous manner in which all three classes performed their duties in visiting the sufferers. With regard to the water supply of Liverpool it is stated to be free from "every possible source of sewer contamination," and, although the supply of water to the houses is not constant, it appears to form a favourable contrast to the miserable scantiness of that in many parts of London.

On the whole, Dr. Trench's Report is a valuable contribution to sanitary literature, and that part relating to the cholera epidemic in Liverpool, is the most complete and exhaustive history of a local visitation which has come under our notice. The value of such a mass of information for the use of the local authorities cannot be over-estimated. Want of knowledge of those neighbourhoods which have year by year steadily contributed to the excess of mortality in Liverpool, and of the exact conditions which are most fatal to the health of the unfortunate inhabitants of those localities, can no longer afford any excuse for the delay in carrying out those wholesome reforms which are necessary, before the death-rate in Liverpool can be reduced even to the still too high level of the rates in other large towns.

It is gratifying to observe from the Registrar-General's weekly returns, that since the beginning of the present year the health of Liverpool bears favourable comparison with that of the same period in recent years. In the past eleven weeks of the current quarter, the death-rate in the town has averaged only 33.5 per 1,000, against 44.7, and 40.6, in the corresponding eleven weeks of 1866 and 1865. Moreover, the deaths from typhus, which had been 649, and 543, in the first eleven weeks of 1865, and 1866, have not exceeded 156, in the same number of weeks which ended Saturday, the 16th inst. It may, therefore, be hoped that the epidemic of typhus, which has raged in Liverpool with more or less severity for five years, is now dying out, and that the year 1867 may prove the first of a series in which the rate of mortality in this town will gradually decline more nearly to the healthy standard for town districts.

ON LEGAL QUESTIONS OF LIGHT AND AIR TO BUILDINGS.

We have on various occasions and in a recent number alluded to this very important and involved subject, which appears to call for some legislative interference, both as a question of law and procedure. In regard to law, the matter seems not likely just now to receive modification, after the opposition made by the Attorney-General to Mr. Goldney's motion in the House of Commons; but we see no reason why the present vexatious and expensive mode of procedure might not be prevented by a course which would not interfere with the legal rights of parties.

Last year Professor Kerr drew the attention of the Royal Institute of British Architects to the subject, and set forth a diagram by which he proposed to show geometrically the extent to which light might be affected in the erection of any object intercepting it. Professor Donaldson, at a subsequent meeting read a paper on "The Practice of Architects and the Law of the Land in respect to Easements of Light and Air," citing all the judgments recently delivered in the Courts of Law. He also mentioned the French regulations, which give no right to an owner of property to build nearer than 6 ft. from the boundary of his ground at the back, nor any

right over the adjoining property beyond 6 ft. on the other side of the boundary. A further investigation as to the measurement of obstruction occurred on the 19th of November. The whole subject was referred to a committee, to consider whether advantage could not be taken of the proposed Bill for the amendment of the Metropolitan Building Act, now under consideration by the Metropolitan Board of Works, so as to promote an equitable and less vexatious and expensive mode of adjusting the relative claims of owners on these points.

It appeared to the members that, inasmuch as such questions involved the rights of two parties in respect of light and air, in the same manner as those in regard to party-walls, provided for in Section III. of the Metropolitan Building Act, so a like series of clauses, *mutatis mutandis*, would considerably facilitate the settlement of light and air questions.

The committee had several meetings, and, with the advice of Mr. Overy, the honorary solicitor, submitted a series of clauses for a new section in the newly-proposed Metropolitan Building Act. It ran as follows:—

"Light and Air.

1. In the construction of the following provisions relating to light and air, the owner proposing to rebuild, add to, or alter his premises, shall be called the building owner; and the owner of any premises whose legal right as to light and air may be affected by such rebuilding, addition, or alteration, shall be called the neighbouring owner.

Rights of Building and Neighbouring Owners.

1. The building owner shall, before commencing the building, give notice in writing of his intention to the neighbouring owner whose rights of light and air shall or may be liable to be affected by the proposed building, and such notice shall be accompanied with a plan and elevation of the proposed building, drawn to a clear and intelligible scale, with the necessary measurements and dimensions figured thereon.

2. A neighbouring owner, who apprehends that any building proposed to be erected by the building owner will interfere with his legal right to light and air, shall give notice in writing to such building owner that he objects to the proposed building, and stating the grounds of his objection.

3. In the event of any such notice being given on either side, a difference shall be considered to have arisen between the building owner and the neighbouring owner, and the effect of the notice shall be to suspend any such erection, alteration, or addition, and no proceedings at law or in equity shall be commenced pending the reference hereinafter mentioned.

4. Unless the parties in difference shall consent in the appointment of one surveyor, they shall each, within one week after the giving and receiving of such notice, appoint a surveyor; and the two surveyors so appointed shall, within one week after their appointment, select a third surveyor; and such one surveyor, or such three surveyors, or any two of them, shall have power to determine the questions hereinafter mentioned.

5. If either party to the difference makes a default in appointing a surveyor within the time aforesaid, the other party may make the appointment in the place of the party so making default.

6. If the two surveyors so appointed shall not, within the time aforesaid, agree as to the appointment of the third surveyor, such third surveyor shall be nominated by the Metropolitan Board of Works, or the chairman thereof for the time being.

7. Such one surveyor, or such three surveyors, or any two of them, shall make his or their award within one month next after the appointment of such one surveyor, or within one month after the appointment of such third surveyor as the case may be.

8. Such award shall determine such of the following questions as the circumstances of the case may render necessary, viz.,—

1. Whether the works of the building owner will or will not injuriously affect the light and air of the neighbouring owner.

2. Whether the works of the building owner can be so modified in point of construction, as to prevent any such injurious effect; or whether it may fairly be so modified, and partly compensated by a money payment.

3. Whether the injurious effect can be wholly compensated by pecuniary damages, and if so, the amount of compensation.

9. The award shall be taken up by the building owner within one week after notice that the same has been made, and such award shall be conclusive unless within fourteen days after the delivery of the award either party shall give notice to the other of them that he is dissatisfied with and intends to appeal therefrom.

10. If such notice be given, the parties shall be remitted to their original rights, both as law and in equity, but in any proceeding either at law or in equity, such award may be given in evidence; and if the result of any proceedings, either at law or in equity, shall be to confirm the decision made by the award, the party appellant shall bear the whole costs of the proceedings.

11. The costs of the award shall, unless thereby otherwise directed, be borne by the building owner."

These were forwarded to Sir John Thwaites, the chairman of the Metropolitan Board, and by him submitted to the committee who had under consideration the amendment of the Building Act. They "arrived at the conclusion that, as the question of light and air is one of common law, any attempt to introduce special legislation in an Act intended to apply solely to the metropolis would be sure to entail very strong opposition in Parliament, and in all probability jeopardise the passing of the bill." This decision of the committee is to be much regretted.

and the grounds of refusal not to be understood for the Institute did not contemplate any alteration in the common law of the question, nor the extension of the procedure beyond the metropolitan jurisdiction. As the Metropolitan Board have such vast powers for the regulation of the metropolis, and such confidence is placed in them, it seems strange that they should shrink from responsibilities, and not attempt to settle the difficulties and perplexities of such cases by a modification of procedure, which would doubtless be approved both by lawyers and surveyors, who are the main parties now benefited, as well as puzzled, by the proceedings in Chancery and at common law as at present conducted.

ON THE USE AND ABUSE OF ORNAMENT.

FEMALE SCHOOL OF ART, QUEEN-SQUARE.

On Friday, the 22nd, Mr. Digby Wyatt addressed a numerous assembly of the pupils and friends of this popular institution on this subject (illustrating his observations throughout with graphical formulae sketched at the time), and was listened to with the most earnest attention.

The following were the principal points of the address:—The abuse of ornament was held to arise invariably either out of excess or poverty of design. As the only safe check upon the use of ornament, therefore, its nature and functions must be fully understood. The nobler the theme the nobler must be the class of beauty in which it should be cast. Ornament should not merely be attached, but should arise out of or suggest use and purpose. The artist should conceive all things, great or small, which he may design, in their complete state; for we find that with all good designers, and especially amongst the Chinese and Indians the complete subject presents itself to their view as a concrete idea. When we contemplate their productions we cannot fail to recognise that ornament is of the very essence of those productions, and cannot be detached from them. Ornament is either conventional or imitative; but must in either case be borrowed from or founded upon nature. Conventional art is the result of education and observation of the expression of abstract form during long ages from the dawn to the noonday of civilization. It is essentially dependent upon geometry and variation of surfaces. Evidences of true principles of design are apparent in all the creations of nature, but varied in form, as in the butterfly, the strawberry, the fir cone, &c.

The lecturer mentioned with qualified approval Professor Semper's work on the principles of design, and recommended strongly the careful study of geometry, of which he elucidated many interesting problems;—amongst others one he had found in an old Spanish work on mensuration for sculpture and architecture, by Juan de Arphe y Villafane. In this the author gives the diagram of a circle the area of which, being intersected by seven lines mutually dependent, gives the division of the circumference into any number of parts for the ready construction of polygons and all their dominant angles.

Mr. Wyatt then graphically sketched many of the elementary original forms under which ornament may be classed, with their combination in harmony and contrast; the principles which ruled in the adoption of circular and square figures; and the necessity of subordination and relief in their application, with more or less intensity of light and shade or tones of colour. He then rapidly glanced at the characteristic and progressive development of the historical styles of ornament. He first noted that of the Egyptians, as expressive of great stability; and that, although ornament is most lavishly applied to all the surfaces of their edifices, yet, on the whole, a sense of repose predominates. Early Chinese art has very elementary, yet extremely interesting forms. The direct reproduction of nature is a very late study of this remarkable people. The Indians, on the other hand, from the very earliest times, delighted in natural objects, mainly floral; and possibly this predilection may have been derived, through Persia, from Nineveh. The Greeks in their earliest periods commenced with the most elementary formality and primitive rigidity, progressing up to the most perfect forms of grace, harmony, and proportion, and ultimately attaining a most judicious union of the imitative with the conventional, and a combination of great repose and dignity, free alike

from violent emotion and insipidity. The character of the ornament of the Romans was that of great magnificence; but in their application of decorative features they departed from the simple severity of the Greeks, and erred in the right apprehension of the function of forms. The late Roman and Byzantine styles evidently derived from the Persians new and vivifying sensations, and flourished, as it were, in a state of fermentation between the Classic and Gothic. New elements of ornament arose among the Celtic and Scandinavian races, derived from the oier and knotted work; until at length, influenced by religious sentiment, the generation of a new and living style was effected in the Middle Ages. It is difficult now to form an adequate conception of ornament as originally applied to Gothic buildings. They are merely ruined fragments of what once existed; but we may form, in studying the church of St. Francis, at Assisi, which is the one best architecturally preserved, and still possessed of its gorgeous coloured embellishment, some idea of the elaborate ornamentation with which every part was frequently covered. The history of art, like that of nations, is a history of decensions and revivals, but never in the same shape,—periods of incubation succeeded by periods of activity. In the Italian revival the artists acquired a mastery of handling and drawing, which led them from great excellence at first into the wildest extravagances of ornament at last; and by letting the dexterity of the hand outstrip the restraining judgment of the brain, they at last wrought their own ruin. The great principles to be followed now should be rigid selection, but from no narrow field of observation and study; and the adoption of all that is beautiful in form, proportion, colour, and sentiment in nature (and for which the female mind has naturally the happiest instinct), and from the relics of the past, without discrimination, but in obedience to rational laws, quickened by invention and tempered by experience.

THE WEST LONDON SCHOOL OF ART.

The fourth annual distribution of prizes at the West London School of Art, Great Portland-street, was made on the 26th inst. Mr. A. J. B. Beresford Hope, M.P., who presided, said that he felt gratified in advertising to the great success which had attended the school from the time of its first formation in very humble premises in Wells-street. He well recollected the small, inconvenient place in which the school was first started. Since then there had been a revolution in art-schools in connexion with State aid, owing to a change in the Minutes of Council, by which less assistance was granted to these schools; but still the West London School of Art had weathered through all the storms, and had waxed stronger and stronger day by day. This success had been achieved by the kind co-operation of the friends of the schools, one of whom (Mr. Peter Graham) he was glad to find present. He felt pleasure in recording that the school was now, in many respects, second to none. Of course, South Kensington stood first; then Birmingham, Glasgow, Leeds, and Liverpool. There were only two got a greater number of prizes on the inspection of works sent to South Kensington, which were Edinburgh and Glasgow; and only five schools sent a greater number to be examined. It was a most cheering fact that only two art-schools passed a greater number of students. These were South Kensington and Leeds. How was this? In the first place, the school had an able, zealous, energetic, and practical committee; but the chief success of the school was due to a gentleman of talent, and of single-hearted devotion to the cause of art,—he meant Mr. Macdonald Clarke. System and inspectors' reports might have done much; but the man who had the charge of the school was, after all, the one to whom they must chiefly look for its ultimate success. 492 students had passed through the school in the past year with credit to themselves. He would look at art studies in two aspects: one was the practical, business-like, money-making aspect; and the other was its moral value to those who were brought under its influence. The value of art studies could not be over-estimated, in whatever aspect we should regard them. It had been an old prejudice that England was not an artistic nation, and there was good foundation for such a belief, for this country was absorbed in the pursuit of trade, to the almost total exclusion of

everything else. Then, again, on the Continent art was fostered by artistic princes; whereas in England our system of self-government sadly interfered with the development of art. The practical value of the West London School of Art was incalculably great. It was true there they had no metal or ceramic manufacturers like Birmingham or Stoke, or even wood-carving like Tunbridge Wells. The district wanted a unity of concentration which provincial towns possessed; but still there were many secondary branches of manufacture carried on requiring the assistance of the artistic faculty. There were such firms, for instance, as those of Jackson & Graham, Hubert, Craze, and many others, which required that a high artistic taste should be devoted by those in their employ, and the students should therefore unite in endeavouring to give their district a high character. He was glad to find they had successfully done so. The fact that only two other schools passed a higher number was conclusive that hitherto the West London School had done well. It was most gratifying that whereas other schools only succeeded in passing one-half their students, their school had passed two-thirds. Mr. Hope concluded his speech by adverting to the moral effects of art studies in elevating the character, and by an earnest exhortation to the students to worthy use their talents for the benefit of their great country.

The distribution of prizes then took place. In the National Competition of best works from the one hundred schools of art in the kingdom, the following students received awards:—Miss Monro: Bronze medal, for figure modelling. Charles Henry: Silver medal, for figure modelling. John Fall: Prize of books for figure drawing.

Three senior students of the school obtained silver medals at the Royal Academy last December; this being the largest number hitherto taken by any school of art, excepting the Lambeth School: and two students have, during the past year, qualified in the school for admission, as students of the Royal Academy, and were admitted.

Mr. Godwin, being called on, briefly addressed the students, urging the necessity for perseverance, in order that practical advantages might result. It was very easy to desire knowledge and skill,—to wish to be clever; but something more than wishing was necessary: there must be resolute application. Time, too, must be given; they must not expect to become artists in "a quarter." The Schools of Art were beginning to produce results in many of our manufactures, though still many thousands of pounds annually were sent out of the country for designs. He concluded with moving a vote of thanks to the president, whose activity was remarkable even in this active age. Mr. Graham, asking further subscriptions from the inhabitants of the district, seconded the motion, which was carried unanimously, and the meeting separated.

THE QUESTION OF CUBIC SPACE IN METROPOLITAN WORKHOUSES.

The report of the committee to the president of the Poor-law Board on this question, has been printed, together with papers submitted to the committee, and presented to Parliament.

Upon the questions submitted to them the committee give separate replies, of which the following is an abstract:—

Question 1. "What amount of floor and cubical space should be allotted to the bed of each inmate in wards occupied both by day and by night; it being understood that fever and small-pox patients, idiots, and epileptics are for the future to be provided for in separate and distinct buildings?"

It is the opinion of the committee that there should be allotted to each sick inmate in metropolitan workhouses an air-space of not less than 850 cubic feet on an average, and in those cases where the height of the ward is more than 12 ft., such additional height should not be taken into account in calculating the cubic space of 850 ft.; that there should be allowed a clear space of 6 ft. across each bed, and that no bed should be placed on the middle of the floor.

In thus fixing the space which they consider requisite for the comfort and proper administration of the sick in workhouses, the committee have not overlooked the fact that it may be impossible (on account of the construction of the present buildings) to give immediately, in every case, the space recommended, and they feel that

a certain amount of discretion must be left with the administrative, in carrying into effect the recommendations of the committee; but it is their strong opinion, that, even under existing circumstances, there should in no case be allowed a less space than 3 ft. between the beds, and that no bed should, under any circumstances, contain more than one person.

The amount of floor and cubical space recommended by the committee is less than that which has been assigned, by men whose opinions command respect, as the requisite amount for hospitals generally. (Papers 3, 13, by Drs. Ackland and Sibson, are here referred to.)

The committee further recommend that cases which give rise to offensive smells should be placed in wards completely separated from the wards occupied by ordinary cases, and called "Separation Wards," and that an air-space of not less than 1,200 cubic feet on the average should be allowed for such offensive cases; the selection of these cases being left to the discretion of the medical officer of the workhouse.

To question 2, which is, "What amount for each bed in those wards which are partially occupied by day and by night by the chronic and infirm, many of whom are usually able to leave these wards during a portion of the day for change of air in any adjoining yard or day-room?" the Committee answer—

That each of such wards should have the use of a day-room. This being provided, an average of 500 cubic feet for each bed will suffice.

To question 3, which runs thus: "What space should be allotted to each bed in those wards which are termed 'surgical'?" the Committee reply—

The same as has been recommended in the answer to question No. 1, it being understood that in workhouse infirmaries surgical cases of a serious character are of rare occurrence.

Question 6 is, "What for lying-in wards?"

A very large air-space, much exceeding 850 cubic feet, has been enjoyed, on an average, by each of the parturient women in almost all the workhouses. The comparative freedom of the lying-in wards from disaster may probably have been owing in part to the ampler air-space thus actually shared among the women, though the committee are conscious that much of the immunity was attributable to other causes. They recommend, therefore, that a rule should be laid down limiting the air-space to be allowed in each ward, for the future, as a minimum for these cases, to 1,200 cubic feet each on the average. (Papers 14, 15, by Mr. T. Holmes and Dr. Randall are here referred to.)

Question 7. "Do the Committee consider it essential for health that any addition should be made to the minimum space of 300 cubic feet, which is now required for each bed in wards occupied by night only by healthy adults or children?"

The committee recommend that whenever there is sufficient width in these wards to admit of more than one row of beds along their centre, the ward shall always be divided longitudinally by a spinal partition. They also recommend that in future the dormitories be so constructed as to contain two rows only of beds.

Question 8. "What course would the Committee recommend for adoption in the event of its being temporarily necessary under present pressure to retain cases of fever or small-pox in a workhouse until admission can be obtained at one of the hospitals specially provided for such cases?"

The committee recommend that, under the circumstances specified, such cases should be removed at once into a separate ward; or, if that should not be practicable, that a bed should be taken away on each side of every fever or small-pox patient lying in the ordinary wards.

Question 9. "What space would they recommend for each patient in special hospitals for fever and small-pox?"

The same space as is allotted in the existing fever and small-pox hospitals; or 2,000 cubic feet.

Question 10. "Can they offer any and what general recommendations on the subject of ventilation of existing sick wards; or as to the best proportions for, arrangements, and ventilation of, new wards in any workhouse hospitals hereafter to be built?"

The question of cubic space is subordinate to the more important question of ventilation; by which the Committee mean the continuous renewal of the air within a given confined and inhabited space, of whatever shape, size, or surroundings, so that it shall be kept pure, or nearly pure, and shall vary within a few degrees only of moderate temperature.

It is plain that the complete and scientific solution of the problem of ventilation, thus understood, would govern and include the scientific answer to the questions of space proposed

by the Poor-law Board for consideration by the Committee.

The requisite space, when settled once for all, will need no further pains; deviations from the prescribed amount can scarcely escape notice. It is not so with ventilation; yet, if this be neglected, all regulation of cubic space becomes an idle care. The Committee, therefore, would suggest watchful and constant attention to this subject of ventilation; to its easiest, cheapest, and most effectual methods, and to the means of adapting them to the various forms and dimensions of existing rooms.

In respect of both present and future infirmaries, the Committee direct attention to a plan prescribed by one of the members of the Committee (Paper 9, by Captain Galton), as having been devised, and found practically successful in solution of the analogous problem—the ventilation of barracks and military hospitals.

In relation to the general subject submitted to their consideration, the Committee hold it to be most desirable that adequate day-rooms, well ventilated and lighted, and proper exercising-grounds should be provided for the paupers who are not confined to their beds.

On the whole subject, the Committee observe that the problem to be solved really is, what is the amount of floor and cubical space which shall not be too little on the one hand, nor more than enough on the other—nor too little for the health and due comfort of the pauper inmates, sick or well, not pressing too much upon the means of the poorest ratepayer. It is fit that these houses be made safe, decent, and commodious; it is neither necessary nor expedient that they be made inviting.

In conclusion, the Committee say that while the space which they have recommended is in excess of the minimum space hitherto allowed, the increase has been suggested, both because the latter space is not, in their judgment, compatible with the rapid restoration of the sick to health, and because they think it insufficient for the purposes of ventilation, decency, and administration.

In the paper by Captain Galton, referred to in the report, diagrams of "the new pattern ventilating stove in use in barracks and military hospitals" are given. With its air-chamber, fire-lump lining, warm-air flue, and ventilator, &c., it closely resembles other ventilating and air-warming fire-brick stoves described at various times in the *Builder*. Captain Galton, of course, agrees with us in advising the adoption of the pavilion principle for workhouse infirmaries.

THE MANCHESTER COMPETITION.

In a few centuries England may see a rational architectural competition. The Manchester Corporation have already, in only the second millenary of their town's existence, discovered that it is best to call for preliminary designs on a limited amount of paper, from which to select a limited number to be finished, and all that are so finished to be paid for: that is, for the age and country, an immense innovatory stride. But they have not made it without an amusing oversight. After saying that the letters accompanying the chosen preliminary designs "will be opened by the mayor for the purpose only of ascertaining the names of the architects to be invited to send in" finished ones, they add, "Each of the designs sent in for the second competition must also have a device or motto marked on each drawing, and be accompanied by a sealed letter similarly marked, addressed to the mayor, giving the name of the author, it being understood that architects shall not adopt the same device or motto in the second as in the first competition; [Are they to adopt the same ground-plan?] "such letters to be opened only after the final decision as to the best design has been come to."

The notion would seem to be, that it conduces to impartiality for the judges to be ignorant of the authorship of the works from which they are selecting. Undoubtedly it does so, especially when, as they promise will be the case here, professional judges are consulted. But now, pray, how are the corporation, who by opposition have already chosen out of twenty-six preliminary sketches,—whose devices we will call the letters of the alphabet,—the six marked A, B, C, D, E, F, and invited Mr. Smith, as the author of A, to finish it; Mr. Brown, the author of B, to finish that, and so on: when the finished designs are sent in, how are the corporation to

divest themselves of the knowledge that this design is Mr. Smith's, and that Mr. Brown's? In what conceivable way can the substitution of new "devices," of M, N, O, P, Q, R, assist them to this feat? In Mr. Smith's design to become unrecognizable because it is marked with the device Q, instead of A?

If the corporation really desire to choose between works before knowing the authorship of each, the only possible way is to engage that no letters be opened till after the final decision; those who are selected being not invited by name to the second competition, but only by a public announcement that those who have used such and such mottoes are desired to finish their designs, and that all others may send and fetch their rejected ones away.

** We believe, for our own part, that the motto system is, as we have before now said, a delusion and a snare, and simply serves to give the jobber an advantage over the honourable competitor. The Manchester programme would have been a better one if it had required the competitor's name to every design.

THE DESIGNS FOR THE LAW COURTS.

Mr. Scott's design has been mainly founded on the paper read by Mr. Webster, Q.C., at a meeting of the Department of Jurisprudence of the Social Science Association, in November, 1865, which paper was sent, with their own instructions, by the Commission to each of the competitors. The system laid down in this paper is that of so-called "concentric circles." Mr. Webster's scheme represents the central hall as the "inner circle," the courts and offices immediately connected with them (as the retiring rooms of the judges and jury), as the "second circle," the space between the second and third circles as "a passage or corridor for communication with the courts and offices;" and certain other offices as "located between the third and fourth circles." Mr. Scott surrounds his central hall and certain areas for light, which the elevated level of the courts necessitates, by a wide and lofty ambulatory, which, in drawing the parallel with Mr. Webster's scheme, may be viewed as his "inner circle." The courts, with the retiring-rooms for judges and jury, form the second; a surrounding corridor the third; and offices for Bar, solicitors, officers, &c., the fourth "circle," these several circles being connected at frequent intervals by transverse passages.

All of these so-called "circles" are repeated on two, and the outer ones on three, stories. Thus there is a lower ambulatory beneath that already described. The witnesses' rooms, jury waiting-rooms, &c., are placed beneath the second circle; while the outer corridor, with the offices attached to it, is repeated both beneath and above the court level.*

Mr. Scott holds that by this arrangement the courts, &c., are brought together within a shorter range than by, perhaps, any other system; and that the ambulatory affords the most convenient space for the circulation of professional men from court to court, and for suitors and witnesses; while the uses of the corridor behind the courts will be limited to professional men and officers of the courts, that at the level of the court and the bench being mainly for judges and other official persons.

The public are understood to be excluded from the central hall and great ambulatory, as well as from the outer corridor and from the floor-level of the courts; but pass from the lower ambulatory by staircases of their own to the galleries provided for their accommodation; and the architect maintains that a still stricter exclusion of them from the range of business might very readily be effected.

The private apartments for the Bar, as their library, their refreshment-room, and sitting-room, are placed above the main ambulatory, where they form a vast suite of wide and lofty apartments. The robing-rooms (five in number) are placed, three of them on the floor beneath the court-level, where they would be reached by the barristers on their way up to the courts; and two of them on the higher level. Mr. Scott, however, states in his printed remarks that these arrangements can be readily modified.

The central block of buildings, which includes the courts, &c., contains on its lower stories the offices of the masters in the Common Law

* A block plan and further particulars of the design will be found at p. 70, ante.

NAGA ARCHITECTURE IN CAMBODIA. — *The Temple of Nakhon Wat.**

View of Exterior of Corridor.



Pillar of Porch.

Courts and other business departments, besides the entrance-hall, central staircase, &c.

This central block is surrounded on three sides by an enclosed street, beyond which is an outer range of building, in which those departments are provided for which do not necessarily adjoin the courts. These consist of the Judges' chambers (which have communication by bridges, &c., with the courts), the offices of the Accountant-general, the Registrar, the Taxing-masters, &c., of the equity courts; those of the Land and Middlesex Registrars, the Bankruptcy Department, the Admiralty Offices, the vast department of the probate and matrimonial business, &c. This department, which is by far the largest which has to be provided for, occupies the western portion of the group, where, availing himself of the liberty conceded to make irregular projections in that direction, Mr. Scott has advanced a second range of building westward of a portion of his main outer range. The intervening space (some 40 ft. wide) is closed at its ends by the Record towers, and being covered over in its lower story with a glass roof, is formed into a suite of reading-rooms for wills, ranging between the towers in which the wills themselves are deposited. These towers are of moderate height, the architect thinking (and we have given his views throughout this notice) that anything beyond this would render their uses impracticable, not only on account of the difficulty of mounting to a vast height whenever a will is to be produced, but because they would go beyond the range of hydraulic lifts.

The view which we give is that which best explains the whole range of the Strand front. It will be seen that on the street level there is a covered arcade for foot-passengers nearly from end to end, while the centre breaks forward in advance of this into a spacious carriage portico 150 ft. long. From this open the main portals of the south front. The Carriage-street front also possesses a considerable amount of architectural character, while internally the chief artistic features (as we have before now described) are the Central Hall, of which there are two alternatives, the one a lofty domed structure, and a second, which is really the covering over of the entire space enclosed by the ambulatory with a glass roof.

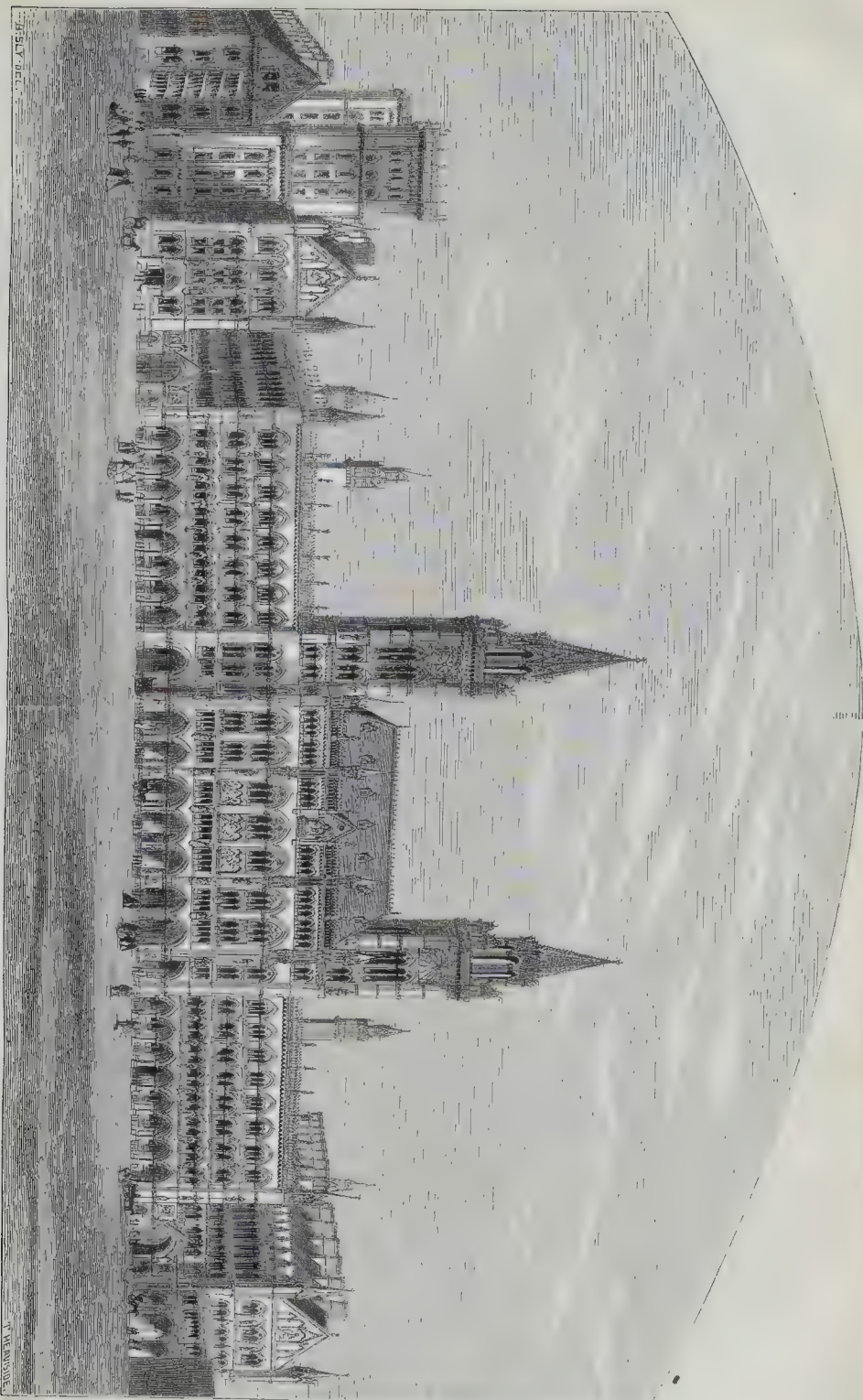


View of Interior of Corridor.

* See p. 218, ante.

The architect, while recommending and giving a popular description of a system of warming and ventilating very similar to that at the Houses of Parliament, and suggesting that Dr. Percy's services should be secured for its direction, nevertheless argues, with some reason, that "in a competition of the present kind . . . a detailed scheme is not only superfluous, but un-

desirable, as, under ordinary circumstances, any one of the designs may be supposed to be equally susceptible of a perfect system as any other of those designs; and it seems, therefore, only hampering the competition with questions having no connexion with the merits of the designs for any one architect to commit himself to any specific system."



DESIGN FOR PROPOSED LAW COURTS.—By Mr. G. G. Scott, R.A.—View in the Strand.

W. H. BAYNE

ON EGYPTIAN ART.

At the last meeting of the Architectural Association, held on the 19th inst., Mr. R. P. Spiers read a paper on Egyptian Art, which he illustrated with a number of drawings taken on the spot, and with specimens of materials (granite, bricks, relics, &c.) collected during a tour in the East. He began by referring to the great antiquity of the monuments he was about to describe, noting the fact that the earlier the building or tomb the more perfect the art displayed in it seemed to be. As an introduction to the subject, he gave a slight sketch of the climate, geography, history, and religion of the nation and people to show their wants and requirements. He then proceeded to describe the monuments, dividing them into two classes, tombs and temples, taking the latter first, because of the greater antiquity of some of them. "The Pyramids," he said, "were gradually developed from the centre, and the ultimate size corresponded with the length of the king's reign who built them. Those of Gizeh were the largest and oldest monuments in the world; they were formerly covered with a casing of polished limestone, a portion of which casing is still visible on the summit of the second great pyramid." The lecturer specially enlarged the wonderful masonry of the interior passages and chambers of these pyramids, as also the temple of the Sphinx lately discovered, in which he said the joints were so small and accurate that only the difference in tone of the huge granite blocks, which lined the temple enabled him to see them. In noticing the excavated tombs, he called attention to the representation in them of the façades of the earliest temples, showing the wooden origin of all their features.

The Serapeon Mr. Spiers visited with Colonel Mariette Bey, its discoverer, and seventeen of their party sat down in one of the huge sarcophagi, in which the sacred bull Apis was interred. As to the Protodine columns at Beni-hassan, Mr. Spiers expressed his doubt as to these having been copied by the Greeks, because the earliest Greek Doric columns were more stumpy and squat in proportion, had an entasis, a considerable diminution in diameter between the top and bottom, and a wide projecting abacus and echinus moulding underneath. The Egyptian columns had no entasis, an almost imperceptible diminution in diameter, and an abacus the width of the column only. The segmental vaults of the interior of these tombs were copied from existing vaulted buildings. The tombs of the kings and queens at Thebes, and the excavations in Nubia followed next in order.

In describing the temples, it was remarked that there was considerable difficulty in distinguishing between temples and palaces, because the king, being chief of the religion, the temple might be his chief place of abode. Generally the sculptures indicated the destination. Luxor, and Medinet Abu, at Thebes, were probably palaces; and a portion of the temple lately excavated at Abydos was probably used as a royal residence, hunting and fishing scenes being recorded on its walls. The earliest plans of temples, according to Herodotus and other historians, seem to have been similar to those of the second period, viz., from 1520 B.C. to 700 B.C. The architecture of them seems to have had a wooden origin; and Mr. Spiers instanced one or two façades of tombs near Sakkarah that he had seen, which strengthened this conclusion. The plans of the second period of Egyptian architecture were very numerous, and their different parts seem to have been added one after another; and this peculiarity was noticeable even in those temples built during any one reign, the temples diminishing in size and height and increasing in gloom as we reached the sanctuary. The lecturer then sketched on the board the plan of an Egyptian temple, and remarked upon the detail of the various features, illustrating his remarks by the drawings on the walls, the adromos of sphinxes sometimes half a mile in length, the obelisks on which the victories of kings were recorded, the seated or standing figures on each side of the doorway, the pylons erected as frontispieces to the temple, on which the victories of kings and religious scenes were depicted in intaglio sculpture; the niches and niches in the wall to hold flagstaffs. The central doorway had raking sides; but the interior of the jambs was vertical, the width of opening at top and bottom being equal.

The courts had colonnades round, and at Luxor and Karnac were two rows of columns, too slight

to support a stone roof, and therefore probably used to sustain emblems of religion on the top. The Hall of Columns was the grandest feature of an Egyptian temple. It would be impossible for him, with drawings of columns a few inches in height, to convey to the mind of those listening to him the impression which features a hundred times their size had upon the beholder, and still less to instil the awe that one feels in threading the various avenues of columns. Though called a hall, it does not impress us as such. By a hall, we mean a large open space, covered over and uninterrupted by supports, or with columns so slender that they do not intrude themselves; but the columns at Karnac are so enormous, and their intercolumniation is comparatively so small, that we can never see diagonally in any direction; only in the direction of the avenues does one obtain an idea of the immense size.

In the temples built under the rule of the Ptolemies, the hall of columns had no pylon directly in front, only a screen between the columns, and these latter are all of the same height, the central avenue only being wider. In the Theban temples light was admitted by clear-story windows, the columns of the side aisles being lower than those of the central avenue, and having above them pierced stone lattice-work. In the Ptolemaic temples the light penetrated the hall over the screens. The rest of the temple consisted of smaller halls, with columns in the sanctuary and cells around. The staircases were built in the thickness of the wall, and each tread was slightly inclined. The walls of these stairs were covered with sculptures, though in perfect darkness; and under the stairs were galleries, in which no light could ever penetrate, with the walls elaborately carved with religious figure subjects.

The most beautiful series of capitals ever designed, were those of the Ptolemaic period and Roman rule; the papyrus, lotus, and bulrush plants; the palm tree, and occasionally some leaves and grapes entering into their composition. And it was remarked that more perfect representations of nature, and yet more completely conventionalised, had never been executed. Of the Domestic architecture of the ancient Egyptians a few words were said, the probable similarity of the houses of the poorer classes with those of the "fellahs" of the present day being remarked.

The materials used in the temples were chiefly sandstone; the pyramids were built in limestone; red and grey granite and basalt were used for the obelisks, sphinxes, and colossal figures.

In the course of the discussion which followed,—

Mr. Ridge said he had not made Egyptian architecture his particular study, but comparing the columns of the Moderns with those of the Ancient Egyptians, he thought that hereafter such a column as that in Trafalgar-square would be regarded as an ordinary column, whereas those seen in Egypt would be recognized as intended to carry emblems from their unfitness for the ordinary work of columns. Mr. Spiers had pointed out, too, that certain columns which he saw in Egypt were not structural, because they were so far apart and so thin. He thought they had a very general lesson to learn from the paper which they had just heard, and from a contemplation of the drawings around them, and they could not but be impressed with a sense of all that was grand and majestic in architecture of Egypt. It was the fashion now-a-days for the student to devote himself almost entirely to the study of the architecture of the fourteenth and fifteenth centuries, while the wonderful monuments of the ancient Egyptians, whose style was peculiarly their own, and had been preserved intact from generation to generation, did not receive that share of attention which they deserved.

In reply to a question from the Chairman in reference to the machinery employed by the Egyptians for raising huge blocks of stone used in the construction of their temples, Mr. Spiers said it was a noticeable circumstance that in no temple which he had visited had he obtained any clue to the manner in which the Egyptians raised those enormous blocks of granite. He had seen several illustrations on the walls and columns of temples and tombs of the progress of the Egyptian edifices, but the slaves appeared in every instance to be collected in small groups. In some cases he had seen what appeared to be oil poured out on the roads for the purpose of greasing them, but it would seem certain that the greater part of the labour was performed by

brute force. Even at a comparatively late date we had no record of the way in which the blocks of stone—62 ft. in length by 12 ft.—were raised in the temple of Baalbec.

Mr. Potter said an impression was produced on his mind on looking at the illustrations in the room as to the common sense exhibited by the Egyptians in designing and planning. There did not appear to be anything inconsistent in what they did. He quite agreed as to the importance of the benefits that would be derived from studying Egyptian architecture, but he did not consider that we should go so far as to copy it.

ETCHING ON STONE.

An ingenious process has recently been published in Vienna, by Von Geissendorff, for photographing on stone, and etching the pictures thus produced. The stone is first coated with a sensitive solution of bitumen in chloroform; the picture or pattern to be transferred is next laid upon it, and covered with a glass plate, as in the ordinary process of photographic printing. In direct sunlight, half an hour or an hour's exposure is enough; but in diffuse light, five or six hours are necessary. At the expiration of this period the paper and glass are removed, and oil or turpentine is poured over the stone. When the picture commences to make its appearance, the stone is washed rapidly with water. The rationale of the process appears to be this:—The parts acted on by the light, that is, all those portions of the paper not occupied by the drawing, are softened, and are therefore attacked first by the turpentine. Those parts of the film of bitumen, which are protected from the action of the light by the lines of the supposed drawing, are harder and not so soon attacked by the turpentine. The success of the process depends, then, on stopping the action of the turpentine just before it commences to attack those parts of the stone which have not been exposed to the light. The stone is afterwards etched with acids in the ordinary manner; and, when the process is finished, the bitumen is removed by turpentine and ether. Colours may be applied to any part of the work if desired, in an alcoholic solution of shellac as a vehicle. When the varnish is beginning to harden, the inventor proposes to dust a small portion of the same colour over the surface, so as to avoid the glare. The process is stated to be particularly applicable to the production of running patterns, inasmuch as the work can be etched to the extreme edge of the blocks, which can then be built in the wall without any further dressing.

GLASGOW ARCHITECTURAL SOCIETY.

At the last monthly meeting of this Society, Mr. Alex. Thomson in the chair, Mr. Wm. Johnston, of the firm of Johnston, Fraser, & Co., of this city, read a paper on "Gas Lighting."

After sketching early experiments,—the first application of gaslight by William Murdoch in 1792; at Boulton & Watt's works, Soho, in 1798; and other places,—Mr. Johnston remarked:—Murdoch's discovery and practical application of gas-lighting in 1792 could not be kept secret. Nine years afterwards, one of the Watts being in Paris wrote to his brother at Soho,—

"If anything is to be done with Mr. Murdoch's gas, it must be done at once, as there is a Frenchman in Paris who has similar ideas, and proposes to illuminate that city by these means."

The first French patent,—that of Leban,—was obtained in 1799; and the first English patent,—that of Winsor,—in 1804. If Londoners will insist upon ignoring the facts as to Murdoch's invention, as they generally do, and date the invention from the date of the patent, then the French patent, being of earlier date, will give the priority claimed by France for Leban. Fortunately Cockneydom is not Britain; and fortunately the preserved records of the committee of the House of Commons, with the evidence of the Watts, the letter from Paris, of which I have just quoted a verbatim paragraph, and the evidence of others who knew of Murdoch's early experiments, have settled beyond power of cavil the claims of William Murdoch to have been by several years the first man to practically apply gas-lighting. Gas-lighting was first exhibited in London in 1808 (eleven years after Murdoch's house and offices had been lighted). This tendency of most Londoners and London writers to

ignore or undervalue anything not "Town," is a serious disadvantage to themselves, and may, I think, account for the fact that the people in London have to tolerate the most clumsy and ill-fitted gas appliances in their shops and houses—gas so foul and coarse, and street lamps of such imperfect construction as would not be tolerated in any third-rate town in Scotland. Why should escapes of gas, and consequent accidents be so common in London as compared with this part of the United Kingdom but from that conceit which tells a man he has nothing to learn from outside? and why is it that so many people in London decline to have gas in their rooms?

The various kinds of lamps having been freely commented upon in detail, Mr. Johnstone remarked, that as to the price of gas, there are few towns so well off as Glasgow, when the illuminating power is taken into account: 4s. 2d. per 1,000 for 30-candle gas is as cheap as London 12-candle gas would be at 1s. 8d. per 1,000 cubic feet, with no deduction for the smoke and dirt. The two Glasgow gas companies pay their shareholders a more than ordinarily good dividend;—in other words, they make a handsome profit by selling such gas at 4s. 2d. per 1,000 cubic feet. To send canal coal by ship to London would cost about 15s. per ton; and as each ton of canal coal produces, at the lowest calculation, on the average 12,000 cubic feet of gas, the London gas companies ought to be able to sell canal-coal gas at the rate of 5s. 5d. per 1,000 cubic feet, of a quality 2½ times better in illuminating power than the sort they now supply at 4s. to 4s. 6d. In conclusion, he submitted the following rules as an epitome of what he had by tests and otherwise explained:—For coarse gas, use No. 5 fish-tail burners, at a moderate pressure; for canal gas, Nos. 2 and 3 fish-tail burners; renew the burners frequently; check the pressure at the meter when it gets too strong; distribute the lights in all buildings instead of concentrating them in one spot; bring the lights as near as convenient to the place to be lighted; use, in fitting, good full-sized gas-pipes; select lamps which offer the least obstruction to the light; above all avoid trashy, low-priced appliances for gas lighting.

A CENTRAL BODY NEEDED FOR SANITARY WORKS.

I HAVE read with much interest your notice of Mr. Austin and Dr. Hardwicke's edition of the Sanitary Act, 1866. Having had some opportunities of noticing the working of our sanitary laws in connexion with local government, inasmuch as the accounts of between forty and fifty unions and local Boards come under my notice periodically, I feel warranted in expressing an opinion upon the subject. It cannot be that a divided controlling authority at the fountain head, such as is described in the work, is a good thing; and when we consider there is one object to be obtained, in one country, and under similar conditions, it is anything but reasonable that there should be the Poor-law Board with one set of instruments; the Local Government Department of the Home Office, with another set; the Burials Department of the Home Office with another, all to accomplish what must certainly be better and more economically effected under one head, and with one machinery. It is not only unreasonable, but, I think, an evil, which in the hands of an intelligent Legislature, ought to be remedied. At present, however, the evil is on the increase. We know that the highways of the whole country were under local mismanagement by many hundreds of individuals, called Surveyors of the Highway, each with a few hundreds of yards of roads to keep mended. Efforts have for many years been made to remedy abuses in this direction, which had become intolerable; but these efforts resulted in a wretched piece of patchwork;—these are Highway District Boards for a portion of a county, local Boards for another portion, the old order of surveyors of parishes, or parts of parishes, for another portion. Again, the accounts of the local Boards are revised by the district auditor; those of the highway districts by their respective Boards; and those of the surveyors practically by no one at all.

So in sanitary matters: the accounts of Boards of Guardians have a strict supervision, or rather review, by the district auditor, so far as the relief of the poor is concerned; but their committees for sewerage and nuisance purposes may spend what they like, and, if they think

proper, keep no accounts at all, without any restraint or revision; whilst, on the other hand, the accounts of local Boards are examined, and the expenditure revised by the district auditor, unless the local Board happen to be also a town corporation, which circumstance, by a strange anomaly, entirely exempts it from control.

But a crying evil is this,—that a town may grow rapidly up around some new seat of manufacturing industry, and buildings in which an entire disregard to all sanitary conditions and common decency is seen, are erected as dwellings for the workpeople, without any let or hindrance; for, by one of the peculiarities of our laws, it is only when this population and the attendant evils have grown into such a magnitude that the high death-rate or the statistics of fever and small-pox become distinguished in the Registrar-General's returns, that the ratepayers have the power to adopt the provisions of the Local Government Act, and so make by-laws to restrain the future construction of fever-nests, these by-laws having no retrospective operation.

The promoters of the Public Health Act and Local Government Act had done probably what they could by means of these statutes, hampered as they are by permissive clauses, to remedy this evil; and it was possible for such a town as I have described, even in its embryo condition, to adopt the latter, and (with another object, it is true) they were doing it in many of the villages of Lancashire; but then it was found that this would interfere with the working of the new Highway Act,—a law which had, after a long struggle, been brought into existence to remedy a wide-spread evil. And so a Bill was hastily brought in, and as hastily carried, forbidding any place having less than 3,000 inhabitants to adopt the Act, which was, in effect, to forbid them to frame by-laws relating to the dwellings of the workmen and the poor.

Such is the state of confusion into which piecemeal legislation,—perhaps, I should rather say, legislation under difficulties,—has brought us.

Local government, of which so much has said, would be very good, if those men were selected to administer it who are distinguished in their respective neighbourhoods by intelligence, good sense, and administrative ability. Unhappily, however, this is not the case, and the ingredients which abound in local elected bodies are found so very distasteful to the upper grades of the middle classes that the latter, after a time at least, leave, if they have ever joined these local parliaments. And so it is not uncommonly found that the majority of the remaining members have very sound or enlarged ideas of their duties. Too often their meetings are scenes of vulgar squabbling.

Mr. J. S. Mill is reported to have said, in a recent debate on the Metropolitan Poor Bill, "Vestry government is hole-and-corner government; of course some of the vestries have suffered wrongfully for the deficiencies of those who had done worse, but it is the essence of hole-and-corner government to be comparatively irresponsible, inefficient, and jobbing, and carried on by inferior persons; objections which would not apply to a central board." These remarks are in a measure applicable to most forms of local government, and exhibit heavy counterpoises to their advantages.

However well these bodies may discharge some of their functions, there are some things which their very localisation renders it impracticable for them to do. For instance, the supervision of a great watershed, whose supervision cannot, from the nature of things, be divided. And, again, a large system of sewerage, with its proper out-let. These not being comprehended within the confines of a local Board, and the country not being a congeries of local-board districts which it might be supposed could work together, there requires some authority of a far larger jurisdiction to carry out these objects. The practical good sense of the people of England will, it is to be hoped, see the absurdity of the cry of centralisation, which has so effectually hindered the progress of large and far-seeing sanitary legislation, and substituted for it a series of imperfect, disjointed bits of law-making, to retrace which will one day be the herculean task of some vigorous independent mind.

Meantime the existing crying evils have called into existence what is intended to be a national sanitary association, under the somewhat objectionable title of "The Sanitary Reform League." Whether the projectors will find sufficient means or shall be joined by a sufficient number of

earnest men to effect much, I cannot predict; but of this I am certain, namely, that the interests of humanity, the demands of an increasing population, and the progress of civilization, require something far larger and more effective than can be accomplished by the bit-by-bit plans and operations at present going on.

WILLIAM REES.

MINTON AND FINE ART.

SIR,—Will you allow me half a dozen lines to reply in part to Professor Donaldson? I do not doubt for one moment that Professor Donaldson's friendly converse with Minton, while walking through art galleries, was infinitely greater than any I could ever have thought of or could even ask, and that consequently he knew much more of Mr. Minton and his art opinions than myself, and is, therefore, better able to speak accurately of them; but, alas! all my experience with that eminent employer of art-labour was of the most prosy and entirely business-like nature and character. What Minton said to me he meant, and what he meant he at once said in quite plain English. Minton was, without doubt, an eminent manufacturer. I once said to him, "Would you employ Raffaele to paint one of these dinner-plates if you could get him?" Minton said, "Yes, certainly, if I could get him cheap enough, and could find a liberal purchaser for the plate after it was done." I do not suppose for one moment that Minton would have ventured to make so practical a speech as this to Professor Donaldson in a noble gallery of ceramic ware, but he did so to me in a dingy little shop. What I said in my letter to you, sir, were Minton's own words. I could add to them, but for fear, for my sole object in referring to Minton at all was for the purpose of citing an example of a class of men through whom modern art-action finds its way to the public—exhausts itself, and is quenched, and ruined.

But still one more word about Mr. Minton and his art successes. I once said to him, for we had a good many talks, "Of all modern trades the art-manufacturer's is the best, I think; for he always takes double profits." Minton said, "How?" I replied, "Because he gets not only the fair trade profit out of the materials and labour, but he takes away, as well, the art-credit of the work." Minton made no answer. Will Professor Donaldson consider carefully the significance of these few lines?

I must ask, too, with all respect, what does Professor Donaldson mean by "a mere artist?" Is "mere" a sign of weakness or strength? Raffaele was nothing but a mere artist. Had Minton employed him we should never have heard his name!

C. BRUCE ALLEN.

OBSTRUCTION OF OUR PAVEMENTS.

SIR,—Is there any regulation that limits the period that raking shores placed against a building may obstruct the public footway?

The pavement in Wellington-street, on the east side, has been occupied for more than three years by two such obstructions placed against the front of a building belonging, I believe, to the music-hall in the Strand; and foot-passengers are impeded on both sides of Ludgate-hill by similar obstacles placed against buildings adjoining the railway viaduct.

PASSENGER.

AN ARCHITECT AT THE ANTIPODES.

The following interesting extracts are from a letter just received from an architect practising in Australia and New Zealand:—For myself I have been knocked about from place to place in an unmerciful manner, up one year, down the next, and scrambling for an existence the third. In Melbourne I was doing very well; in fact, had made my home there, and had a beautiful place about eight miles from town, and went backwards and forwards by rail every day to business. I did not do much in the building line then; I principally gave my attention to valuations, surveys, &c., and was making a first-rate thing quietly, and putting by a little money. One of my appointments was as surveyor to a savings-bank, which one day stopped payment, and I, being unfortunately one of the shareholders, had to sustain my share of the loss,

which amounted, on my part, to 4,000*l.*; and not only that, being connected with the bank as surveyor, I was looked upon (with the directors) as a swindler, and my business gradually dropped off. Hearing of an appointment in the Public Works at —, I thought it better to take it, although it was only 300*l.* a year, than stop in Melbourne and starve: so I left my family and went: when pretty well settled, I sent for them, and so we muddled on for some time. I then went in for competitions in my spare time, and succeeded in gaining seven, one after another. You may suppose this was a godsend. The last one removed me to —, and here I have tumbled into all the good buildings of any importance at a good salary, and am allowed to practise privately to a certain extent. So much for my life since I left England thirteen years ago to grovel in the back slums of Australia and New Zealand, where wooden shanties and native huts are considered works of art, and a brick building is a gem. . . .

THE PRESIDENCY OF THE INSTITUTE OF BRITISH ARCHITECTS.

WE are glad to hear that the council have determined to nominate Mr. Tite, M.P., for the presidency. We have received a letter from a Fellow of the Institute urging strongly the claims of another member of it to the presidency; but, not desiring to assist in raising controversy on the subject, we forbear to insert it. There is little doubt that the gentleman named has only to express his willingness to serve to be elected on a future occasion. The writer adds:—

"One word as to the honorary secretary. This appointment has always been an honourable and important one. It will be more than ever so now that we are only to have one honorary secretary, with a paid secretary to do the routine work. The announcement that one of the present honorary secretaries will be a Moderator at the approaching voluntary examination appears equal to a public declaration of his intending to cease to hold the post of secretary. It is a matter for the gravest consideration who shall be chosen to hold this post for the ensuing year; and upon a fortunate or unfortunate choice of this officer quite as much depends as upon the choice we make of president."

A FELLOW OF THE R.I.B.A.

THE ROUND TOWERS OF IRELAND.

MR. FERGUSON, in alluding favourably to my theory of the similarity of the Round Towers with the *Fanauux* de *Cineleira*, in the second volume of his admirable "History of Architecture," has added a few objections, on which I would wish to make a few remarks. He observes that "it is, however, far from being a complete explanation, since many of these towers have only one or two very small openings in their upper story." This, however, only confirms their analogy to the *Fanauux*, as some of those structures have only one or two openings in their upper story. The *Fanal* at *Fenioux* has but one. He goes on to say, "There is also a staggering fact that this use is not mentioned in any legendary or written account of them." He might have added the astonishing fact that the Round Towers are scarcely mentioned at all in any legend or written Irish annals. The towers mentioned in Irish annals as keeps or places of refuge were evidently, like most of the oratories and churches of the same period, of wood, from their being so frequently burned, and were not the Round Towers, which are built of strong masonry. Dr. Petrie admits that the custom of building oratories of wood was continued in Ireland even to the twelfth century; but, he adds, "the strongest evidences in favour of this conclusion, that the *dairtheachs* were usually of wood, are those supplied by the Irish annals, which so frequently record the burning of this class of building by the Northmen, while the *dairtheachs* escaped the flames." If we apply similar reasoning to the frequent burning of the *cloicheachs* (the so-called Round Towers), we must be led to the conclusion that they also must have been of wood.

He adds further, "They are frequently described as bell-towers." *Cloicheach* has been evidently wrongly interpreted bell-tower, for in the registry of *Clonmacnoise* of the fifteenth century, the *cloicheach* there is mentioned as a small castle or steeple built by O'Rourke, as a monument, and as a memorial of his own part of that cemetery." There is no mention of it as a bell-tower. Further, Mr. Ferguson, in his description of the monastery of St. Gall, notices

the resemblance of the towers there to the Irish towers, and observes no mention is made of bells. The *cloicheachs* mentioned in Irish annals were evidently, as shown above, built of wood, and were not the Round Towers which are built of excellent masonry. We may add, further, if the Round Towers were built for bell-towers, why do we find bellies built alongside of them at a later period, as at Swords, and Lusk?

Mr. Ferguson seems inclined to lean to the view "that they were better adapted for treasuries and places of refuge than for the purpose of displaying lights." Now it is an established fact that the Round Towers are almost always found in burial-grounds. Their invariable position in cemeteries, as at *Monasterboice*, *Clonmacnoise*, is therefore more in harmony with my view of their being like the *Fanauux*, beacons or lighthouses of cemeteries, and a strong objection to their being considered as treasuries and places of refuge. If meant for these purposes, why are they always placed in cemeteries?

Dr. Petrie, when advocating his view of these being places of refuge, is of opinion that from fifty to eighty people could easily take refuge in a tower. But let us consider for a moment: fifty people shut up for a week, or even for a day, in a tower of about 8 ft. inner diameter, with the door shut, and the small quantity of light and air admitted through the very small windows in the stories of the tower: the Black-hole of Calcutta would be nothing to it.

Some would connect the Round Towers with the tower of Ravens; but they do not possess a single feature in common. Who can see any resemblance between the lofty and broad *Ravenna* tower at St. Apollinare, in Classe, with its flat roof, its numerous windows, and its nine stories, and the slender Irish tower, with its conical roof, its four windows at the summit pointing to the four cardinal points, its small windows to light the stories, scarcely over more than two, and its door at a distance from its base?

HODDER M. WESTROPP.

DAMP WALLS.

M. L. T. requests to know whether there is any preparation before masonry which would prevent the damp from exuding from the oolite stone of which houses are built in the neighbourhood of Bath? The house in question is said to have been built of stone taken from a salt quarry, and the walls, when papered, are very soon greatly disfigured.

STREET RAILWAYS.

THE attempt to introduce tramways on the main public thoroughfares of London being opposed, perhaps the amalgamation of the railway and tramway systems might be found to succeed; that is, to create a special line of thoroughfares for the cars by purchasing or renting slices off the backyards or *yardens* of the street houses parallel with the main line of traffic, or nearly so, working in and out among the houses to render the cost as low as possible. The rails would cross at their level, cutting through the lower portion of houses on each side by a *quasi* new entrance or archway, where the space of the cars could be slackened, and passengers set down or taken up. The advantage of this plan is the saving of cost of embankments, viaducts, cuttings, and stations, besides the destruction of valuable property, while passengers would be taken up or set down much nearer to their destinations than is usual by the railway system. The prospect of the backyards would certainly not be cheering, but it would surely not be less so than that of the chimney pots of some of the metropolitan lines, or the blackness or darkness of others. These lines might likewise be made available for the transit of goods from one railway station to another.

D. M.

ARCHITECTURAL DRAWINGS FOR PARIS.

SIR,—Unwilling as I am to intrude upon your space with any matter which may be considered only of importance to the person immediately concerned, yet I should wish to draw attention to the following complaint. Having received a notice from the English Architectural Committee for the Paris Exhibition inquiring what space I should wish reserved to me, I filled up the notice for three drawings, giving their size according to the regulations. In due course, I received a second notice saying that a certain space (for two of the drawings) had been assigned me. At the time appointed I sent the two drawings to Kensington, and received a receipt for them. At the close of the preliminary exhibition I received an abrupt notice to remove the drawings, which I did; but there was no explanation given me, before or at the time, why they were not forwarded with the drawings of the other exhibitors to Paris. After waiting a short time for some communication I wrote to the official secretary (the receipt of which letter was only formally acknowledged) asking why they were returned, but although above a month has elapsed, having written on the 15th of February, I have had no communication whatever, or any explanation given why the space which had been allotted to me had been withdrawn, every regulation having been strictly complied with on my part.

R. L. R.

COMPETITIONS.

Yarmouth: Terrace, &c.—The Corporation have awarded the premiums as follows:—A terrace for first-class houses, 23 ft. frontage, cost not to exceed 900*l.* each, including the area, railings, and walls. Premium awarded to Mr. J. T. Bottle, Great Yarmouth, 20*l.* A detached marine villa, cost not to exceed 1,500*l.* Premium awarded to Mr. J. S. Dodd, Reading, 20*l.* A pair of semi-detached marine villas, cost not to exceed 2,000*l.* per pair. First premium awarded to Mr. J. S. Dodd, Reading, 20*l.*; 2nd premium to Mr. J. T. Jackman, Soho-square, London, 10*l.*

Folkestone Competition.—Sir: According to the instructions to architects competing, Mr. Hyde, surveyor to the South Eastern Railway Company, to whom the drawings were sent on the 31st of December last, was to advise the directors respecting the award of premiums, and I with many others think it quite time his decision be made known, or some explanation given for the delay.

EXHAUSTED PATIENCE.

SINKING HOUSES, LIVERPOOL.

SIR,—I have some houses which are built on a soft foundation, and they have sunk very much. There has been a stone quarry there, and it has, I suppose, been filled up with rubbish. I have had to rebuild one house. They still keep sinking. If any of your readers know of any means to prevent it, and will make it known, they will be doing me a favour.

C. H.

* Get proper advice on the spot.

FIGURE DRAWING CLASS OF THE ARCHITECTURAL ASSOCIATION.

SIR,—Will you allow me to call attention to the advantages offered by the above class, and to state that a good opportunity is now afforded for the entry of new members. The class resumes its studies on Tuesday evening, the 2nd of April, and there are vacancies for at least a dozen additional students.

The class meets in the large gallery of the West London School of Art, in Great Portland-street, on three evenings in each week, viz., Tuesday, Thursday, and Saturday, from seven o'clock to half-past nine. The studies are from the best life models, with draped and costume models occasionally, casts from the antique, and anatomical figures, and include time-sketches from the life, for the practice of rapid sketching.

The studies of the class are conducted under the supervision of our able instructor, Mr. William Trego, and the class is under great obligations to Mr. Clarke, the head-master of the West London School of Art, for the valuable advice and assistance he has always so courteously rendered to us. The class is not limited to members of our association.

CHAR. H. F. LEWIS, Hon. Sec. of the Class.

CENTRAL COTTAGE IMPROVEMENT SOCIETY.

COMPETITION FOR DETACHED LABOURERS' COTTAGES.

SIR,—In your last week's issue I observed an advertisement, requesting tenders from builders to carry out the prize designs for the above. I am at a loss to conceive the object of the advertisement, when tenders have already been sent in (not exceeding the stipulated sum, viz., 100 guineas), from ten respectable builders to carry out the first prize design, and I am informed by the secretary, that as much had been done for the second prize design. What more do they want? Do they wish to shuffle out of the prizes altogether? It seems to me that that is the object of the society: why not say as much instead of going a roundabout way to do so.

One tender I sent in was from a builder in the Vauxhall-road, who would erect one or fifty cottages, at 105*l.*, to be built within three miles of the Vauxhall Bridge. The other tender was from a builder at Wallham-green, who would be willing to erect any number at the same price within three miles of that district.

J. T. SMITH.

CHANGE OF NAME IN LONDON DISTRICTS.

SIR,—In your volume of the *Builder* for last year a correspondent laments the change in the names which the Metropolitan Board of Works has made in many of the streets of London. Perhaps he is not aware that the present is not the first time this has been done; but time after time one or another change has been made, in some cases to suit the present more refined ideas. Take the following as a few specimens where the old names have disappeared in and near the City:—Cow-lane, Petticoat-lane, Smock-alley, Bagnio-court, Blowbladder-street, Pickaxe-street, Love-lane, Pig-street (as shown on a plan in my possession as at the west end of Old Broad-street), Grub-street, Duck-lane, the Stews, Rotten-row, Rag-fair, Tyburn (softened into Tyburnia), Cut-throat-lane—many round London so

called—Ducking-pond-row, Cock-lane* (from the owner's name, or the fowl sold there), Knock Fingers, near Wellclose-square, Aog-lane, Five-foot-lane, City, Fleet Ditch, Holborn Bridge, Pudding-lane, where the great Fire of London began at a baker's, and Pyc-corner, where it ended, names rather singularly associated together in one remarkable event; Willow-walk, one in Gray's-inn-road and one in Five Fields, Chelsea, are gone; while one near Old Street-road still retains its name, though not its character, which gave rise to it. Dog-row also still remains. Butcher-row, Chick-lane, Field-lane, Black Mary's Hole, Warner-street in the Hole, Hedge-lane, near Leicester-square, and Skumbelo, Chelsea, are among the number.

A. Z.

THINGS NOT GENERALLY KNOWN.

Things still unknown.—When the sinking of the caissons for pier No. 3 (the second from the Middlesex side) of New Blackfriars Bridge is to be commenced.

When the Metropolitan Board of Works will acquire all the property needed for New Earl-street.

Things known.—The works of New Blackfriars Bridge commenced on June 7, 1864, and were to have been finished in three years—namely, on June 7, 1867.

The Act of Parliament for new Earl-street (26 & 27 Vict. cap. 45), received the Royal assent July 13, 1863—forty-four months ago!

ANISQUE LABORE NIHIL.

ST. JOHN'S CATHEDRAL, BRISBANE, QUEENSLAND.

THE new Anglican Church of St. John at Brisbane will be one of the most important ecclesiastical edifices in Queensland. The design selected by the committee out of various competitive plans, is that of Mr. D. W. Ryan. It embraces tower and spire, nave, aisles, transepts, apse, bishop's room, vestry, organ chamber, and sacristan's room. The length, in clear, is 208 ft., including chancel and transepts. The clearstory walls are 50 ft. from nave floor to wall plate, the height 80 ft. to ridge. The nave is separated from the aisles by an arcade of seven arches. The transepts and chancel have respectively moulded arches springing from worked columns with foliated capitals; the clearstory is pierced with seven double-light windows, with tracered heads; and the roof principals are supported on stone shafts and carved capitals. The chancel and porches will be paved with Minton's encaustic tiles. The church, when completed, will be capable of seating more than 2,000 persons.

CHURCH-BUILDING NEWS.

Hanley (Stiffordshire).—After having been closed for about eight months, for extensive alterations and improvements, Stilton Church has been re-opened. The chief improvement is the chancel, for which the parish is indebted to the rector, the Rev. S. T. Nevill, and which will cost about 1,600l. The style of the main portion of the church is Early English, but the new chancel is Decorated Gothic. It is 35 ft. long by 29 ft. wide, and has an apsidal end. It is built of Hollington stone, and is surmounted externally by a pierced parapet, with pinnacles and finials. There are five twilight and two single-light windows. The roof is open, and framed with red deal, stained. The principals are moulded, and supported upon stone columns with carved capitals. The spandrels are filled in with tracery, and the ceiling in the apse is decorated with gold stars on a blue ground. The floor of the chancel has been paved with Minton tiles. There are stalls of carved English oak, and on either side of the chancel, in front of the stalls, two rows of their seats, the ends of which bear carved emblems of the four Evangelists. The old pulpit has been removed from its station at the head of the nave, and has been succeeded by one of carved oak, which stands at the north side of the chancel. The pulpit is octagon-

shaped, and is supported on a pedestal with moulded capital and base. The chancel is lighted artificially by three polished brass Gothic coronas. In the nave the whole of the pews have been removed, together with the wood screen which cut off one of the bays, and had the effect of forming a sort of second vestibule to the church. New oak benches, with inclined backs and moulded and carved ends, have been substituted for the discarded pews. Two bays have been taken out of the north and south galleries, at the ends nearest the chancel, and the organ has been removed from the west gallery to a chamber prepared for its reception on the south side of the chancel. It has been overhauled by Messrs. Foster & Andrews, of Hull, who have introduced some improvements. The decoration of the nave and the ceiling is elaborately marked, and the bosses at the intersections of the lines are picked out with gold. The arches are coloured, and the spandrels are filled in with passages of Scripture in scrolls, overlying foliage conventionally treated. The benches on the ground-floor will seat 900 persons, and the cost of the alterations in the body of the church will be about 1,500l.

Croydon.—St. Saviour's Church, which has been recently opened, has been about twelve months in building. In its present state it is incomplete, the addition of a tower and spire being in the original plan. At present, instead of the tower there is a small bell-turret. The whole structure is built of bricks. The bricks are of three colours, red, yellow, and black. The columns are of coloured stone, and rise from square bases, terminating with foliated capitals, not all carved at present. The arches are all of brick, relieved with stone facings. The clear-story windows over the arches are set deep into the brickwork, and there are two marble shafts, with carved capitals, to support the three small arches of the three lights. The chancel-arch rises from small marble shafts, supported by carved stone corbels. The roof is open-timbered, stained to represent mahogany, and that in the chancel is supported by two angels. The east window of the chancel is of three lights, at present filled with plain glass. The other two chancel windows, north and south, are filled with stained glass. A reredos is to be placed in the chancel (now in the hands of the Queen's sculptor, Mr. Thred), at the expense of Mrs. Newman Smith; and there will be side screens of stone to correspond. The reredos will represent the Last Supper. Most of the windows have been filled with stained glass, presented by members of the congregation. The architects are Messrs. Mullins, Lee, & Mullins, and the builders Messrs. Myers & Sons. The church has been prepared for the accommodation of 512 persons, at a cost of 4,600l., exclusive of stained-glass windows, marble shafts, pulpit, lectern, font, chancel-screen, encaustic tiles for chancel, and other special gifts; and at the present time a debt of 1,200l. is owing to the contractor, for which the committee have made themselves responsible. The following are some of the details not yet provided for:—Side-screens of marble and stone for chancel, screens for vestry and children's chapel, glass for east and west windows, encaustic tiles for nave and aisles, alms-boxes, font-ower, carving capitals, &c.

STAINED GLASS.

St. Mary's, Nottingham.—The gift of the banking family of Messrs. Smiths, erected in commemoration of the founder of the family, has just been completed by Messrs. Heaton, Butler, & Bayne, of London. The south transept roof and the stonework of the window and side walls have been restored. The subjects represented in the windows are, "The Parables of our Lord." Above them, in the smaller openings, are angels singing and playing instruments, and in the larger space on either side of these two rows is an angel with a scroll. Below are forty-eight openings, consisting of four tiers of twelve windows each, and as a rule two lights are given to each parable. On the opposite window in the north transept the Miracles are to be represented; but at present only the central compartment, occupying a third of the window, has been undertaken.

Enthillon Church, Sutton.—The committee for the erection of some suitable memorial to the late founder of All Saints', Benhiton, Sutton, has a memorial window now in process of

making. It is intended to fill in the large window of the chancel with stained glass. The subject to be illustrated is that of the Ascension. This will occupy the five lower lights: the canopy and base will be filled with rich foliage work. The tracery will contain the Lamb, Alpha and Omega, and other emblems, on grisaille work. The work is to be done by Messrs. Heaton, Butler, & Bayne, of London.

Cliffe Church.—Several improvements have recently been made in the architectural features of the Church of St. Thomas-a-Becket in the Cliffe. A new memorial window, in the Perpendicular style, has been placed in the south aisle, by the Misses Hillman, to the memory of their parents. This window contains stained glass, representing, in one compartment, the "Resurrection," and, in the other, the "Ascension of our Saviour." A second new window, of a similar character, has also been placed in the south aisle, by the churchwardens; but this, at present, is not of stained glass. The memorial window is the work of Mr. Wailes, of Newcastle. Messrs. Parsons, of Lewes, have done the stonework.

St. John's Church, Eton.—Another window has just been erected in this church, by the artists who have erected those already inserted, Messrs. O'Connor, of London. It is on the south side, and to the memory of Thomas, eldest son of Thomas and Ann Ingaltson, as recorded by an inscription on the glass. The subject in the centre apse is the "Raising the Widow's Son." On either side are emblems, the burning heart, and the pelican, in allusion to the dedication of the church to St. John, "The Evangelist of Love," the whole groundwork being of grisaille and diaper.

Snodgrassworth Church.—A stained glass window, by Messrs. Hardman, of Birmingham, and designed by Mr. G. G. Scott, consisting of five lights, illustrating the five principal events in the life of our Saviour, namely, the Nativity, the Worship of the Magi, the Crucifixion, the Resurrection, and the Ascension, has been erected at the east end of the chancel of this church, to the memory of the late Mr. B. B. Colvin, of Pishiobury. In order to harmonise with the new window, the walls of the chancel have been cleaned, the ceiling painted, and the screen varnished and decorated. Inside the altar-rails the floor has been relaid with encaustic tiles of a rich pattern, and a new Communion service and altar-cloth added.

Books Received.

Our Schools and Colleges. By HERBERT FRY. First annual edition. London: Hardwicke, 1867.

THIS volume, edited by the author of "The Royal Guide to the London Charities," contains the principal particulars respecting endowed grammar, collegiate, proprietary, and middle-class schools, and other important institutions, where the young are trained for the naval, military, civil service, middle-class, and similar examinations; as also information respecting colleges and universities. It must be a useful volume to all engaged in the selection of educational establishments for their children.

VARIORUM.

"The Book of Knots, illustrated. By 'TOM BOWLING.' London: Hardwicke." This is a treatise on the art of cordage, illustrated by 172 diagrams, and showing the manner of making every knot, tie, and splice. It is both curious and useful, especially to sailors, and, accordingly, it is dedicated by permission to Prince Alfred. Among the multitude of knots, some of which would seem to be capable of bothering the Darenport "aperrits," we observe the builders' knot and double knot.—A neat little edition of "Gulliver's Travels" has been published by Mr. Tegg. It has three or four coloured illustrations, and is very well and clearly printed.—"Outline of English History," by Henry Ince and James Gilbert, has been sold in hundreds of thousands, and will continue to be so. The new edition, just now issued (Kent & Co., Paternoster-row), has new matter to the extent of fifty pages. It is as full of information as an egg is full of meat.—"Engineering Facts and Figures for 1866" (Fullarton & Co.) is a reprint of useful articles from the *Engineer*, *Engineering*,

* The Cock-lane ghost made a sensation in London some eighty or ninety years ago.

† Houndsditch and Shoreditch still remain, and the latter as a parish will, doubtless, continue.

and similar publications. The contents, some of which are illustrated, are classified, and references are given at the end of each division to other papers and articles connected with it to be found in periodicals.

Miscellaneous.

THE CHESTER TOWN-HALL WORKS.—Mr. Gargan informs us that his removal from these works to others in Ireland was of his own choosing, and that he was not "dismissed" at all, as reported.

A FREE LIBRARY AND MUSEUM FOR NOTTINGHAM.—The town council have unanimously resolved, "That a committee be appointed to investigate the working of the Free Library and Museum Acts, and that it appears desirable to take measures for their being adopted in this town." The committee has accordingly been appointed.

INFIRMARY FOR BOLTON.—According to the *British Medical Journal*, Dr. Chadwick, of Southport, formerly a resident of Bolton, has offered 1,000*l.* towards securing a site for a new infirmary for Bolton, outside the borough; and, to utilise the present infirmary, he offers another 1,000*l.* towards converting the present building into a public library and museum. Alderman Heywood cordially agrees with these suggestions, and promises to follow in the steps of Dr. Chadwick.

PRESENTATION TO MR. GREATOR, LATE CITY SURVEYOR OF COVENTRY.—At a dinner in the Castle Hotel, Coventry, Mr. Greator, late surveyor in this city, has been presented with some valuable testimonials of esteem and respect. These testimonials consist of a gold watch, a purse containing 150*l.*, and a silver cup. The watch and purse were subscribed for by the members of the corporation and other gentlemen of this city, and the cup by the men employed under Mr. Greator, while, for fourteen years, engaged as city surveyor.

MACCLESFIELD SCHOOL OF ART.—The mayor, as chairman of the school, convened a meeting of gentlemen, to confer with the committee as to the best means of carrying out the wishes expressed at the late public meeting of ratepayers. The number of those who had opposed the rate, but had expressed a willingness to unite in voluntary efforts, and had received circulars to attend, was very small. The meeting unanimously resolved "That an immediate canvass for subscriptions be instituted; and, further, to lend all possible aid in promoting the best interests of the school." It was announced that about 50*l.* had been subscribed, and it was agreed that the town should be divided into wards, and that members of the town council and others should be solicited to undertake the canvassing of the separate wards. Most of those present consented to become canvassers. In course of the proceedings, Mr. Ford, the master of the school, said about twenty students had been enabled to take up valuable situations in various trades, mainly owing to the art education they had received in the Macclesfield School.

ESTABLISHMENT OF A GYMNASIUM IN NEWCASTLE.—A meeting of those interested in the formation of a gymnasium has been held in Newcastle-upon-Tyne, to receive the report of a provisional committee, appointed at a general meeting held on the 27th of November. Major Spoor, N.R.V.C., presided. The Chairman said there was every reason to augur a favourable reception of the club by the people of Newcastle. In its establishment they had had the advantage of the formation of a similar club in Gateshead. He then read the report of the secretary (Mr. C. Neville Johnson) of the Provisional Committee; and it was resolved by the meeting that it was deemed expedient that a company should be formed (limited liability) having for its object the erection of a public gymnasium in the town, and that the meeting pledged itself to support the project. Matters of detail will be considered by a committee, and afterwards submitted to a committee for approval. Some gentlemen were then requested by resolution to act as provisional directors of the company, with power to add to their number. The plans for the proposed building, executed by Mr. Oliver, were laid upon the table at the meeting for inspection.

THE AGRA EXHIBITION.—The Exhibition of Works of Art and Industry got up by a committee representing the North-Western Provinces of India, has recently taken place at Agra with great success. It seems to have excited much interest among both natives and British. It only remained open, however, from Monday, the 4th February, to the Saturday following. Prizes were awarded by jurors. The exhibition was opened, in state, by the Lieutenant-Governor, Mr. Drummond; and the President of the Central Committee, Mr. Thornhill, addressed the Lieutenant-Governor on the occasion, who made an appropriate reply.

ANECDOTE OF HERBERT MINTON.—A china storekeeper in Boston, U.S., who had been in a London crockery shop, and knew Herbert Minton by sight, saw him one day enter the Boston store just before the "World's Fair" (as he thought, enjoying the glorious privacy which 3,000 geographical miles, as a rule, will afford even to a peripatetic potter). Taking up a beautifully modelled Parian figure of his own manufacture, he asked the *so-disant* Bostonian, the name of the producer? The storekeeper came up close to him, and without any prelude, slapped him on the back, and replied, "It's one of yours, sir," and thus the mantle of *incognito* suddenly collapsed.—H. H. V.

LEOMINSTER WATER SUPPLY AND DRAINAGE.—The committee appointed by the local Board to consider the plans of Messrs. Gotto & Beesley for the water supply and drainage of Leominster, have recommended that a trial boring should be made as suggested by the engineers, in order to ascertain whether a sufficient quantity of water suitable for the town may be obtained by this means; and thus avoid the expense of filtering and interfering with the rights of mill-owners, as would be the case if the supply is taken from the river or other streams in the neighbourhood. The local Board has agreed to the recommendation of the committee, and the trial bore is now being executed by Mr. F. C. Bugbird, of London, contractor.

A NEW AQUATIC FIRE ENGINE.—The second complete steam floating fire-engine which has been constructed in England (the first being now the property of the Metropolitan Fire Brigade), has been purchased for our Indian Government. Both have been constructed by Messrs. Shand & Mason, hydraulic engineers, Blackfriars-road. The new craft is 120 ft. long, and has a breadth of beam of 16 ft. It possesses four boilers. The principal objects of interest between decks are the engine, the pumps, and the propeller. The engine possesses 30-horse power. The pumps number six, and by means of them six jets can be charged at one time, at a pressure of 120 lb. on the square inch, which is equal to a height of 160 ft. It is estimated that the propeller, at 200 revolutions, can make the new floating fire extinguisher go at a speed of 10 knots, or 11-3/5 miles an hour. Satisfactory trials have been made on the Thames with the vessel, to test her speed and hydraulic power.

THE QUESTION OF WASTE IN BRASS CASTING.—The right of a master to deduct from his servant's wages for extra waste of material, was brought before the local magistrates, at Wolverhampton, a few weeks ago, and decided by them in the affirmative, and has been again argued in another case there. The complainant, Edmund Pugh, brass-caster, summoned his employer, Mr. Charles Sale, for 1*l.* 0*s.* 4*d.*, which he alleged was due to him for wages. According to the custom of the trade the complainant was to be allowed 7 lb. to every owl for loss in casting. It transpired, however, that the loss of weight in casting was irregular. One witness stated that during eighteen years his average loss had been 8 lb. in the owl, yet the masters had never deducted for that loss which was over the usual allowance. In this case 12 lb. had been wasted over the usual allowance, and for this 7*s.* 4*d.* had been deducted, and the difference, 1*s.*, was refused. The magistrate was of opinion that the fact that the metal had been constantly weighed and a certain allowance made for waste during a period of forty years justified the defendants in deducting from the wages of their men for the amount wasted over the usual allowance. That the masters had not always enforced their right did not make it void. It would be injudicious to deduct in all cases, as the waste sometimes arose from bad metal or accidents; but great quantities might be wasted from mere carelessness. He was of opinion that the masters had acted rightly in making the deduction.

WORKMEN'S RIOTS IN FRANCE.—We hear from private sources that the riots consequent on the strike at Roubaix, near Lille, had much more serious consequences than have been spoken of in the newspapers. We hear of nine mills that have been greatly injured, if not destroyed.

THE ARTIZAN AND LABOURERS' DWELLINGS BILL.—Mr. McCullagh Torrens's Bill in relation to artizans' and labourers' dwellings, the same as that which was introduced last year, has been read a second time, and referred to a select committee. It provides for the demolition of buildings which are unhealthy, and, if necessary, the erection of new buildings by the local authorities.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—On the 21st inst., Miss Edith Heraud read to the members of this society selections from "Macbeth." Miss Heraud reads with great discrimination and good effect. The abilities of this young lady should serve to keep her more continuously before the public than seems to be the case. The audience on the occasion in question were greatly pleased.

ACCOMMODATION IN THE HOUSE OF COMMONS.—We are asked, from as far off as Hayti, the number of members the English House of Commons will seat with comfort. We reply, on the best authority,—

On the Floor.....	258
In the Galleries.....	108
	364

The above calculation allows a seat of 24 in. wide to each member. A reduction of this allowance would, of course, give an increase in the number of members.

ARCHITECTS' BENEVOLENT SOCIETY.—The following is an abstract of the last balance sheet:—

1866.		
Balance ending year, 1865.....	£115 17 2	
Received subscriptions.....	178 10 0	
Ditto donations.....	20 13 6	
Dividends.....	38 10 7	
	£363 11 5	
Paid expenses.....	£55 10 9	
Gifts.....	200 0 0	
Robins & Barber, brokers ...	1 17 0	
	257 16 9	
Balance in banker's hands end of 1866.....	£105 14 6	

Out of the amount of 105*l.* 14*s.* 6*d.*, the sum of 30*l.* 13*s.* 6*d.* has to be invested, and there are bills to pay amounting to about 19*l.*

STRIKE OF ENGINE DRIVERS.—The Brighton and South Coast engine-drivers have struck work, but merely for a day. The strike is virtually at an end. "The only point at issue between the men and the directors," says the Society of the engine-drivers, "was the conditions on which the men should receive their promotion, and has been arranged by the authorities agreeing that if any men are passed over they will have the right to appeal to the board of directors, and their claims will be duly considered. The men ask no more than this; and the Brighton directors having conceded every other point, they have resolved to trust themselves to the upright dealing of gentlemen with whom they have no especial quarrel, and hope that their future relations may be both amicable and satisfactory."

COTTAGE HOMES FOR THE PEOPLE.—The Suburban Village and General Dwellings Company (Limited) has issued a prospectus, which states that the capital is to be one million, in 100,000 shares of 10*l.* each, with power to increase; and the first issue will be 200,000*l.*; 1*l.* deposit to be paid upon application and 1*l.* on allotment. The trustees are Alderman Lusk, M.P., Professor Fawcett, M.P., and Mr. G. Cruikshank. The company is established "to provide at the most rapid rate possible, healthy, pleasant, and comfortable abodes, for the overcrowded population of the metropolis. The company will purchase estates in all the suburbs near to and having direct railway connexion with London, and erect thereon complete villages. The houses erected will contain from four to eight rooms with every domestic convenience, each house to have a piece of garden ground. Educational establishments, &c., will be provided, as also a limited number of shops erected. A large estate has been purchased in close proximity to Brixton, Loughborough-road, and Herne-hill stations. Improved dwellings will also be erected in London. The instalments paid in purchase of a cottage of four rooms, with a piece of garden-ground will not exceed (including railway fare) what is now paid for rent only of two rooms in our overcrowded localities."

REWARDS TO INVENTORS.—The Army Estimates for 1867-8 contain provision for rewards to inventors, to the extent of 22,800. Of this sum, we believe 15,000 will go to Major Palliser for the projectiles which bear his name, and 6,000 to Mr. Fraser, of the royal gun factories, for the modification which he has suggested in the Armstrong system of gun building, with a view to cheapening the manufacture.

THE SEWERAGE OF REGENT-STREET.—The local sewerage of Regent-street has long been in a very defective condition, and liable to give way or to become choked up and overflow, and this has again taken place near to the houses Nos. 95, 97, 99, and 101, causing an overflow into the wine vaults of No. 95. Mr. Howell, the parish surveyor of St. James, Westminster, has submitted to the vestry of that parish four schemes for improving the condition of the sewerage of the street. The vestry, being in a difficulty as to the best scheme to be adopted, have called in Mr. Haywood, the engineer to the City Commissioners of Sewers, to advise them on the subject.

BURNING OF ST. ANDREW'S CHURCH, NOTTING HILL.—On Saturday evening, within the short space of an hour, this so-called iron church was reduced to a complete ruin. It was erected at a cost of 1,600, or 1,700, about four years ago, for the accommodation of the well-known Kensington Potteries. The building was left perfectly safe at five o'clock in the afternoon by the mission woman, who had been arranging the books, &c., for the Sunday Services. The cause of the catastrophe is at present unknown. The church was partially insured, but not sufficiently to cover the loss, which will fall heavily on a very poor district. It would be as well if the Metropolitan Board of Works, whose assent is necessary before such buildings can be erected, should insist on the framework being really of iron, and not, as is now usually the case, mainly of wood, with a few angle uprights and other pretences.

MORE ROMAN REMAINS AT CIRENCESIER.—The most recent additions to the Corinium Museum, which is becoming rich in antiquarian lore, comprise several objects of interest, some of which were not before represented there. In excavating at the new cattle-market, some stone coffins have been found, with three sepulchral urns, all in good preservation. In one urn, in addition to bones, a lamp was found; also a safety pin, on the same principle as those in use at the present day, a bronze brooch, a "tear-bottle," and four coins, three of them of a very rare description. The place where these remains were found is but a very short distance from the Querns, which, for many reasons, one being the irregularity of the ground, which is broken up into a number of mounds, having the appearance of tumuli, has been regarded by antiquaries as an ancient place of sepulture, and the recent discoveries confirm that hypothesis. By some the Querns is supposed to derive its name from the word *cairn*. Some further discoveries of Roman remains have been made in the New-road.

THE METROPOLITAN IMPROVEMENT RATE BILL. At the last meeting of the Metropolitan Board of Works a report from the Works, &c., Committee was read, setting forth the grounds on which the committee thought this Bill ought to be supported. Some misapprehension, says the report, has been shown to exist in reference to the present taxing powers of the Board, and it has been stated that the Bill will increase those powers and augment the burden of taxation. That opinion was entirely erroneous: under the Metropolitan Local Management Acts the powers of the Board are unlimited, and they can raise any sums they deem necessary for the purposes of those Acts, their most important function being the improvement of the metropolis. The object of the Bill is the provision of funds for carrying out urgent and pressing improvements, and the relief of the heavily-burdened ratepayers of the metropolis by the readjustment of taxation. Mr. Freeman moved the adoption of the report, and a long discussion took place, when Colonel Hogg moved that the report be rejected, and that the solicitor be directed to draw up a concise answer to the objections made to the Bill. The Chairman agreed with Colonel Hogg in thinking that while members of Parliament would read and attend to a short and concise statement, they might not attend to the lengthy document the committee had drawn up. The report was finally rejected, and Colonel Hogg's amendment carried by a large majority.

ST. MARTIN'S HALL, LONG ACRES, will shortly be transformed into a first-class theatre. The works of alteration will be speedily commenced.

NATIONAL GALLERY ENLARGEMENT.—Lord J. Manners, in moving for leave to introduce his Bill to make further provision for the enlargement of the National Gallery, explained that its object was to carry into effect an arrangement entered into by the late Chief Commissioner of Works last year, and that it was rendered necessary by the existence of technical difficulties in the way of acquiring Archbishop Tenison's Library and the schools of the parish of St. Martin-in-the-Fields. It had been found requisite to schedule the property, and take compulsory powers for its purchase. Leave was given.

TENDERS

For building three warehouses and a factory in South-west-street, for Mr. E. H. Moses. Mr. N. S. Joseph, architect. Quantities by Mr. Pearson.
King & Sons (accepted).....£8,903 0 0

For alterations, &c., to 216, Upper-street, Islington, N., for Mr. Truman. Mr. W. Smith, architect.
Warne.....£1,150 0 0
Perry.....790 0 0
Crabb & Vaughan.....788 0 0
Glenn.....780 0 0
Sabej.....750 0 0
Johnson.....690 0 0

For schools, at Brighton, in connection with the London, Brighton, and South Coast Railway Company. Mr. H. N. Gouty, architect. Quantities supplied by Mr. J. C. Lansdowne.
Bland.....£714 0 0
Cheesman.....690 0 0
Simms & Marten.....653 0 0
Nightingale.....645 0 0

For new shop front, &c., No. 25, Sloane-street, Chelsea, for Mr. C. J. Fringle. Mr. H. J. Hancock, architect.
Nightingale.....£193 8 8

For a pair of semi-detached six-roomed cottages, proposed to be built at Hounslow. Mr. William Tim, architect.
Cole.....£276 0 0
Wilson.....370 0 0
Emerson.....330 0 0
Walker.....298 0 0

For retraining St. Marylebone Parochial Schools at Southall. Mr. Saxon Snell, architect.
Faulkner.....£235 0 0
Sparrow.....235 0 0
Crabb & Vaughan.....309 0 0
Hanson.....298 0 0
Proctor.....298 0 0
Tasker.....288 0 0
Cowley.....288 0 0
Wynn.....288 0 0
Pedley.....240 0 0
Gibson.....200 0 0

For alterations and additions to residence of Mr. Scott Stonehewer, J.P., Shoreham, Sussex. Mr. Horatio N. Gouty, architect, Brighton. Quantities supplied.
Sawyer.....£492 0 0
Nightingale.....645 0 0
Simms & Marten.....617 0 0

For erection of a Concert-hall, Brighton. Contract No. 1, foundations. Mr. Horatio N. Gouty, architect. Quantities supplied.
Nightingale.....£1,040 0 0
Bland.....993 0 0
Simms & Marten.....969 0 0
Cheesman & Co.....890 0 0
Chappell.....879 0 0

For building a library and Turkish bath at the rear of No. 3, Adelaide-crescent, Brighton, for Mr. John E. K. Morley. Mr. Horatio N. Gouty, architect. Quantities supplied.
Cheesman & Co.....£710 0 0
Simms & Marten.....628 13 0
Nightingale.....547 0 0

For alterations, &c., at Old Shot Tower Wharf, Commercial-road, Lambeth. Mr. F. G. Widdows, architect.
Wheeler.....£1,186 0 0
Child & Son.....893 0 0
Ennor.....892 0 0
Richards.....770 0 0

For Swan Downers Schools, Brighton. Mr. G. S. Clarke, architect. Quantities supplied.
Baker.....£2,335 0 0
Parker.....2,085 0 0
Barnes.....2,069 0 0
Nightingale.....1,823 0 0
Cheesman.....1,095 0 0
Simms & Marten.....1,060 0 0
Rirk.....1,049 0 0
Chappell.....1,069 0 0

For Holborn Valley Improvements, for the Corporation of the City of London. Contract "D." Mr. W. Haywood, engineer. Quantities supplied by Mr. D. C. Nicholls.
Hill & Keddell (accepted).....£23,675 0 0

For two small houses, at Croydon. Mr. Henry William Broadbridge, architect.
Collier (accepted).....£730 0 0

For a new house and shop, at Hitchin, for Mr. Thomas Chamberlain. Mr. J. Shilcock, architect.
Butterfield & Seymour.....£387 10 0
Andrews & Foster.....346 0 0

For rebuilding No. 23, Lime-street, City, for Mr. James Thornhill. Mr. Charles Reilly, architect.
Smith & Son.....£1,335 0 0
Carter & Son.....1,177 0 0
Tasker.....1,175 0 0
Webb & Sons.....1,174 0 0

For a new house and shop, for Mr. T. Sanderson, at Stotford, Beds. Mr. J. Shilcock, architect.
Foster & Stapleton.....£825 7 6
Picken & Walshe.....592 4 0
Redhouse & Brittain.....550 13 2

For a new house, for Mr. F. Levitt, at Arley, Beds. Mr. J. Shilcock, architect.
Redhouse & Brittain (accepted).....£242 3 0

For new warehouse in Chapel-street, Dublin, for Messrs Hugh Moore & Co. Mr. W. Fogarty, architect. Quantities supplied by Mr. Gribbon.
Roberts.....£9,150 0 0
Midland.....9,000 0 0
Cockburn & Sons.....8,975 0 0
Bolton.....8,600 0 0
Nolan.....8,500 0 0
Meade.....8,500 0 0
Crowe & Sons (accepted).....8,500 0 0

For converting the Manor House, Upton, into schools, for the Guardians of St. Luke's.
Alterations and Boundary wall additions and lodges.
Simms & Marten.....£7,979 0 0
Morter.....7,489 0 0
Eaton & Chapman.....7,481 0 0
Rivett.....7,373 0 0
Perry.....7,273 0 0
Henshaw (accepted).....6,967 0 0

For gas holder and tank at the Hastings Gas Works. Mr. T. G. Barlow, engineer. Quantities by Messrs. Pain & Clark.
Cutler.....£5,948 10 0
Laidlaw.....5,354 15 0
Newton, Chambers, & Co.....6,100 0 0
McCrack & Co.....5,270 0 0
Horton & Co.....5,100 0 0

For new Congregational chapel, at Brighton. Mr. H. N. Gouty, architect. Quantities supplied by Mr. J. C. Lansdowne.
Cheesman & Co.....£2,878 0 0
Anson.....2,570 0 0
Parsons.....2,370 0 0
Simms & Marten.....2,358 0 0
Chappell.....2,224 0 0
Nightingale.....2,185 0 0
Kemp (accepted).....1,951 0 0

For a billiard-room, at Wimbledon Park, Mr. Robert J. McCabe. Messrs. Lee & Lee, architects.
Stimpson.....£2,338 0 0
Nicholson.....800 0 0
Adamson & Smith.....783 0 0

Reservoir, Portsdown-hill, Portsmouth.—The following corrected list of tenders has been sent us by Messrs. Simms & Marten:
Light.....£2,900 0 0
Lawrence.....5,650 0 0
White.....5,460 0 0
Simms & Marten.....5,484 0 0
Edwards.....5,350 0 0
Furness.....5,195 0 0
Pineo.....5,030 0 0

Schools, Newington.—Sir: will you kindly allow me to say in reference to the statement of tenders for Mr. Spurgeon's "School and Almshouse, Newington," that I am not the person who heads the list. My eldest son, and, of course, he bears my name, priced the quantities, and arrived at the strange result. However, he but lately returned from Victoria, where a higher wage is given, and I suppose his calculations were based upon the assumption that he was still a resident in that state. I should be much obliged, therefore, if you would state in your next impression that Wm. Quinell, sen., of the above address, is not the person who tendered for the said works. Such a mistake is calculated to, and certainly will, confer upon me a great amount of injury, if not at once rectified.—W. QUINELL, SEN.

TO CORRESPONDENTS.

J. M. (We have no further information than has appeared in our Journal.—W. M. M. sent as requested.—W. T. (under the mark).—B. E. (we can do no service by interfering in private disputes on ex-arte statements) Decorator (not known with certainty).—J. T. (J. G. Yarmouth.—H. B. P.—D. M.—O. A. V.—W. B.—R. L. R.—R. H. G.—T. D.—E. R.—S.—P. W.—S.—H. V.—O. R.—M. C.—Architects.—H. C.—H. B. S.—J. A. W.—T. N.—W. K.—W. D.—A.—J. T. S.—F. M.—T. B. R.—W. P.—C.—R.—E.—J. St. J. (see R. H. G.—T. D.—E. R.—S.—P. W.—S.—H. V.—O. R.—M. C.—M. T. M.—W. H. P.)

We are compelled to decline pointing out books and giving addresses.
All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.
Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

Advertisements cannot be received for the current week's issue later than THREE o'clock, p.m., on THURSDAY.

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The Builder.

VOL. XXV.—No. 1261.

The Paris International Exhibition.



ON Monday last, precisely at two o'clock, according to arrangement, the Emperor and Empress of the French, full of smiles, entered the enormous building which has been erected in the Champ de Mars, and proceeded to make the tour of it. The sun shone, a green velarium powdered with bees formed a covered-way of approach, a thousand flags fluttered, and, though the people of Paris had not made it a holiday, large crowds of sight-seers gave animation to the external scene. In the centre of the outer zone of the building, that appropriated to machinery and processes, a raised gangway is formed running all round; a capital feature,

and the only part of the building where a general view from above, of any portion of the Exhibition can be obtained. Ascending this on the French side of the chief entrance, which is next the Pont d'Jena, the imperial party and suite walked all round the building, representatives of various nationalities being presented to them on the way. They descended on the English side of the same entrance, and then passed through the central avenue to the Fine-art zone, which they traversed in the same manner, making various stoppages for presentations. The Emperor must have been greatly astonished at the change that had been effected since his last visit. None who walked through the building on Saturday but those who know from experience what can be done in the last twenty-four hours in such undertakings, could have supposed that such an aspect could have been put on by Monday morning as was the case. Sunday did not there stop work, as fortunately it does with us; and where, in fitting up courts and compartments, every one is doing his own work, it all goes on simultaneously, and completion of a certain sort comes everywhere about the same time. We are not advising our readers, however, now to visit it. It will be a month before it can be satisfactorily seen. In some of the sections the cases are not opened. Where the articles are set forth there are no labels, and, though the English Executive have got out a catalogue, a bulky red-covered volume not without sins, and including an account of previous exhibitions, and a general introduction in several languages, no figures of reference on the objects have yet been possible. Some of the buildings, moreover, in

the surrounding grounds, the most original and curious half of the undertaking, are but in carcasses; though even here the rapidity and skill with which the French, by means of their plaster and the apparently unlimited command of decorative artists capable of drawing with much spirit and colouring harmoniously, are able to throw on a skin of beauty was singularly striking. When these buildings outside are finished, the palace and park of the Champ de Mars will be the world's marvel, and an object for universal pilgrimage. French, English, Belgian, Italian, German, Egyptian, Tunisian, Chinese, Turkish, Persian, Russian, Norwegian, and Babel knows what other structures besides, are being erected and decorated at immense cost; and though, as we are disposed to believe, a very large amount of the work has been done by Paris hands, it was under native direction, and is faithfully characteristic. Some of the wooden buildings,—those of Russia notably, and to which we early referred, are beautiful specimens of workmanship. The cost of the Egyptian Temple has been immense, but the Crystal Palace has taken the shine off its novelty. Much money has been spent in fitting up and decorating the Egyptian section inside the building; and the story is,—and probably it is a story,—that France lent Egypt the money to do it with. The pavilion of the Emperor, on a turfed bank near the principal entrance, is light, elegant, and costly, including a plinth of marble, a wide projecting verandah all round, with supports and ornaments of zinc, and a balustrade below; inlaid marble steps, with bronzed eagles at the foot, and a stone pavement to terrace, with incised ornaments; while within there are mosaic floors of marble, and paintings on the ceiling. The covering is domical, and of zinc. Nearly opposite to this, on the other side of the path, is a building put up by the English Commission as a testing-house and for various experiments as to lighting and heating. This takes the shape of a Tudor cottage *ornée*, not in the highest style of architectural art, but still a type of much that is done amongst us. It is made, too, the means of exhibiting numerous building materials and processes. The roof is covered with various sorts of tiles and slates; some of the chimneys have ornamental brick shafts, others terra-cotta pots of known patterns. One window-frame is of terra-cotta. Some parts of the exterior are “half-timber,” some are covered with cement, and others with tiles in varied patterns; while the cresting obligingly tells observers, in very large letters, that “This Ironwork was made by Cottam, Winsley-street.” No mistake about that, at any rate. One face of the building is adorned in this wise:—being covered with plaster having a rough and coloured face, ornamental forms and patterns are cut out of it and filled in with white plaster, and having a smooth face. The drawing from which the workmen were doing this part of the decoration was signed E. J. Tarver, architect. Within, where the roof is ugly, the walls are being lined with specimens of Keene's Cement in various patterns, Robinson's enamelled slate, and varieties of wall tiles. Altogether this Testing House, when finished, will have its value.

Close to it the terra-cotta monument, in memory of Mulready, designed by Sykes, is being set up. It consists of a recumbent figure of the painter on a tomb, and a canopy supported by ornamental columns. It seems to want refinement, but is not yet in a state to admit of a right judgment being formed.

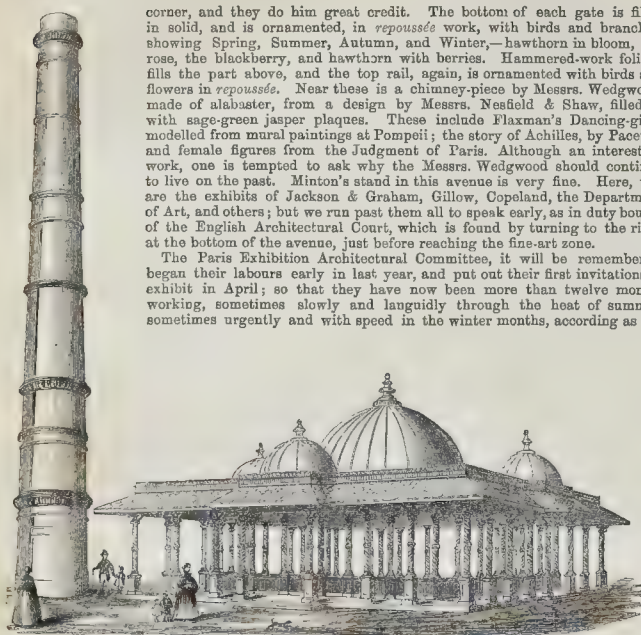
In the English Boiler House, too, in this same part of the ground, terra-cotta is largely used in the shape of repetitions of the columns made by Mr. Blanchard, for the Royal Horticultural Society's gardens at Brompton. The story of this building is somewhat curious, but we have scarcely time to tell it fully. Under the wasteful mode that has been adopted of supplying power

to the machinery, the Exhibition building is surrounded with boiler-houses and their chimneys; there are, we believe, some fourteen or fifteen of them. The English Executive found that, besides generating steam for moving the British machinery, it was an object, in constructing the boiler-house, to exhibit several boilers contributed by exhibitors; and in order to induce visitors to inspect them without suffering inconvenience from heat, an open colonnaded treatment was adopted (see p. 234). The general character of the design was furnished by a building in Ahmedabad, the capital of Goozerat, in British East India. This building was Syad Oosman's mosque, and is described in a volume on the “Architecture of Ahmedabad,” of which we lately gave an account. This Syad Oosman, called Shumâes Boeshânce, founded a suburb of Ahmedabad, on the west of Sâburmuttee river, which is still called Oosmanpoor. He died in A.D. 1458, and two years afterwards his patron, Mahmood Begurra, built in his memory the tomb and mosque which are here represented. The tomb is 78 ft. square, and contains 80 pillars, of which 32 are double. The diameter of the centre dome is 33 ft. The minaret serves for the chimney. The details of the columns, it will be remembered, are not Indian. Some excess of strength has been given to the timber roof, and the domes, of which there are five, are unfortunately shams. We must not, however, stop longer in the grounds just now.

The form of the building, as most people now know, is an oval; or, to speak more correctly, it is described by two semi-circles connected by a straight line at each side about two-thirds of the radius in length. This oval is divided into concentric zones, each zone being appropriated, in theory, to special objects, and the centre is an open garden. The building is then divided into quarters, so to speak, by avenues running from the outer circumference to the inner garden, and these quarters, more to one and fewer to others, are given to the different countries. There is thus provided, on paper at any rate, the special classification and the geographical classification.

After the fullest consideration we can do no less than re-assert most positively, that the building is constructed on the plan originally published in our pages, and reprinted by us some time ago in juxtaposition with that of the French building as erected. Mr. Le Play, to whom plenty of credit may still be due, unwisely persists in refusing to admit this obligation. But the denial is useless. Pat the lines on paper, and the fact is obvious. Let him paint an inch thick, as Hamlet says with a difference: to that admission he must come at last. It might be done, too, with less reluctance, inasmuch as in execution it cannot be deemed a complete success. We are not at all disposed to join in the cry that has been raised as to the ugliness of the building: its arrangement has several advantages, and the ease with which any part of it may be found by making for the central garden—itsself a charming feature—is admirable. Nevertheless, it is probably the last of its kind. The classification cannot be maintained; at any rate, it has not been maintained here, and the circular form presents many difficulties.

Quitting this part of the subject,—the main avenue leading from the principal entrance to the central garden has “France” on the left side, “England” on the right, and is lighted by a clearstory in which, at too great a height, are some of the best specimens of stained glass by the artists of the two countries. Some good examples of English work have been made to front this avenue. Thus, immediately after passing across the outer zone, or machinery department, are seen a capital pair of wrought-iron gates, by Messrs. Barnard & Bishop, of Norwich. These were designed for them by Mr. Thomas Jeckyll: his monogram will be found in one



corner, and they do him great credit. The bottom of each gate is filled in solid, and is ornamented, in *repoussé* work, with birds and branches, showing Spring, Summer, Autumn, and Winter,—hawthorn in bloom, the rose, the blackberry, and hawthorn with berries. Hammered-work foliage fills the part above, and the top rail, again, is ornamented with birds and flowers in *repoussé*. Near these is a chimney-piece by Messrs. Wedgwood, made of alabaster, from a design by Messrs. Nesfield & Shaw, filled in with sage-green jasper plaques. These include Flaxman's Dancing-girls, modelled from mural paintings at Pompeii; the story of Achilles, by Pacetti; and female figures from the Judgment of Paris. Although an interesting work, one is tempted to ask why the Messrs. Wedgwood should continue to live on the past. Minton's stand in this avenue is very fine. Here, too, are the exhibits of Jackson & Graham, Gillow, Copeland, the Department of Art, and others; but we run past them all to speak early, as in duty bound, of the English Architectural Court, which is found by turning to the right at the bottom of the avenue, just before reaching the fine-art zone.

The Paris Exhibition Architectural Committee, it will be remembered, began their labours early in last year, and put out their first invitations to exhibit in April; so that they have now been more than twelve months working, sometimes slowly and languidly through the heat of summer, sometimes urgently and with speed in the winter months, according as cir-

As to these photographs we may observe, that it was not contemplated at first to exhibit any; but the British Executive, at the instance of this committee, accepted photographs as illustrative of the architectural designs comprised in Group 1, Class 4, of the French arrangement. By this concession, which entailed considerable additional labour and responsibility on the committee, a far better representation of architecture in England will be obtained than would be given by the drawings only; and by a happy coincidence there will for the first time be exhibited copies of drawings in two important competitions, one of which is but recently decided, while the other is still in a state of suspense. We believe this is the first time when, by a combination of circumstances, it is possible for a rational judgment to be formed of the comparative merits of a series of designs apart from the exhibition of the designs themselves. Mr. Bowler, let us add, has done excellent service in hanging the drawings.

It should be borne in mind that with regard to Group 1, the committee was appointed by the British Executive to select the drawings which should be sent to Paris (the photographs being added subsequently as above mentioned); so that all the care and responsibility, as well as the cost of packing and transmission to and fro, will be borne by the British commission. Also that in order to facilitate the labours of the committee, the galleries at South Kensington were offered and accepted for the preliminary exhibition, held in January last, of which an account was given in our pages at the time.

The drawings being selected, and a few others not available for the first exhibition being added, they remained at the disposal of the British Executive, who as yet have been unable to complete the task of hanging them. But with regard to the other court, Group 3, of which we have spoken, the committee were to act as a body of exhibitors associated together for a definite purpose, and as such were not entitled to any assistance or support.

They have had thus to act in a double capacity; and, for the sake of carrying out their ideas, it has been necessary for them to find the means, not only by charging the exhibitors in proportion to the space they occupy, but by disinterestedly subscribing amongst themselves. The heavy charges required to be met have necessitated the raising of a considerable sum of money; but it is hoped that, after all, nothing more may be required than has been already raised, though the committee were very careful in their earlier statement not to commit themselves to any definite amount. And in this they acted wisely; for, considering the amount of confusion, the difficulty of obtaining workmen, and of keeping them at work when so obtained, the various changes and difficulties in the way of carrying out the slightest work, an increase of expense must be entailed upon this committee as on every one who is an exhibitor to the extent of at least double the cost of similar work done at ordinary times.

Of the drawings it is scarcely necessary for us again to speak, especially as they are not yet all in their places; but we gladly notice one drawing, hung, we presume, as a memorial of one whom it was the delight of all to honour—the late Professor Cockerell, R.A. This sketch, by his own hand, of the sculpture in the pediment of St. George's Hall, at Liverpool, was lent by the corporation of Liverpool, to whom it belongs; and though it is but a slight *souvenir*, and the only exception to the general rule as to quite recent works, we are glad the committee have obtained it, and that it is among the first to have a locality assigned to it in the International Exhibition.

With the drawings it was intended to combine (according to the designation of the Class 4) architectural models. Of these one is of sufficient importance to take a prominent position, viz., Mr. Scott's model of the Prince Consort Memorial (which we understand has been presented by her Majesty to the South Kensington Museum), and this has been placed in a central position of the passage running through the adjoining group, and close to Skidmore's case of metal-work, which contains portions of the same as now being worked out, so forming a very appropriate and interesting object, as a connecting link, as it were, between the architect's actual art-design, and the manufacturer's actual art workmanship, and showing, we venture to think, that the "Arts cognate to Architecture" are appropriately placed in the position assigned to them. Of the design itself, we may remark that

cumstances required, but always persistently and determinedly. The space originally granted, and then considered too small, has been cut down twice or thrice, removed altogether to another part of the building, turned round, cut short, and in every way changed; but, after all, with such evident advantage to the position of the courts that little need now be said as to this beyond one word of regret that the committee did not at first know they would occupy such a conspicuous place in the sight of the world of visitors, and have to fill such an important part of the Exhibition.

It is more than probable that had they so known, greater efforts would have been made, and more special appeals addressed to architects themselves, to take care that their names should be represented in the Court of "Arts cognate to Architecture," as well as in their own special group, by designs and models.

The constitution of this committee, however necessary, was not favourable to the working out of any very elaborate ideas, and the general haze which seemed to envelope all the doings and the proposals of the Exhibition authorities made it very difficult for those few who had the actual carrying out of the details to see their way, or sometimes even to feel it. It should be mentioned that almost all the architectural and kindred societies of England, as well as the Institute of Architects of Ireland, joined the Royal Institute of British Architects in this enterprise, but in reality little or nothing has been done in the provinces; and the Irish Institute confined its interest in the matter to a timely donation towards the funds of the committee. The Scottish architects have preferred to stand aloof, and are not, that we are aware of, represented in the Exhibition.

Thus, it will be seen, the matter practically fell into the hands of the Institute; and the President, indefatigable in this as in other matters, gave what assistance he could personally, and always his strenuous countenance and support to what the sub-committees and their officers were able to attempt. Unfortunately, it happened that Mr. G. R. Burnell, one of the honorary secretaries, whose fitness for some of the special duties required to be fulfilled in Paris will be acknowledged by all, was smitten down by paralysis just at a most important juncture, and thus a loss to the architectural public generally fell heavily on this committee. As the knowledge of facts and correspondence connected with the Exhibition was difficult to be taken up by any newly-appointed officer, Mr. C. F. Hayward, the other honorary secretary, was charged with the whole duties; but with a gentleman who, though

an amateur, has since done good service to the committee—Mr. G. B. Wood, assistant honorary secretary; Mr. Charles Barry acting as treasurer. Subsequently, the post of architect to the committee in Paris was undertaken by Mr. W. H. White, a resident there, who has acted in an honorary capacity with the energy of one enjoying a lucrative office, and has met the demands upon his time and attention at the Exhibition building with the utmost good humour. Others of the committee, including the honorary secretary, have also from time to time personally superintended the completion of some of the details.

The group under which architects' own drawings, designs, and models are exhibited is, of course, fine art (Numbered 1, Class iv.); but it was found impossible, we presume, to give space inside the actual fine-art galleries. So that these architectural drawings have been placed as near as possible to these galleries, and on the same walls, but on the side towards the general Exhibition. The beautiful French drawings for the "Archives des Monuments Historiques," are exhibited in the inner circle of all, open towards the garden; and there would have been room for English drawings in the same position, but it is certainly not a good place in all weathers for drawings on paper. At the same time, the "Arts cognate to Architecture" (forming "Group 3" in various classes, under the general head, "Furniture, and other Objects for the Use of Dwellings"), originally placed in the midst of other exhibitors, have been moved back to the same position as the architectural drawings, and in immediate connexion with Group 1; so that in one long line, occupying about 125 ft. of frontage, with passages, screens, and courts behind, can be seen at a glance (and the better as this is on the outer circumference of one of the curves) the whole British Architectural Exhibition.

Writing, as we do now, however, we may well say we fear the Group 1 will be cramped, for although those that are hung are very satisfactorily placed—not too crowded, nor too high or low, yet it is evident that a great deal more space must be found before the heap of drawings now in the corners of the court can be hung on the walls. We say nothing of the photographs, of which not one has yet been hung; not merely, as it would appear, from want of space, but also from want of hands to do the work; for some space appropriated to photographs of the Law Courts designs is still a blank, though a number of frames lie beneath it ready to show the very last phase of Gothic, and the last effort of British architects to their *compères* throughout the world.

its grouping, though effective and necessarily grand, from its mere size, is, after all, hardly so full of verticality—so suggestive of growth, one part out of another—which we have considered to be characteristic of monuments of this class,—as it might have been. And though we would not prejudice the composition from a model on such a scale as this, nor indeed from any model at all short of the real size, we cannot help thinking of the construction, and how in the name of truth all the upper part of the building can be carried with any direct bearings below. In all the Eleanor crosses, and other similar monuments, besides the spires of the Mediaeval times, this difficulty was in the simplest manner obviated and the eye as well as the judgment satisfied with a beautiful tapering outline, and gradually receding stages of construction.

Again, in finishing this important work, it is to be hoped all bizarre effect and all merely meretricious ornament may be subdued, and the detail carefully subjugated to the general grandeur of effect. And we say this because, from the colouring of the model, as well as from the original drawing (which, by the way, should be placed in close proximity to it), we fear the mass of coloured marbles, and gilded and painted metal-work, will only take off at first from the dignity of the whole design, and very soon indeed become dirty and distressing to behold. With all this, which of course will not be thought adverse criticism, we feel the noble character of the work as one worthy of the well-beloved Prince; and know that the Prince Consort Memorial is in safe hands, and will remain a great monument of the art and skill of nineteenth-century artists and workmen.

We may remark, by the way, that one of the metal pediments of the first stage is now being erected at the right hand or British side of one entrance through the great outer gallery (machinery), in a good position for judging its effect when completed. The objects exhibited in the Architectural Court we shall notice on another occasion. Touching expenditure, the Imperial Commissioners have not won golden opinions from their foreign colleagues. France, or rather we should say, a certain number of Frenchmen, are to gain everything; other nationalities are to pay. Helping in such an undertaking is a much more expensive affair than having an exhibition for ourselves and the world in our own country. It will cost the British Treasury say 150,000*l.*, at least, irrespective of the thousands upon thousands spent by the individual exhibitors. The Exhibition of 1862 cost 460,000*l.*, and brought back 460,000*l.*—that is, it really cost nothing; and the Exhibition of 1851 gave England a profit of about 200,000*l.*, besides many other good results. The difficulties under which the English have worked have been very great. Should Mr. Henry Cole, hereafter, have to tell the story, say in reply to a motion in the House of Commons, it will be found amusing. We believe, to give an example, it was four months before he could get a site for the terra-cotta columns and arch designed by Sykes for the South Kensington Museum,—a capital work executed by Mr. Blanchard; and these, together with a bay of the building (a specimen of capital brickwork and terra-cotta), were ultimately implanted amongst the machinery in a very inappropriate situation.

To get down to the Strand of the River Seine, where buildings have been erected to display the Exhibition made by the English Admiralty and the French Admiralty, a tunnel was required, although a cheaper and more discoverable approach could have been made; and we were forced to pay 2,000*l.* or 3,000*l.* as a moiety of the cost of it, to say nothing of the expense of preparing the ground to receive the building, and the building itself. We could fill a page with similar statements; but it is an ungracious task; and, if it had not seemed to us right that like position of our Executive should be understood, we should not have pursued it even thus far.

PRE-HISTORIC LAKE EMBANKMENT.—A lake has been discovered in the State of Iowa, in America, occupying a surface of 2,800 acres, which is between 2 ft. and 3 ft. higher than the surrounding country, and surrounded by a carefully built wall 10 ft. or 15 ft. wide. When or by whom the wall, which is very old, was built none can discover. The stones of the wall vary in weight from a hundred pounds to three tons. There are no stones on the land within ten miles around the lake.

THE GREAT ROMAN WALL.*

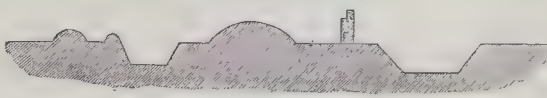
THE mighty "muris," or great stone chain, placed by the Romans round the neck of Britain, has shared the fate of other imperial relics. At the close of the Roman occupation, from being disused it became uncared for; and every succeeding century found it more and more disregarded. Its stones furnished an acceptable and ready-fashioned material for Mediaeval builders, of which they freely availed themselves, and the high, broad stone wall became frayed, ruined, and diminished under their hands. We know of a Saxon crypt that was built out of it; Mediaeval castles were built out of it; farmsteads were built out of it; and fragments of it are to be seen in various places built up in different buildings along its route. But, now stalking up hill and edging steep crags, now gliding down some precipitous hill or crag side, now and again crossed by our nineteenth-century railways, now crossing plains and taking further strides across moorlands and pastures, now lost sight of in a crowded town, or a field in which a coal-pit is worked, and coming into view again, perhaps, in a farmyard, there are still many lengths of it left. These are sometimes only a few stones high, at others several feet in height, though nowhere perfect; and again only a trace of the wall is to be seen, or, perhaps, the very foundations are exposed for miles, and formed into a highway, or into a bridle-path. Stretching across Northumberland and Cumberland, in a line where England measures but 74 miles from sea to sea, these bulky fragments of the old wall lie mellowing in the sun or bleaching in the winds, according to the shelter or exposure of their site. Occasionally we may still see the original conformation of the ditches and embankments with which the military strength of the defence was increased. On the north side dives down a deep fosse; on the south is the vallum, consisting of three ramparts and a second fosse. Several of the stationary camps may be visited. The remains of some of the mile-castles are yet very considerable, although by far the larger number of them have quite disappeared.

The first question naturally asked when examining this august boundary, who built it? Considering that it is mentioned by various early writers, it would appear that to answer it satisfactorily would not be a difficult matter. A novice would reply, Severus built it. Another would be perplexed by a hazy impression that Agricola was concerned in it. Those who know all that has been said upon the subject would hesitate to give an opinion. A fourth class of respondents would aver that it was the work of Hadrian. The exact order of its formation, and the exact period when it was commenced and completed, are matters of conjecture, based upon the evidence of the wall itself, and that afforded by somewhat conflicting written testimony. At first we find mention of it at intervals of centuries, but as time passes on this occurs more frequently; for, curiously, as less could be said with certainty more was written. The most recent work upon the subject is a third edition of Dr. Bruce's description of the mural barrier. In this fine tome the author has gathered together every early allusion to the imperial rampart, and every description of it by more recent writers,—Stukeley, Gale, Horsley, Wallis, Hodgson, Hutton, Hutchinson, Gordon,—and supplemented them with a vast amount of information out of his own stores; and this in a manner so sumptuously precise that we may say the author has done justice to his theme. It is understood that the late Duke of Northumberland liberally opened his coffers to aid in the due perfection

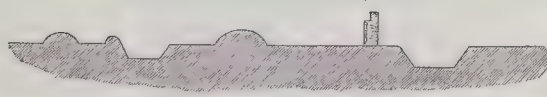
of this work by furnishing a large number of the woodcuts with which it is illustrated, and further increased its comprehensiveness by allowing Dr. Bruce the free use of a survey of the wall made by Mr. MacLauchlan, with a reduced reprint of his map and the pick of a series of illustrations destined for another work on Roman northern antiquities. With this dual aid, and the sympathy and assistance of the Dean and Chapter of Durham and of several distinguished antiquaries, and among them the owner of large tracts of the wall, to whom the work is dedicated, the author has gone over the ground he trod in his first and second editions with new lights and new powers, and this third volume may be looked upon almost as a new work.

Those who may never hope to see the remains of the great Roman legacy themselves may gain a very clear idea of their present appearance as well as of the mighty barrier in the days when it was in use from the scores of illustrations, a few of which we are enabled to give (see pp. 242, 243). Sections from two points show the slight difference the wall presented in its enormous length, and also that there was some slight variation, which with the number of centurial stones found along its course, suggests that it was built in separate lengths at the same time just as our Thames Embankment has been, each century placing an inscribed stone at the beginning and end of the piece erected by it. It was evidently planned to resist foes on both sides. Dr. Bruce divides it into three parts—1. A stone wall strengthened by a ditch on its northern side. 2. An earth wall or vallum, to the south of the stone wall. 3. Stations, castles, watch-towers, and roads for communication and transmission of stores. One of these roads is for the most part placed between the stone wall and the earthen barrier, which are about 60 or 80 yards apart, except where the nature of the ground has called for a deviation from this rule. The companionship of the wall and vallum ceases for the longest length about midway between the two seas, where the wall mounts the hills and the vallum quietly continues along the valley. Here the two barriers are sometimes half a mile apart; and at Axeldunum, near Burgh-on-the-Sands, just before the vallum ceases, there is considerable distance between the two. It is noticeable that the wall is several miles longer than the vallum. The wall extends from Wallsend to Bowness, or from the Tyne to the Solway; whereas the vallum stops short of this distance about three miles at either end, beginning at Newcastle and terminating at Dykesfield. This fact deserves consideration, as it seems to favour the supposition that the two works were separate undertakings, with a long interval between them. In other respects the barrier seems to have been the design of one mind. It does not exactly pursue a straight line, as Bede says it does; for, whenever the wall approaches a height that is not quite on its route, it goes a little out of the way to ascend it, and whenever it makes these deviations they are always at angles. Sometimes, to avail itself of every jutting rock, the wall runs a course that is almost zigzag. But, dipping down into the gaps between elevations, and climbing one after another, the wall took every obstacle, and overcame it. At one point, indeed, close to the river Irthing, in Cumberland, there is a cliff upwards of 100 ft. in height, about which there is some doubt as to whether it baffled the builders. There is no trace of the wall on its face, but that is accounted for by the fact of its yielding stratum, which is in constant course of being washed away by the river. If, however, this was permitted to form no exception to the rule

[Scale 75 feet to the inch.]



Section of the Works half a mile west of Carraw.



Section of the Works near the Eighteenth Milestone west of Newcastle.

* The Roman Wall: a Description of the Mural Barrier of the North of England. By the Rev. J. Collingwood Bruce, LL.D., F.S.A. Third edition. London: Longmans & Co. Newcastle-upon-Tyne: Andrew Reid, 1867.

to climb every height, the doctor points out that the wall must have assumed the appearance of a leaning tower as it slanted up its steep side. All along the length of the barrier runs its fosse,

looking like a green groove on the north side of it, except where it has been hewn through rocks, and the great blocks taken out of it are strewn about. In some places it is deeper and wider than it is at others; but for a general idea of its dimensions, it is near enough to mention its average measurements as being 36 ft. in width by 15 ft. in depth. The vallum is on a similar colossal scale. Its aggers are still 6 ft. and 7 ft. high in some places, and its fosse is about 7 ft. deep. The stone wall is represented in the sections to show its site, though it does not exist at those points on the line (see last page).

The stations, or military cities, occurred at intervals of an average of four miles apart. They are quadrangular in form, and enclose a space varying from three to six acres, which in several instances is covered with the foundations of houses. Most of them were furnished with four gateways; and when they were not so placed that their northernmost wall was in a line with the great murus, they were situated exactly midway on its course, so that the wall came up to the north side of their eastern gateway, and departed from it again at the western entrance. The vallum as frequently came up to the southern boundary of the station, or formed a protection for the south side of the eastern and western entrances. This is not the only disposition known for these stations, as three of them are placed considerably to the south of both lines of barriers, and were probably constructed for special purposes of defence, as they stand near defiles; and Dr. Bruce shows that several of the stations on the wall were built before its erection, as places for the retreat of the soldiers employed in its construction. There is a certain Roman register of military and civil officers and magistrates that has afforded antiquaries a most valuable clue to the number and names of these stations. It is supposed to have been compiled about the year 403, and it contains a list of the prefects and tribunes under the command of the Duke of Britain; and among these there occur those who are stationed upon the "Vineam wall." When an inscribed stone is found in a stationary camp bearing the name of the cohort stationed there, antiquaries look to the *Notitia* in question to tell them the ancient designation of the city. This mode of ascertaining the forgotten names of the ruined cities is not without its uncertainties; and accordingly it is not surprising that authorities differ in the assignment of names to places and places to names. In fact, the identity of some of the camps has been disputed with as much tenacity as the questions whether the wall and vallum were two separate works or one scheme, and whether Hadrian or Severus built them or either of them. Dr. Bruce thus explains his test:—"At the station of Chesters, on the North Tyne, several slabs have been found, bearing the name of the second ala, or wing of the astures. . . . Now, as the *Notitia* represents this ala, or body of cavalry, to have been stationed at Cilurnum, the probability is that the camp on the west bank of the North Tyne is the Cilurnum of Roman Britain." When we add to this the fact that at the next station to Chesters a slab and altar have been found inscribed with the name of the cohort mentioned in the *Notitia* immediately after that stationed at Cilurnum, there seems to be no reason why we should refuse to accept the same guidance to the designation of this and all the other camps. There are, however, stations which have hitherto yielded no such confirmation of their identity.

The mile-castles have obtained that name from the circumstance that they are placed, as near as may be, at the distance of a Roman mile from one another. They are usually about 60 ft. square. Castle-Nick Castellum, of which we give an illustration, is rounded off at its outer southern angles. It will be perceived that the wall forms its northern boundary, and that there are entrances to it from the north and from the south. The existence of these gateways has only been ascertained recently, and altogether alters our conception of the purpose of the wall. If there had been, as was always supposed, no passes through the wall, or but very few instances of them, we might still follow the conclusions of former writers, that it was intended as a boundary; but, taking the computation of Horsley, that there were eighty-one mile castles, and eighteen stations, though the *Notitia* gives twenty-three of the last, we come upon a hundred gateways, one or two more or less, opening out to the north, which must force upon us the conviction that operations against the enemy were carried on to the north of it. The turrets or watch-towers are the next structures upon

the line. These have almost all disappeared now; but in Horsley's time there were still, here and there, as many as three to be seen in their proper sequence, which were sufficient to let us know that four of them occurred between each two mile-castles, as the spaces between each made that arrangement clear. They were about four yards square at the base. Sentinels placed in each were within call of one another; and hence there could have been no necessity for the supposed speaking-tubes with which fiction has furnished the wall. We may as well state here that neither the author's long-continued and minute examination of the various lengths still standing, nor Mr. MacLauchlan's practical survey, nor the almost microscopic search of the able delineator of the various inscriptions, Mr. Moesman, reveal the faintest trace of the existence of any such speaking tubes. Occasionally lengths of pipe have been found, both in lead and clay, in the stations, but they never formed part of the wall, and were clearly intended for no such use. Nevertheless, Drayton in his "Polyolbion" mentions the "hollow pipes of brass;" Sir Christopher Ridley, "a trunk of brass;" Grey, in his "Chorographia," "a pipe of metal betwixt the tower or sentinell houses;" and Camden also refers to the same tube; showing how easy it is to fall into error if writers trust to hearsay instead of ocular proof. Dr. Bruce calls this acceptance, a traditional fiction; and likens it to the tale told by Xiphilinus, in his life of "Severus," about the towers of Byzantium.

The masonry of this series of walled stations, castles, and towers, and of the wall has been put together without the introduction of the rows of bonding tiles which mark Roman masonry in the counties where stone is not so plentiful as it is in the north. The facings on both sides are blocks of freestone, about 8 in. or 9 in. thick, and 10 in. or 11 in. broad, and the great mass of rubble between these surfaces is bedded in mortar. It is easy to pick out the quarries along the line of route whence the stone has been procured. Some of them have not been worked since the days of the Romans, and the quarrymen's names and other Roman inscriptions are to be seen carved thereon, with little punctures joined to one another by connecting links. So late as 1837, among the chippings in one such quarry, was found a bronze purse full of gold and silver coins of the time of Hadrian and some of his predecessors. And it is also easy to see that when a quarry close at hand has yielded only inferior stone it has been passed over, and others at the distance of seven or eight miles worked in its place. The innermost end of each stone slightly tapered as it runs into its bed of mortar. Dr. Bruce has treated the masonry very carefully, devoting several woodcuts to it. He shows four varieties of ornamental tooling with which some of the stones are dressed, forming lozenge, rectilinear, plaited, and cruciform patterns on them, which he considers later than the original formation of the wall, and probably due to leisurely reparations; and gives from Trajan's Column figures showing how the masons along each stone on their backs by means of rests, with ropes or wooden handles passed over their shoulders. The inscriptions in the quarries he is also very careful about. In the case of a series of fine inscriptions on the face of a cliff in Cumberland, made by the Roman quarrymen, a framework was erected, from which elevation the artist made a most accurate copy of them.

Neither wall nor vallum would have been of much use without roads. The Romans knew too well the importance of communications to neglect them; and they laid down their military way between the two great barriers, so as to be protected by both. It was about 17 ft. wide, being wider than the Appian Way outside the gates of Rome by 3 ft. or more, as measured by the author. It passed from station to station, and mile-castle to castle, following the wall except where it mounted some steep crag, when it took the straightest and most level route to the next station or castle. In doing this it was necessarily longer than was convenient to those going from one extremity of the barrier to the other. For the use of direct communication between the extremes there was a second road, south of the barrier, which ran from Cilurnum to Magna, a work the author attributes to Agricola. Those who contend that the vallum was a previous work to the wall, headed by Horsley, find a third road in the north agger of the first-mentioned work. Mr. MacLauchlan leans towards this opinion; but Dr. Bruce, who believes that vallum and wall were one scheme,

departs from these authorities. He finds that in those places where the vallum is most perfect the north and south aggers exactly correspond; and as it is unlikely there would be no difference between a road and a rampart, he declines to accept the suggested road as anything more than an agger. Wauling-street and the Maiden Way cross the wall on their way north, and branch-roads depart from them in directions which, as our author points out, enabled the Roman rulers to send troops from York to South Shields, Newcastle, Corbridge, Carvoran, and Carlisle, in any season, or beyond the wall direct to Berwick, Melrose, Bewcastle, Netherby, or Middleby. The construction of the road accompanying the wall deserves a word. Its crown is raised about 1 ft. or 1½ ft. above the surrounding soil, and its sides are bordered with kerb-stones; when it runs along the slope of a hill it is made level with extra-sized kerb-stones on the hanging side.

All along the line of barrier we are struck with the free use of its stones in Mediaeval and comparatively modern times. Following in our author's steps, who makes his way from Wallend to Bowness, from milestone to milestone, we hear first of an altar discovered in the foundations of a conventual building in Tynemouth. Near the site of the first mile-castle after starting from Wallend there is a farmhouse with several Roman stones in its walls, and a pond in the fosse. Farther on Newburn Church has stones with "diamond broaching" in it; Halton Castle and Halton Church are chiefly composed of Roman stones, and an altar is turned upside down in the churchyard; after passing one of the most remarkable points of the route—Chesters,—an onstead at Sewing-Shields shows us more stones used up; a centurial stone is inserted in the front of the gig-house, and the farm-house is entirely built of them; in a cottage at Chesterholm there are some coping stones, a centurial stone, and altars built up, besides a piece of sculpture; at Cowgap are some ruined cottages formed of the wall-stones; at Carvoran there are more relics built up; beyond the fine station of Magna there are the remains of Thirlwall Castle, altogether formed of Roman stones; many and many a garden has an altar in it, and many a swine-trough along the wall is formed out of the same relics; at Lanercost, an altar dedicated to Jupiter is built upon the clearstory of the priory church; at Walton there are cottages, and at Sandyside a barn made of Roman stones, the latter diamond broached; and so on throughout the entire route. Added to this the gentleman's seat in the neighbourhood of any portion of the wall that is without its Roman relics is rare indeed. But more than with what has been taken away, we are surprised with the numbers of relics the wall and its component parts have yielded. The number of coins found is amazing, sometimes quite sharp and new, and preserved in wooden boxes as though hidden, sometimes in purses as though lost, sometimes singly as though dropped, and sometimes in the company of skeletons, as though their last owners had perished with them in their possession. We are enabled to give a representation of one of them bearing a fine impress of Hadrian, and showing what



manner of a man was the great builder. Articles of jewelry are more rare, but still, there have been gold chains and rings, and bronze ornaments found in sufficient numbers to have warned the heart of the coldest Roman matron. Among the finds, perhaps, the most remarkable is the silver lanx, 1 ft. 7 in. in length by 1 ft. 3 in. in width, found in one of the supporting stations south of the wall. There is an electrotype facsimile of it in the museum in the old castle at Newcastle presented by the owner of the original, the Duke of Northumberland. It has five full-length divinities on it in different attitudes, who are ranged above three animals placed in extraordinary context in a line below, the whole

being framed in an ornamental border. The meaning of this silver bas-relief work has not yet been satisfactorily made out, a fact we are free to mention as a refreshing set-off to the learning and patience that with almost a monotonous industry has unravelled the intent of every inscription and piece of sculpture that has hitherto come to light. The immense mass of relics, however, consists of altars, dedicatory tablets, funeral inscriptions, and centurial stones. Of the former we give an example ("an altar to many gods"), inscribed,—

TO THE GENIUS OF THE PLACE,
TO RETURNING FORTUNE,
TO ETERNAL FORTUNE,
AND TO PROPITIOUS FATE,
CAIUS CORNELIUS
FEBRICIUS,
TRIBUNUS OF A COHORT,
FROM THE PROVINCE OF
MAURITANIA CÆSARIENSIS,
A NATIVE OF

The name of the place of which the tribune was a native is not legible. This altar was found at Maryport, and is now in possession of the Earl of Lonsdale. Like others, it consists of a base, shaft, and capital, upon the top of which is a cavity for the reception of offerings. The scroll-like ornament on either side of the capital, which is a feature in all Roman altars, Dr. Bruce thinks a representation of the faggots required to consume the offerings. Many of the altars found along the line are dedicated to Jupiter ("best and greatest"), several to eternal Rome, (Fortune, Mars, Silvanus; less popular deities have also occasional representatives. One altar to Silvanus states that it was erected by a prefect of the Sebostian cavalry "on account of a boar of an enormous size which many of his predecessors were not able to destroy," giving us a glimpse of the grand, real limits of those days. The vesica-shaped piece of sculpture, of which we give a representation, has a more remarkable story to tell than we might at first credit. Dr. Bruce gives a wooden of a Roman capital which the Norman builders of Durham Cathedral have approached very closely in a doorway in the south side of the nave; but this early instance of the vesica more than foreshadows its frequent use in Medieval times. It was found in a Mithraic temple at Borcovius, at the west end, set up between two altars dedicated to Mithras. It is supposed to represent Apollo as the sun or Mithras, the head and front of a worship which, notwithstanding efforts made by Hadrian to repress it, was clearly popular along the mural line. Our author says: "In consequence of the cruelty and impurity connected with this Eastern form of worship, Hadrian passed decrees repressing it. Notwithstanding, it made rapid progress; and, according to some of the fathers of the church, rendered itself antagonistic to Christianity, not only by its rejection of polytheism, of which the world was tired, and the adoption of a rationalistic creed, but by the imitation of some of its peculiar rites." It would seem as though it also incorporated at least one of the symbolic forms used by the early Christians.

Dr. Bruce devotes a chapter to the vexed question, "Who built the wall?" and a very able and well-arranged chapter it is. Disposing of Gildas and Bede in a breath, he begins the discussion with enunciating Horsley's view, that Agricola was the builder of most of the stations along the line of wall; that the north agger of the vallum was his road with which communications were kept up between them; that Hadrian built the fosse of the vallum and its southern ramparts; and that Severus was the builder of the stone wall, with its ditch, mile castles, and sentinel towers. To this he demurs, and proceeds to assign to Stukeley the discrimination of being the first to start the theory that all three works were one design. Hodgkin, the lamented historian of Northumberland, mentions that he had gradually and slowly come to the same conviction, and further, that the whole barrier was planned and executed by Hadrian; and to this our author agrees, seeing corroboration in various facts, especially in the circumstance that not a single inscription along the line mentions Severus; while the name of Hadrian is frequently met with. To the statements by Latin writers that the wall was built by Severus he gives single combat, and vanquishes one after another. The question would thus appear to have been settled if it were not that Mr. MacLauchlan, after making a careful survey with chain and rod, and bringing the advantage of professional acumen to the inquiry, arrives at exactly the opposite conclusion. He is of opinion that the barrier is the work of three periods, points out two places along its route where the wall would have run into the vallum if it had not been purposely bent to avoid doing so, and to others where the two defences approach much nearer to one another than they would have done if one mind had laid down the scheme. So there the matter stands.

A supplementary chapter on the geology of the district traversed by the wall, elaborately illustrated with a geological map and section, by Mr. George Tate, opens out a vista that tells of changes before the advent of man, of land submerged and lifted up again after the lapse of untold ages, of volcanic power rending the earth into fissures, of molten rocks which filled up such chasms, of tumultuous action and upheavals followed by seasons of peace, when Northumberland became dry land, whilst Cumberland was still submerged beneath waters in which strange fish-like reptiles, the ichthyosaurs and plesiosaurs, disported themselves; and of further changes, in which mighty icebergs floated in the sea, and ice either covered the face of the land or hemmed it in before the hills, dales, and plains took their present form, or even the foot of Celt or Roman left its impress on the virgin vegetation. This branch of the subject is ably treated, and new information afforded which will have especial interest for many minds.

Hutton, the historian of Birmingham, walked from that centre of industry to Carlisle at the age of seventy-eight, for the purpose of examining the wall for himself. He walked from one end of it to the other, and then back again, before he turned his face homewards to write his history of it. Should any of our readers be fired with a similar enthusiasm for the mighty work, we may direct him to make his way first to Hexham, where he will find the Border Counties railway ready to convey him to the part of the wall where it is to be seen to the greatest advantage. Here, too, he would see the Saxon crypt formed of Roman stones, of which we show an illustration. Should he start from Wall's End or Newcastle, he would have to walk many miles before he came in sight of the wall. The first place where a stone of it lies above ground is at East Denton. The turnpike-road, in fact, runs upon its foundations for many miles, except where it arrives at a village where it makes a detour to the north, because the villages are usually clustered round the sites of mile-castles, the foundations of which often furnished the substratum for the principal dwelling in them. Cilnrum, better known as Chesters, offers the first condensed interest. Excavations have been carried on in late years at Borcovius, which Stukeley speaks of as the Tadmor of Britain, with very interesting results. The walls of this station are nearly intact, and the *muræ* in its neighbourhood, Housesteads, about eight courses high. Castle-nick is another centre of interest, for here the masonry stands about 5 ft. high, and the military way with its curb stones is in good preservation. The scenery around, too, is wild and grand. The largest station on the line has fewer remains than many others. The late Earl of Carlisle, however, writing of the supposed site of Troy, said he could give a Cumberland borderer a good impression of it by telling him that it wonderfully resembled the view from the point just outside this camp. He writes, "Both have that series of steep conical hills, with rock enough for wildness, and verdure enough for softness. Both have that bright trail of a river creeping in and out with the most continuous indentations." It is now called Birdswood, and is identified as the Amboglanna of the Notitia. The celebrated Maiden Way departs from it, and darts straight away midst Cumbrian fells and dales to Bewcastle. It is pleasant to see men's Romans think, when quarrying and shouldering the stones, prying out the inscriptions in the quarries and in the stones themselves, or wheeling away the soil out of the fosse, and throwing it up into embankments, that their work would have the fascination of a spell for men of learning 1,600 years after they had looked their last upon the heathery hills of the North; that the time would come when to have travelled from one end to the other of it, especially on foot or pony, with wallet on shoulder, was to have graduated as an antiquary; and that to give the magnificent account of it now before us to the public, a duke, a dean, and a doctor of divinity, would proudly associate their choicest stores.

Beyond the engravings to which we have referred, we are enabled to reproduce several others, serving to show as well the manner in which the book is illustrated as the condition of Roman art in the North of England.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the Special General Meeting of members held on Monday, the 25th of March, the Royal Gold Medal for the year 1866 was awarded (subject to her Majesty's gracious pleasure) to M. Charles Texier, of Paris.

The Pugin Travelling Studentship was awarded to Mr. Henry Walker.

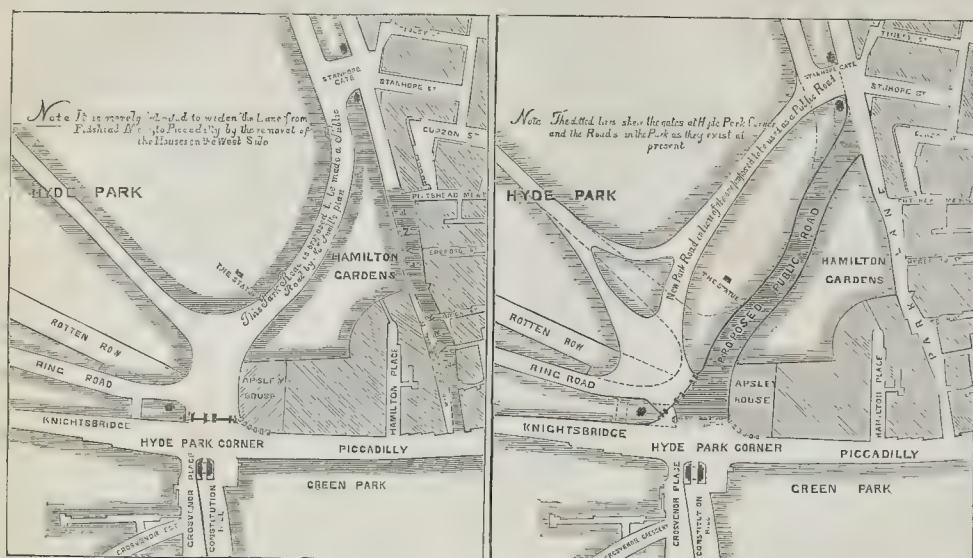
The Student's Prize was awarded to Mr. Wm. Howes.

The Institute Silver Medals—the Soane Medalion, the late Sir Francis E. Scott's Prize—and Mr. Tito's Prize, were not awarded, none of the designs and drawings submitted in competition for them having been considered worthy of premiation.

PARK-LANE IMPROVEMENT.

On more than one occasion reference has been made in our columns to Mr. Henry Saxon Snell's plan for the accommodation of the traffic between Hyde Park-corner and that portion of Park-lane lying to the north of Stanhope-gate. The traffic from the important district south of Hyde Park, to the equally important section of the metropolis north of Oxford-street and the Bayswater-road, is now filtered through a narrow neck of about 30 ft. in width, forming the southern entrance of Park-lane. The Metropolitan Board of Works proposes, at an expenditure of from 105,000*l.* to 150,000*l.* to widen this neck as far as the entrance to Pitthead-mews; but the Board does not propose to carry the widening any further to the north. The result will therefore be, not that the capacity of Park-lane will be improved, but merely that the block now existing at the Piccadilly corner will be transferred to a point 260 yards northwards. For this object the ratepayers of the metropolis are asked to contribute a very large sum of money, the bulk of which will be spent, not in work done, but in compensation paid for property destroyed. An alternative plan of the Board was to make a road through the aristocratic *culte des sacs* known as Hamilton-place. This would hardly have been an improvement at all, inasmuch as the available width of the roadway would have been no more than 33 ft. It was abandoned, however, not on this account, but because the gradient of the road would have been too great for ordinary traffic, and this gradient could not have been improved without a total destruction of the cellars in front of the houses, and without a proportionate increase of cost, which cost would have been further augmented by the compensation to be paid the tenants in Hamilton-place for spoiling the privacy of the street,—a point not so much as considered in the estimates of the Metropolitan Board.

Mr. Snell, taking the fact that at least nine-tenths of the Park-lane traffic are from or to the west, and that seven-eighths of this traffic go down or come up Grosvenor-place, asks himself the question, why it should not be carried more directly into Park-lane; and why a road, which is now available for every description of private vehicle, should not be used for the convenience of the public at large. He therefore proposes to form a public road from Hyde Park-corner to the south side of Stanhope Gate, without taking for this purpose a single inch of the park sward. He would make the exit into Park-lane through the northern end of Hamilton-gardens, which are public property, though now railed in and diverted from public use for the enjoyment of a few individuals. Even these would suffer no inconvenience, for the narrow strip of the gardens which Mr. Snell proposes to take is a thick and ugly plantation—a jungle on a small scale—into which nobody except a sturdy gardener ever goes. At Hyde Park-corner he would set back the gates now facing Grosvenor-place, in such a way that they would open directly into Rotten-row and the Lady's-mile; and while the approach from Piccadilly would be improved, the architectural features of the structure would be brought out fully, without the foreshortening which now detracts from the appearance of the



HYDE PARK CORNER, AS IT IS, AND AS IT SHOULD BE.

façade. Mr. Snell would, in lieu of the present private road, cut another park road to the west of the Achilles statue, thus forming a better access from the north to the Lady's-mile.

A month ago we presumed that the chief objection to Mr. Snell's plan would come from the Duke of Wellington, as owner of Apsley House; but, as was seen in the case of the new house built abutting on the Thames Embankment by the Duke of Buccleuch, the private wishes of an individual cannot be allowed to set themselves against a public improvement. The opposition of the Duke of Wellington, moreover, would be balanced by the probable support of His Royal Highness the Duke of Cambridge, who is now opposing the counter-proposal of the Metropolitan Board, which would take Gloucester House, the residence of His Royal Highness; and it may be assumed that the Marquis of Westminster would support Mr. Snell's scheme, inasmuch as it would produce the direct line of traffic from the Grosvenor property to the north of the Park. Nominally, the parks belong to the Crown; really, they belong to the public. If it be said that the rights of the Crown in Hyde-park would not allow the diversion of any portion of the Park to the accommodation of mere ordinary traffic, it may be retorted that not only has Birdcage-walk been opened for public traffic through a park, but in this very Hyde-park itself, at its western end; a road of much less public utility was five years ago opened, which now it would be rather difficult to shut. The Crown and the public can have no really antagonistic interests here. No portion of the Park proper is destroyed or alienated from the public by this scheme; and we cannot conceive that the First Commissioner of Works, on due examination, would feel it his duty to oppose a scheme which, saving at least 94,000*l.* to the metropolitan ratepayers, offers to the public a benefit so great. The late First Commissioner of Works stated, with reference to the Hamilton-place scheme (and the argument holds with reference to Mr. Snell's plan), that "there are many precedents for what is proposed to be done," and that the Queen authorised him to give his consent "in case a public necessity exists for the new thoroughfare."

The Metropolitan Board, having given its assent to the scheme now before Parliament,

naturally objects to Mr. Snell's plan; but really the Board cannot consider itself bound by a decision arrived at on incomplete and delusive premises. If the Board thinks that the adoption of another plan would cast a stigma upon its judgment, we can only say that in our opinion the stigma would be justly cast, not by the adoption of a better plan, but by a blind refusal to consider the decisions of the Board anything but final. The resolutions of the Metropolitan Board cannot be like the laws of the Medes and Persians. It is not too late to take the matter in hand; but we understand that, if not the Board, at least some of its officials, have said that Mr. Snell's scheme, of which we give an engraving this week, is not original. This is one of those things which it is very easy to say. If the Board of Works, as it states in a communication to some of the vestries, and as Sir John Thwaites has declared, knows that Mr. Snell's scheme, first publicly proposed in our pages, has long ago suggested, the least that it can do is to quench Mr. Snell's claim, once and for all, by producing this scheme of long ago. But the plan itself must stand on its own merits, whoever may have been the originator. We are assured, however, that the assertion is entirely a mistake. The Board has stated in a public document that only three schemes were laid before it. One was that which it now proposes to carry out; another was the Hamilton-place plan; and the third was a proposition that the light traffic might use the existing park road, under certain conditions, in the day-time. This last proposal is very different from Mr. Snell's.

We are glad to see that a large number of the vestries have instructed their representatives at the Metropolitan Board to press for a reconsideration of the scheme now before Parliament. The Marylebone vestry has gone still further. It has passed a unanimous resolution, "that the vestry approves in the main (without pledging itself to the exact detail), of the plan submitted to it by Mr. Saxon Snell, for the improvement of Park-lane, as the most convenient, practical, and economical of any plan now before the public; and it begs to request the consideration of the Metropolitan Board of Works to Mr. Snell's plan with a view to its adoption." We do not think the Metropolitan Board can afford to disregard these appeals.

THE LAW COURT DESIGNS.

No one who visits the designs for the proposed new Palace of Justice, now exhibiting in Lincoln's Inn-square, can fail to be struck with the amount of skill shown in the arrangement of the plans, the beauty of the drawings, and the mastery over the details of Gothic art which they all display. Probably no similar exhibition in recent times has given evidence of so high and uniform a degree of merit as this one displays. With all this the effect produced on my mind by the examination of the drawings is one of extreme despondency as regards the position and prospects of architectural art in this country, and as the subject is one of public interest, I should like an opportunity of explaining how this feeling arises in the presence of so much real ability.

The first question that occurs with regard to this subject is to ask why architecture alone of all the arts and sciences of the present day should be the one which is not only unprogressive, but actually retrogressive? In literature, in painting, in engraving, and generally in all the imitative arts—I dare hardly include sculpture—men are all trying to express nineteenth-century ideas by the best and most direct methods that are available. In all the arts of construction, in everything that concerns manufactures or furniture, progress is the law; in the sister art of engineering, precedent is thrown overboard, and the best mode of accomplishing a given object is alone thought of. Every science is progressive, and is consequently adding daily to the triumphs of mind over matter. In fact, in every art, or in every science, when good has been done, it has been by gradual aggregation of experience, and by steady progress towards a well-defined aim. Why architecture should be an exception to this rule remains to be explained, if it is capable of explanation. It certainly was not an exception in Greece or in Rome, and least of all, was it so in the middle ages. Nothing, indeed, is more remarkable in Gothic art than the exulting progress that marks every stage from the eleventh to the sixteenth century, and which transformed the rude architecture of our Saxon forefathers into the over-elaborate architecture of the Tudors.

It is easy to see that our present admiration of

Gothic art arises from a reaction against the still more absurd classical art of the last century. When, in the sixteenth century, all the world went wild in admiration of classical literature and classical art, architecture naturally fell into the same trap; and the system of education in our universities and public schools has done all that could be done to perpetuate the delusion to the present day. The classical system has broken down at last, but substituting one falsehood for another does not, unfortunately, make a truth; and if it were absurd to attempt to restore the arts of Italy as they existed about the time of the Christian era, it is scarcely less absurd to suppose that the arts of the feudal system in the Middle Ages are suited to the wants of civilized England in the nineteenth century.

So long as men only knew of five orders of architecture, and did not believe in the possibility of the existence of any others, there seemed no escape from the slough into which architecture had fallen. The case, however, is different now, when we know that instead of five there are 500 orders of architecture, and that any one of them is as good as any other of the remaining 499, if it is as appropriate to the purpose to which it is about to be applied, and is used with discretion and good taste. But, more than this, the fact that 500 orders or styles have already been employed in the infant world proves that there are not only 500 but 5,000 still remaining to be evolved by the inventive faculties of mankind, and only waiting to be evoked that they may appear.

But to turn from these generalities. It may be asked where is the escape from the present difficulty? An immediate cure to a malady of such long standing is of course impossible; but supposing the commissioners had inserted in their instructions a clause to the following effect:—"We do not pretend to dictate the choice of style to the competing architects, but no pointed arches and no classical pillars will, under any circumstances, be tolerated." Or suppose the judges were now to say to any of the eleven, "We accept your plan, and approve generally of your elevation, but we insist that wherever you have put a pointed arch you shall turn a round one." This might necessitate some but not any great alteration in the design, and it would not effect all that is required; but it would do this, it would get rid of the masquerade of Mediaevalism. The griffins and gorgons, and all the unhuman figures would take flight to the realms where they were created. There would be no longer any reason why modern art and modern elegance should not be introduced. The nineteenth century might be acknowledged, and the architect, freed from the trammels of archæology, would far more easily suit his design to the purposes for which it is required. No doubt he would cry out lustily, at first, that his design was spoilt. In ten or twenty years hence, when the Gothic mania has passed, with crinolines and chignons, to the limbo of all untruthful fashions, he would rejoice that he had been saved from what all probably will then acknowledge to have been an absurdity.

It may be asked,—If this is so, why did not the competitors see it, and some of them, at least, try what common sense could do in the preparation of a design? The answer is only too easy. If any man undertakes the enormous labour and anxiety involved in such a competition as this, he is bound to use every means in his power to insure his success. In the present instance it was known that some of the judges had a sentimental veneration for the Middle Ages, and that others were so entirely innocent of any knowledge of the subject they were appointed to decide upon, that they would be led away by any fashionable cry or influenced by any enthusiast who got access to them. The competitors knew that Gothic was the prevailing fashion of the day, and the one most likely to win, and Gothic consequently all the designs are.

An architect would simply be throwing away his chance who, on entering on such a competition as this, would set himself down to think only of how he could best arrange his design according to the principles of common sense, and then how he could most appropriately ornament it so as to express its purpose and its age. Who is then to appreciate each thoughtful conscientiousness? On the other hand, the public have within the last thirty or forty years learnt the rudiments of Gothic design. They have reached that schoolboy stage of knowledge which considers a correct copy the highest intellectual attainment, and are proud of showing their

knowledge by saying this feature is correct, or there is no authority for that detail. Common sense and progress are words that have long ago dropped out of architectural parlance; but they are the fundamental principles of design in all styles, and were most especially so in Gothic, and, till they are restored to their supremacy, there is little chance of any improvement.

Among much that is discouraging there is one circumstance connected with this competition that seems to afford a ray of hope. No one is quite satisfied with it. In spite of all the talent displayed, and the beauty of the drawings, it has been impossible to get up any enthusiasm about it in any quarter. The lawyers do not like it. They feel that they are men of the nineteenth century; that they have been working hard to bring law, and the practice of their courts into harmony with the feelings and advancement of the age, and they do not quite like that the architects should dress them up in the guise of the thirteenth century, and try to make them look like the wisecracks whose portraits appear in the last volume of the "Archæologia." The general public, too, feel uneasy. They can recollect the enthusiasm which hailed Barry's design for the Parliament Houses, and cannot help feeling that if they are so soon tired of Tudor, they may as soon tire of Edwardian or Italian Gothic. This feeling of "mal àaise" on the mind of the public with regard to the competition, is most hopeful. So soon as educated men begin to think about it, the battle is half won. When men ask why architecture alone should stand still, and retrograde in an age of progress, and find that no satisfactory answer can be given, they will demand something else. When they demand it, it will be surely obtained. There is abundance of talent in the profession; but, till the public are convinced that Gothic spires and Grecian porticoes are both and equally absurdities when erected in the nineteenth century, they must be content with such imitative shams. It will be easy to do better things so soon as there is taste sufficient to appreciate a good thing when done. Let us hope that the day may not be far off when this may be the case.

JAMES FEROUSSON.

THE CRADLE OF ARCHITECTURE.

In the exhibition of designs for the new Courts of Law we trace a promise of something even better than the future completion of a worthy palace of justice. That such will be one result we cannot doubt, but more important than the erection of such a building, however great its merit, would be the formation of a school, and a style, of English architecture fitted for the requirements of the nineteenth century. Of this we think that the little barrack in New-square, Lincoln's-inn, contains more than an indication. A certain harmony of thought pervades the great majority of the designs. They are not so remarkable, probably not one is so remarkable, for originality, as for the evidence they afford of patient study of the problem to be wrought out in the plans, and of a general consent as to the kind of effect to be produced by the elevations. In almost every instance the idea present to the mind of the designer appears to have been the modification of some actual type of structure to the wants of the day. One striking interior, for instance, was neither more nor less than a church, a lofty and noble cathedral nave, and, therefore, most unfortunately, quite inappropriate for the purpose in view. For the rest, the outlines of St. Paul's Cathedral, of the Westminster Palace, of the Façade of the Tulleries, and of the Crystal Palace (or, rather, of the newer wagon-roofed Terminal Railway Stations), or, best of all, of the noble hall of William Rufus, seemed to form the *fond* of the designs. In this, if there is not what those who are greedy of novelty would call striking originality, there is, it may be, something better. Such an exchange of the expression of patient, conscientious, successful labour by our leading architects is a boon to the whole profession, and is no unworthy offering to the genius of architecture.

It is instructive to glance from this, the latest effort of our day in the tectonic art, to the relics of the earliest forms of human habitations, and to inquire from what earlier type were developed the aisles of Westminster and of St. Onen, the towers and spires of Windsor and of Oxford, the arches of the Coliseum and the Cloaca Maxima, and the time-defying taper of the Pyramids.

More especially is such an inquiry of interest at a time when the science and the art of building are undergoing the throes of revolution, having at once to modify the active disposition of all military and of much civil architecture, and to make use of a material which, as at present employed in construction, is entirely new. Massive and frowning fortresses are replaced by low casemates and earthen glacis. The fort that was formidable in the wars of the Empire is now a helpless target to the monster siege-gun, and, in a military point of view, hardly more tenable than an Irish round tower or an Apulian dovecot-turret.

On one hand is the power of projectile force to crumble the firmest masonry; on the other hand is the power of the steam-engine to forge and to roll planks and beams of iron and of steel. Military structures, which shared with churches and monasteries almost all the attention of our earlier builders, are now becoming less impressive features of landscape; on the other hand, the increased value of land in towns and cities, the dense crowding of the ever-increasing population, is leading to the rebuilding of wide districts, which are to be covered by lofty palatial terraces and squares, while the large spans that the improved manufacture of iron enables the engineer to throw over road and river, lend a novel, if not always a graceful, character to our new metropolitan architecture. Again, the combination of glass and iron for roofs of wide span, to which the erection of the Exhibition building of 1851 gave the first impulse, although the application of this convenient form of shelter is yet in its infancy, cannot fail to take a prominent place in the cities of the future. In our own time we have seen the spontaneous condemnation of the effort to introduce in our climate the peristyle that is so grateful as a shelter from the Italian sun. The piazza at Covent-garden gives a sensation of damp discomfort, and that in Regent's Quadrant has actually vanished from over the stilled shops. But the glass shed outside the departure-platform of the Great Western Railway, although evidently designed for comfort rather than for show, so evidently fulfils the purpose for which it was constructed, that it is matter for wonder that it has not been more frequently repeated in our streets.

While buildings in metal and in glass, as the invention of our own times, are the marks of an entirely new era in architecture, we are enabled by the recent labours of moribund travellers to trace back to their very starting-point the history of those diversified styles which owe their origin to the mason and to the joiner, and which represent the progress of art in dealing with stone and with wood. In the square boxes, pierced with the least possible number of the smallest practicable openings for light, the rapid growth of which is due in great measure to the operation of the window-tax, we trace, indeed, the decadence of building, and a marked return towards the original wigwam. But even the typical form of structural ugliness, the square, careeless, offensive meeting-house, in which some of our respectable nonconforming ancestors were wont to hug themselves over memorials of bygone persecutions, are now becoming everywhere replaced by decent, or even stately, places of worship. The critic who believes that architecture, to be permanent and noble, must above all things be true, does not fail to regret that, in employing their increasing wealth on the adornment of their chapels, the Nonconformists have not sought to raise structures consistent with their rite of worship, and that they should have borrowed the transepts and the chancels which have a historic as well as a symbolic meaning that they entirely ignore. The noble Vaudois temple at Turin, built in part by English money, is an example that might be well followed in England. Among the Romanist churches of the bright little city it stands as a visible confession of a simpler rite. No stranger can take the Vaudois church for a Roman Catholic edifice. But the stranger who strays into many a Dissenting chapel among us comes out with a feeling which a vulgar and irreverent man expresses by saying he has been swindled. He thought he was going to church!

Our recent information as to early stone structures, is derived from the beautiful photographs of Jerusalem, now publishing, as the fruit of the ordnance survey of Palestine. There is no spot on earth where the super-imposed work of successive generations can be so distinctly traced. Beneath the rubble of the present day, we discover the rough masonry of the Crusaders, built

as by those who wrought with their weapons by their side. Hard by are sacred relics of Saracenic architecture, marks of labour lavished on their holy places by those who read the second commandment as it was written, and to whom the representation of animal forms was as unlawful as to the Jews themselves. We trace the works of Julian and of Adrian in their unsuccessful efforts to rebuild the Holy City. One photograph shows us an inscribed stone that appears to have formed the base of a statue to the former emperor, and which has been worked, upside down, into a wall repaired by the latter. Then come the distinct marks of Herodian times, the regular masonry by which the magnificent Idumean restored, though he could not rival, the massive ashlar of the great founder of the Temple. Not at Jerusalem alone, but at Hebron and at Herodium we can recognise beyond doubt the workmanship of the energetic sovereign who resisted the blandishments of Cleopatra, and who was friend alike of Anthony and of Augustus. We fail, as yet, to find any certain sign of the hurried work of that pious Jew and half and yet reverent autobiographer who rode out alone by night to examine the ravages committed on the broken wall of Jerusalem; who tells us that he put not off his clothes while he stood from sunrise to sunset on the growing wall, save that he put them off for washing;—that builder girt with the sword by whom stood he that sounded the trumpet. But if Nehemiah's work escape us, there can be no mistake as to that of Solomon. Vast blocks of channelled limestone, some as much as 5 ft. or more in thickness, and attaining seven times that dimension in length, still remain to explain how it came to pass that Eastern tradition holds that monarch to have been served by the geni; and even underlying Solomon's work, marked in some cases by false joints so as to harmonise with that noble architecture, are still more gigantic relics of the earlier builders of Zion, the Rephaim from whom the valley took its name. We attribute the prodigious scale on which the buildings of Solomon were designed to the desire of the royal mason that his work should not be dwarfed by comparison with that of the giants.

We know that the ancient walls of the Jebusites were such as to prove impregnable even to the warrior David, until, like Alfonso of Arragon, at Naples, 2,500 years later, he succeeded in the stratagem of effecting an entrance by the covered channel of the aqueduct. In the few remaining gigantic blocks of date anterior to the channelled ashlar, in the continuation of a quasi cyclopean style, in the known strength of the ancient stronghold, and in the yet lingering local names, there is, we think, evidence to connect the more ancient walls of Zion with those of Tyre and of Mycenae, with those wonderful cyclopean structures that seem to mock the puny labour of human hands, and that yet record, in different spots of Italy, of Greece, of Asia, and of America, that there were, in old times, "giants upon the earth."

The massive shade of the Egyptian temples, and the conventional form which architecture had assumed at so remote a date as that of the foundation of the Pyramids, carry us to the earliest recorded or determinable dates of masonry; but in the absence of historic evidence, if we rely on the internal testimony alone, we should conclude that the regular levelled steps of the pyramidal structure betray a later phase of art than the polygonal-fitted blocks of the later Cyclopean masonry; and still more so, of course, than the filling up of the vast boulders of the earliest and rudest walls.

Another remark of extreme interest as regards the great antiquity of masonry occurs to the student of the most ancient Hebrew record that is held to refer to the founding of the Mesopotamian cities. This record appears to describe the use of brick as subsequent, not to the employment of wood, but to that of stone. The halls and terraces of Nimrod and of Babel are not spoken of as developments of the mud hut or the sod wall, although the material was similar to that of our navigators' huts. They were reared, it is intimated, by builders accustomed to the use, not only of stone, but of cemented masonry. Men who, if they came down from the Median hills and found the ordinary building material altogether deficient in the great alluvial valley of the Euphrates and the Tigris, bethought themselves of the use of fire, or at least of the torrid rays of the sun, to harden their simple substitutes for squared stones. "And they had brick for stone, and slime had they for mortar."

It is in Italy that the builders in stone first come into fellowship with the builders in wood. In India, indeed, we find that the architecture of temples, and even of sculptured caves, is but a representation in stone of not only the idea but the details of earlier wooden structures. Thus the principle was permanent, although the material was changed. But in Italy we find that combination to which we owe all Gothic work. The arch (with the kind permission of Niebuhr) is of the age of the Roman kings at the very latest. The Cloaca Maxima is of the age of the water-conduces of Hezekiah, and of the mural sculptures of Sennacherib. The arch is traced with probability to the date of the twelfth Egyptian dynasty. It is certainly as old as the eighteenth dynasty,—that is to say, as old as the Exodus. By the time of Ancus Marcius a true vaulted structure had replaced the stepped, receding, triangular roofs yet to be seen in the Oscan tombs. The Roman builders blended this prime secret of masonry with the use of the columns and entablatures that were clearly of wooden origin,—glorified posts and beams. When the waters began to settle after the flood that overwhelmed Imperial Rome, the mingled style of stone and wooden design, the Romanesque blending of column and of arch, fell into the hands of men who by blood and by habit were workers in wood. The Teutonic tribes are essentially wood men, joiners, and shipwrights. Thus, as the groins and intersections multiplied with the increase of architectural skill, ribs and columns assumed a form which we should have believed, but for the sure testimony of architectural history, to have been taken at once from wooden structures, and to have represented bundles of posts and carved ribs, or even the intersections of a trained and pruned avenue, such as that which is such a glory of the park at Cassiobury. In this instance, indeed, we find a simulation of architecture by nature, which is, so far as we are aware, unique. Lord Essex has two avenues which intersect nearly at right angles. The one which points to the house is clipped and trained, and resembles a lofty Gothic nave; the other, of untouched trees, recalls a Saxon aisle.

The very earliest use of wood, which has thus eluded and tantalized the student of Gothic art, and of which we have such certain traces in the rich carvings of the Jain temples, and in the triglyphs, entablatures, and columns of the regular architectural orders, has just been brought under our notice by a traveller who, while second to none in enterprise, has been almost first in misfortune. The howl of discredit with which the first great discoveries of M. du Chaillu were received in certain quarters without even the poor excuse of ignorance, may indeed not be reckoned by him, still less by ourselves, as an unmitigated misfortune. It has stimulated him to another effort, and it has fixed his fame as a discoverer in spite of the only half-subdued snarl of his old assailants. The verdict of all candid readers of his two works is unanimously in his favour. But the loss of his stores of specimens, of his photographs of scenes and figures as new to us as if they had existed in the planet Mars, is one more easy to be deplored than to be repaired. The sketches with which he has endeavoured very imperfectly to supply the reproductions of African scenery which the camera promised to afford, though of no moment in an artistic point of view, are yet of great value if considered as diagrams, so to speak, illustrative of his descriptions. And here, separated from the dome of St. Peter's and the Victoria Bridge, not by the lapse of time, but by mere geographical distance, we find the earliest type of human abode constructed of wood.

Passing by the description of the negro villages of the Apongo and Ishogo tribes, which might be readily taken for railway huts as to outline and dimensions, although walled in by bark instead of by sods, and roofed with palm-leaves instead of with slabs or slates, we come to the account of abodes more primitive than any that have previously been presented to European notice. These abodes are of two kinds, and the wide interval that separates the builders will not be readily guessed from the amount of art displayed in the construction of these dwellings. One sort of hut or bower is found on the soil of the forest, in irregular groups of ten or twelve together. They are formed of flexible boughs of trees, plucked with the leaves on them, stuck in the ground at each end, and bent over so as to form a sort of arched bower, the longest branches being in the middle, and the others successively shorter, the whole being covered with large

leaves. They are of a low oval shape, like a gipsy's tent, or rather like that sort of dwarf tent, supported by half-hoops, which may still occasionally be lighted upon in some of our wilder country lanes. The highest part was about 4 ft. from the ground, the greatest breadth was about 4 ft. also. The furniture consisted of three or four sticks on each side, for the occupants to sleep upon, and the remains of a fire lay in the middle of the floor.

In the presence of this primitive form of fire-place it is to be detected the most marked distinction between these dwellings and others discovered in the same forest, which, however, were constructed, not upon the ground, but upon trees. They are formed at a height of 20 ft. or 30 ft. from the ground by bending over and interlacing a number of the weaker boughs, so as to form a bower, under which the builders can sit, protected from the rains by the masses of foliage thus entangled together, some of the boughs being so bent that they form convenient seats; on them were found remains of nuts and berries.

It is a fact not gratifying to those who would make the distinction between man and beast to depend directly on zoological characteristics, that the latter kind of bower, of which M. Du Chaillu tells us that he has sent two specimens to the British Museum, is the work and the abode of the Nshiego Nkendo, or yellow-faced chimpanzee,—a new species of anthropoid ape discovered by our aquatorial explorer, and that the former kind of huts, those on the ground, are the homes of a new race of dwarf wild negroes, also discovered in the same journey. The fire-place, or at least, the use of fire, is decidedly in favour of the terrestrial bower-builder, the twisted seats on which remnants of food could be found seem far in advance, on the other hand, of the few sticks placed on the ground for the man and the woman to sleep upon. When we reflect that the opposable thumb in the hinder members of the ape, which makes them more at home on trees than on the ground, is an anatomical difference fully adequate to account for the difference in level selected for the building in either instance, we must confess that we have arrived at a primitive style of architecture in which it needs microscopic eyes to detect the boasted superiority of man.

We are not writing, nor does M. Du Chaillu write, with any malice prepense against the negro, or any desire to trace the descent of any human family from a quadrumanous origin. Into views of this nature this is not the place to enter; we need only say that, if we had occasion to express our own opinions on the subject, they are at once very definite, and very much opposed to such a theory. Nor will it be forgotten that in animals zoologically as well as cerebrally the most remote from man, we find displayed building powers of a much higher order than those evinced by even the more civilized negro tribes. The chapter that tells of homes without hands—of the textile nests of the social birds, and of the earthen structures of hymenopterous and of neuropterous insects, has, indeed, been largely enriched by M. Du Chaillu. But we have confined our notice to houses built by hands, by hands of more or less delicacy, but in which a grasping set of fingers, with true opposable thumbs, have been purposely and systematically employed in the fabrication of shelter from the elements out of portions of vegetable material. This is the commencement of architecture. Improve, embellish, increase as you may, in the tropical bower it is to be seen the simplest, earliest form of intelligently constructed abode, and in this according to our present information, the skill of the arboreal tribes which, in our belief, no attempt at education can modify, is strangely parallel to that of the human treaders upon earth, to whom, weird and ape-like as they appear, we cannot be wrong in attributing a large, if not an unlimited, capacity for education and for progress. Of those marks which have been dwelt upon by moralists as proofs of the difference, not in degree but in kind, that exists between man and beast, two are strangely obliterated by M. Du Chaillu. One, indeed, remains—the capacity to kindle fire. Strange stories are told on this head, but, as far as we can verify, the power of kindling, or even of maintaining fire, has never yet been evinced by those inferior animals who rejoice in its warmth and seek its blaze. But the building of the Obongos differs little from that of the Nshiegos, while, in the cry of the Kooloo, or Kooloo Kamba, the third anthropoid ape discovered by M. Du Chaillu, we have something quite as closely resembling

human articulation as does the constant monotonous call of the little brown lazzaroni, who swim and dive about in the sun-heated waters of the gulph of Naples—"Ashcar,"—which, rendered into the nearest Italian, would be "aspettare" and means "wait for me." The Obongo would seem not to have very long to tarry to be overtaken in the actual, if not in the potential, state of their civilization. That ancient wisdom which hints at what fashionable modern writers call the "solidarity" of man and beast, receives a frequent comment on many a page of the journey to Ashango land.

MOORISH TOWERS IN ALGARVE, PORTUGAL.

A JOURNEY through the old Moorish kingdom of Algarve is interesting in many respects, historically and otherwise. Like Portugal in general, it possesses very few ecclesiastical buildings of any note; here and there scattered about the country may be seen a few old churches, said to have been converted from mosques to their present uses. In many cases this opinion is open to dispute; but it is no doubt true in some of the quaint old cities. They, however, possess little architectural interest, and very rarely yield any distinctive trace of the old Moorish taste and fancy. The churches generally, even those aspiring to the rank of a "se," or cathedral, are mostly very plain, rough, and solid in the exterior; and offer little or no display of art in any shape in the interior worth attention. They are large, lumpish, masses of wall, with squat, heavy towers, with little or no attempt at decoration. The openings for windows are mostly small and unornamented, so that the general effect of the interior is dark and gloomy, fully realising the poet's dream of "a dim religious light." These observations apply with equal force to the two old cathedrals of Faro and Silves, both of which are stated to be converted mosques; of which change, however, they show little trace; though, no doubt, the tradition is true in the main.

Nearly all the old towns in Algarve possess some remains of Moorish antiquity in the shape of walls, towers, and entrance-gates, all more or less in a state of decay, though many of these remains are better preserved than might reasonably have been expected from the effects of time, war, and the more rude assault of earthquakes; from all of which these relics of the past have very severely suffered. Many of these towns are still surrounded by their old walls and towers; and some yet retain their citadels and old castles sufficiently intact to give an idea of their mode of construction and various uses. It may be said however, at once, that few or none of these remains display any trace of the distinctive characteristics of what is generally recognised as the Moorish style of architecture.

Those who look for horse-shoe arches, and the fanciful details of buildings like the Alhambra, or decorations like the fine old tower of Belem, will be disappointed. I have never met with a single trace of anything of the kind among the various towers and castles which have fallen under my notice. Walls, towers, and castles are plentiful enough in Algarve, and in general there is little or nothing to distinguish them in any remarkable degree from similar remains of feudal ruins in other parts of Europe.

The Pisanese and Genoese towers scattered about the islands of the Mediterranean, bear as strong a likeness to the Moorish towers in Algarve as the famous brothers Dromio bore to each other. These towers are mostly in a venerable state of dilapidation, but oftener from the hand of man than the gradual wear of time. They have been used as quarries, to supply stones for the erection of modern buildings. It may be said, *sotto voce*, that the Portuguese are not famous for preserving their antiquities; but as this compliment may be returned and apply with equal force to England, the least said will be soonest mended; for are not the worthy burghers of Tenby about to dismantle their feudal gates, and pave their streets with their antiquities?

These old walled towns may not imply the likeness to Carnarvon or more especially Conway, in Wales, when in their prime, with flank walls, projecting towers, strong gates, and the castle or citadel, and many of them are placed near rivers.

As a general type of these specimens of fortification, the old city of Silves—the ancient Moorish "Chelb"—may be taken as an example,

for it still possesses gates, walls, towers, and a castle. It once had the honour of being the capital of the Moorish kingdom of Algarve, and has witnessed many a fierce encounter between the doughty champions of the Crescent and the Cross.

It has borne the brunt of many a siege, has been taken and retaken by Moslems and Crusaders, and suffered much in consequence; it was terribly shaken by the great earthquake that ruined Lisbon, and but twenty houses were left standing in the city after that fearful shock. Although nearly all the houses of the old city crumbled into dust and ruin, the walls and towers still stood their ground, and still remain to attest their strength,—yet they were but walls of concrete faced with ashlar.

This old city stands on the summit of a hill of moderate height, in the middle of a long narrow valley, which, with its accompanying river, runs down to the sea at Villa Nova Portimao. It is a conspicuous object when seen from the neighbouring hills and high grounds which block up the valley in the direction of St. Bartolomeo. There is a fine view from the towers of the rugged sides and cloud-capped heads of the Sierra de Monchique, the wildest and most lofty mountain in Algarve.

The town at present extends in a westerly direction down to the river, where it may be said to have outgrown the walls, but in every other direction it is free from suburbs or outbuildings; nor can any of the buildings in the town be seen from outside the walls except to the west, all the rest being quite inclosed, as in the "good old time" of Moorish rule.

The river which meanders close by the foot of the hill on which the city is built is now sadly shorn of its former glory, only practicable for small boats; yet in times of yore larger vessels came close up from the sea: the old heavy iron rings in the rocks still remain to show the ancient mooring-places.

The great peculiarity of the Moorish fortifications of this old city is, that the towers are all detached from the general line of walls,—standing alone by themselves, but connected to the walls by a stone vault or bridge, nearly on a level with the top or platform of the tower, the distance from the wall to the tower being small, not more than 5 ft. or 10 ft.

Why these towers are detached from the main walls I cannot say; nor have I ever met with anything similar in any of the many old castles and walled towns which have passed under my notice.

These towers are in general about bow-shot distance from each other, but not equally spaced; they adapt themselves to the accidents of the ground.

No doubt when these towers were perfect, the little bridge which connects each to the walls was furnished with protecting parapets, or covered way; none, however, now remain. Nearly all these bridges still exist, except where one or two of the towers have been destroyed, where they have shared in the fate of the fallen towers, to which they formed the communicating links.

These towers may be called solid blocks of concrete, covered on the external face with coursed stone; for the only things that can be called rooms are very small, and never more than one in any tower. The top or platform was of course flat, sheltered by battlements and embrasures, none of which remain at the present time.

In one or two of the towers the connecting bridge appears to have opened into the room, but in most it led direct to the platform.

The concrete of which these are formed has been built up apparently in layers, in the same way in which the Portuguese peasantry still build their mud walls for their houses, and possibly the thin ashlar casing may have been carried up at the same time. The quantity of lime employed in this ashore, or concrete, is small, even where it has been exposed for some centuries,—and in all cases the ashlar has been wantonly stripped. Although this mode of building may appear fragile, it must be borne in mind that these almost isolated towers have withstood the shock of earthquakes, when almost every other building in the city encumbered, except the stout walls of the venerable cathedral, once the Moorish mosque.

The gates, a prominent feature in these old cities of Algarve, where they still exist, are very massive, and simply, in the case of Silves, consist of two square towers, with an arched gateway between

them; the two flanking towers, like the rest, being detached, but connected to the main walls by an arched bridge or vault. The gateways at Silves in form are similar to the two square towers at Faro, but the latter formed a joint portion of the wall, and were not detached; at present they are little better than mere mounds of crumbling concrete.

According to Verolles, the great wall of China is "built of brick, or rather it consists of a mass or long embankment constructed of mud, and faced at each side with a continuous range of bricks, forming a frontage for it." So these Moorish walls are built of mud, mixed with a little lime, and faced with stone in courses.

The Castle of Silves still retains its walls and entrance towers; the outer walls forming part of the general line of exterior defence of the town.

All internal arrangements have long since disappeared, and the inclosure now offers nothing to view but a rugged plat of grass, with one or two openings into the capacious vaults below; for all the granaries and stores appear to have been underground.

The feature most worthy of note is a noble underground cistern, a magnificent work, erected by the Moorish founders of the castle to contain their supply of water during the stormy times of siege and trouble. It is said to contain 5,712 hogsheds, but upon what authority this is based I cannot state. It is covered in by a double row of arches, supported on columns, and ventilated by one or two small openings from the exterior, which admit sufficient light to see the clear water in the bottom. It has been restored, and may, perhaps, be considered one of the most perfect things of the kind in Portugal. It is approached from the castle-yard by a flight of steps, which descend into the interior. Tradition says that this noble old cistern was fed by springs, but how far this may be true I have no means of knowing.

This old city was taken by some crusaders on the 3rd September, 1189; it was, however, speedily retaken by the Moors, and remained in their possession until captured by the Christians in 1266, under the command of D. Paio Peres Correea, who finally conquered the ancient kingdom of Algarve, and expelled for ever the crescent from its romantic valleys.

J. LOCKWOOD.

THE QUEEN'S INSTITUTE AT DUBLIN FOR THE TRAINING AND EMPLOYING OF WOMEN.

THE fifth annual report of this useful Institute has been printed. It is maintained to assist gentlewomen of limited means, by training them to the pursuit of suitable professions and occupations; as by opening classes in which educated women can receive instruction in such arts and occupations as offer a reasonable prospect of remuneration to skilled industry; by procuring work for pupils; by maintaining a Registry for pupils and employers; and by collecting a library of books of productive industry.

The Institute claim to have now attained a position of usefulness. In the past twelve months the work of the business departments and the progress of the classes have been satisfactory. An increase of 25 pupils is shown by the returns; 175 having attended the classes, besides 23 who were registered.

Forty-five clerks, trained at the Institute, have received appointments in the service of the Magnetic Telegraph Company.

In all fifty-two new pupils have been drafted into situations and employments; and, notwithstanding the still comparatively limited sphere to which the operations of the Institute are confined, it is enabled to find work with regularity for forty-two ladies engaged in embroidery, various fancy works, plain sewing, &c.

Subscriptions may be forwarded to 25, Molesworth-street, Dublin. The Lord Lieutenant is the President of the Institute, and Lord Brougham and Lord Talbot de Malahide are the vice-presidents. Mr. A. B. Corlett is the secretary.

SOUTH KENSINGTON MUSEUM.—Visitors during the week ending 30th March, 1867.—On Monday, Tuesday, and Saturday, free, from 10 a.m. to 10 p.m., 9,696; on Wednesday, Thursday, and Friday (admission 6d.), from 10 a.m. till 5 p.m., 1,568; total, 11,264.

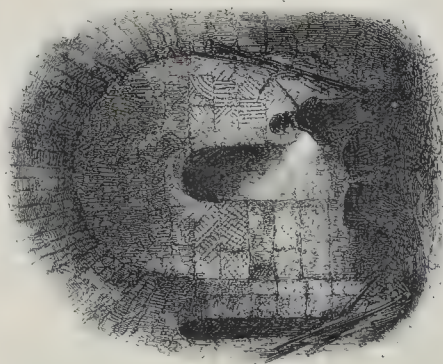


Altar to the Unknown God, Antiochia.

THE ROMAN WALL AND ROMAN ART IN BRITAIN.*



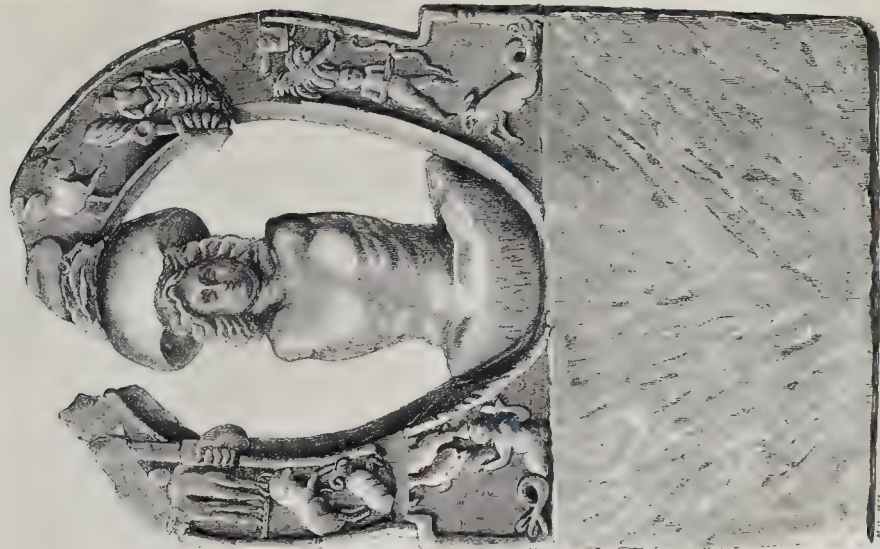
The Miles Castle, Castle-Nich.



In Wilfred's Crypt, Hesham.



Altar to Many Gods : found at Harborough.

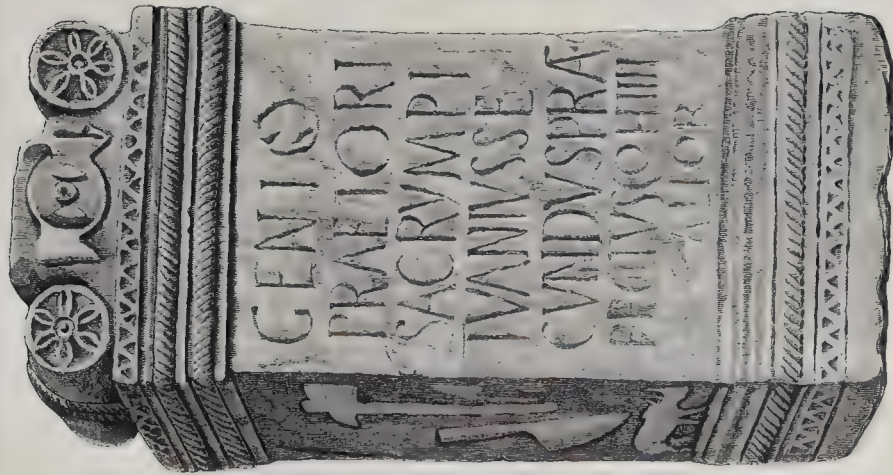


Sun Worship. Apollo as Mithras.

* See p. 235, ante.



The Genius of the Camp.



Altar erected by the Fourth Cohort of the Gauls.

ANCIENT ROMAN STAMPS.

An interesting article by M. Sichel, a well-known oculist, appears in a recent number of the *Annales d'œculistique*, on the stamps used by Roman eye doctors for impressing their *collyrii* or tablets of eye-salve. These stones have been discovered amongst Roman remains in this country, France, Belgium, and Germany, but not in Italy. They appear to belong to the second or third century of the Christian era, and generally bear the name of the doctor, and a few words descriptive of the virtues of the unguent. M. Sichel gives a description of no less than sixty-nine seals, one of which is inscribed as follows. The italics show the parts which have been supplied:—

"Cui Dedemonis ambrosium
Ad caligum et claritatem."

which may befreely rendered, "Cains Dedemon's ambrosial ointment for removing dimness and restoring clearness of vision." The characters are reversed, so that when the seal was impressed upon the cakes or tablets, the inscription, "without which none are genuine," as the quacks say, appears the right way. Some years ago, some fragments of *collyrii*, together with a stamp and a collection of surgical instruments, were discovered at Rheims. On analysis, the ointment was found to contain a large quantity of lead, iron, and copper; the same ingredients, in fact, as are now used for such purposes. One of these stamps has recently been presented to the Royal Museum of Antiquities at Brussels. It belonged to a Roman oculist, named Junius Macrinus, and bears four inscriptions, each on a separate face, two in Greek and two in Latin. It was discovered in the neighbourhood of Maestricht. One such stamp, if we remember rightly, was found at Wroxeter.

SOCIETY OF BRITISH ARTISTS.

The forty-fourth exhibition of the Society of British Artists is in no respect inferior, by comparison, to its most immediate precursors. Pleasing and cleverly-executed pictures, others of better promise than performance, with some few of particular merit, present an aggregate as attractive as usual, and quantity at its present level quality will in a degree condone the want of something more superlative to concentrate attention.

If in the multiplicity of its items—11,076, including water-colour drawings and sculpture—all tastes are not administered to, it will be the one appreciation of Mr. Baxter's ideal so inseparable from the recollection of long ago. Mr. J. J. Hill, who sometimes rivals him in creamy complexion, soft eyes, and dark or light brown hair, with generally a flower in it, has but one specimen, and not of this kind, but of another equally well known—see "Fishing Girl" (170). Mr. F. Y. Hurlstone also confines himself to a single contribution, "A Peasant Girl of Alcalá de Guadaira, Andalucía" (186), whose dark face is set off with some very bright draperies of ruby, orange, and emerald dye. Mr. A. J. Woolmer only poses his pretty model—who, in distance of time, looks as young as ever, if not quite so fresh—and does not pose any one else this year by leading them into the dark mysterious caves in which it has been his wont to announce himself at home; or to pace with him interminable and labyrinthian groves, or tread rich glistening pavements through vistas of fantastic architectural forms,—arcades that only echo the painter's name, and are of "such stuff as dreams are made of." "The Garden's Daughter" (21) and "The Messenger" (358), where the same fair lady is enlisting the services of a sympathetic dove to convey her love, represent him well, though they mix with them "A Thought about the Past" (248).

The mutability which Time has the credit of possessing as a special property, and of dealing out to all who are engaged in playing this little game of life, can be but partially distributed after all; for there are things that never change. Let the cards be shuffled ever so thoroughly there are those who always hold a blank hand, and playing the best are the worst losers; there are those whose only hope exists in a belief that there must be change presently—that nothing can go on in the same way for ever; if they find this credulity anodyne, they had better not look to some of our painters for encouragement, unless

it be to learn how to remain satisfied with things as they are. But the Society of British Artists is not a singular exception to the influences of change and progress any more than its annual exhibitions can be cited as an illustration of the uncertainty supposed to attend most human proceedings; for every one knows what to expect when they occur, and few are disappointed.

Mr. E. J. Cobbe's rustic, whether standing or sitting, are all alike, motionless as motionless, without expression, and nicely done. In "Gossip by the Way" (93), there is no talking in going whatever, for the damsels who, it might be supposed, ought to appear as if engaged in vivacious colloquy, are all mutely intent on having their portraits painted. "The Fish-cart" (206) by Mr. J. Henzell, with more lively occupants, has the same artificial appearance of colour that has deteriorated from many of his former pictures. Mr. T. Roberts is not so successful in depicting the effects of "A Tedious Sermon" (33) as he has been with more patient listeners in "Family Pew," and this may be regarded as fortunate if it helps to put aside a subject that threatens to become as prevalent as "Sleeping-stones." Mr. Haynes King treats ordinary incidents of everyday occurrence with unobtrusive skill: his boatman lover asking his chosen one "An Important Question" (54) has much naturalness to recommend it. "My ain Fireside" (60), at which the matter-of-fact old lady is sitting, and seems to know the comfort of; with a similar situation, but a dissimilar sitter, who is young and visionary, and sees "Faces in the Fire" (383), are small works, that have high finish, without showing the means by which it is attained.

There is much character and expression in Mr. W. Hensley's "Village Postman" (86), as he is examining the addresses of his budget of letters to satisfy the solicitous inquiry of an evident victim of a first-love, just of the age when all thoughts of hardbake become loathsome, and hard hearts, only hair, cruel parents, moonfulness, and moonshine form the delicious jumble of distraction destined to tone the memory of very young ladies, and help them to forget some of the long lessons they have learned, and prepare them for others more difficult and less easily forgotten.

What opportunities the village postman must have of creeping into confidences, indulging in conjecture, and gleaning knowledge with stray inferences; else how should he have guessed that the intercepted letter—with which papa is grimly retiring to his study, where he will frame a little speech for the benefit of Rose (she looks like Rose) presently—was from whom it was? His "Nothing, I'm afraid, this morning, Miss," must have sounded very like "You are too young for this kind of thing," had she the discernment of a metropolitan covey; but it is evident she has not. Mr. Hensley is clever and suggestive in treatment of this incident, and it is not a hackneyed one.

Mr. E. C. Barnes, comparatively speaking, a new member, is a great acquisition; the more so by reason of the evidence he gives of being on the improving list. "The Beau's Stratagem" (115), his largest picture, but not his best, is chiefly remarkable for the executive ability it displays. A gallant, in the costume of Elizabeth's time, is diverting the attention of an amorous governante by making obvious love to her whilst he is surreptitiously handing a note and making an assignation with her ward. The humour of the situation is rather broadly conveyed; and the story would have been better told, or would have appeared better worth the telling, if its importance had not been overrated and so large a scale adopted for its annunciation. Far superior to this is the romance of "The Woman in Grey," who, with no name, is the heroine of a sensation tale, the last chapter of which is headed with Tennyson's lines—

"Break, break, break,
On thy cold grey stones, O Sea!"

There is more pathos in this cold, grey composition—more direct appeal to sympathy—than in all the attempts to effect such a result that are to be found in its neighbourhood put together: there are three volumes of trial, at least, in that pale face, though little is to be seen of it; and its expression now is one of weariness and hopelessness. As an instance of the variety and force obtainable from a limited employment of colour, this eloquent little work is admirable and instructive. "The Emigrant" (189), by the same, is also entitled to praise.

Mr. J. Collinson has elaborated a very simple

episode, "A Sister of Nazareth and Blind Woman" (154), or one of an institution of nuns practising the kindly offices of charity. The hands, and several parts of the picture, have been thoroughly studied, and there is much of exquisite manipulation throughout. Mr. T. Heaphy goes back to the Cavalier and Roundhead period for inspiration, "General Fairfax and his Daughter pursued by the Royalist Troopers" (238). It is recorded that during the flight from their pursuers, they took refuge in a barn, when the general's embarrassment was considerably augmented by the repeated wailing of the little girl, to so severe an extent as to threaten her with death, though she lived to become afterwards the Duchess of Buckingham. The arrangement is too theatrical to imply probability, though there is much good workmanship; but the dresses and accessories are all too new-looking and clean, evoking the wish, in common with so many of the costume pictures here, that the value of dirt and the effects of wear and tear, are not better understood by English painters. "The Arrest" (39), by Mr. C. Rooster, is a good incident for a telling illustration of the same period; with the Puritans for the oppressors. A Royalist family are disturbed whilst celebrating a christening ceremony. Both skill and painstaking are evinced in the elucidation of the story, though the method of exhibiting them is somewhat dry and hard; and the same objection applies to Mr. A. Hunt's "Margaret of Branksome" (113), though only a single well-studied figure.

To note others, "The Last of his Race" (164), by Mr. A. J. Horsford, an invalid child heir to unnumbered acres, but whose tenure will be shortly estimated at a very few feet, is watched by his mother, "The Ballad Singer" (155), by Mr. W. M. Hay, conveys another story based on family affection, though there is some ambiguity in relating it. A girl, gaily dressed in the streets at night, is listening to a wretched old ballad-singer, in whom she recognises her sister: the moral of this appears to be, that "you must be naughty if you would wear nice clothes," though there may be a storm of conflicting emotions raging beneath the nice polka jacket, stirred by such recollections as the song of "Home, sweet home," may be supposed to awaken for a retrospective drawback. This is slightly and well painted; and the same may be said of Mr. W. Holyoake's young ladies of reputable conduct, in "Our Party at the Derby" (142); of Mr. A. Ludovici's procession of school children, who hush their play as they are about to glide through the solemn shadows of the cloister; and of more that shall be mentioned next week.*

BRITISH ARCHAEOLOGICAL ASSOCIATION.

At the meeting on the 27th ult., Mr. H. Syer Cuming, Vice-president, in the chair; after the new members had been announced, and thanks returned for presentations, it was stated that the council had had under consideration a letter in the *Times* of the 25th ult., signed "H. C.," in which the restoration of the tomb of Henry V. in Westminster Abbey was urged. The council did not think, however, that the time had arrived to enter any protest. The Rev. Dr. Giles gave some account of a German portion of the Puginian Tables, presented by Mr. Kinkelhof. It is a sort of Road-book, with maps. Mr. H. Godwin, F.S.A., said that the English portion is appended to Richard of Cirencester.

The Rev. W. Sparrow Simpson, F.S.A., read a paper on "Eussæo-Greek Portable Icons," which are of three forms,—triptychs, diptychs, and square plaques. The Greek Church does not admit of green images, and even a painted face, if in a carved frame, comes within the objectionable list. The icons are of various dates, but their antiquity is doubtful. Mr. G. H. Wright suggested that earlier designs and schemes had been copied or retained, showing a stationary state of art. The paper was illustrated by many specimens belonging to Mr. C. Brent, Mr. Cato, Mr. Waron, Mr. Gunston, and the writer. The chairman exhibited one, circular, differing in form from the others. The earliest appeared to be of the fifteenth century, the other of the seventeenth. Mr. G. M. Hills and Mr. G. Vere Irving spoke of the unchanging nature of the art in the Greek Church for centuries.

Mr. Vere Irvine produced some coins, said to

* To be continued.

have been found in a stone cyst in Lesmahago Churchyard: they, however, were but farthings, not earlier than Louis XIII., showing that deception in "fnds" was not limited to the south of the kingdom.

Mr. J. L. Irvine forwarded two drawings; one of a crucifix said to have been found in Ludlow Castle, and of the thirteenth century; by the other of Saxon work, on the north side of Diddlebury Church.

Other exhibitions followed: by Mr. Brent—the triangular fan of a pair of scales, erroneously called "money of necessity;" Mr. Cumming, a Roman lamp, with a sandal as the potter's mark; Mr. Lockhart—a merchant's mark of the fifteenth century, showing a combination of Roman and black letter; Mr. Morris Jones—drawing of a font, formerly a carved capital, in Buttington Church; the Rev. James Beck—part of the crock in which the Washington "find" of 2,500 coins was buried; also part of a green cementitious substance which it contained, and some broken parts of coins cemented together by it. This gave rise to an interesting and animated discussion, the green coating having been believed to be the result of the decay of a leathern bag. It was tried in the room by fire, and proved not to be wax. Mr. Bailey undertook to have it analyzed by next meeting. The pottery is softer than usual, and is of a material unknown in manufacture, and it was thought to be sun-dried. Keys were exhibited by Mr. Grover and Mr. Kettle, and drawings of keys by the Rev. Hugh Ingram, found at Steyning.

THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of the Architectural Association was held on Friday evening, the 29th ult., at the House, in Conduit-street.

Mr. H. Ambrose, of Brompton, and Mr. E. Locke, of Sutton, Surrey, were elected members of the Association.

The Chairman stated that a number of the members had, on the previous Saturday, visited St. Alban's Abbey, where they had been received in the most courteous manner by the Rev. E. C. Hawkins, the rector; and where they were met by Mr. E. W. Godwin, who kindly accompanied them over the building, and read a most interesting paper descriptive of its ancient history.

A vote of thanks was subsequently passed to those gentlemen for their kindness on this occasion.

The Chairman called attention to the Architectural Association sketch-book. It was, he said, proposed to form a club among the members of the Association for publishing drawings and sketches of ancient buildings, or other objects of architectural interest. In his opinion, the proposal was well worthy of the support of the Association, and he hoped that as many members as possible would join the club.

The Rev. M. E. C. Walcott then proceeded to read a paper on the arrangements of St. Alban's Abbey; the details of which he pointed out upon a ground plan, which, he stated, had been prepared after much careful examination on the spot. He also pointed out on another plan the errors into which he believed previous antiquaries and archaeologists had fallen, and contended at some length that the arrangements of the monastic buildings formerly in connexion with the Abbey Church were those which in all probability belonged to a Benedictine church, such as that which flourished at St. Alban's.

At the conclusion, the Chairman observed that the paper which they had just heard read was extremely interesting and useful as opening up a knowledge of those antiquarian subjects which were of so much use in the study of architecture. [All who had heard Mr. Walcott might not be disposed to agree in the conclusion to which he had arrived. He (the Chairman) for one, could not say that he entirely agreed in all that the reverend gentleman had said; but they were all much indebted to him for having read his paper, and for having prepared the plans which he had exhibited and explained. It appeared to him that according to architectural indications in the south wall of the Abbey, over the south aisle a stranger's dormitory had originally existed at that place. He asked whether it were true that the coffer of the old shrine containing the relics of St. Alban was now to be found in a monastic building at Cologne.]

Mr. Birch stated that the late incumbent of St. Alban's, the Rev. Mr. Nicholson, had distinctly traced the coffer to which the chairman

referred as that belonging to the shrine of St. Alban, not St. Alban, the former of whom could not have been an English saint.

A vote of thanks having been accorded to Mr. Walcott.

The Chairman announced that on the next evening of meeting a paper would be read by Mr. C. Aldridge on the Architecture of Northern Italy.

LUDGATE, NEWGATE, AND MOORGATE.*

THE changes in the manner of warfare, the increase of commerce, and the altered conditions of the people have caused the ancient walls of the City and the gates which stood upon them to be removed, and, before long, the last of those barriers—Temple Bar,—which, although not one of the old defences of the City, so much stops the way will be removed.

The railway passes close to where the gate which was called after the mysterious King Lud formerly stood. Here, says Geoffrey of Monmouth, there was a gate built by the British king, about sixty years before the birth of Christ,—so reports tradition,—and to this we are bound to pay that degree of deference which it deserves. Other historians say that "this name is, with much greater appearance of probability, derived from the rivulet Flood—Flud—Vloot—Vloete, or Fleet, which ran into Fleet-ditch, and was very probably called Ludgate instead of its original name of Fludgate. To leave these hazy ideas, it is clear that in 1373 the gate here was constituted a prison for poor debtors who were free of the City, and it was afterwards greatly enlarged by Sir Stephen Forster.

The history of this gentleman is romantic; for when the management of the prisons rendered it necessary for those who were confined to beg at the gates or windows of the prison, this Stephen Forster was standing at the gate, asking for help, when a rich widow, passing by, inquired what sum would procure his discharge: on his answering twenty pounds, a sum much more considerable in those times than in the present, she advanced the money, took him into her service, where he was so indefatigable in his attention to business, that he gained his mistress's favour, and married her. After great success in trade he became Lord Mayor of London, and obtained the honour of knighthood. In the midst of his prosperity Sir Stephen did not forget his old prison-house. His lady and himself, to enlarge the prison, caused several of the houses near the gate to be pulled down, and in their stead erected a strong square stone building, containing the following rooms, viz., the porch, the paper-house, the watch-hall, the upper and lower lumberies, the cellar, the long ward, and the chapel. In the chapel there was the following inscription:—

"This chapel was erected and ordained for the divine worship and service of God, by the Right Hon. Sir Stephen Forster, late Mayor, heartily pray; And Dame Agnes, his spouse, to God consecrate, That of this house made for Londoners in Ludgate, So that for lodging and water prisoners here nought pay, As their keepers shall all answer at dreadful domed-day."

These lines show a curious phase of the old prison life. The founder provided an income for the chaplain, and ordered that all the rooms in the additional buildings should be for ever free to all unfortunate citizens; and that they, on their discharge, provided they found their own bedding, should pay nothing for lodgings or chamber rent. Notwithstanding the good intentions of the founder, and the threatening in the inscription, the provisions of Sir Stephen were neglected. When the gate was removed, the prisoners were removed to the London Workhouse in Bishopsgate-street. As one of the curiosities of the past, the provisions made by the prisoners in the watch-hall, for the sake of preserving order, the master, keeper, and prisoners chose from amongst themselves a reader of divine service, an upper steward, called a master of the box, an under steward, and seven assistants, by turns daily; a running assistant, two churchwardens, a scavenger, a

chamberlain, a running post, and the criers or beggars at the gate, who were generally six in number.

The reader, besides attending to the prayers, was obliged to ring the bell twice a day, and also for the space of a quarter of an hour before nine o'clock, to warn all strangers to depart the prison. The salary of the reader was two shillings and eightpence a month, a penny of every prisoner at his entrance if his garnish amounted to sixteenpence, and a dish of meat out of the Lord Mayor's basket. All the prisoners kept the master of the box in equal esteem with the reader, and to him was committed the several orders of the house, with the accounts of cash received upon legacies, and the distribution of all provisions sent in by the Lord Mayor and others, and the cash received for garnish and begging at the gates, which he used to expend weekly in bread, candles, and other necessities. He likewise kept a list of all prisoners; as well those who were upon charity as those who were not; to each of whom, by the aid of the assistant of the day, he used to deliver his share of bread and other provisions; it was also his business to receive the gifts of the poultry, fishmongers, and other market-people, sent in from the clerk of the markets, by the running post, for which he gave a receipt, and afterwards, in the presence of the assistant of the day, exposed all for sale to the charity men in a fair market, and the money arising therefrom was deposited in the common stock. This officer, with the under-steward, assistants, and churchwardens, were elected monthly by the suffrages of the prisoners; the election of the other officers was conducted in the most orderly manner, and no doubt the best of trust. The officiating assistant was invested with the power of a magistrate, and could commit a prisoner to the stocks or shackles for abusing any person. His business was also to see the collar cleared at ten o'clock, for which he received 6d. out of the charity-money,—2d. of which was for the upper steward, 2d. for the running assistant, and 2d. for himself.

The running assistant was to attend to the criers at the gate, to change money, to open the boxes, to put candles in their respective places, to look after the clock, &c.; his salary was 4s. 8d. a week. The business of the churchwardens, who were selected from amongst the younger prisoners, was to call to prayers after the bell had done ringing, and to do some other trifling duties; the salaries of those officers was 4d. a month. The duty of the scavenger was to keep the prison clean, to fetter offenders, to put them in the stocks; he had a fee of 1d. for each culprit, and a salary of 5s. 8d. a month.

The chamberlain took care of all the bedding and linen belonging to the prison, appointed lodging for new comers, furnished the prisoners with sheets, and gave notice to strangers to leave at ten o'clock.

The business of the running post was to fetch in a basket the broken meat from the Lord Mayor's table, provisions from the clerk of the market, from private families, and the charities given in the streets; which, when so considerable as not to admit of being divided among them all, were publicly sold: the salary annexed to this office was 4s. a month, 1d. out of each man's dividend, and 1d. out of every 1s. 4d. garnish. Two of the criers begged daily at the gates; he who stood at Ludgate-street was allowed a fourth of what was given, and he on the Blackfriars side, one-half of the money collected there.

Notwithstanding this complex machinery for the management of the prison, corruption seems to have crept in. On the Monday following every election the accounts were audited and passed, and the balance divided; but if it amounted to 3s. 4d. a man, the keeper of the prison, without the least right or reason, used arbitrarily to extort 2s. 4d. from each prisoner, the remainder being placed to the account of the prisoner, to be paid at the time of his discharge.

The prisoners were also obliged to pay the turnkey 12s. a month, for no other service than that of opening the door to admit gifts and charities sent to the prison, which frequently amounted to little more than he received.

The fees must have been a sad trouble to prisoners. At the coming of every prisoner 1s. was paid to the turnkey. The prisoners had to pay 3d. for the best lodgings; for the second, 2d.; and the third, 1d. Notwithstanding the provisions which had been made by Sir Stephen

* These notes have been in type several months.

Forster for the provision of clean sheets, they were charged 6d. a month; if the prisoners found their own beds, the keeper still charged 3d. a week for bed-room, or 4d. at the most; and not above two to lie in a bed.

If the prisoner by his inability could go no further than a couch, he had to pay only 1d. per week for chamber-room, and 1d. per week for lamps and candles. A freeman of the City, on being arrested for debt, could insist upon being carried to the Ludgate Prison; but a fee of 4s. or 5s. was extorted by the bailiffs, the due being but 2d.

For entering his name on the prison books each prisoner had to pay 1s. 2d. and his fellow prisoners demanded 4s. for garnish, 1s. 6d. for sheets and 1s. 6d. for coals and the use of the house; and if these charges were not paid the clothes of the poor prisoner were privately taken from him and not returned until the money was paid. He was, however, allowed to go abroad on giving good security to return at night or for a consideration, in the charge of a keeper: for the latter he had to pay 2s. 6d. to the head turnkey, and 1s. 6d. to the keeper who attended to him.

On being discharged, the prisoner had to pay 2s. to the master keeper, 1s. 2d. to the turnkey, 1s. for every action entered against him, and if he was taken in execution 2s. 6d. for every action. Often the fees came to more than the debt, and prisoners have been kept in this and other prisons when the charges against them have been withdrawn in consequence of the want of sufficient funds to discharge their debt. Hungry and at times almost naked, the poor debtors lay in those unsanitary dens until death mercifully relieved them from their sufferings. There was a gift to this prison, called *Neil Gwynne's Dole*, which used to be distributed to prisoners every ninth week.

Such are some of the memories of the ancient gate, which before the Great Fire was a time-worn weather-beaten object. So far as we know, nothing but some of the old figures which were fixed upon it now remain, and the wayfarer this way no longer hears the tinkling of the little bell and the voice repeating, "Pray, pity the poor debtors." The locomotive whistle sounds shrilly as the trains rattle over the site, and the tide of busy human life rolls on from morning till night.

Newgate.

Bad as was the condition of Ludgate as a prison, Newgate was, in this respect, infinitely worse. As early as 1218, this edifice was a common goal for felons taken in London City, and so lately as 1457,* Newgate, and not the Tower, was the prison for the nobility and great officers of state. To go back, however, to a more remote date: in 1241, the Jews of Norwich were hanged for circumcising a Christian child, their house was pulled down and destroyed, and Aaron, the son of Abraham, a Jew, who lived in London with several more of that people, was sentenced to pay 20,000 marks, at two payments, within a year, or otherwise to be kept perpetual prisoners in Newgate or other prison. In 1252, one John Offrem, who was committed to this prison for having killed a prior, found means to make his escape, which so much displeased King Henry III. with the City, that he sent for the mayor and sheriffs to come before him to answer for the consequences. The mayor blamed the sheriffs, to whom the custody of the prisoners properly belonged, whereupon he was permitted to depart, but the sheriffs were sent to the Tower, where they remained upwards of a month. On the Tuesday after Palm Sunday, in the year 1431, for reasons which we do not find stated, the prisoners were removed from Ludgate to Newgate, and on the 13th of April, in consequence of a false complaint made by the keeper of Newgate, eighteen freemen were taken to the Compters and chained as if they had been felons; but on the 16th of June, the City debtors were again removed to Ludgate.

In the year 1612, Robert Dow, merchant tailor, appointed the bellman or sexton of St. Sepulchre's to pronounce two solemn exhortations to persons condemned to death; for which, and for the ringing of the passing bell as the criminals were being carried to execution, he left 1l. 6s. 8d. for ever. The exhortation was not to be pronounced upon such as had committed murder; it began with,—

"You prisoners that are within,
Who, for wickedness and sin,"

* Chamberlain.

and ended with,—

"All good people, pray heartily to God for these poor sinners, who are now going to their deaths, for whom the great bell doth toll," &c.

In some articles on the old London wall in a previous volume, we referred to the partial destruction of this gate at the time of the Great Fire. It was repaired in the year 1672. The appearance which it then presented was unchanged until its demolition. The west side was adorned with three ranges of Tuscan pilasters, and their entablatures; and in the intercolumniations were four niches, in one of which was a figure representing Liberty, having the word *libertas* inscribed on her cap; and at her feet lay a cat, which was said to have been an allusion by the sculptor to Sir Richard Whittington, who was a benefactor to the prison. On the east side there were also a range of pilasters; and in three niches were the figures of Justice, Mercy, and Truth. Nearly a hundred years ago it was observed of Newgate, that, considering it as a prison, it is a structure of more cost and beauty than was necessary, because the sumptuousness of the outside but aggravates the misery of the wretches within; but as a gate of such a city as London, it might have received considerable additions both of design and execution. The gate of a city, erected rather for ornament than use, ought to be in the style of the ancient triumphal arches; and it must be allowed that hardly any building admits of more beauty or perfection.

Before John Howard's days, Newgate must have been a shocking prison: the debtor rendered unfortunate by the vicissitudes of trade or sickness, and other causes, was pent up with the most abandoned and determined villains; and in the vilest parts of the metropolis of this time we could find no scenes so horrible, so vicious, and depraved as were daily to be met with within the walls of Newgate. We may attempt to imagine the pictures which were there presented, but fear that the reality was far worse than anything which the imagination can conceive.

Those only charged with offences, who had not been tried and convicted, were put with the worst refuse of human society, corrupted in morals and poisoned in matters of health by stench and nastiness, and by those pollutions which, arriving at a climax, caused outbreaks of distemper and pestilence.

On the top of old Newgate, as shown by the views taken just before its removal, there is to be noted a windmill: this is an example of an early attempt at ventilation. "For," says Chamberlain, in 1770, "a contagious disease, called the gaol distemper, has frequently destroyed great numbers of prisoners, and even carried its contagion into courts of justice when trials were held. To prevent as much as possible these dreadful effects, a ventilator has been placed on the top of Newgate, to expel the foul air and make way for the admission of such as is fresh; and during the time that the sessions are held herbs are also strewed in the court of justice, and in the passages leading thereto to prevent infection." Newgate, at the time of its demolition, was one of the most picturesque of the City gates; notwithstanding, we must rejoice at its removal, for what would be the condition of the thoroughfares in this direction—towards the City—if the barrier had been still left standing.

Moorgate.

This gate is not of any great antiquity, for in the year 1415, during the mayoralty of Thomas Falconer, the wall of the City was broken near Coleman-street, and a postern built, which was since called Moorgate, from its vicinity to Moorfields. In 1511 this postern was restored, the ground levelled, and made more commodious for the citizens to pass to their adjacent fields and gardens. The gate which was built here after the Great Fire was one of the most imposing of those along the City wall. It was erected in 1674, and consisted of a lofty arch and two posterns. Maitland says that the central arch was built higher than usual, for the sake of allowing the City trained bands marching through it with their pikes erected; it is, however, far more likely that the additional height was intended for the better convenience of the carts and wagons loaded with hay coming to the City, a design having been formed at that time to make a haymarket in Little Moorfields, but this design was not carried into execution. The upper part of the gate was

adorned with Corinthian pilasters, supporting an entablature, and a pediment, in which were the City arms. The apartment over the gate was appropriated to the use of the Lord Mayor's carvers.

Cripple-gate.

This gate, so called from the large number of cripples who assembled there, was of very great antiquity. John Lidgate, the monk of Bury, says, that in the year 1010, the Danes ravaging the country of the East Angles, Bishop Alwin caused the body of St. Edmund the Martyr to be conveyed from Bury St. Edmund's, through the kingdom of the East Saxons, and into London by the way of Cripple-gate, where it is pretended that miracles of the most extraordinary kind were performed.

The antiquity of this gate also appears from the charter of William the Conqueror, confirming the foundation of the college in London, called St. Martin the Great, in which are these words,—*"I do give and grant unto the said church, and canons serving God therein, all lands, and the Moor without the postern, which is called Cripple-gate, in other part of the postern."* This gate was also used as a prison, to which debtors and persons charged with trespasses were committed. Anything more unwholesome or unsuitable for the incarceration of unfortunate offenders could not be easily conceived than those buildings which had been erected for the purpose of warlike defence.

1244. This gate, says Chamberlain, was rebuilt by the company of Broomers of London. 1483. Edmund Shaw, mayor of the city, bequeathed by his will 400 marks, which, with the remains of the old gate, were to build a new one, and which was actually performed in the year 1491.

The gate was repaired and beautified—so ran the words of an inscription which was upon it—in the reign of Charles II. It was a plain, solid edifice, void of all ornament. The rooms over it, at the time of its demolition, seem to have been occupied by the water-bailiff of the City. There was only one postern.

Maitland thought that this, in 1010, was the only gate in the north wall of the city, and that it was erected over the Roman military way which led from London to Hornsey.

JUDGE JEFFREYS AND HIS ARCHITECT; WITH A WORD ON THE NEW LAW COURTS.

THAT because a thing has been done in a certain manner or style ever so long ago, it is a safe guide to follow ever so long after, though doubted by some audacious innovators who suggest the exact contrary, is, we all know, quite sufficiently recognised by learned lawyers and architects. This fact is strikingly manifest from the show in the shed at Lincoln's Inn, demonstrating the strict consonance of the free, scientific, and remarkably enlightened Middle Ages with the London of the passing hour. Any apparently absurd incongruity is due, neither to the style of artistic expression appropriate to the thirteenth or fourteenth century being totally unsuited to the nineteenth, nor to the slightest deficiency of originality or truthfulness in the architects; it is simply because the whole course of modern civilization is radically and lamentably wrong, for it ought to be such as would be faithfully reflected by Gothic architecture, which therefore has been most sagely adopted. Besides, the style, though of foreign origin, became naturalized, and thus quite as English as Chaucer's spelling, the burning of witches or heretics, and trial by ordeal,—all which, like the contemporary architecture, would have been revived long since if the philosophical views of the modern Medievalists had haply more generally prevailed.*

Precedents then being so highly esteemed, the following one in professional practice may be interesting, if not sufficiently Medieval to be

* The hopeless confusion of ideas on the subject of art-architecture, as distinguished from manufactured architecture, is naively illustrated by one of the competitors, who, as mentioned in this journal, has virtually adopted a thirteenth-century cathedral for his type, but actually claims to have proceeded as he "believes the old architects would have done, if it (the courts) had been built in their day,"—ignoring the principal fact bearing on the matter, that they did not copy buildings erected six hundred years previously, but designed in an original style peculiar to their own time. While all else advances, architects are pelted and prayed to wearily retrograde, one touch of true art or unobscured nature being rare indeed.

authoritative or suggestive for future legal contingencies. And although (as seems probable in the National Gallery competition) modifications of such unjust treatment have since frequently befallen our architects, the grim setter of this precedent may, by his shameless example, deter its further adoption in any phase or degree. I found it in the *European Magazine* for 1795, p. 248:—

"Amongst the many scandalous appointments of trust during the profligate reign of Charles II., calling up Jeffreys to such high situations as he possessed was one of the most notorious. In addition to his well-known character of a libertine and a servile courtier, he was that of a dishonest man and a shuffler in his private dealings, as the following anecdote (never before published) will evince. Having obtained a grant from King Charles II. of a lot of ground on the east side of St. James's Park, he employed an architect to build him a very magnificent house there, with a private chapel, &c. As soon as the building was completed, the architect, of course, called upon him for payment, but was put off; he called again and again, but never could see him, and was often repulsed from his gate by the porter, with rudeness and ill-humour. The general character and despotic power of Jeffreys prevented the architect from taking any legal steps in the business, till Jeffreys's power began to wane upon the first flight of King James. He then made his way into Jeffreys's study, saw him, and pressed for his money in very urgent terms. Jeffreys appeared all humble and much confused, made many apologies for not settling the matter before, said he had many weighty affairs pressing on his mind at that time; but if he would call the Tuesday following it should be finally settled. The architect went away after this promise; but between that and Tuesday, Jeffreys, in endeavouring to make his escape from England, was found out, reviled, and much bruised by the populace."

Part of the then "magnificent house" is No. 23, Duke-street, with passage and steps leading to the chapel and park. There, after the terrible juggle's sudden fall, as Macaulay tells us, the exultant rabble congregated, and read on the door, with shouts of laughter, the bills which announced the sale of his property. Hard by, in the National Portrait Gallery, Jeffreys's smooth, calm, handsome features, such as flattery saw, stand out from the brilliant canvas of Kneller. Perhaps Mr. Cunningham or Mr. Papworth could favour us with the name of the persistent architect.

Sheridan's analogous treatment of Henry Holland, albeit distinguished from the British cunning of the alternately blustering and whining Chancellor by a playful coruscation of misguiding genius, is related in the *Builder*, vol. xiii., p. 423.

EDWARD L. TARNBUCK.

NOTES IN THE HOUSE OF COMMONS.

The New Law Courts.—End of last week Mr. Lanyon asked the Secretary of the Treasury whether it was the intention of the Commissioners of the New Law Courts to accede to the request of the competing architects, to the effect that two professional men, selected by the competitors, be added to the judges. Mr. Hunt said, the Lord Chancellor had received a letter from the competing architects, asking that the two gentlemen who had been acting as assessors might be appointed judges, together with a third gentleman, to be named by themselves. The Lord Chancellor had asked the opinion of the Government upon the subject, and a reply had been sent that at this late period it was not desirable to alter the arrangements.

Art-Unions.—Mr. Beresford Hope inquired of the Vice-President of the Committee of Council on Education whether he was prepared to bring in a Bill, during the present session, to place Art-unions under the Department of Science and Art. Lord R. Montagu pleaded overwork, and said that as soon as he had leisure he hoped to think about the subject.

Mr. Shields and the Thames Embankment Designs.—Mr. Lowe moved that Mr. Shields's petition be referred to a select committee to inquire and report. Lord John Manners contended that an invitation to compete issued by the Royal Commission was a very different case from one issued by the Government itself. In the advertisement referred to, he urged, no mention was made of any premium or remuneration whatever. He could not admit that Mr. Shields had any claims to compensation, with every respect for his ability. Mr. Cowper also thought there was no case. There was no definite engagement, he said, for compensation entered into, and the Commission declared in the first instance that they did not adopt of plan. Mr. O'Beirne insisted that a gross piece of in-

justice had been perpetrated, and that a case had been made out for an inquiry. Mr. Ayrton was opposed to the committee, on the ground that if Mr. Shields was entitled to remuneration every one of the forty-nine other competitors was likewise entitled. The motion was lost by a majority of 49 to 29.

The Plantagenet Statues.—The Foreign Secretary, in reply to questions, has explained that the Emperor of the French had offered the Plantagenet statues at Fontevault to her Majesty, and that that offer had been accepted with gratitude; but that since then the state of the case has altered. Legal objections were taken to the removal of the remains, which objections, it was thought, could only be overcome by legislative action on the part of the French Chamber; and independently of that consideration, in the locality where these memorials are, when it was found that they were about to be taken away, a strong feeling was excited against their removal. Her Majesty, therefore, at once released the Emperor from his promise, and a communication to that effect had been made to the French Government, and a hope expressed that now that their value had been appreciated in the locality to which they belonged, some means would be taken for their preservation, and that they would not be left in the neglected state in which they undoubtedly had been for some time.

Bunhill-fields.—Leave has been given to Mr. Crawford to bring in a Bill for the preservation of Bunhill-fields burying-ground as an open space, and for other purposes relating thereto.

Burlington House.—In reply to questions put by Mr. Layard, Lord J. Manners said the building intended to be erected for the use of the London University would not be part of a group in connexion with Burlington House, and it would not be in the same style as Burlington House, but in Italian Gothic. He had no objection to direct that the elevation and plans of the new building should be placed in the library. The elevation itself was now being tinted in order to be photographed. There was no truth whatever in the report that Mr. Pennethorne had protested against the use of Italian Gothic, as he had himself proposed a plan in that style. Colonel French asked what was meant by Italian Gothic, and was referred to Mr. Layard, who sat next to him. Both the alternative designs of Mr. Pennethorne, Lord John Manners added, would be placed in the library.

THE NATIONAL GALLERY COMPETITION.

On the motion for going into Committee of Supply in the House of Commons, on Friday last, Mr. Goldsmid called attention to this competition. He said he had had no communication with the competing architects, but was actuated solely by a feeling of fairness towards those engaged in the competition. He reminded the House that there were spoken conditions as well as written ones, and that the architects had intimated to the First Commissioner of Works that they had agreed to compete on the distinct understanding with Mr. Cowper that one of the competitors should be selected for employment. Mr. Cowper, in a letter to the secretary of the Board of Works, last month, had said it would be unfair not to decide which of the designs was the best, and would establish a precedent injurious to the success of future competitions for public buildings. The main cause of want of success in the designs was, that complete and accurate instructions were not given to the architects. The fair course to pursue now would be to select one of the competing architects, to give him proper and definite instructions, to call upon him to furnish designs, and then to place those designs before the judges. He thought that if this was not done public faith would be broken, but if it were they would have a fair chance of securing a creditable building.

Mr. Gregory said, he grieved for the architects, the judges, the trustees of the National Gallery, but, above all, for the real sufferers, the public, who were astonished at the weakness and vacillation with which the question had been treated during a series of years. The hands of the present First Commissioner were unfettered, and he trusted the noble lord would see the necessity for having a new building, and the impossibility of making anything that would be creditable or suitable out of the present structure.

Mr. Cowper said he agreed with his hon. friend that a lamentable amount of vacillation and change of purpose had been exhibited in connexion with the subject, but he entirely dissented from his views that it had been occasioned by any act of the executive Government. Committee had been appointed, who made reports opposed to each other, arising from art jealousies or the peculiar notions of individuals. There had been no want of definiteness in the instructions. The number of rooms required could not be settled, and no man could even now state that; but that was not a material point. The size of the rooms and the mode of lighting the galleries were left to the discretion of the competing architects, except that the rooms were to be 50 ft. in width. They were told that the space in the map given to them would have to be covered, and they were to make their arrangements accordingly. They could not tell the competing architects what pictures would be exhibited in the gallery. The competition had been of use, for he

thought that valuable materials had been collected which would prepare the way for an ultimate decision, and he hoped that the time had arrived when this long delay and vacillation would come to a close. He felt confident that the solution of the question had been greatly assisted, and not retarded, by the course adopted last year, and he thought it would be competent to the noble lord to propose a measure which would meet with the general approbation of the House.

Mr. Beresford Hope was sorry, he said, that the right hon. gentleman had not touched upon that branch of the subject which was important, namely, the question between the past and present Chief Commissioners of Works, the judges, and the competing architects. The architects thought that they had been ill-used by the judges, but he must remind the right hon. gentleman that the judges determined not to proceed in the matter of selection without written instructions from him. They had the instructions to the competitors before them, but they were singularly vague, and only referred to the housing of pictures. The instructions were no doubt true so far as they went, but they were needless to any man who was worthy of the name of architect. The judges, having refused to act without instructions, wrote to the First Commissioner as to what they were to do; and the instructions they received stated in the last paragraph that they were to be at liberty to refrain from recommending any one of the designs of the competitors. The First Commissioner said he did not pledge himself to accept any of the designs, but if any one of them should be selected, the author of it would be selected to carry it out, with the usual commission upon the outlay. Well, the judges examined the designs, and found in them great architectural merit, ingenuity, fancy, and ability, but they also found that the architects had not been able to grapple with all the difficulties in reference to the site and the incompleteness of the instructions. They broke down and failed, and consequently the judges could not recommend any one of the designs for adoption, and they reported to the First Commissioner accordingly. The memorial of the architects said that they had agreed to compete upon a distinct understanding that one of the bodies would be employed. That was a mistake; for there was nothing distinct about the whole matter. He trusted that his noble friend would come to a proper understanding with the architects, and would have a building made to house our pictures which would be an honour and a credit to the country.

Mr. Tite said there could be no doubt but that the competition was intended to end with the election of one of the competing architects. The result had been unfortunate, but the question now was what the Government ought to do in the matter of a national gallery. The choice lay between altering the present building or erecting a new one; he preferred the latter, and he saw little difficulty about the matter if Government would only take competent men into their councils.

Lord Elichu denied that there had been any breach of faith with the competing architects, seeing that the Commissioners distinctly declined to bind themselves to accept the successful design. He should be inclined to ask the two most successful competitors to compete again, and to give for their guidance the most recent instructions of the Commissioners. He concurred in the suggestion for a new building, but would not recommend any expenditure until the proper place had been obtained.

Sir C. Bowyer and Captain Gridley made some remarks, and Mr. Cowper said it had been his intention to select the successful competitor, and he had so stated it in an incidental conversation. He had, however, made no official memorandum to that effect.

Lord J. Manners said the multitude of counsellors had tended by the variety of their advice and suggestions rather to bewilder his mind than otherwise. He did not at all approve of inviting all the architects to try again. The ground on which the building was to be erected would probably not come into the possession of the Government for a year or a year and a half, and therefore no immediate decision on the plans was required. A valuable suggestion had been made, namely, that they should consult the trustees of the National Gallery before they decided on the adoption of any plan. He intended to follow that advice, and doubted not they would eventually have a building worthy of the object to which it would be devoted, and entirely satisfactory to the country.

OPENING OF THE BURY IRRIGATION WORKS.

The Bury St. Edmund's experiment has been tried upon twenty-five acres of land, in the parish of Fornham, leased by the local commissioners for the purpose.

The various street-drains empty themselves into an intercepting sewer, which extends from a point near Stamford Bridge to Bell meadow, on the Fornham-road. At the terminus a tank was constructed for carrying out a system of desodorizing, but, as the annual cost was found so considerable (far exceeding that of the irrigation works), and the income derived from the sewage was almost nominal, the surveyor hesitated on financial grounds to encourage its continuance, and recommended the Board to adopt the irrigation plan. The sewer, however, was in the direction that the sewage must be carried, whatever means of ultimately disposing of it were to be adopted, and a tank was equally required for the purposes of irrigation. At a short distance from the tank, engine and boiler-houses and coal-sheds have been built, and it is further proposed to build a cottage adjacent, as a residence for the engine-man. These buildings are so constructed that without alteration duplicate machinery may be placed therein if required. The motive power employed is an eight-horse horizontal high-pressure engine, manufactured by Messrs. Turner, of Ipswich, driving a double crank, by which are worked two 9-inch horizontal double-acting pumps. The

* The quotation is attributed to Mr. Seward, in Dr. Barrett's scarce "Essay on the Earlier Part of the Life of Swift," published 1808.

boiler is fitted with Barret's patent damper, to economize fuel and produce a uniform pressure in working. A 12-inch cast-iron suction-pipe extends from the pumps to the well in the tank. The pumps are provided with an air vessel 12 ft. high by 2 ft. 6 inches in diameter, the object of which is to promote ease in working, by providing a "cushion" of air above the level of the sewage, to prevent the pipes receiving the force of the blow occasioned by each stroke of the pumps.

The main is continued underground, and about 3 ft. below the bed of the Lark, to the field-tank, situated at a distance of about 800 yards, and at the highest part of the land, being at an elevation of about 45 ft. above the level of the ground on which the pumps are erected. The field-tank is dug out to a depth of several feet, and furnished with a brick floor 55 ft. by 10 ft., and is further enlarged by a raised bank of clay, &c., so as to give a total depth of about 12 ft.; and the walls are of clay, sloping down to the floor at an angle which gives a length of 78 ft. and a width of 33 ft. at the top of the bank. This tank is of ample capacity to receive an entire day's sewage, which is pumped into it from the rising main; and by means of valves the sewage is conveyed away for the purpose of irrigating different parts of the land. The land at the disposal of the Commissioners, it is expected, will absorb the whole of the sewage of the town; but arrangements can doubtless be made for treating some of the adjacent lands in a similar manner.

The sewage produced in Bury is stated to amount to something like 60,000 gallons daily; and in case it should be found necessary to cease pumping an entire day, the receiving-tank will contain this quantity. The pumps, having a 2-ft. stroke, working at 25 strokes per minute—to accomplish which requires 94 strokes of the engine—will throw (theoretically) 33,000 gallons per hour, or, deducting one-fifth as waste, the actual quantity would be in round numbers 26,000 gallons; consequently 2½ hours' pumping per day will be sufficient to convey to the field-tank an entire day's sewage.

The whole of the works, including the erection of the buildings, have been designed by, and carried out under the superintendence of, Mr. Croft, the town surveyor, and are now in operation.

THE ARTIZANS' AND LABOURERS' DWELLING BILL.

MR. TORRENS'S Bill came up from the Select Committee with a variety of amendments grafted upon it. It only purports to deal with buildings, and not to regulate the overcrowding of their inmates. In cases where contagious diseases exist, or have frequently existed, in any dwelling-house or premises, and where such premises are in a state calculated to engender such diseases, the owner or landlord is to be required to cleanse, alter, or rebuild the same, in such manner as to remove the evil in question, or else to sell the premises to the authorities constituted under the powers of the Bill, who will then undertake the necessary works themselves. In case the owner do not elect to part with the property, but neglects to perform the necessary works, the authorities may cause such works to be executed themselves, and the owner will be liable for the cost. The substance and object of the Bill is comprised in these provisions, and the powers it gives are sufficiently guarded against being arbitrarily or unnecessarily exercised. The local authorities, charged with carrying out the law, are defined by the Bill. In the metropolis, exclusive of the City, they are to be the Metropolitan Board of Works. The officer of health to be appointed under the Act is to report touching the condition of dwelling-houses when in a state to be unfit for human habitation, when the local authorities are to cause the necessary improvements to be made. Also four householders may give notice in writing to the officer of health of the existence of contagious disease in any premises in the neighbourhood, or that the premises in question are unfit for human habitation; and he shall thereupon be bound to inspect them, and report forthwith to the local authority, which is then to take action in the matter, first giving notice in writing to the owner of the premises to be dealt with. The next step is to lay the report of the health officer before the grand jury, who shall make such a presentment or order thereon as the exigencies of the case may require. When the presentment is made, the local authorities

shall cause the premises to be surveyed and a specification of the necessary works to be prepared. Notice of these proceedings is to be given to the owner, in order that he may forthwith cause the works to be done. If, however, he should object to the specification, he may within a fortnight give notice thereof, and the dispute is to be settled within ten days by amicable arrangement, or else by two justices. Power of appeal is also given to the owners of premises to the Quarter Sessions, or the borough magistrates—the new law being applicable to the whole of the United Kingdom.

When the presentment has become final and complete, either through the decision of the court of appeal or through the absence of exception to it, the owner of the premises will have three months to make up his mind whether he will do the works himself, or require the local authority to purchase. If he elect to retain the premises and execute the works himself, he will have two months more in which to commence them, and they must be finished within the time limited by the specification, or, upon default, the local authority may cause them to be done, and the owner will have to refund the cost. In case of sale there is a provision for the valuation of the premises; and, in case of dispute, the amount is to be settled by a jury. When total demolition and not mere improvement is requisite, the owner is to be entitled to compensation. These are the chief provisions for carrying out the object of the Bill, namely, to provide, by the construction of new buildings or the reparation and improvement of old ones, suitable dwellings for the labouring classes; and also to provide for the opening out of closed or partially closed courts and alleys, by pulling down such buildings as may be necessary in order to make them healthy.

HOUSES FOR THE WORKING CLASSES IN BELGIUM.

THAT the working population, not only of the metropolis, but also of all manufacturing towns, is lodged in a manner prejudicial to health, regardless of comfort, destructive to morality, and insulting to decency, will be at once admitted. A very little has been done in mitigation of this great evil, and very much remains to be done before it can be said to become alleviated, much less removed. It would be a fallacy to imagine that ours is the only country that has suffered its working classes to be badly cared for, or rather not cared for at all. The same serious contingency has occurred in nearly every country where the ratio of population to area has reached the same amount. Thus, in Belgium, which has an equal if not greater population per unit of area than we have, the same important subject has lately attracted considerable attention, and the same difficulty has been experienced in attempting to provide a remedy for the evil. There, as with us, a distinction must be made between the working population of a metropolis like London, and those of smaller provincial towns, where a large agricultural element prevails.

In the vicinity of mines and large works, in Belgium, there have been two systems adopted of building workmen's dwellings. The one consists in erecting a regular little town, with long streets of houses, precisely identical in size and appearance; and the other, and the preferable one, in our opinion, comprises the erecting of houses in small groups of two, four, or at the most ten together. This latter system affords a far better circulation of air around and about the houses. If a man, after being all day in a confined unhealthy locality, comes home to a small house surrounded on all sides, and regularly hedged in by others, it is no better than "out of the frying-pan into the fire." He experiences no relief, and feels not a breath of pure fresh air, for which his lungs have been pining, for perhaps the last twelve hours together, but appears to be in the same atmosphere as he was when at work. As might be expected, the latter description of dwellings is eagerly sought after; they are well built, healthily situated, provided with a small garden and yard, let at moderate rents, and repaired when necessary by the proprietors, who are usually a company or a firm. The existing dwellings in the Belgian village are of a somewhat antiquated character, and could be rebuilt with advantage. They are, nevertheless, infinitely superior to the ordinary lodging-houses for working men that are to be found in cities, especially in those which until lately were closely

surrounded by fortifications. The destruction of these relics of ancient warfare, the erection of boulevards, and extensive means of intercommunication, new streets and wide thoroughfares, are a step towards facilitating the erection of a better class of dwelling for the artisan class. When a workman can, for the same or less rent, exchange an old dilapidated dwelling or lodging without a yard, garden, or even the conveniences essential to decency, for a new house, built in accordance with the idea of modern architecture and comfort, and provided with a small garden where he can cultivate vegetables and other useful products, he will not hesitate long about the choice. The great question in Belgium, as with us, is how to erect a large number of these dwellings with a rapidity commensurate with the wants of the community at large. It is exceedingly questionable whether private influence, even if it were unanimous, could effect the desired result. It is true that in parts of Hainaut, Charleroi, and others, building advances with extraordinary rapidity; but the houses built are erected by those intending to occupy them, who have greater resources at their command than mere working men. The question is, will anybody build workmen's dwellings on a large scale; for it is only on a large scale that they will prove of any real utility, upon pure speculation. The truth of the matter is, that with us there are thousands of persons who would be willing enough to invest their whole fortune in a scheme which simply promised ten or twenty per cent., although at the same time its failure might place them in the Bankruptcy Court; but these very persons would rather run the risk of the latter contingency than invest in a scheme which would give small but certain returns. In other words, they are ready enough to place insolvency in the one scale and wealth in the other, but turn a deaf ear to the suggestions of prudence, which would point out the true *avermum medium*. It is a complete error to rely upon the influence of generous or philanthropic opinion to accomplish so urgent and vast a measure as the transformation of the dwellings of the working population.

The direct interference of the local and provincial authorities in this matter is considered in Belgium to be, for many reasons, undesirable; but an indirect influence so exerted is believed would prove most advantageous. This is probably the bearing of the case with us. While, on the one hand, it would not be desirable that the whole onus, and consequently the whole authority, in so vast a scheme should be invested in the Government; yet unless something tangible is effected by the Legislature in behalf of the class in question, it is impossible to expect that an evil of a nature so serious and so increasing can be successfully grappled with.

K.

THE MANCHESTER TOWN-HALL COMPETITION.

SIR,—A short time since you appended to some notice of a competition a query of your own as to how long the profession would be content to undervalue their work by responding to such invitations; but so long as the system of offering every building of public importance to public competition is continued, it is difficult for any one with the natural ambition to obtain such commissions, to refrain; and the system being accepted, it is useless to complain of it, although notoriously as unsatisfactory in its results to the tempters as to the tempted; but as the modification of it put forth by the Manchester Committee is novel, it is desirable to consider the proposal to the profession made by it.

At first sight, as remarked in your last number, it sounds fairer than usual; and the idea of a preliminary competition of lighter character, in order to choose a certain number of architects, to compete again, has the apparent advantage of economizing the time of those not so chosen; but in this case, so many drawings of so finished a character are required as quite to negate any such advantage, and leave without palliation the extraordinary disadvantage of asking all the competitors to expose their hands. I really believe that if the Manchester Committee knew what they were asking, they would have hesitated before they entailed so heavy and useless a tax upon the architectural profession.

Months of thought and drawing, necessitating an outlay of probably not less than 10,000*l.*, are what they have demanded, in the first instance,

without the offer of a sixpence in the shape of remuneration. The only premium proposed is the being chosen to compete against eleven picked men, who are to be paid a sum (300*l.*) which cannot cover a fourth of their expenditure in this double competition, without considering their own time in the least. Truly this is a positively frightful tax to be levied upon the profession to enable the Manchester gentlemen to make up their minds, if they have any to make up, or if they were not made up long ago, and the whole a farce as well as a tragedy combined. At least let the matter be received in the true light, and not thoughtlessly accepted as a boon to be grateful for. Had one plan and one elevation been asked for in the first instance it would have been different. But had the committee sought an architect who had proved he could build what they wanted, or chosen one from a number by an examination of works done, it would have been better still. As it is, winning spurs in the architectural profession is like holding the bolt of the Prize-ring, and having to fight for its retention, at the cost of far more kicks than halfpence. Q.

THE TRANENT MINER.—AUTHENTICATION WANTED.

In books of philosophical experiments it is stated that you may fire from a loaded musket a candle-end through a board of considerable thickness placed stationary. Something very analogous, with a live human body for a projectile, is stated to have just occurred. The *Weekly Dispatch* of March 24th describes from the *Haddington Courier* the extraordinary escape from a fearful death of a coal-miner at Tranent. Messrs. Durie and Nisbet, coal lessees there, have availed themselves of an old and disused shaft, 276 ft. deep, containing a considerable accumulation of water, to open a communication with an adjacent new pit, by fixing at 176 ft. deep a strong and firm staging of 2-inch deals, to which the miners are lowered by rope and windlass. Down this shaft a young man, named Mylne, rather than wait to be lowered, and against the dissuasions of his comrades, proceeded to slide by means of the rope, sailor-fashion; but had hardly left the pit-mouth ere he let go his hold, when immediately was heard the crash of his body on the stage. Those above, on descending to secure his mangled remains, found him alive on the water at the bottom of the shaft, keeping himself afloat by means of some wooden fixtures, having by the velocity of his descent, passed through the 2-inch staging, "as neatly as if his person had been a rifle-bullet," and sustained, in the way of personal injury, only a scratch on the chin; so that, after some repose, he is now able to walk out of doors again.

Deeming that, in the interests of science, this remarkable statement should not be allowed to rest as it is, I take the liberty of questioning its veracity. J. W.

CONCRETE FOR COTTAGES.

In reply to J. S. W.'s inquiry respecting the proportions of cement and gravel for forming concrete walls, I have found that 10 parts of clean sea shingle or fine beach, mixed with one part of Portland cement, make very good work; but common gravel requires these proportions to be altered to 8 and 1, and even to 6 and 1, in consequence of the loamy matter it contains; much of this can, however, be got rid of by sifting.

The better plan would be for your correspondent to test these quantities, and act accordingly. BENJAMIN ADKINS.

A proper proportion of sand must be included.

THE THAMES EMBANKMENT.

Sir,—Any one that takes the trouble of looking carefully at the embankment works will see that at least two years must elapse before they are finished, although we are within four months of the time stipulated in the contract for their completion. I am neither the recipient of information nor the desire to enter into the question of who is to blame for the delay; my object is simply to offer a suggestion, which, if practicable, would to some extent conciliate public opinion and enable the ratepayers to enjoy benefit from the vast expenditure already incurred. I refer now more particularly to the sections between Westminster and Lambeth Bridge on the south side, and Westminster and Hungerford on the north side. The energy of the contractor on the Lambeth side contrasts favourably

with the other, both being in about the same stage of advancement; and with fine weather and the same energy these two sections might be finished within three months, at least, so far as the river wall and footway are concerned. Now my proposal is, that so far as the footway or pavement the public should have the use of them on these two sections, a connexion being made by a plank walk with the end of Northumberland or Arundel-street, in such a way as would not interfere with the construction of the Hungerford steam-boat pier, which will be considerably behind the other part of this section.

I think it to be regretted that polished red granite has not been used to some extent in the parapet wall facing the river; the blocks, for instance, with one side polished, or at the pier an open parapet, with plain rounded shafts of that material, in the Venetian balcony style,—perhaps something might even now be done in that way,—and as supporting the lamps which will crown the parapet blocks. I also incline to think that a grille, of appropriate design, 8 in. or 10 in. in height, on the coping, would improve the appearance and prevent boys from walking on it, as they undoubtedly will unless some such contrivance be provided. J. W.

DRIPPINGS FROM CORNICES.

THERE are many grievances and troubles in this changeable climate of ours, but I think the most uncomfortable and objectionable is the thaw following a heavy fall of snow; and this brings me to the matter to which I desire to direct your attention, and that of your readers. One of the most tiresome features of a London day in the constant and almost *incessant* dripping upon the pavement, from the cornices and projections of the houses. How easily could this be remedied. Instead of allowing the cornice *to overhang*, to what it is necessary and let the water escape by occasional outlets, through the parapet or blocking course, into the gutter, and so on to its legitimate ending, the down pipe. If this were done the nuisance would be entirely avoided, and when a shower stopped, it would leave off raining, which certainly is not the case at present. In all buildings that I have erected, I have followed the rule mentioned, and the consequence is an entire prevention of the nuisance. ARCHITECTS.

CENTRAL COTTAGE IMPROVEMENT SOCIETY.

COMPETITION FOR DETACHED LABOURERS' COTTAGES.

Sir,—The advertisement in your impression of the 23rd ult., which Mr. J. T. Smith writes that he is "at a loss to conceive the object of," became a necessity in the difficulties raised by the two builders he had named as willing to carry out his plan. The advertisement has, however, announced the object of the Council, and arrangements are now pending which will doubtless result in the erection of the cottages.

H. MARTIN, Secretary.

NEGLECT OF NOTICE

TO DISTRICT SURVEYOR UNDER THE METROPOLITAN BUILDING ACT.

On Thursday, the 28th ult., a summons, taken out by the district surveyor of Bow and Poplar, against a Mr. George Hince, the occupier of a beer-shop, situated No. 273, High-street, Poplar, was heard before Mr. Partridge, at the Thames Police Court.

The defendant had illegally altered a skittle-shed and workshop, a two-story building, at the rear of his premises, by converting it into two dwelling-houses; and by excavating the ground and under-pinning the walls had formed three stories to each, without giving two days' notice, as required by the Act.

The dwelling-houses, besides being irregularly constructed in other respects, can only be approached by a narrow passage, about 14 ft. wide, through the house, fronting the High-street. The magistrate having asked the defendant what he had to say to the charge, and finding he had no excuse to make, remarked that it was a bad case, and convicted him in the penalty of 5*l.* and costs.

SANITARY PROCEEDINGS IN PADDINGTON.

At the Marylebone police-court, before Mr. Mansfield, magistrate, a decision has been given in reference to sanitary measures in Paddington, under the Metropolitan Management Acts, 1855 and 1862. Mr. Leaver appeared to the complaints of the vestry, "to show cause why the penalties (20*l.*) and costs, inflicted by the magistrate on the 25th day of July, 1866, for non-compliance with the orders issued by the vestry for certain sanitary improvements, and not carried out by the defendant within the time stated for the execution of the same," should not be paid.

Mr. W. H. Sullivan, sanitary inspector, and inspector of nuisances for the parish, proved the service of the vestry orders, and that not being complied with, and that the penalties had not been paid to the vestry.

Mr. Atkman appeared for the defendant, stating that for the same premises (8, Poplar-place and 14, Caroline-place), the defendant had been previously convicted, and had paid the penalties. He was instructed to state that all the vestry, the medical officer of health, and the inspector required had been well and beneficially carried out to their satisfaction, and also the improvements of the defendant's property. He was therefore hoped that as the defendant at the time was most seriously unwell, and as all the works were satisfactorily executed, the magistrate would consider his former decision previously to deciding in the present case.

The magistrate called upon the inspector, who corroborated all the defendant's solicitor had stated. The magistrate then remarked, that it was well for the public to be aware, that if the owners of property neglected to carry out improvements such as those in ques-

tion, he had the power to inflict the penalties now under consideration, and to a much higher sum. In the present case he believed the vestry of Paddington, or their officers, were not desirous of seeing the penalties enforced; and, under the circumstances, he would order the defendant to pay the cost and expenses, which was at once complied with.

REVISION AND CONSOLIDATION OF THE SANITARY LAWS.

A DEPUTATION of the National Association for the Promotion of Social Science, consisting of the following gentlemen:—Sir J. Kay Shuttleworth, bart., Mr. H. W. Rumsey, Dr. Hardwicke, Mr. Gaol, Rev. W. L. Clay (secretary), Dr. A. H. Jacob (of Dublin), Dr. Lankester, F.R.S., Mr. James Beal, Mr. Charles Hawkins, Mr. Layard, M.P., Mr. Rendle, Captain Clode, Mr. Pocock, Dr. Stewart, and Colonel Sykes, M.P., waited on the Duke of Marlborough at the Privy Council Office, on Wednesday, to present a memorial on the consolidation of the sanitary laws.

The conclusions of the memorialists were as follows:—

"1. That the laws of public health require to be revised and consolidated, with plain and specific enactments on sanitary matters.

"2. That permissive enactments are generally taken to be permissions not to act, and that therefore the most useful provisions should be made peremptory.

"3. That the constitution of sanitary authorities should be more uniform; their areas of administration more extensive; their powers and functions more comprehensive; and that some provision be made for the addition of members possessing other and higher qualifications than those now required.

"4. That the inefficiency of the administration of the health laws by the local authorities is in part due to the absence of a central power, which could be appealed to without reference to the courts of law, and could by means of judicious advice, and, if necessary, legal compulsion, cause the local authorities to do their duty."

Mr. Layard, M.P., introduced the deputation, and Mr. Rendle, Dr. Lankester, Mr. Rumsey, and Dr. Stewart addressed the Duke.

In reply, the President said he was much indebted to the gentlemen of the deputation for the manner in which they had represented the facts. Of the provisions of the Sanitary Acts, several were of a tentative character, and others of such a confused order that it was impossible for him then to give an opinion as to their consolidation. Of the late Sanitary Act nothing could be expected so early as to its working. Some time must be allowed to ascertain its weak points before consolidation. The Act ought to be carried out, and he thought it would be. Other Acts might be improved by further legislation. The consolidations of areas and other details would be a matter of great consideration, and without pledging the Government either one way or the other, he would take care that it had their very best attention.

CHURCH-BUILDING NEWS.

Southwold (Suffolk).—The scaffolding which has long hidden the chancel-roof of the church has been removed, and the painted roof exposed to view. The design is a copy of the original painting, which, although far gone, was in sufficiently good preservation to enable a transcript of it to be produced, both in form and colour. The principals, purlins, cornices, hammer-beams, and other members, are picked out in various colours and patterns, the prevailing one being a chequered roll moulding, in some parts red and white, and in others red and black,—a very common ornament in the time of Henry VII., at which period the original painting of this roof was executed. The panels, with the exception of those in the last bay to the westward, are blue, powdered with gold stars. The westward bay, under which the roof-loft originally stood, is more highly ornamented than the rest, all the panels being filled with angels holding scrolls or emblems. The woodwork of both nave and chancel roofs has been restored in oak, and re-covered with lead, the clerestory windows made new and glazed with cathedral glass, and the original battlements restored and continued along the nave. A new four-light east-window has also been inserted. The outlay up to the present time amounts to between 1,600*l.* and 1,700*l.*, but much more remains to be done to render the restoration complete. The works have been executed principally by Southwold tradesmen,—Messrs. Allen & Son doing the stonework, Messrs. Naunton, Prestidge, Strouger, Forder, and others, the carpenters, joiners, plumbers, and glaziers' work respectively. The painting of the chancel-roof was done by Messrs.

J. & J. King, of Norwich, and the whole has been done under the direction of Mr. Phipson, architect.

Ispsley.—St. Peter's church is now undergoing restoration. The work is being done by Mr. Espley, of Evesham. The chancel will be almost all new, with a new arch, new windows, a small stained-glass window, and a large window, with Bath-stone dressings. The other stonework is mixed Bath and Bromsgrove stone. The nave will be re-pewed to seat about 100. There is an apparatus for heating, the furnace being almost in the centre of the nave: a patent fire runs up the aisle towards the chancel.

Bromsgrove.—The little chapel of the Grammar School requiring enlargement, many friends subscribed for the work, the expense of which was to have been about 400l. Mr. Hopkins, of Worcester, was the architect selected. The chapel has been elongated 18 ft. at the east end, giving 40 extra sittings, and forming a chancel for the choir, and a sanctuary. Two acutely pointed arches, resting on corbels, support the new open roof of the chancel. The arches are constructed of Bromsgrove stone of two colours. On the south side of the chancel are two couples of lancet-lights, each couple being under one moulded arch. One of these lancets has been filled with stained glass by Mr. Wailes, of Newcastle. In the little chamber, where the organ is now deposited, is a minute lancet light, which contains the figure of St. Cecilia, the patroness of music. This was the gift to Mrs. Collins of Messrs. Lavers & Barrand, the glass-painters. The old east window of the chancel has been readopted; it consists of three cusped lancets, painted by Mr. Wailes, and contains some of the principal events in the life of our Saviour.

Holt.—It is proposed to restore the old parish church of St. Chad, Holt, in accordance with plans submitted by Mr. Douglas, architect. Its present state, according to the *Chester Courant*, is very bad. An appeal is being made. The cost of the proposed restoration will be 1,500l.

Woolton Courtney, Somerset.—The church has, during the past year, been considerably improved, reset, and repaired. A modern and very rude upper stage to the tower has been replaced by an Early English superstructure, with ridged roof in consonance with the ancient fabric. The perpendicular windows of the nave and north aisle, which were in a ruinous state, have been reconstructed, and new windows inserted in the north aisle. The east window of the aisle is of stained glass, and gives representations of the Holy Family. It was the gift of Miss Hole, of Alcombe. The chancel east window has the Crucifixion and two Sacraments. The two south windows of the chancel are memorials to a daughter and son of the rector, Bishop Chapman. These are all the work of Messrs. Hardman & Co. A lofty west gallery has been removed, and the church reset in red deal, with tracery in the bench ends. The reading-desk, pulpit, and chancel seats are of wainscot. There is an oak reredos, of five ogee-crooketed canopies, the panels being occupied by emblems in medallions and diapers, and this, as well as the decoration of the chancel roof, which had been previously renewed, is the work of Mr. Hansell, of Taunton. The cradle roofs of the nave and aisle, the latter rich in bosses of great variety, have been strengthened and repaired. The works have been carried out by Messrs. Shewbrooks & Son; the freestone work by the late Mr. C. Stagg; the carving by Mr. Seymour, all of Taunton. Mr. Ashworth, of Exeter, was the architect.

Busbridge (Surrey).—The Church of St. John the Baptist, Busbridge, near Godalming, has been consecrated. The church owes its erection to Mr. John Ramsden, of Busbridge Hall, at a cost of 4,000l. It is built in the Gothic style, from designs furnished by Mr. Gilbert Scott, and the contractors were Messrs. Moon & Son, of Godalming. The church will seat 220 persons in its interior, which consists of chancel, nave, and single aisle. The exterior walls are of Bargate, quarried in the neighbouring park, and the interior walls are lined with chalk slabs, obtained from and prepared at Pattenham. The roof is an open one. The church throughout is paved with Minton's encaustic tiles. The large east window, and the smaller window on each side of the chancel, are coloured in Powell's quoins. The seats in the chancel, intended for the use of the choir, are of oak, carved by Mr. Farmer, of the Westminster-road, who we understand also executed the stone carving throughout the edifice. The pulpit was made after a design by Mr. Scott and is constructed of Bath stone and

chalk. The font was also designed by Mr. Scott. It is made of Forest of Dean stone. The seats in the church are all free, and consist of chairs. Attached to the back of every seat there is a kneeling cushion, to be unfastened from a hook when required. The church is surmounted by an oaken shingle spire. The roof is pointed, and red tiles are used in the covering. The whole of the ironwork of the church was prepared and supplied by Messrs. Filmer & Mason, of Guildford. The design on all the keys and locks is the Busbridge crest, namely, a fish, an idea of the contractors. The church is situated on a gentle elevation at the extremity of the village, and a few minutes' walk from the town of Godalming.

Hallow.—The foundation stone of a new church has been laid at Hallow, on a new site. This is a field called "The Reens," near the entrance to the village from Worcester, and was given by the trustees of the endowed school in the parish. Mr. Hopkins is the architect, and the contractors are Messrs. Inwood & Osborne, of Malvern. The church is to consist of a chancel, nave, north and south aisles, vestry and organ chamber, south chapel for the school children, south porch, and western tower; but owing to the want of funds the tower and spire will not be erected at present. The nave, 60 ft. by 20 ft., will be divided from the aisles by arches, supported by circular columns. There will be a steep-pitched roof, the thrust of which externally will be counteracted by flying buttresses. The chancel will be 32 ft. by 18 ft., with lofty timbered roof. There will be an east window of three lights; a west window of five lights; circular clearstory windows; and two two-light windows in the aisles. A tower and broach spire will rise to a height of 143 ft. The style is Early Decorated. The Earl of Dudley has given the stone, and Earl Beauchamp a reredos. The late Earl Beauchamp, as lay proprietor of the parish, gave one year's great tithes (between 300l. and 400l.) towards the work.

SCHOOL-BUILDING NEWS.

Gorton (Manchester).—A new school in Gorton, Gorton, has been opened. The school belongs to the Openshaw Methodist Free Church, and is a plain commodious building, consisting of one large room and two vestries, with other appurtenances, and stands at the back of a plot of ground which is reserved for a chapel. The school is fitted up for day-school purposes, but will at present be used only for Sunday-school operations and divine service. It will accommodate 250 scholars, or it will seat 200 adults. The cost, including fittings, furniture, and school requisites, is 450l. This is the second school commenced and completed during the past twelve months in connexion with the Openshaw Methodist Free Church—the first being the Cobden Memorial Schools at Openshaw, which cost 900l.

Sibford.—The new Parochial Schools in this village have been opened by the Bishop-Coadjutor of Edinburgh, who for seven years was in pastoral charge of the parish. The schools, built from designs by Mr. Buckridge, of Oxford, will accommodate 120 children, and have cost about 600l.

Haddiscoe.—The new school, with teacher's residence, for the parishes of Haddiscoe and Toft Monks, the erection of which commenced in September last, has been opened. The total expenditure has been 580l. The building was designed by Mr. J. B. Pearce, of Norwich, architect, under whose superintendence the work has been carried out by Messrs. Jackson & Rounce, of Blundestone.

Grantchester.—The new school has been opened. It is in the Gothic style, from a design by Mr. William Fawcett.

Books Received.

The Poor of Edinburgh and their Homes. By WILLIAM ANDERSON, Reporter, *Edinburgh Courant*. London: Simpkin, Marshall, & Co. 1867.

The truthfulness of Mr. Anderson's narrative, and it is a very painful one, is spontaneously certified by the Rev. Dr. Guthrie, an excellent authority. The volume is a reprint of a series of reports to the paper with which the

author is connected. These reports make no pretension to sanitary or other arrangement, although the sanitary aspect of the subject is kept steadily in view: the sketches have also social and moral interest as well; and they are ably and graphically written, and contain, occasionally, anecdotal remarks of touching interest as to the social and sanitary condition of the poor of Edinburgh, among whom there is a fine field for philanthropy. The volume is dedicated to the ladies of Edinburgh, who are doing much on behalf of their poor. A Ladies' Sanitary Association might do great good in a methodical and effective way in aid of so desirable an object as the raising of the social and sanitary position of the poorest class of the citizens.

VARIORUM.

The Science Review for April contains a fuller account than has before been printed of the curious phenomena of sensitive flames at Mr. W. F. Barrett, lecturer on natural science at the International College, who first noticed these phenomena and drew Dr. Tyndall's attention to them, is the author of the paper, which is illustrated by diagrams. This popular and ably-conducted Review sustains its varied interest in other respects; and, indeed, it forms a monthly compendium of facts in science, as well as of original papers on many subjects.—"The Penny Guide to Paris, and popular London, Chatham, and Dover Guide," and "The Penny Guide to Paris and popular South-Eastern Railway Guide." London: 24, Bride-lane. These are useful guides, and contain not only all the requisite railway tables and "a Concise Guide to Paris by an Englishman long Resident in that City," but also maps of the routes on this side the Channel and of Paris, as well as of the Exhibition building. A penny guide to Paris, however, is rather too cheap, and we think is a mistake: no one going would grudge expense, and for that sum a much better guide might be prepared: as it is, the wind has been taken out of the sails of those of a better class by these cheap issues, and some of them, we believe, have in consequence been suppressed.

Miscellaneous.

HOSPITAL STATISTICS.—Of every 1,000 deaths in London in 1866, 62 occurred in one or other of the metropolitan hospitals; and of every 1,000 of population in London, about 1.5 were inmates of these institutions. Taking 10 large metropolitan hospitals; the average mortality to every 100 cases treated in 1865 was 11, the mean term of treatment being 34 days. As regards the duration of cases, the *maximum* and *minimum* were attained in the two hospitals for special diseases; the mean term of treatment being 71 days in the Consumption Hospital, and 25 days in the Fever Hospital. If by the adoption of sanitary measures the duration of cases in the general hospitals can be reduced, the utility of the hospital will be increased, so far as its funds are concerned. While the annual mortality of the general population of London was 2.6 per cent. in 1865, the average mortality of the sick population in ten large metropolitan hospitals was 11.8 per cent. In 1861 the proportion was 9.4 per cent. The mortality of the inmates in 1866, who were all suffering from disease, being 47 times as high as the general mortality of London. With the exception of deaths to 100 constantly sick has increased since 1861. It is to be feared, even in the present day, that patients after having undergone any serious operation often die of hospital pyæmia, or purulent deposit, which is generally supposed to be caused by some defect in the sanitary arrangements of these institutions. The deaths in England from pyæmia have increased from 159 in 1863 to 202 in 1864, and the increase of this disease is a matter which calls for serious attention. The classes of cases which are admitted into particular hospitals differ largely, so that the investigation of the effects of ventilation and other sanitary arrangements requires great care and skill. It has been recorded that after the wing of a large hospital had been well ventilated and put into good sanitary condition, there was a marked and continuous change in the amount of disease, and an abolition of those secondary diseases which so frequently occur in hospitals that are under bad sanitary arrangements.

THE HERTS. ARCHÆOLOGICAL AND ARCHÆOLOGICAL SOCIETY.—A special evening meeting of the members and friends of this society has been held in the Townhall, Hertford; Mr. J. C. Hawkins, rector of the abbey, in the chair. Mr. Pollard, of the Herts. *Guardian*, read a paper, entitled "Leaves from an Archæological Note Book." The subject of the paper was the Saxon and Danish fortifications near the village of Great Amwell, on the river Lea, in Herts. The Rev. O. W. Davys, M.A., rector of Wheathamstead, read a paper on "The Choral Arrangements of Churches;" and the Rev. Canon Gee, M.A., vicar of Abbot's Langley, and rural dean, one entitled "Another Peal of Bells."

THE JEFFCOCK MEMORIAL CHURCH.—Shortly after the explosion at the Oaks Colliery, in which Mr. Parkin Jeffcock lost his life in a brave and noble endeavour to save that of others, a project for a memorial church, at Mortomley, was started by a few of his personal friends, to whom he had mentioned his wish to do something towards erecting such a building. The plan has received a gratifying amount of support, although up to the present time it has not been brought before the general public, owing to the wish of the committee that it should not, in appearance even, clash with the General Memorial Fund. The trustees are the Earl Fitzwilliam, Lord Wharncliffe, and the Rev. William Micklethwaite.

CARVED REREDOS.—A carved oak reredos, from designs by Mr. G. J. Baguley, has just been erected in Christ Church, Sheffield. It is divided into seven compartments, three of which form the triptych or altar-piece, and on either side the corn and paten, and the vine and chalice, surrounded by texts. The other portions are filled up with the Lord's Prayer and Creed, illuminated, the capitals alternately gold and colour. Above the reredos, and corresponding with it, are tablets of the Ten Commandments, also illuminated. The whole has been painted on zinc by Mr. Baguley. The lower portion of the reredos is arched, the wall behind being diapered on a green ground. The woodwork, supplied by Mr. Dobson, harmonizes with the carved screen already in the chancel.

AN AERONAUTIC SOCIETY.—At the last meeting of the members of the Royal Institution a lecture, "On the various Modes of Flight in relation to Aeronautics," was delivered by Dr. J. B. Pettigrew. One of the objects of the lecture appeared to be to bring into notice the newly-formed Aeronautic Society, the president of which is the Duke of Argyll, who sat on the right hand of the chairman, Sir H. Holland. The lecturer thought that if the art of flying be ever accomplished, it must be principally by the application of mechanical force, the muscular power of man, however applied, being quite inadequate for the purpose, and balloons alone not presenting the means of guidance through the air. He considered that the invention of flying was not more improbable than many others that have been accomplished, and that it might be looked forward to as the grand achievement of the age.

PRESCRIPTIVE PATHS: ACTION AGAINST LORD DERBY.—At the Manchester Assizes, a gentleman named Winterbottom brought an action against the Earl of Derby for obstructing an alleged public footpath in the township of Pilkington, thereby putting the plaintiff to expense in removing the obstruction. It appeared from the arguments and evidence on both sides that this was a dispute as to the public or private character of a certain footpath. For the plaintiff it was stated that the path had existed for the use of the public so long as living memory went, and witnesses in support of this assertion were called, varying in age from 70 years to 90. Three years ago Mr. Statter, Lord Derby's agent, had stopped the pathway. The plaintiff had expended 4s. or 5s. in removing the obstructions put in the pathway. For the defence it was urged that certain public trespass had been allowed by the person who had leased the property, but on the lease falling in the owner was not bound to recognise the practice allowed by the tenant. It was also urged, as a legal objection, that no individual member of the public could maintain an action for the obstruction of a public highway unless he could show that he had sustained some particular damage by the obstruction. The jury found a verdict for the plaintiff, with 4s. damages, leave being given for the defendant to move the Court of Exchequer on the point previously mentioned.

DONATION TO THE NATIONAL GALLERY.—Captain Hans Busk has presented to the trustees of the National Gallery a work of art by Nicolo Poussin. It is in excellent preservation. The picture was painted in 1641, and was purchased some years since from the Barberini Gallery for 600 guineas. It was considered one of the gems of the collection of the late Mr. Hans Busk, who died in 1862.

STONE IN KEYSTONE.—Some years ago part of an old building, originally a lepers' hospital, was pulled down, and in the keystone of the arch of a low doorway was found a *white stone*. The keystone was in two parts, carefully fitted together; and a small groove had been chiselled out of the middle of each part, forming a hollow just large enough to admit the stone, which is the size of a large marble, and unpolished. I shall be glad if any of your correspondents can explain this circumstance.—*Notes and Queries.*

MAGNETIC SPIRALS.—If an iron wire be twisted during or even after the passage of a voltaic current through it, the wire, it is said, becomes magnetic. When the wire is twisted in the manner of a right-handed screw, the point at which the current enters becomes a south pole: in the opposite case it becomes a north pole. If, during the passage of the current, the wire be twisted in different directions, the polarity changes with the direction of the twist. Some light will doubtless be shed upon the phenomena of vegetable spirals by these curious facts.

DAMP WALLS.—An Ipswich correspondent says:—In reply to "M. L. F.," I have just effected a complete cure from damp exuding from a brick-wall, upon which no plaster, much less paper, would adhere, on account of its having been several times saturated with sea water. I have done so by using "Italian plaster." If your correspondent will try it, I feel certain he would meet with equal success. The cost is but little more than that of Portland cement, and may be papered upon forty-eight hours after being used, without any risk of damp or discolouration.

NEW BUILDINGS AT BURLINGTON HOUSE.—The site of the new buildings for the Royal Academy, in Burlington-gardens, is now being excavated, and before the end of summer in next year it is thought the Academy may remove from Trafalgar-square to its new abode. As our readers already know, Messrs. Banks & Barry have charge of the buildings intended for the learned societies; Mr. Sydney Smirke is the architect of the Academy, and to him is due the improvement of the aspect of Burlington House, by the addition of a story to it; and Mr. Pennethorne is the architect for the London University.

THE CATHEDRAL FOR BERLIN.—According to a Cabinet order, published on the eve of the king's birthday, the long-promised Cathedral of Berlin is now to be undertaken in good earnest. The late Privy Councillor Stüler has supplied the drawings. Independently of the entrance-hall, the body of the building will be 240 ft. square, and 140 ft. high. Above this will rise a cupola, 190 ft. high, surmounted by a spire and cross, 70 ft. in height. This gives a total altitude of 400 ft., or just 4 ft. less than that of St. Paul's. The columns of the portico are to be Corinthian, it is said, and the general character of the building that of a vast basilica.

EXPLOSIONS.—These have been rather numerous of late. A mixing-house at the Faversham powder works has been demolished by an explosion, and four men killed and one severely injured. A gas explosion has seriously injured four persons at Scott-street, Leeds. Gas from a defective main had accumulated in the cellars of a house, and a candle was as usual stupidly taken down to see where the leakage arose. The house and shop were very much damaged. A curious explosion in a kitchen-oven has occurred at Belgrave, near Leicester. A bottle of water, with a tied cork, was put into the oven to heat, and forgotten till it exploded, killing one person and seriously injuring two others, and destroying the oven, the fragments of which injured those in the kitchen. Strange to say, the very same sort of accident had already occurred in the same village. A small steam-boiler connected with a chopping-machine in the ground premises of a shop at Barnsley has exploded, severely injuring two persons and seriously damaging the premises. At Stepney an explosion has taken place in a private dwelling, from a stock of parlour fireworks that were there manufactured.

MR. RUSKIN.—This gentleman has been appointed by the Vice-Chancellor of Cambridge to the office of Sir Robert Rode's lecturer for the ensuing year. He will deliver a lecture in the Easter term.

THE CHARGE OF THE PARKS.—The metropolitan police are henceforth to take charge of Hyde Park and the Green Park. The carriage-gates of Hyde Park will be kept open till twelve o'clock at night instead of ten, as hitherto. The magazine barracks in the centre of the park will be used as a police-station.

THAMES SUBWAYS.—The Board of Trade have reported to Parliament on the Bill proposing to give power to a company to construct subways under the Thames from Pimlico pier to Nine Elms; from Temple pier to Dilke-street, Lambeth; from Tower Dock-wall to Pickle Herring-stairs, Southwark; and from Wapping Old-stairs to Cherry-garden-stairs, Bermondsey-wall. The Board make several suggestions relating to clauses in the Bill; and submit that it may be a question whether the benefit to the public would compensate for the inconvenience and danger to navigation likely to be caused by the temporary works required for the construction of the subways of Tower-dock and Cherry-garden-stairs.

THE RESTORATION OF THE OLD ROMAN AQUEDUCT.—The Anglo-Roman company for restoring the Marston aqueduct, and bringing again into the city the copious and salubrious water for which it was constructed 2,000 years ago, are about to set to work. The surveys being completed, the works are to be commenced immediately with 500 labourers. Above Tivoli, along the upper valley of the Anio, the stream will be conveyed along an aqueduct, and across the Campagna to Rome in iron mains. About eight miles of the ancient aqueduct above Tivoli have been uncovered and examined to see whether the conduit could be made serviceable again; but it appears that it will have to be reconstructed entirely.

MONUMENTAL.—The bronze statue of Mr. Cobden recently cast in London, of which Mr. Marshall Wood is the sculptor, has been placed on its granite pedestal in St. Ann's-square, Manchester, opposite the front of the Exchange. The pose of the figure represents Mr. Cobden, with hand uplifted and finger pointed, in the act of addressing as in the House of Commons.—The Town Council of Liverpool has before it a proposition to place a statue of Mr. Mayer in one of the niches of St. George's Hall. A resolution in favour of this method of acknowledging the great benefits which the originator and collector of the famous Museum of Antiquities which bears his name has conferred by his gift of the collection to the town, was adopted at a meeting held in the Mayor's parlour; and there is no doubt the Council will unanimously accept the suggestion. The statue will be a suitable companion to that of William Brown, the giver of the building containing the Free Library and Museum.

THE GILDING OF PORCELAIN.—A coating of gold, which is brilliant without burnishing, may be imparted to porcelain, observes the *Scientific Review*, by means of a mixture prepared as follows:—Thirty-two parts of gold are to be dissolved in aqua regia, containing 128 parts nitric, and the same amount of hydrochloric acid, heat being applied. When the solution is complete, one and one-fifth part tin, and the same amount of butter of antimony, are to be added; and, after heat has been applied, the result is to be diluted with 500 parts water. Also sixteen parts sulphur, and the same amount of Venice turpentine, are to be gently warmed until they form a tough uniform dark-brown mass, which is to be thinned with fifty parts oil of lavender. The solution of gold is poured into this; and the mixture being kept warm, it is to be constantly and gently stirred until a uniform liquid is obtained. On cooling, the water and excess of acid separate; and the resinous mass thus obtained is to be well washed with water, and dried, then thinned with sixty-five parts oil of lavender and 100 parts oil of turpentine; and, having been heated until it becomes of a uniform consistence, five parts basic nitrate of bismuth are to be added to it; after which, it is to be left at rest till it is quite clear. The clear portion may then be poured off, and is ready for use. It dries quickly on the porcelain, and the gilding is brought out by the application of a high heat.

A NEW YORK THEATRE BURNED.—The Winter Garden Theatre, at New York, has been burnt down.

SOCIAL SCIENCE PROGRESS.—A Social Science Association for the Bombay Presidency has been formed at the suggestion of Miss Carpenter.

THE MAHOGANY TREE IN INDIA.—Dr. T. Anderson has reported to Government that great success has attended the introduction of the mahogany-tree into the Calcutta Botanical Gardens. Several of the trees, originally introduced in 1795 from Jamaica as young trees, were destroyed in the cyclone of 1864, when they were seventy-one years of age. They had attained a very large size, averaging from 12 ft. in girth at 4 ft. above the ground. The wood is in great demand at high prices in Calcutta. Dr. Anderson believes that the mahogany-tree might as easily be spread over all parts of Bengal as the larch has been in Britain.

THE NATIONAL EXHIBITION OF WORKS OF ART AT LEEDS.—This exhibition, which is to be held next year, promises to be a great success. The promoters have already obtained the special encouragement of the Queen, and the energy with which the project has been taken up by the leading families of Yorkshire, who have already subscribed a guarantee fund of upwards of 100,000*l.*, affords proof that its promoters and friends are in earnest. The promoters look forward to the formation of local galleries of paintings and sculpture as among the results of the forthcoming exhibition. An influential London committee of advice has been formed, and Mr. J. B. Waring has been appointed chief commissioner, and Mr. W. Bedford assistant commissioner.

THE ANCIENT RECORDS OF THE CORPORATION OF LONDON.—An important contribution to the history of England is about to be made by the corporation, who have at length resolved, on a report from the Library Committee, to engage Mr. H. T. Riley, M.A., to compile a volume of extracts from certain of the corporation records, at an estimated expense, for 750 copies, of 550*l.*, 300*l.* of which will be the cost of editing, and the remaining 250*l.* will in all probability be repaid by sale of extra copies. Precedents are not wanting for this movement on the part of the London Corporation. They gave permission to the Master of the Rolls to publish "Liber Albus," "Liber Horne," &c., and the Camden Society to publish "Chronicles of London." The great value of these records has been recognised by many writers of eminence, both British and foreign, from Stow, in 1598, to M. Delplis, in 1843. The time comprised in the extracts proposed to be published will extend over a period of nearly 200 years, viz., from Edward I. to Henry VI., whereas the "Liber Albus" extended over only 100 years, viz., from Edward I. to Richard II.

THE BUILDING TRADES MOVEMENT.—The joiners and quarrymen in Barnsley and neighbourhood have struck work for an advance of wages and a reduction in the hours of labour. Notices were some time since delivered by the men to the effect that on and after the 1st of April the joiners would require 1*s.* per week advance and a reduction of one hour per day, viz., from ten to nine hours, while the quarrymen required an advance of 2*s.* per week. The masters agreed to give the extra 1*s.* per week to the joiners, but declined to concede any reduction in the hours of labour; with regard to the quarrymen, it was agreed to advance their wages 1*s.* per week. The wages of the joiners at present vary from 22*s.* to 27*s.* per week, and those of the quarrymen from 21*s.* to 24*s.* The masters also threaten to go out next month on the question of time and wages.—About 400 joiners have gone on strike at Hull, in pursuance of resolutions passed at the meetings of the Operative Joiners and Carpenters' Society. It appears that some time ago the operatives gave their masters notice that they should demand the Saturday half-holiday, commencing on the first week of April, without any deduction from the ordinary rate of wages. The masters' reply to this was, that they were quite willing to grant the half-holiday if the men would accept payment by the hour. The men refused to accept the masters' terms, and gave notice that in the event of their request not being complied with they should strike work on the 1st of April. In about a dozen shops where the masters have work pressing the half-holiday has been given, but in the others it has been refused, and the men have accordingly turned out.

THE LEICESTERSHIRE ARCHITECTURAL SOCIETY. At an ordinary meeting of this Society, recently held at Leicester, office-bearers were elected, the mayor for the time being as president. Various objects of interest were exhibited, and the Rev. John Fisher read a paper upon "Armorial Bearings, Grants of Arms, and Laws of Heraldry."

"THE PARIS EXHIBITION AND LAW COURTS COMPETITION."—A correspondent on this subject says that while he thinks it is very desirable that our architecture should be well represented at the Exhibition, and commends "Adelphi" for calling attention to it, he is of opinion the result will not be obtained by sending the limited competition designs of the New Law Courts and National Gallery. He thinks it would be better to send the designs of some general competition.

BURSTING OF A CANAL.—The Wakefield and Barnsley canal, near Barnsley, has burst its banks. The water ran off for a considerable distance. Several collieries were consequently set-down, and a large number of men thrown out of employment. The canal burst at the aqueduct, and the water flowed on to the low lands beneath, and considerable damage was the result. The point where the canal burst was the same at which a similar accident occurred more than once during last year.

THE TRADES UNION COMMISSION.—This Commission is now holding open sittings at Park Prospect House, Westminster, Sir William Erie presiding. Office bearers and others connected with trade societies, such as the London Bricklayers' Society, the National Association of Plasterers, and the Masons' Society, have been examined in regard to the rules of their respective societies; as also Mr. G. Potter in regard to his individual connexion with the London Working Men's Association and the Progressive Society of Carpenters.

BUSINESS NUISANCE.—The Court of Chancery will grant an injunction to prevent a business being carried on so as to be a nuisance, where the annoyance caused is such as materially to interfere with the ordinary comfort of human existence, and will not require proof of specific injury, such as, for instance, the destruction of vegetable life. Smoke alone, or bad smells or offensive gases alone, or noise alone, are sufficient causes for the interference of the Court by injunction. The Master of the Rolls thus held in the case of *Crump v. Lambert*.

TENDERS

For rebuilding the Crown Inn, High-street, Peckham, for Mr. Henry Hobbs. Messrs. Finch Hill & Paraire, architects.—
Shapley & Webster (accepted)...£1,700 0 0

For proposed works at the Chalm Schools, for Mr. R. Tabor. Messrs. Slater & Carpenter, architects. Quantities not supplied.—
Nightingale.....28,557 0 0
Simpson.....7,400 0 0
Fell.....6,945 0 0
Manley & Rogers.....5,827 0 0

For works at Woolmer's Farm, near Reigate, Surrey, for Mr. Taylor. Messrs. Dent & Son, architects. Quantities not supplied.—
Nightingale.....£564 0 0
Thornton.....634 0 0

For addition to house in Marham-street, Westminster, for Mr. G. Adams. Mr. H. W. Budd, architect.—
Pemberton.....£177 13 0
Wilson.....169 0 0
Mills & Son.....168 0 0

For brick and pipe sewers, Putney, for the Wandsworth District Board of Works. Mr. J. Nibley, surveyor. Quantities supplied by Mr. D. W. Young.—
Oliver & Co.....£19,200 0 0
Baker & Co.....17,763 12 0
Thirsk.....12,460 0 0
Wainwright.....17,400 0 0
Hiscox & Williams.....17,400 0 0
Ayras.....17,400 0 0
Wigmore.....17,275 0 0
Robinson.....17,194 0 0
Blackmore.....17,000 0 0
Moxon & Co.....16,908 0 0
Pearson.....14,800 0 0
Harvey.....13,877 0 0
Ring.....13,820 0 0
Keeble.....13,100 0 0
Nott.....13,000 0 0
Mann.....12,550 0 0
Hill & Eddell.....12,000 0 0
Thackray.....11,900 0 0

For new shop-front, &c., at No. 392, Euston-road, for Mr. S. B. Robertson. Mr. A. Evers, architect.—
Forley.....£170 0 0
Ebb & Sons.....163 0 0
Foster.....160 0 0

For works at the House of Correction, Coldbath-fields, Mr. F. H. Fownall, architect (supplementary estimate).—
Henshaw (accepted).....£27,000 0 0

For St. Pancras Workhouse enlargement. Mr. E. C. Robins, architect. Quantities supplied by Mr. Snell.—

Names.	New Wards and Chapel.	Lengthening Wards.
Crabb & Vaughan.....	£11,950 0 0	£880 0 0
Gribbis.....	11,068 18 0	1,455 10 0
Marsland & Son.....	11,170 0 0	1,000 0 0
Crooket.....	11,180 10 0	911 0 0
Lathley, Bros.....	10,691 0 0	897 0 0
Neuman & Mann.....	10,215 10 0	829 18 0
Abraham.....	9,807 0 0	874 0 0
Strivener & White.....	9,883 8 0	832 0 0
Keeble.....	9,857 0 0	831 0 0
Nutt & Co.....	9,980 0 0	735 0 0
Kirk.....	9,797 0 0	815 0 0
Thackray.....	9,833 8 0	811 0 0
Saley.....	9,760 0 0	830 0 0
Chapple.....	9,803 0 0	719 0 0
Hart.....	9,393 0 0	744 0 0
Henshaw.....	9,220 0 0	730 0 0
H. & E. Kell.....	9,225 0 0	687 0 0
Rigby.....	9,184 0 0	1,045 0 0
Palmer.....	9,145 0 0	735 0 0
Langman & Way.....	9,837 2 0*	739 0 0
Brass.....	9,080 0 0	719 0 0
Manley & Rogers.....	8,990 0 0	704 0 0
Whitigdale.....	8,888 0 0	777 0 0
Mann (accepted).....	5,378 0 0	660 0 0

* Total.

For building and finishing a fourteen-roomed house and offices, Whitstable, for Mr. Thos. Gann, Junr. Mr. H. Marshall, architect. Quantities supplied by Messrs. Wilson & Broadbridge.—

Stridde.....	£1,890 0 0
Webb & Son.....	1,389 0 0
Hill.....	1,397 0 0
Collings.....	1,385 0 0
Goodman.....	1,340 0 0
Foad.....	1,235 10 0
Bushell.....	1,197 0 0
Snow.....	1,194 14 0
Kemp.....	1,177 0 0
Lawson & Cloak.....	1,164 15 0
J. Forster.....	1,068 15 0
Hornell.....	1,045 0 0
T. Porter.....	1,045 0 0

For building new class-rooms and chapel-keeper's apartments, Walsley chapel, St. John's Hill, Wandsworth. Mr. John Tarring, architect. Quantities supplied:—

Lathley, Bros.....	£799 0 0
Brighton.....	473 0 0
Easton, Bros.....	779 10 0
Spink.....	760 0 0
Richards.....	680 0 0
Saunders.....	647 0 0

For alteration and addition to the Horns public-house, Grange-road, Brompton. Mr. H. Jarvis, architect.—
Henshaw.....£723 0 0
Thompson.....685 0 0
Marsland & Sons.....580 0 0
Tarrant.....540 0 0
King & Son.....490 0 0

For shop-front, bar-fittings, &c., at the Falcon Tavern, Fetter-lane, for Mr. W. Carter. Messrs. Bird & Walters, architects:—

MacLachlan.....	£915 0 0
J. Brown.....	910 0 0
E. Brown.....	895 0 0
Newman & Mann.....	895 0 0
Ebbs & Son.....	884 0 0
Wilson & Son.....	874 0 0
Kelly, Bros.....	815 0 0

For ten six-roomed houses, with additions, Lordship's-road, Stoke Newington. Mr. Herbert Ford, architect:—
Cole (accepted).....£4,000 0 0

TO CORRESPONDENTS.

Black Bettle.—"A Constant Reader" wishes us to ask "correspondents as to the best means of getting rid of the nuisance of black-bettles or cockroaches, which infest the basement, and more particularly the kitchen, of the writer's house." We have occasionally replied to this query ourselves in the *Builder*, but will be glad to know if anything new can now be suggested by our correspondents. An unwholesome of an old West-end house wishes to know how to get rid of bugs in the walls of a room which was thoroughly cleaned, searched, and fumigated last autumn, but already gives signs of insect life. As the bugs seem to "make their way through crevices and cracks," we should recommend the careful filling up of these; failing which, perhaps, some form of the pyrethrum powder or Persian insect-killing might be tried: those in puff-ball form would be most easily got into crevices. Reeking of St. Paul's churchyard, however, has one of these powders, which is said to be useful in killing such insects.

W. K. - J. B. W. - J. G. Jun (we have no time to refer). - S. K. L. Y. N. - J. P. A. - Justice - J. D. E. - R. W. - T. E. - K. D. - X. G. D. - R. O. - Va. - de Salva - J. E. - W. B. - R. B. F. - Y. - A. H. F. - P. F. We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication. Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

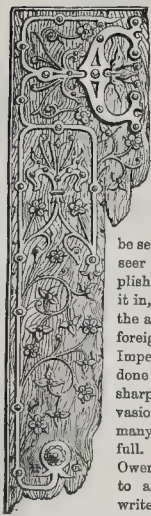
Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m.**, on **THURSDAY**.

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The Builder.

VOL. XXV.—No. 1262.

The Paris International Exhibition.



CONSIDERABLE advance towards a good state of things has been made since our last notice; and though there is yet an immense deal to be done, and those who go later will examine the collection with more ease and completeness than they would be able to do now, there is, nevertheless, much more to

be seen than any ordinary sight-seer would be likely to accomplish. There is more room to see it in, too, than there will be, for the accounts that have reached foreign countries from pens the Imperial Commissioners have done all in their power to render sharp, have not yet led to any invasion of the gay capital; so that many of the hotels are not half full. Mr. Cole and Mr. P. C. Owen have done all they could to afford facilities to English writers, and the result is that the newspaper readers of Eng-

land really know more of what the Exhibition comprises than the inhabitants of Paris. It will be a marvellous collection of things useful, beautiful, and curious; that is quite certain: and it will be for this country to get out of it the greatest amount of information possible by examination and contrast of the materials afforded.

In one of our own special departments, architecture, Professor Donaldson, we understand, is deputed by the Department of Art to report on the architectural drawings, especially those of foreign countries; and we may, of course, take this as an indication that in all the various branches of art and manufacture there illustrated, competent persons will, in like manner, be appointed to examine what is exhibited, to inquire into our position relatively with foreign countries, and point out the weaknesses and deficiencies that we should strive to remedy.

The French architects have not been cramped for room, as was the case, unavoidably doubtless, with their English *confrères*; and such of them as have exhibited have set forth their designs by plans, sections, and views, on enormous frames. One architect, and an able one, J. Henard, has a large number of large drawings. The French pictures, of course, form a prominent feature of the Exhibition, and will be talked of hereafter. Of German pictures there is a fair collection. Russia sends some important paintings, by Simmler, Flavitsky (woman in a dungeon, to which the water is entering by the window), and Peroff, whose three children dragging a sledge in the snow have faces touchingly expressive. The Belgian pictures are not yet hung, and will have a building to themselves in the park.

The English pictures have been hung most conscientiously and satisfactorily by Mr. Samuel Redgrave; and though the absence of many important names is observable, — MacIise, Herbert, Dyce, Creswick, — and of large canvases, treating large subjects, the collection makes a fair exposition of the condition of English art. It comprises 129 paintings

in oil, and 90 water-colour drawings, including good works under the first heading by Ansdell, Armitage, Boxall, John Burgess, Calderon, E. W. Cooke, Cope, Desanges, Dobson, Egg, Elmore, Faed, Frith, Frost, F. Goodall, Grant, Hayllar, Hook, Holman Hunt, J. P. Knight, Leighton, Landseer, John Lewis, Linnell, Millais, O'Neil, Emily Osborne, Paton, John Phillip, F. R. Pickersgill, Poole, Stanfield, Henry Wallis, E. M. Ward, Mrs. Ward, Watts, Wells, Yeames, and other able artists.

The proportions of the galleries, as we understand, were fixed from lines laid down in England, and light is admitted from continuous openings in the centre of the ceilings. In the English gallery this arrangement remains; but in the other galleries a solid false ceiling has been formed, running down the centre, under the light, at the level of the blinds, the effect of which *per se* is not agreeable. We shall be anxious to know what decision experience will give as between the two modes after some of the brightest days of summer. At present there is certainly not a bit too much light in the English gallery. The walls in this gallery, we may mention, are coloured sage green (as are all the columns and other ironwork in the parts of the building appropriated to England), while in the foreign galleries the tint of the walls is a Pompeian red. The distinctive green colour, by the way, given to the English portion of the building, contributes greatly to the convenience of visitors.

Our glass comes out supremely well: the stands of Dobson, Green, Defries, and Pellatt, are objects of general admiration. Amongst the jewellers, Hancock, Emanuel, and Hunt & Roskell, hold their own.

Messrs. Doulton & Co., of Lambeth and Paris, make a fine exhibition of useful pottery, including a still and a large jar of excellent quality.

The Belgians have a very large, indeed cumbersome pulpit of carved oak, with double flight of steps to it, and a lofty canopy, somewhat top-heavy. This is the work of the Messrs. Coyers, of Louvain, and the carving shows skill, but it is all, unfortunately, sand-papered down to the smoothness of a cast. There is a carved wooden altarpiece near it, liny and poor in design. The name of the exhibitor of this has become illegible in our notes, and no clue to it can we discover in the catalogue. In fact, this first edition of the "Complete Official Catalogue, English Version," beats "Bradshaw" by chalks. We have found it useless. The French works of fine art are not discoverable in it at all, and the English paintings and architectural drawings are given as an addendum.

In the French department there is a large plan, in relief, of the Cathedral of St. Denis, showing all the monuments, — a model, in fact, of the cathedral to a certain height above the floor. It is exceedingly well made, and an interesting object. The number and variety of the monuments, true and false, in St. Denis, are remarkable, and make it a place for study.

America is greatly behindhand, but promises to make a good show. In fact, this is already done in the fine-art department and in the annex for agricultural implements. In the court, John Shuster, of New York, exhibits some marble chimney-pieces, chiefly remarkable for the material. One is of California marble, which has the appearance of polished tortoiseshell, with many gold specks. In the design — seventeenth century it may be called — the endeavour appears to have been to get in as many angles and small panels, and raised mouldings as possible. With half the labour a better effect might have been produced. The work is very well done, and the price asked is 4,000 dollars, say 800*l.*, an enormous sum considering, moreover, that there is no carving. The owner, however, believes the chimney-piece to be unique, as to material. A second chimney-piece of similar

design is perfectly white, without speck, and comes from Rutland, in Vermont. This is priced at 360*l.*

Looking into the machinery and processes zone, where all sorts of things are now being set up, we see a remarkably fine piece of red terra-cotta and brick construction from Lauban, in Prussian Silesia, exhibited by A. Augustin. It is in the shape of an archway, with griffins in a panel above, and a parapet, and for soundness, correctness of form, and evenness of colour, is not surpassed, if it be equalled, by any similar production in the Exhibition. Some terra-cotta shields, also from Silesia, fixed at the entrance to a court in the machinery zone (where a trophy of gilt and coloured agricultural implements is being set up), are excellent. A Gothic window-frame, and pinnacles at the side, with group of figures in the head, from Ernst March, of Charlottenburg, near Berlin, is also a noticeable work. The figure of a brick-layer on one hand and a carpenter on the other serve as corbels under the columns at the side.

Being in the machinery zone, we would say that the painted blinds in the English portion of it must be considered successful. The idea is an excellent one; and though, in two or three cases where figures are introduced, the blinds are open to adverse criticism as works of art, it is sufficiently well carried out on the whole, and is made to convey much valuable information in various languages. Thus, on one blind, we have the first Carding Machine, dated 1769; on another, Watt's first *San* and Planet Engine, 1788; and, on a third, Arkwright's first Spinning Machine, 1769. The Liverpool blind contrasts the town as "Liverpool," in 1655, with the Liverpool of 1867. Staffordshire goes back to an early mode, and gives a curious symbolical outline representing a manufactory, a railway, ships, and two miners at work. Here, however, let us stop. We are but recording desultory reminiscences. By and by we shall endeavour to get more fully such precise information as we may from special departments.

CONCRETE CONSTRUCTIONS IN FRANCE.

THE advantages which concrete, under some circumstances, possesses as a building material, have already been so fully demonstrated, that it seems superfluous to reiterate them. It is, perhaps, a matter of surprise, these advantages considered, that this material is not more often adopted, particularly in the construction of dwellings for the working classes. One reason for this, we think, is, that although such use of concrete is by no means new, as the concrete walls of the old Romans testify, its economical and other qualities are not known, or appreciated by the general public. Moreover, until recently mechanical difficulties stood in the way. These, however, have been lessened by the apparatus and scaffolding lately patented by Mr. Joseph Tall, by which the walls of buildings in concrete may be carried up to any required height. Excepting some houses erected by Mr. Tall, at Bexley Heath, and others, including a church and a farmhouse, neither of them very favourable examples, however, by Lord Salisbury, at Hatfield, at the instance of the late Captain Fowke, very little has been lately done in concrete construction in England. In Paris the use of concrete is rapidly extending. The well-known invention of M. François Coignet, called "*Bêtons Agglomérés*," described on more than one occasion in our pages, is being largely used for buildings and public works in the French capital, in every instance with the most satisfactory results. This artificial stone is produced simply by a mixture of any kind of sand with a small quantity of hydraulic lime, to which occasionally is added a trifling quantity of cement. No new material, we believe, is employed in the production, and notwithstanding the great proportion of the sand used, an artificial stone is obtained which is harder, more lasting, and better able to withstand the change of climates, to resist frost, heat, drought and moisture than many natural stones. By employing superior materials, a stone is ob-

tained equal to granite or jura-stone. It can be moulded into the most delicate forms of art, and has the advantage of hardening instead of softening in the air, according to the well-known law of mortars and concretes. Among the more recent constructions with Bétons Agglomérés may be named the supporting wall of the Boulevard de l'Empereur, measuring 13,000 cubic metres, with ornamental staircase 7 metres wide; the vaults (12,000 cubic metres); the underground drains (12,000 metres), and the water and river works (20,000 metres) at the new Exhibition Building; about thirty-one English miles of sewers, barracks, and numerous other works for the city of Paris. Indeed, Parisian engineers and architects hold that this material cannot be surpassed in applications for underground and foundation works. It is equally well adapted for buildings of great height, as may be seen by the church at Vesinet, of which we have given illustrations. The bell-tower of this church is 40 metres high, and we are assured that it has not suffered in the least from vibration or sinking. At his manufactory in St. Denis, M. Coignet has succeeded in producing stones that surpass natural stones in homogeneous formation, and in the power of resistance against breaking, frost, drought, or moisture, at a cost of 50 per cent. less than the ordinary material.

Some time ago specimens of the cheaper concrete were submitted to the Emperor of the French, and his Majesty, recognising the importance of economy in this class of construction, ordered forty workmen's houses to be built with it. A piece of ground was obtained in the Avenue Dumesnil, and the dwellings are now being executed from the Emperor's own designs by Mr. W. E. Newton, C.E., of Chancery-lane. About half the number, we believe, are already finished. They are double houses of three stories in height, each furnishing accommodation for six families, each family being provided with three apartments,—namely, a sitting-room, 4.50 metres by 3.47; bed-room, 3.70 metres by 3.47 metres; kitchen, 3.47 metres by 2.02; with cellar, water-closet, &c. A small inner court affords light to the back rooms. The doors, windows, and stairs have been made by machinery out of Paris, the woodwork consisting of deal, sycamore, and oak cills. The bed and sitting rooms will be furnished with marble chimneypieces—which can be had at a cost of 23 francs a pair—and with stoves, the kitchen with a cooking apparatus. Water and gas will be laid on; and the water-closets are to be fitted up in the English fashion, in compliance with the orders of the Emperor. The floors are of concrete and iron; the chimney flues round and smooth internally; and, in short, the entire tenements are built on the ordinary concrete principle. The design shows no architectural ornamentation, but is plain, neat, and substantial. Besides Mr. H. E. Newton, the resident architect, and an English foreman, no skilled labour has been employed in the building, the entire work having been done by ordinary French labourers at 2 francs 50 cents a day. The cost of each double house—accommodating six families—will be about 500*l*, exclusive of the land, which was obtained after considerable difficulty, and on rather high terms. The whole outlay is borne by the Emperor, but in what way it is intended to dispose of the dwellings is not known. We are, also, unable to say at what rent the dwellings will be let. Sufficient ground has been marked off for a block of sixteen additional tenements. The concrete used by Mr. Newton consists of 4 measures of large gravel stone, 4 measures of sharp sand, and 1 measure of Portland cement, mixed in the usual way. The walls contain about 40 per cent. of conglomerate. We may mention that Mr. Newton has also in course of construction a number of two-story houses in concrete, intended for dwellings for the workmen of the Société Anonyme des Forges et Fonderies, at Montmartre, a few miles from Paris; and likewise one or two private villa residences.

The Emperor of the French has here set us a good example. It is agreed on every side that one of the most pressing questions of the day is how to provide suitable homes for the poor. To some extent the question has been practically met, but only partially, and not so well as it might have been. Concrete constructions, it can be shown, are cheaper, healthier, and safer, and therefore better than ordinary houses. The objection in a sanitary point of view to all the common brick and lath and plaster constructions, is their absorbercy of moisture, and in closely-crowded habitations their absorbercy of

miasma. Concrete is not by one quarter so absorbent of moisture and damp as brick, while it gives a washable interior surface. Its great economical quality is that concrete costs about one-half the price of brickwork. The Waterloo model dwellings, which have turned out the most remunerative of their kind, paid about 54 per cent.; but had concrete been used as the building material instead of brick, we believe these houses would have yielded 73 per cent. Labouring-class tenements, built of brick, on the most economical plan, will cost 100*l*, for living-room, bedroom, and scullery; the same thing can be done better in concrete at a cost of 75*l*. for each separate dwelling. We say better, for the walls and roof, besides being stronger, will be nearly impervious to wet or damp; the interior walls will be washable, the dividing walls less pervious to sound, which in close tenements is a great comfort, and the whole will be fireproof, for there will be nothing but doors and windows to burn. We hear that a number of gentlemen, including several well-known sanitary reformers and architects, convinced of the great advantages which this material offers in the construction of improved dwellings for the poorer population, at lower rents than has hitherto been possible, are endeavouring to form a company, with the object of erecting houses of this class in the metropolis, and generally of making capitalists and others better acquainted with the merits of concrete for building purposes of every kind.*

RAILWAY PARALYSIS.

The debate in the House of Commons on the motion of Mr. Crawford deserves to be attentively considered. It is perhaps more remarkable from the "masterly silence" of those who might have been expected to speak than from the mastery of the subject displayed by any of the actual speakers. It seems hardly credible that on a question affecting the character of more than a fifth part of the capital invested in railways not a single clear, commanding, intelligent voice should have been raised on behalf of the owners and creators of a property which now exceeds in amount the half of the national debt. Speakers, on the contrary, seemed anxious to disclaim any right to speak as representatives of the railway interest, and the honourable member who, from his position and his ability, would have been most naturally regarded as a railway authority, carefully avoided expressing a decided opinion. The upshot of the debate was, that railway property is immeasurably and irrationally depreciated from the constant vagaries of legislative action, and from the total want of unity, or even of harmony, among those to whom the management of railways is committed. So people are to wait with patience for the forthcoming report of the Railway Commission. If that report presents a clear and masterly delineation of the state of the question, legislation may follow; and if such legislation should not happen to be in direct opposition to the conclusions of the report, we shall have reason to think

* With reference to a recent discussion on the subject at the Society of Arts, Mr. W. E. Newton writes,—"As some of the gentlemen who spoke after me appeared somewhat sceptical as to the strength of concrete and its applicability for the construction of buildings, and seemed to think that the advocacy of this material was an 'amiable weakness,' it may perhaps be interesting to state the nature and composition of the concrete which has been successfully used in constructing the Emperor's 'Maisons Ouvrières' in the Avenue Dumesnil, Paris, and also that used by me in the works I have carried out here. In Paris we used one part of Portland cement (C. Francis & Sons) to five parts of large gravel stones, varying in size, from the size of pearl barley to that of peas. The fine sand is sifted or screened out, put on one side, and used for making stucco for facing the work. At this place I find it more economical to use burnt brick earth, or 'brick ballast,' as it is called, from which I sift out the very fine, and add 1 of Portland cement to 8 of ballast. This makes a very hard workable concrete, reduced the cement to 1 in 10 with perfect success. I burn the ballast myself, and it costs me under 2s. per cubic yard. Therefore, if we take 1 yard of ballast at 2s., and 4 bushels of cement at 1s. 1d., we shall have a cubic yard of concrete for 8s. 7d., to which add 2s. 3d. per yard for labour, and we shall find we can put up a superficial yard of 6-in. work for less than 10s. One gentleman ventured to question the possibility of building a wall 20 ft. high in 9-in. work. I only say that this has been done by Mr. Tall, and the houses so constructed have been sold by him at a very large profit. From the numerous experiments I and others have made in concrete constructions, I have no hesitation in offering the following challenge to the sceptics, viz., that they shall build a wall of any dimensions in common brick and mortar, with or without Fryer's bond, and I will build one in concrete; and if the concrete wall does not sustain a greater weight than the brick wall I will forfeit to them 5*l*, and the cost of the wall, they undertaking the same liability to me should the brick wall not stand an equal test."

matters are somewhat improving. The general admission that no one knows what to do, is most humiliating.

The maxim that a prophet is without honour in his own country was regarded of old as a reflection rather on the incredulous listeners than on the disregarded counsellor who addressed them. In late times, however, incredulity has had somewhat the best of it, as the only universal attribute of modern predictions is their non-fulfilment. Talleyrand laid down a memorable canon when he said, "*Ce qui arrive toujours est l'imprévu.*" We are not, therefore, about to urge any claim to having foretold the present unprecedented continuance of public distrust. We have on more than one occasion pointed out that the course of events that would follow the financial shocks of 1866 must be one of a new and unprecedented character. Such was a natural consequence of the unprecedented nature of the convulsion. But that such a course should develop itself into a state of permanent and hopeless gloom, sapping the springs of enterprise, throwing doubt on all the relations of business life, and menacing, in the fears of some, still worse disaster, no public writer could have anticipated, or would have been justified in leading others to expect.

To inquire into the complex causes of this continued public gloom, to trace each disturbing element to its source, and to attribute to each the true and the false measure of its importance, is the duty rather of the historian than of the journalist. We shall not now further refer to this investigation than may be necessary for a practical purpose. It cannot, however, be denied, that the chronic panic now affecting the London money market is but a "case" of a state of distrust and despondency that is of far wider range. It is not confined to our own capital or provinces, it is not merely financial in its nature. It embraces every country of Europe, and shows itself in almost every instance where social action is called for. It is political, no less than financial, and moral, or even religious, no less than political. In France it is evident in the large accumulation of bullion in the coffers of the Bank, in the tone of the discussions in the legislative chambers in spite of the jealous care with which all occasions of debate are restricted and controlled, in every fresh act originating in the Imperial administration. In Russia it is to be found in the tenseness of relation between the noblesse and the autocrat, and in the features of the social revolution, so little understood in this country, in the position of the serfs. Of Germany it is needless to speak. The new appearance in Europe of the kingdom of Hungary, an event that at another time would have filled all men's mouths with wonder, is now hardly thought of in the press of our own affairs. But over all Central Europe confidence and security are as yet distant, if promised blessings. We see Spain under the terror of martial law and wholesale deportation. Italy, having acquired Venice, and lost the great bond of a common object, and a common enemy, is now at the threshold of her troubles, ministry and chamber throwing on each other the stigma of faction and of incompetence, and each with very good reason. Helplessness is at its apogee in Italy. Not that those who read the debates that occur in a certain hall in Westminster have much occasion to boast of the superiority of English constructive wisdom at this particular moment. The events of the day seem to grow beyond the control of the men of the day; and the want of cool heads to counsel and to plan, and prompt and ready hands to execute, is every day becoming more apparent. The habit of living under pressure, of doing all things at railway speed, of conversing and almost thinking by telegraph, is producing an effect which is aggravated by the perversity of that which, while far from being an immoral, is yet a demoralising literature. But the great master-work underlying the whole framework of European society, and amply sufficient in itself to account for this general lapse towards chaos, is the untruthfulness of almost all public statements. Effect must be produced, and the price of effect is truth. In every political programme, in every Royal proclamation, in every prospectus of a public company, in every statement of party views, a certain amount of morality is claimed, which is to be found in words alone, and has no relation to actions. Swindling is cloaked under the guise of benevolence; and every crime which we have learned to reprobate in the history of the violence and falsehood of what we call darker ages, is perpetrated in the full blaze of the nineteenth century, and in the name of the Almighty.

Now, the point which presses on us at the moment,—for our political and intellectual chaos can only be incidentally alluded to,—is the particular manner in which the plague of universal distrust is now threatening our great railway property. Of the causes which have deteriorated that property we have not unfrequently spoken, the main fact being that legislative apathy or connivance has allowed private rapacity to enrich itself at the cost of the railway proprietary in general. Notwithstanding the large sums unfairly added to the capital account of railway construction in Great Britain, we still have in our system of internal communication a property of immense value, and one that only requires rest, and moderate care, to become, perhaps, the finest property in the world. The annual intake from our railway traffic exceeds 8 per cent. on the whole 456,000,000l. expended up to the end of 1865. The working expenses, at the same date, were about 45 per cent. of the receipts; so that a net earning of from 4 to 4½ per cent. over the whole paid and borrowed capital was actually distributed, in very unequal proportions, among the proprietors of railway shares, stock, and debentures. Of these various forms of ownership or lien the shareholders proper, or proprietors of the capital originally subscribed, and supposed, at the time of its subscription, to be sufficient to construct the lines now in operation, compose less than half,—ordinary capital representing 220,000,000l. out of the 456,000,000l. of total. The holders of preference capital and debenture stock represent 30 per cent. of the total proprietary, or 138,000,000l. out of 456,000,000l.; while rather more than 20 per cent. of the entire capital, or a sum of 98,000,000l., is represented by mortgages, or debenture bonds, issued for a term of years. This mortgage capital is not, however, a mere temporary loan. It is as legitimate a part of the capital account as either of the two larger items. Its present anomalous form has arisen from the attempt to facilitate the raising of the requisite capital, and the scheme proved not unfitted for the purpose. But it possessed the radical defect of requiring the constant renewal of the loan or re-borrowing of the sum lent. It sends the railway proprietors into the money market as annual borrowers to an extent of perhaps 20,000,000l. to 30,000,000l. It is true that the money borrowed with one hand is paid away by the other, but it has to be borrowed first, no matter for how short a time. In times, therefore, of commercial pressure, or of financial panic, the companies are placed in a false position. They have to borrow money when it is scarce, and that not to complete their works, or to aid in any way their earnings, but merely in consequence of the fact that they have committed, and the Legislature has sanctioned, the error of making them dependent on a hand-to-mouth renewal of permanent capital. It was another form of the very error that ruined the finance companies. Apart, therefore, from any sources of distrust peculiar to certain lines, the whole railway interest, perfectly solvent as it is, earning a net return of 4½ per cent., which is annually increasing, and which only requires time to augment and perhaps even to double, is subjected to periodical disquietude and possible heavy loss from this distinct cause of the terminable nature of debentures.

If this simple fact be kept in view, it cannot be impossible to find a remedy. The case is not that of a spendthrift who would borrow on his hopes; but that of a landed proprietor who seeks to renew a mortgage, the interest on which amounts to only a seventh of his rental. The condition necessary to give confidence is that the security should be a prior one on the whole estate, and that a receiver should be appointed to collect the interest direct from the income of the property. This might, we suggest, be arranged somewhat on the following plan:—

1. A new consolidated railway 4-per-cent. stock to be created and issued to the public under the following guarantee:—

2. The several railway companies to be allowed to underwrite this consolidated stock to an amount in no case exceeding a sixth of their expended capital.

3. This, however, to be allowed only after an independent examination of the debenture issues of the several companies, and verification of their perfect regularity.

4. Three months before the date of the payment of each half-yearly dividend of 2 per cent. on the consolidated stock, the entire traffic receipts of each line to be handed over to the trustees, to be appointed as hereafter mentioned, until the amount of 2 per cent. on the stock

underwritten by the directors of such line be paid to such trustees.

5. The trustees to be three men of adequate ability, and known integrity, who shall devote their whole time to the duties of the post at an adequate salary, and who shall be appointed, one by the written suffrages of the directors of the subscribing railway companies, expressed by their respective chairmen, one by the directors of the Bank of England, and one by her Majesty's Government.

6. A general secretary, a consulting engineer, and an accountant, or audit secretary, to be appointed to attend the trustees, with such further staff as might prove needful.

7. The payments received from the subscribers to the consolidated stock to be rateably applied by the trustees to the paying off of the mortgage debentures of the subscribing companies as they mature, a general statement of the whole of such mortgage debt, and of the periods at which it will mature, having been drawn up in the first instance as a guide to the proceedings of the trustees.

8. Power might be given to any holder of existing debentures to verify his documents on the payment of a fee, and to ascertain how far they would be covered by the engagements of the company that had issued them, in reference to payment from the trustees.

By the adoption of this plan, some eighty millions of a guaranteed stock, fully equal in its claims on public confidence to Consols themselves, would gradually replace an equal amount of what in fact are only long-dated promissory notes. Each company would be relieved from the greater portion of the anxiety and expense attending on the constant renewal of debentures. A sixth part of the railway capital of the country would be permanently settled at a rate of interest somewhat less than the mean net earnings of all the railways united, so that the original owners would benefit by the certitude of payment, as well as, in most cases, by a slight reduction in the rate of interest. No interest would be interfered with. A perfectly safe form of investment would be offered to the public, and that without augmenting the public loan. And the directors of every railway, when freed from a harassing and unretributed portion of their anxieties, would be able with a better heart to devote their attention to their proper functions of facilitating and developing traffic. The great cause of chronic disturbance would be removed from the market of railway securities, and a revival of confidence must eventually follow so great an increase in the stable character of railway property.

SANITARY MATTERS.

Condition of Newcastle-upon-Tyne.—The two reports bearing on the sanitary state of the town already alluded to in our columns have been published under the auspices of the Corporation, and are now under their special consideration. One is a report by the sanitary sub-committee of the Town Improvement Committee; and the other by the Public Health Committee. The former document gives an abstract of the measures taken by the Town Improvement Committee acting as the sanitary authority, and contains suggestions which the Town Improvement Committee unanimously recommend for the careful consideration of the council. The sanitary sub-committee state that they instituted a system of inspection, the results of which they embody in a table. Of 23,566 rooms inspected, about two per cent. of which, 408, were uninhabited, and the rest occupied by 55,366 people, or nearly one-half of the population within the borough; the result is that about one-eighth of these houses had not, at the date of the inspection, in the opinion of the inspectors, the means of good ventilation; that one-eighth of the houses was without water supply, either from the Water Company or other legitimate sources; that a fifth of these houses were without any privy accommodation; that the drainage of two-thirds of the houses only was good, and that, of the remaining third, more than a third, or an eighth of the whole number, was without any drainage; and, lastly, out of 55,366 persons, 7,779 persons lived in rooms under 300 cubic feet for each person, or about one-seventh, while the remaining six-sevenths, or 47,587, had above 300 ft.; but 37,012, or two-thirds, had above 400 cubic feet. The Town Improvement Committee recommend the adoption of the "Labouring Classes' Dwelling Houses Act, 1866," and the "Labouring Classes'

Lodging Houses Act, 1851," incorporated therewith, and that it be referred to the Town Improvement Committee and Finance Committee to negotiate a loan from the Public Works Loan Commissioners, for the erection of dwellings for the labouring classes under the first Act; and further, that the committee be authorised to prepare plans for such purpose on a site the property of the corporation, or to be otherwise acquired, and to submit the same to the council for their approval. The Public Health Committee travel over similar ground to that traversed by the Sanitary Sub-Committee, and they arrive at virtually the same conclusion. To the reports are added appendices, in which some valuable statistics are given.

Longton.—Several summonses—the first of a series—against persons for crowding houses so as to make them nuisances and injurious to health, have been heard at Longton Police Court by the sitting magistrates. The Town Clerk was the complainant, by direction of the Town Council. The charges were brought under the 18 & 19 Vic., c. 121, s. 27, and were proved by Mr. Allen, surgeon, one of the medical officers of the borough. In the first case, Mr. Allen said he visited the house (in Short-street) on the 10th of March, and found a man and his wife, both ill, and two children, in the living-room on the ground floor. Upstairs, in the bed-room, he found four adults—a man and his wife, and two women—and six children. The room was 12 ft. by 14 ft., and 7 ft. high, allowing 117 cubic feet of air to each inhabitant. Mr. Allen said the house had been more crowded than when he visited it—one family having removed from it; and there had been fever and small-pox in the house. In some of the cases orders were made for the abatement of the nuisance in fifteen days, and in the others the defendants undertook to comply with the law. The wife of one of the defendants appeared and said she, and her family were living in their present wretched abode because they could not get a better place to live in, owing to the scarcity of houses. In addition to getting rid of some of the inmates of their houses, the defendants were ordered to cleanse them.

The Mephitic Atmosphere of the Underground Railway.—The attention of men of science and philanthropy is called by the *British Medical Journal* to this subject. A measure of air taken from the Underground Railway station at the Portland-road or Gower-street station, says the writer, would be pronounced by the physiological chemist a very villainous compound to be used as a respiratory material. The passenger who waits there a few minutes for a train feels an unpleasant choking in his throat, a smarting of the eyes, and is unpleasantly conscious of an objectionable and sulphurous odour. He is thankful to get out of the close chamber in which he is confined; but the unfortunate porter who shuts the door of his carriage is left behind. Instead of a two minutes' inhalation of poisonous vapours, he has a day of it; and in his behalf the directors of the company are asked to improve the ventilation of their stations. They should regard these stations as like the stoke-holes of a man-of-war; and, from the system of ventilation adopted on board an iron-clad ship, learn how to draw down from above a decent supply of air sufficient to displace, or greatly to dilute, the potency of the poisonous exhalations of locomotives which at present accumulate at these stations.

Death in a Night-soil Tank at Bradford.—The deputy coroner has held an inquest on the body of Abraham Maxfield, aged twenty-four, who died in a tank on the premises of Messrs. J. & W. Garnett, worsted spinners. James Maxfield, his son—Abraham Maxfield, and William and John Anderson, were engaged in emptying this tank of night soil, received from eight privies connected with a shed on the premises of Messrs. Garnett. The tank is beneath the ground, was 7 ft. deep, and was reached through a manhole. They had been engaged for some time in lading the night-soil out of the tank with ladles which had long handles, and when the soil had been reduced to about 2 ft. in depth, Abraham Maxfield entered the tank in order to expedite the process by filling a bucket, for his associates to pull up through the manhole by means of a rope. He had not been down more than two minutes before he was heard to stumble. William Anderson, then in apprehension, immediately entered the tank in order to rescue Maxfield, but, though both were heard apparently on their feet, they soon fell in the tank. Anderson was dragged through the manhole by a rope, and is

was thought that Abraham Maxfield had laid hold of him, but Maxfield fell down dead in the night-soil. The body was recovered by a coal-rake. Death had been caused by the sulphuretted hydrogen gas at the bottom of the tank. James Maxfield also attempted to enter the tank in order to make an effort to recover his son, but was fortunately prevented. The witnesses said that no one had ever before entered the tank for the same purpose, that they had no authority to do so, and that the deceased entered of his own accord. The jury returned a verdict of "Accidental death."

Howden.—This town has for some time past suffered from a severe visitation of fever, caused, it is supposed, by the unclean state of the Old Derwent, which is used as a town sewer. The Wesleyan day-school, which abuts on the drain, has been closed in consequence of the epidemic. The master of the school and a number of the pupils have died, and a great portion of the remainder have suffered severely, one medical man having had thirty-seven cases under his care at one time.

Wrexham.—A number of cases of typhus fever are reported from Wrexham, some of which have terminated fatally. It is believed that want of proper drainage has been the chief cause.

Cheltenham.—The improvement Commissioners of this town, who are forbidden to continue to pour the sewage into the Chelt, have resolved to buy 120 acres of land for irrigation at Boddington, two miles from the town, and to borrow 17,000*l.* to pay for the land, which will cost 10,000*l.* and for the necessary works. Landowners representing 400 acres have signed an agreement to take the sewage upon their land, paying 10*s.* per acre, and it is only intended to irrigate the land proposed to be purchased when the sewage cannot be applied to the adjoining land.

News for Miners and Others.—A little instrument, called a box respirator, has been invented for safely breathing smoke or other noxious vapours, at fires, in mines, wells, tunnels, or any underground workings. The inventor is Dr. Clement King, who has for many years been advocating the sanitary inspection and the more healthy working of our coal-mines. Messrs. Sherrin & Co., Upper Ground-street, Blackfriars, are said to be able to show the invention to any who may be interested in its use.

SOCIETY OF BRITISH ARTISTS.

It is not for the difficulty of selection, or rather of election, to represent the constituency with a proper regard to partiality, it would be scarcely necessary to extend the short list of pictures given last week from the Exhibition of the Society of British Artists; for they must favourably answer this purpose in some opinions, at all events.

The collection is unusually bare of principal points,—a want that suggests the question, Why is the corporation making no efforts to strengthen the ranks of its members? Unless they have resolved that the Institution shall die with those who are its present representatives, the managers appear to be very blind to certain consequences. Co-existent with the rarity of new talent, devoted to the interests of the community—the rarity of new names even to swell the list—is the dearth of good pictures contributed by casual exhibitors, a source of assistance that must sooner or later fail completely, if the vast absorption by special patrons of the arts and artists of everything saleable or that would be likely to help in the formation of a show-room, is to continue year by year. It becomes less easy to account for the little distinctiveness that successive collections at these galleries bring with them; less easy to do more in noticing them than by an abstract comparison with what they too closely resemble to afford a chance of remark that would not be a repetition of, if it is not to stultify, a former one. On the present occasion it is only necessary to say that there are many such productions of the class already indicated, and much of the customary description of landscape composition,—decided by which Messrs. J. B. Pyne, A. Clint, J. Syer, J. B. Pettit, and others, have been wont to proclaim tenancy of the respective grounds on which their several reputations are based.

It is by recollection of what Mr. Pyne, and the few that may be associated with him, have done in the long practice of their art, that a contrast of the present with the past aspect of these

walls is made visible: all honour to him and his like.

Mr. G. Cole is conspicuous; for, with some present and always clever instances by which he denotes his preference for the glowing sunset effects of hot summer and autumnal evenings, he proves that he can be equally happy in other seasons; and appears invigorated by the change to a cooler and more bracing atmosphere: see "Spring Time" (171), so welcome to all—when banks are spread with clustering purple and primrose blossoms, and bark-strippers are at work upon the felled oaks, for sometimes spring is very like winter. The agreeable freshness of this production is one of its many merits; years have elapsed since English pastoral, and a more comprehensive illustration of Nature's varying charms, used to be themes dilated on by many of the Society's earlier and ablest supporters; but this was before innumerable railways cut up broad expanses and made hard lines for the painters of panorama on large canvases, without taking them to "fields and pastures new." The landscape department has no longer the predominance of former times, or it becomes less effective from monotony. Success appears to beget eternal progenies of its first causes; and if it attain its usual level of excellence even of later years, there is little to evoke a new form of eulogy.

Returning to the figure subjects, Mr. W. Bromley's scene from Shakespeare, describing the interview between Queen Katharine and Cardinals Wolsey and Campeius—"King Henry VIII," act 3, scene 1 (9)—entitles him to acknowledgment of his labour in a good cause, though he has not perfectly justified his choice of so difficult an undertaking by the result of it: the action of the Queen is totally out of propriety with the text; and all the actors want dignity, and to become habilitated to the clothes they wear. Another, an explication of Hubert's report, of how "Young Arthur's death" had affected the people, exciting apprehension and dismay, is far more satisfactorily rendered, though with no great evidence of such inspiration as the living words of the poet would account for so readily. With good colour to recommend it, it wants dramatic expressiveness, for it is almost as tame in this respect as Mr. J. H. S. Mann's depiction of placid enjoyment of an "Afternoon at Chioggia, Italy" (348), with a hurdy-gurdy-man, etherialized into a minstrel by the aid of a verse from Byron's "Beppo," to assist. This is a carefully-studied and well-painted composition, but somewhat insipid in matter as well as from excessive softness in the method of its execution.

"The Morning Walk" (360), by C. W. Nicholls, though the lady engaged in it is of the most modest and unobtrusive appearance, is very attractive for its good painting; and there is something to repay a look at "Nanman's Wife and her Hebrew Maid" (408), by Mr. A. W. Bayes, putting aside the objection that there is nothing Hebrew about either of them beyond what is nominal.

Mr. J. Ritchie can reproduce broad open daylight effects with some of the fidelity of a camera. It is to be regretted that he could not have invested his "Scene at the Hustings: the Contested Election" (198) with more vitality.

"The Despatch" (219), by Mr. A. H. Tourrier,—a terrace in Spain; "The Duenna and her Charge" (227), by Mr. W. M. Hay; "A Surrey Lime-kiln" (237), by Mr. A. Fraser, R.S.A.; Mr. W. J. Montaigne's episode from history "London, A.D. 1715: Rebel Prisoners from Preston" (225), noticeable more for promise than performance; "The Sicilian Vesper" (349), by Mr. P. Priolo; and Mr. R. Dowling's "Incident in the Siege of Gloucester, 1643" (566), a good characteristic subject that offers wide opportunities for an apt enunciation, though here but partially represented, are attractive for some quality or other. In nothing more of those likely to be popular, Mr. J. C. Waite's domestic incident of "Pleasing the Fair" (192), a family group of cottagers, with the baby master of the situation, must not be omitted; nor Mr. T. Gray's "Sleeping and Waking" (375), wherein the little sister, placed to watch at the cradle of a younger child, has succumbed to quietude and fatigue and is asleep, whilst her charge is very wide awake indeed, clapping at the submeans for amusement; and Mr. J. Locker's "Fairy Tales" (471), also pretty and naturally arranged. But neither of these, or their kind, has the brilliancy and force of Mr. A. H. Burr's capably painted boy, "Nursing Baby" (580), that make it so conspicuous an item, and, though composed of

the simplest materials, one of the best works in the collection.

Mr. J. Hayllar's book-learned child, who is administering homoeopathic doses of moral philosophy to a gaunt old gardener who "Never had no Learning" (430), is the only at all interesting point in a dark and flat picture; and though the incident is a pretty one, it is not agreeably told.

The water-colour drawings are an exhibition in themselves; with such works as Mr. W. W. Gosling's "Winter" (700), and "Hoar-Frost Evening" (856), to lead in the section of landscape; and Mr. J. D. Linton's "Georgione" (948), though rather black in its elaborated finish, entitled to a similar distinction to head the figure department.

LONDON "REVISITED."

"Our first visit was to the Lions,"—Addison, "The Freeholder," No. 47.

Who has not read and re-read, and has by heart, like our inspired Poet Laureate,—Wordsworth's "Yarrow Unvisited," his companion poem, "Yarrow Visited," and the triumvirate triptych poem of "Yarrow Revisited?" The poet of Rydal and all time has suggested the above title—will our readers kindly be attracted and lend willing eyes to what we are about to tell?

In a self-chosen exile from London, of some six or seven years, we of course had all but forgotten the capital of the world, and were about to turn to a "Gazetteer," or McCulloch's "Geographical Dictionary," for some account of "London as it is,"—when we bethought ourselves that we would see London again for ourselves. What, we asked, is there new there to attract us? Madame Tussaud, or the tombs in the Abbey; the ball of St. Paul's, the Thames tunnel; or that great incentive to our forefathers and to ourselves when young, "the Lions in the Tower." Alas! the Lions in the Tower, and "Martin," that all-attractive bear, are no longer to be seen. "The Queen's Beasts" are now, in 1867, all heraldic,—imaginary like the Scottish unicorn. But London we must re-see, and London must be re-visited for the sake of Edwin Landseer's Lions, and Theodore Hook's inimitable lines:—

"They cut his throat, from ear to ear,
His brains they batter'd in;
His name was Mr. William Weare,
He dwelt in Lyon's Inn."

But our thoughts carry us to the year 1824, and this is 1867—just 300 years since A.D. 1567, when, miraculous to say! as a certain author records, "only fifty-eight Scotchmen were found in London." There were no metropolitan police then in Scotland-yard. London in 1567 was without a Superintendent Sir Richard Mayne, or an Inspector Tanner. Hardly a Bow-street Townshend then, though Dogberrys did exist.

"To go to Lon'on's but a walk," an old song tells us, much a favourite with Robert Burns. To London, therefore, we must go, not on foot, but by train: "London must be re-visited." What is London like? We were almost born—certainly lived for full six years—within the sound of Bow bells. We love Gresham's grass-hopper, and the dragon on Bow Church; have more than a liking for Temple Bar; and well remember when the Northumberland House lion looked in a different direction, and showed a true respect to glad chains, warm furs, and unmistakable Mansion House turtle.

Convinced of the necessity of re-visiting London, we set off *ad* "the Great Northern," for our modern Babel. Having and cultivating a lady's longing for novelty, we made our way from Pugin-famed King's-Cross to Trafalgar-square, and all to see "the Lions." What lions? Why, Sir Edwin Landseer's lions, and Baron Marochetti's bronze.

We are "well up" about lions,—as good as Lord Lyon King-at-Arms himself. We are "up" like a herald painter or publican in all kinds of lions from red to black, from "The Great" to "The Little." What interest must we therefore take in Sir Edwin's handy-work. Great were our expectations. We looked to find one lion at the very least, resembling the famous description in Mr. Pope's "Bathos,"—

"He roar'd so loud, and look'd so wondrous grim,
His very shadow fear'd to follow him."

But Landseer's lions, with all their cleverness, fail to frighten or surprise nursery-maids and children. Some of our contemporaries are too

hard upon Sir Edwin for his lions. They affect not to see any merit in them,—write of them as maids of thirteen talk of puppy-dogs, and would inflict upon the artist the punishment which Lord Cadogan said was due to Bishop Atterbury when a prisoner in the Tower. "What shall we do with the man?" was asked:—"Why, fling him to the lions," was the answer.

The court newsmen kindly informs us that our beloved Queen has "perambulated" the Landseer lions; but what her Majesty thought of them we are only suffered to conjecture. This is to be regretted, for her Majesty, it is well known, is skilled in art, and the true British lion, as Addison's Tory fox-hunter assures us, knows at a glance the legitimate from the pretender.

But Sir Edwin Landseer's lions are fine; not to be matched, we fear, in animated art, with the "Parian Dog" of Alcibiades, now at Duncombe Park, or the "Eagle," once at Strawberry Hill, that delighted Walpole and inspired Gray.

We well remember the time when the Nelson monument in Trafalgar-square, in London, was first started. Sir Francis Chantrey was then alive (he died in 1841), and was on the look-out for "the job," as it has proved. Designs were sent in—original designs were asked for—and few would compete. Chantrey, of course, would not risk his well-earned reputation. The designs were barren of invention or of meritorious reproduction in the noble art of sculpture. The Committee of Taste (so-called or self-called) were all but unanimous in selecting Mr. Rallton's column with Mr. Bailly's standing statue of Nelson, formed of two stones from the Granton quarry. The capital is of bronze, cast from cannon recovered, by Pasley and others, from the unfortunate *Royal George*, rendered immortal in verse by the muse of Cowper (not him of Panshanger and the Woods and Forests in Whitehall-place). The statue was set up on the 4th of November, 1843; and the lions were wanting to complete the monument until the last anniversary of the execution at Whitehall (immediately in front of them) of King Charles I.

Unfortunate Trafalgar-square! It is the most ill-used square in London—Leicester-square not even excepted. We well remember when the Mews and the migratory menagerie of Mr. Cross (late of Exeter Change) occupied its northern or National Gallery side. Then, after a long interval, came the memorable fountains, recalling, to immense disadvantage, Versailles and the real Alhambra. Then Chantrey's equestrian figure of George IV., designed for the migratory Marble Arch (meant for Buckingham Palace) was set up; then came Dr. Jenner and Sir Charles Napier, and Sir Henry Havelock; but Jenner has been banished among the nursery-maids and children of *Lower Kensington* and *Upper Paddington*. Mr. Marshall's statue of a great benefactor to the human race deserved a better fate. Some of the largest subscriptions to its erection came from abroad—from Russia in particular. This should be better known.

Several quotations have been applied to the Landseer lions. We remember two that are not inappropriate:—

"And calm the terrors of their claws in gold."

But their claws are pacific enough, though they cost a fair share of Australian gold. The second, from Pope, we have already given.

In my next contribution I shall have something to say about the great buildings now erecting, or on the eve of erection, in London. What a golden age for English architecture. What with Government offices, chambers, law courts, hotels, railway stations, private banks, &c., &c., our builders, if they lack originality, invention, and utility, do not lack either employment or good pay.

PETER CUNNINGHAM.

ELECTRIC LIGHT.—A French company has purchased the right to use Wyld's great steam electric machine in France, and will try it first in the lighthouse on Cape Griznez, whence, as is said, the light will radiate not only all across the Channel, but some distance into the southern counties of England.—Mr. Siemens has suggested the lighting up of buoys and beacons at a distance from the shore, by sending a current of electricity to them through a submarine cable. In that way he proposes to employ the electricity generated by his machine. His method has been approved by the Commissioners of Northern Lighthouses, who intend to apply it to light the buoys and beacons that mark the most dangerous spots round the coast of Scotland.

TELEGRAPHIC PROGRESS.

It is stated that the scheme before Government for taking over the management of the telegraphs only waits till the Reform Bill is out of the way. The capital at present involved in telegraphs amounts to nearly 3,000,000*l.*, and the Government scheme contemplates an expenditure of 10,000,000*l.*, to be devoted to the buying off of the present shareholders and debenture-holders, and the development of a scheme of postal telegraphs in all parts of the kingdom. Among the improvements which have been suggested at the General Post-office are the opening of numerous sub-offices in postal districts; the lowering of rates to an almost nominal sum, and rendering them uniform; the issue of telegraphic stamps; the provision of efficient staffs; and frequent periodics as well as express deliveries.

There are eighty places in England and Wales containing each upwards of 2,000 inhabitants with no telegraphic accommodation. This contrasts unfavourably with the Belgian and Swiss systems; for in these countries telegraph offices are abundant, so that in Belgium there is one office for every 15,000, and in Switzerland one for every 10,000 inhabitants. This is effected by a combination of postal and telegraphic administration.

There is now on trial at the chief office of the London District Telegraph Company, in Cannon-street, a telegraph printing instrument, producing letters printed in ordinary type by means of pressing small keys bearing the respective letters. It is worked by a combination of clock-work and electricity, and has now been in use for some weeks, it is said, without a single derangement.

The actual receipts from the working of the Atlantic Cables from the 28th of July last to the present date have averaged 813*l.* per day, including Sundays. The reduction of the Atlantic Telegraph rates from 20*l.* to 10*l.* for twenty words improved the revenue. A further reduction of prices is under consideration. Mr. Cyrus W. Field left England on board the *Great Eastern*, after having completed a contract with the Telegraphic Construction and Maintenance Company, for the manufacture of a cable to be laid between Placentia (Newfoundland) and Cape Breton. The successful completion of this additional link to the chain of connexion now existing between the Old World and the New, will, in time of peace at least, insure absolute security and certainty of communication between the two continents.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

On Wednesday, the 10th of April, Mr. Godwin, V.P., in the chair; numerous interesting objects were exhibited by Lord Boston and others, including a photograph of the portion of a stone cross recently exhumed at Kelso, and probably one of the four named in the charter of David I. as bounding the abbey sanctuary. It was thought to be of the tenth century. Mr. Gunston exhibited three medals of Elizabeth's reign, two of pewter and one of brass, with a remarkable bust of the Queen. The Chairman commented on the superiority of the productions of the medallists of former times over those of our own day.

Mr. E. Roberts exhibited a fac-simile drawing of the inscription in iron, dated 1687, on the poor-box in Bride Church, Sussex. The letters are many of them coupled, and some are smaller than the others. The inscription is,—

"SERVE THE LORD AND REMEMBER THE POOR."

The Chairman drew attention to the vast number of remains from the Sussex forges to be found, and especially memorial slabs in churchyards; and inquired if any similar iron slabs were known in London; but no one appeared to be aware of any.

A paper on "Pre-Augustin Christian Symbols" was read by Mr. Grover; and he produced drawings of several instances of the *Cirio* and other marks, which he conceived were Christian, and were certainly of Roman date. One on a pewter stamp, found in the Thames, was of the time of Valentinian. In the discussion which followed, the importance of the subject was fully acknowledged. Mr. Thos. Wright considered, however, that the marks called Christian did not necessarily imply Christianity. Dr. Giles said that Augustin did not find Christianity in Eng-

land, but in Wales, and the English derived it from the Scots in Ireland. There was no Christian in Britain for 200 years after Christ, nor in England, to any extent, for 400 years. Mr. Hills said that accounts of Christianity in Ireland were authentic only from 450, in the time of St. Patrick. Dr. Todd's life of that saint showed that the Irish were heathens before his time. The close communion of Wales with Ireland was, he thought, evidenced by the fact that St. David of Wales is one of the chief Irish saints.

A perfect seal of the Commonwealth was exhibited by Mr. Gunston. Surprise was expressed that it had escaped the customary breaking-up, on the termination of the Commonwealth.

Mr. Syer Cuming exhibited a new batch of forgeries in zinc, belonging to the Rev. Mr. Simpson, Mr. Bailey, Mr. Brent, and Mr. Mayhew. They are all of fresh forms, and more calculated to deceive than the leaden forms. They consist of arms, gauntlets, legs, ampullæ, helmets, bottles, &c. Mr. Bailey said he had been informed that some thousands were being exported to Germany. The chairman thought that it could not be too generally known that these manufactures were being continued and varied, so that the unwary might be warned against purchasing them. They exhibited much misplaced ingenuity. Mr. Cuming also read a paper on Cetacean Bones found in London, and produced several specimens, one belonging to Mr. Bailey, being a bone of an enormous fish, perhaps 100 ft. long. In answer to inquiries Mr. Cuming said these were all found in similar beds of gravel, and with them bone pins. The question chiefly was, whether these bones were articles of commerce, or whether the fish were natives of British waters. Dr. Giles said that Juvenal referred to the British whale (though it might have meant a porpoise).

The Chairman, in thanking Mr. Cuming, referred to his energy and knowledge, displayed on almost every archaeological subject; and in announcing the adjournment of the meeting took occasion to mention that it was not generally known what was intended by the section, "History of Labour," in the Paris Exhibition. It would be a collection of specimens and illustrations of handiwork of all ages, and he expected that it would be one of the most marvellous expositions of archaeological subjects ever brought together. The Rev. Mr. Simpson said that he understood the Irish academy was fully aware of the importance of the Exhibition, as they were to send all their gold ornaments.

CANAL PURIFICATION AT MANCHESTER.

At the recent assizes for the Salford Hundred, when an application was made to postpone the trial of the indictment against the Bridgewater trustees for fouling the water of the canal, it was mentioned that the trustees had employed Mr. Cawley, C.E., of this city, to carry out certain works which it was expected would abate the nuisance and prevent its extension. The works planned with that object are intended to cut off the river Medlock water from the Bridgewater Canal by means of a new lock, which has been constructed a little below the Egerton-street bridge, and to supply the canal exclusively with water from the Rochdale Canal. The considerable difference in the levels of the two canals makes this alteration comparatively easy, as from the Rochdale Canal to the Bridgewater Canal there is a fall of 8 ft. From within the Castlefield lock an iron pipe of very large diameter is taken through the rock and under the bed of the canal to beyond the new lock, a distance of about one-third of a mile, and every time the water in the lock has to be lowered it is let out through the pipe into the Bridgewater Canal. With respect to the river Medlock, the larger portion of the water was many years ago diverted from the original course of the river (which now forms a reservoir or basin for the Bridgewater Canal), and passes, by means of a tunnel, to a point beyond where the canal begins to follow the track of the Altrincham railway. A portion of the Medlock water still supplies the head of the canal, but none of that water passes beyond the new lock, which has been constructed for the especial purpose of turning back the Medlock water through a culvert into that river near its junction with the Irwell, and provision has been made to prevent any rise of the Medlock water. Owing to this, and to the increased body of water in the other portion of

the canal, derived partly from the Rochdale Canal and partly from the abolition of water-wheels, the set of the water is rather towards Manchester. The end attained by the works, which have been executed at a great cost, is that the unfouled water of the Rochdale Canal is prevented from mixing with the Medlock outflow, and so contaminating the Bridgewater Canal.

It is to be hoped that this may be effective, and that Brindley's great engineering work, a canal on one level for above a score of miles, may be made as pure as it was when first formed.

THE FEN DISTRICT INUNDATIONS.

In the Nisi Prius Court, before Mr. Baron Martin and a special jury, the case *Peck v. The Marshland, Smeeth, and Fen District Commissioners* has just been under trial. The plaintiff complained of the defendants, after making a certain drain under various Acts of Parliament, (the defendants) took upon themselves the making of it, and did the same without authority; that the plaintiff occupied land near it; and that the defendants negligently and improperly maintained it that the sluice burst, the drain overflowed, flooded the plaintiff's crops, and injured his lands. The defendants pleaded "Not guilty," and denied that they assumed to themselves the duty of maintaining the sluice.

In opening the case to the jury Mr. O'Malley said that the main question for the jury was to decide whether that of the negligence of the defendants and the points raised by the plea, for as regarded the question of the amount of damages, that would be settled in the same way as was done in the case of "Coe v. Wise," by an arbitrator.

The plaintiff was called, and in the course of his evidence said, that on the 4th of May, 1862, the Middle Level sluice burst, in consequence of which the lands were flooded. After that more water came up with the time. Mr. Wright, the chairman of the Marshland and Smeeth Commissioners, then gave directions that some piles should be driven against the north side of the sluice. There were driven in six, the effect of which would be to disturb the silt and to carry it more easily away. No engineer was present while the piles were driven. On the night of the 14th of October, 1862, the sluice of the defendants' drain blew up. The drain held the water that came up that night, and it was a low tide, but on the 8th it overflowed and flooded the plaintiff's land. The overflow continued for three days, and the water was not off the land for six days after that.

In the course of his cross-examination this witness said that the banks on both sides (close to the spot where the inundation took place) had been pared away by the defendants and it, Commissioners of Sewers for brick-making, admitting that had they not been so pared away his lands would not have been inundated.

Mr. Arthur Sanders, a district surveyor and engineer, at present engaged in engineering works at Sandringham, who had been called in to inspect the sluice after the accident, said that the cause of accident was a hole in front of and in the sluice, which hole ought to have been filled up. The risk of a further danger by driving in piles as protection only increased it, as this driving in shook the sluice.

Mr. Keane, in opening the defendants' case, went on to say that he should call skilled engineers to show that what was done in the efforts to cure the evil was the right thing—viz. pouring down and clenching in sheet piling; that the hole was filled up with hydraulic lime, in proper manner, there being a solid invert at the bottom of the sluice, and so long as this was sound the hole spoken of was of no consequence.

Sir John Rennie said that he built the Marshland sluice in the year 1832. The sluice was built upon a very strong principle, having a timber floor with piles; then there was an inverted arch filled up with hydraulic lime, between the invert and the second floor there was concrete, this second floor forming a flooring running right through the sluice. On either side there were doors to keep back the water. I have heard, said the witness, that three panels of the roadway have been removed, and that a hole appeared; but I am quite satisfied that nothing could have damaged the invert. The water may have leaked in between the two doors, but I am sure it did not get in through the real floor below. In my judgment the efforts made to correct the mischief were proper. Driving in sheeting piles and filling up the hole would be likely to loosen and wash away. I was called in after the Middle Level sluice had failed, by the landowners in September, 1862. I examined this sluice among others, and saw nothing amiss in its requiring a dam. My attention was not called to the bank. I did not see the hole; it did not seem to me, from what I have heard, to be anything serious. It seems to me that all was done which reasonably could be done.

In cross-examination Mr. O'Malley put a letter into the witness's hands, dated October 8, 1862, addressed to the solicitor for the present plaintiff, in which he said, "I had the Marshland sluice been properly looked after, this accident would not have occurred." That "necessary measures had been disregarded, and that the accident must be necessarily attributed to the neglect of proper precautions."

The letter, which was a very long one, and contained other expressions leading to the inference that Sir John was impressed with a notion that there had not been sufficient care and precaution in the protection of the sluice, was written in a copying-machine, and corrected by Sir John himself.

Mr. Pies, a civil engineer in King's Lynn, of considerable experience and large business, who had been engaged in the building of the Marshland sluice, said that, from what he heard during the plaintiff's case, all that was done to avert the damage was correct, and there was no danger to the floor up from concussion in driving the piles. He also said that a hole 6 ft. deep in front of the sluice was not dangerous.

His Lordship summed up the evidence to the jury,

leaving to them one question only, viz.—Did the defendants use due and reasonable care in keeping the sluice in repair? The other question, whether the defendants were under any responsibility to the plaintiff was a legal one, which would have to be considered by the Court of Exchequer, and probably by the House of Lords. He then stated the facts, going through the evidence given on both sides, and in reading the letter written by Sir John Rennie to the plaintiff's solicitor, Mr. Wilkin, above noticed, said that it was most unfortunate to see letters of this kind, as their effect was to throw doubt upon all such evidence as that intended to be given by these skilled and expensive witnesses.

The jury immediately found a verdict for the plaintiff, expressing their opinion that there had been great negligence.

DRAINAGE OF THE FENS.*

In treating of the Witham out-fall, Mr. Wheeler says:—

"After a thorough consideration of the whole subject, I am led to the conclusion that the present defective condition of the drainage of the Fens is entirely owing to the state of the outfall, and I have no hesitation in saying that the evil will increase at a very rapid pace, unless some remedial measures be at once taken."

The whole subject may be thus summarized:—That the fens have been this winter in a deplorable condition, owing to the defective state of the drainage.

That such defect is attributable to the deterioration of the outfall, caused, principally, by the gradual encroachment of the sands on the sea, and the consequent silting up of the estuary. That no works of interior drainage can prove of any benefit until the outfall is improved.

That the improvement of such outfall can best be obtained by pushing the channel forward, as the sea rises.

That the work immediately required, is the training of the waters by fascine work, for a distance of about two miles and a quarter below Hobhole sluice.

That the benefit derived will be the immediate lowering of the water in the upper portion of the river to the extent of 4 ft., a general improvement of the channel below Hobhole, and the formation of the shifting sands, which now encumber the river, into agricultural land.

That the cost of this will be about 12,000*l.*, the annual charge for which will be 600*l.*

That the money required can be raised, and rates levied, without the expense of obtaining an Act of Parliament, by the formation of an Outfall Board, under the powers of the "Land Drainage Act of 1861."

THE RECORD OFFICE, FETTER-LANE.

The central tower of the Record Office, which is now nearly completed, is to have on each of its four sides a statue, under a canopy that stands above the parapet—the Empress Matilda, Queen Elizabeth, Queen Ann, and Queen Victoria. The execution of these statues has been entrusted by Mr. Pennethorne to Mr. Joseph Durham, A.R.A. The statue of Queen Victoria was the first placed in its nook, and the Empress Matilda has just now been erected. Queen Ann will be there before the 20th of April, and Queen Elizabeth by the 18th of May; and thus the tower will be completed, and all scaffolding removed, by June.

The statues, which are admirably executed, are above the size of life, a fact that would scarcely be guessed from below.

RAILWAY ACCIDENTS IN 1866.

THE Board of Trade have issued the concluding part of their reports on railway accidents for the past year. It appears from this document that thirty-seven accidents took place during the last seven months of 1866, and that fifteen persons were killed and about 250 injured. The most important accident was that which occurred on the Carnarvonshire railway on the 6th of September to an excursion train, in consequence of the presence of some material between the point and stock rail, by which the points were prevented from closing. The train was thrown off the line and six persons were killed. The line had never been opened for passenger traffic, and the company were guilty of an illegal act in conveying passengers without the Board of Trade certificate. It does not appear, however,

* "Remarks on the State of the Outfall of the River Witham, with Suggestions for its Improvement." By W. H. Wheeler, Surveyor to the Corporation of Boston, Dingwall, Boston.

that any steps were taken by the Board to punish the offenders, as they have power to do under their Act of Parliament. In the present case, nobody seems to blame except the company, and the pointman had no notice of the return of the train. The permanent way appears to have been in good order, and the points at which the accident took place had only been put in about a fortnight before. Referring to other accidents, the officers recommend that where possible the points should be locked in connexion with the signals, so as to prevent the signals indicating "all right" when the points are in reality all wrong. They insist in several places on the importance of this. One of the practices followed by many railways is strongly condemned. We allude to that of detaching carriages at stations where the train does not stop. An accident occurred at Tunbridge from this cause on the 30th of September, which "appears to have been the result of a hazardous system of working, and the inexperience of the guard of the detached portion of the train." Major Rich says further, "The system of detaching parts of trains is objectionable, as it must at all times be attended with risk, but particularly when the points have to be altered so as to turn the detached portion of the train on to another line, as was the case at Tunbridge." In spite of this the South-Eastern Company still continue the practice. The same officer also protests against the objectionable system of running goods-wagons with passenger-trains, and particularly when the goods-wagons are placed in front of the passenger-carriages. A large number of these accidents were due to the neglect of signals and disobedience of orders; but when men are kept on duty for twenty-two hours, as was the case with the driver and fireman concerned in an accident near the Bramley Station, who can be surprised that their attention should flag a little? "Their ordinary duty," says Captain Tyler, "extends over sixteen or seventeen hours." There is sometimes a difficulty in dealing with cases of neglect, in consequence of the previous good character of the delinquent. It is right that a man should be punished in some way for inattention, but when a servant has for twelve years performed certain duties without a single complaint against him, it seems hard that he should be dismissed from the company's service, especially when, to quote Captain Tyler, the oversight was "one which might have been expected, sooner or later, from any man placed in such a position and with such appliances; and I consider that the real cause of the accident was the want of a looking apparatus in connexion with the points and signals at the junction." In cases of an important accident most railway companies are anxious to "do something," and this desire either takes the form of "giving every possible facility for obtaining an insight into the cause of this terrible calamity," or else of discharging an old and valuable servant as a sort of propitiatory sacrifice to the god Public Opinion. This is beginning at the wrong end, and if companies would follow out the recommendations of the inspectors oftener than is now the case, Colonel Yolland, Major Rich, and Captain Tyler's duties would, at all events, be very much lightened.

THE DRAINAGE OF GREAT BERKHAMSTED.

A COMMITTEE having been appointed by the vestry of Berkhamsted to consider the subject of drainage and reported, have recommended drainage on the principle of separating the rainfall from the sewage, at a total estimated cost of 5,500*l.*, of which 3,751*l.* would be required for the construction of drains and works as per engineer's plans and report. The method of separation advocated by Mr. Menzies, and of which we have ere now spoken, is that recommended by the committee. The vestry having considered the committee's report, requested the reporters to make inquiries as to the earth system and again report. This the committee have now done. They state that they cannot recommend the application of this system to Berkhamsted, and append a report by Mr. William Longman, who is the churchwarden of Berkhamsted, containing a series of objections to the earth system as applied to a town; such as the enormous quantity of earth required, and the impracticability of using such earth as suggested, several times over, as householders

would revolt against such a practice; the necessity still for drainage to carry away slopes of all kinds which could not be sent through the surface drains to pollute the streams; the ponderousness and impracticability of carrying out such a system at all except in isolated localities; and the intolerable nuisance and source of disease which it would inevitably become. In all this we fully agree, as our readers know. The application of the Local Government Act to the parish is advised.

GAS.

The gas movement, as no one can deny, was exclusively originated and carried on for years by the *Builder*, against the high prices and the bad gas of the gas companies, both in London and the provinces, so that our concern for the public interests in this matter cannot be doubted; but we must protest against the attempt which is now being made to reduce the maximum dividends of gas companies from 10 to 7 per cent. per annum. The gas companies have not kept faith with the public: their gas is abominable, and their prices are still too high: they have juggled with bonuses and maximum dividends, in order to frustrate the end which the Legislature had in view of reducing prices for the public behoof, and therefore they have brought down this attempt to reduce their dividends upon their own heads; nevertheless, we must record our opinion that this is an injurious and cancelled for interference with the property of shareholders, who are not seldom widows and orphans, or persons entirely dependent on the profits of gas companies. Injury to these is what we cannot be justly charged with: our successful endeavours to reduce the prices of gas, and improve its quality throughout the whole country, ever tended, as we always insisted they would, to improve the dividends of companies as well as to promote the interests of the public; and at length it became quite common for directors themselves to propose reduction in price for the very purpose of raising their dividends; and they seldom if ever failed to raise them by doing so. In reducing their prices, however, and improving their gas, so as to hold forth strong inducements to the public to fill private dwellings with cheerful gas lights, by all means let the companies earn the profits they have heretofore been allowed to earn; and 10 per cent. per annum cannot be regarded, in commercial transactions, to be anything like usurious interest in return for public services. Though the gas which the Imperial gas company supplies the Londoners with is now most shameful stuff, we regret to observe from statements in the papers that the price of their shares has fallen from 85*l.* to 63*l.* in consequence of the threatened Bill now in Parliament, and that the shares of other companies have fallen in proportion. Sir S. Northcote, who introduced the Bill into Parliament, has expressed his willingness to substitute another Bill for the present one, leaving in blank all figures as to price and standard quality of gas, but he does not seem to have alluded to the threatened reduction of maximum dividends. Of course Sir S. Northcote's object is that all surplus may more stringently than heretofore be applied to the reduction of price to the public: we hope, however, that he will think better of it, and not insist upon the reduction of dividend; more especially as the public are not only interested in a reduction of price, but also in an improvement of quality. Much better give way on the point of dividend than on that of standard quality.

The price of gas is about to be reduced at Birmingham to 2*s.* 5*d.*, 2*s.* 7*d.*, and 2*s.* 9*d.* per 1,000 feet, the rate varying according to the quantity consumed.

The directors of the Faversham Gas Company have commenced making extensive alterations at their works, in the construction of a new tank and gasholder (the latter capable of storing upwards of 50,000 cubic feet of gas), erecting new retort-house for forty-six retorts, new coal-store, and other buildings. It is understood that the whole plant and works will be remodelled under the direction of and from plans prepared by the company's engineer, Mr. Darney. These alterations have been found necessary in order to meet the increasing demand for gas in this town, and also to enable the company to manufacture their gas with greater economy.

Professor Frankland, in the course of the last of a series of lectures on "Coal Gas," which he

has been delivering at the Royal Institution, said he had just had the illuminating power of the gas supplied to different large towns tested by the standard sperm candles, and now holds written and signed certificates in his possession of the result as follows:—Berlin, 15*½* candles; Paris, 12*¾*; London, 12*¼*; Vienna, 9*½*; Edinburgh, 28*½*; Manchester, 22*½*; Liverpool, 22*½*; Glasgow, 28*½*; Aberdeen, 35*½*; Greenock, 28*½*; Hawick, 30*½*; Inverness, 25*½*; Paisley, 30*¾*; Carlisle, 16*½*; Birmingham, 15*½*. Thus the gas supplied to Edinburgh and Glasgow gives more than twice the light of the gas provided for London. The above shows the average light given by the gas furnished in London; but, in particular instances, it only equals nine candles. The gas of London, also, he stated, is richer [ouler?] than it ought to be in the sulphur compounds, and in burning gives off too much poisonous sulphurous acid and other gaseous vapours injurious to health and property.

London gas is now worse than it was many years ago, although its methods of manufacture have been cheapened by the discoveries of science, and all new inventions in this direction having been eagerly taken up by the gas companies, who, so far as is known, have not adopted a single invention which would benefit the consumer. The lecturer concluded by saying "gaslight should have an illuminating power of twenty candles, below which no gas is fit for household use!"

The Anglo-Roman Gas Company has just signed its new contract with the municipality for the illumination of the remaining part of the city, more than half of which is still lighted with oil-lamps. A great development of resources will be required for carrying out this plan, which has been facilitated by the Government having granted permission for the cast-iron tubes required for the purpose to be imported duty free. On the first establishment of the gasworks, the import duty on cast-iron pipes in the Papal States was 200 per cent. on their value.

THE TRADES MOVEMENT.

Wolverhampton.—To the carpenters and joiners and to the plasterers are now added the bricklayers, who have agreed to arbitration between themselves and their employers when differences arise. A first court of arbitration between six delegate bricklayers and six delegate builders was recently held, under the umpireship of Mr. Rupert Kettle, in a committee-room of the Town-hall. An application for an increase of wages of a farthing per hour was granted; and it was arranged that while the masters should not interfere with the men's union, unionists should not interfere with the employment of non-unionists. Arrangements were made for the drawing out of a code of rules which will provide for any future alterations, either in wages or arrangements, by arbitration. The masons and labourers are now the only two branches in the building trade here who have not yet adopted this wise and satisfactory mode of settling disputes; but it is believed that the latter will soon follow the example of the bricklayers. The masons have given notice for an increase of 3*d.* per hour, and change of rules, and the masters offer to submit the questions to arbitration; to which, however, the men are very much opposed.

Blackburn.—The corporation labourers are at present on strike. Their dissatisfaction, we hear, is due to the refusal of some of their demands relating to the Saturday half-holiday. The painters who for a long period have discussed with their employers a re-adjustment of wages, have failed to come to terms; and the notices of the men having expired without a settlement, that branch of the trade is suspended. At a general meeting of the Blackburn branch of the Defence Association of master engineers, machinists, &c., it was unanimously resolved that as the various works in the town have a sufficient supply of men for all present requirements, this meeting stands adjourned for two months from the present date. The nine-hours movement in the joinery trade is the subject of negotiation between masters and men. The movement commenced six months ago, when the men demanded a reduction of hours from fifty-five to forty-nine hours per week, the weekly wages to remain without alteration at 28*s.* Notices were served at the time, a period of six months being the customary term for projected alterations in the terms of working.

The Railway Employés.—The engine-drivers and firemen employed on the Great Eastern

Railway have sent a memorial to the directors, requiring an increase of their wages to the same scale as that agreed to by the Brighton Board. The firemen ask that, when promoted to be drivers, they shall rise to the highest position at the end of three years. They do not ask this rise to be at the end of twelve months, as in the case of the Brighton men. The whole of the engine-drivers of the Darlington section of the North Eastern Railway, in connexion with the mineral and goods department, have struck work.

The engine-drivers on the Scottish railways are agitating for an improvement of their present position in respect of wages and hours of labour. At a recent meeting held in Glasgow it was resolved that ten hours should be submitted to the employers as a fair day's work; and with regard to wages a scale was agreed to, ranging from 5*s.* to 7*s.* 6*d.* per day for drivers, and from 3*s.* 6*d.* to 4*s.* 6*d.* for firemen.

The whole of the English navvies at work on the Midland Railway, at Somers-town and St. Pancras-churchyard, left their employ last week, the ostensible reason being that about 100 Belgian navvies had been introduced by Messrs. Waring, the contractors for that portion of the line. The foreigners work at much lower wages than those paid to the English labourers, and this, it may be remembered, last year caused great disturbances near Caterham and Horsham between the two parties. Immediately the men, about 400 in number, came out with their shovels and picks, they held a meeting on the ground that is intended for the Midland Station. A chairman was elected, and several persons spoke, and it was proposed and carried, with a loud cheer, that all the men should be fetched off the works, and not again resume work until the Belgians had been discharged. Pickets were sent up the line, numbering about 150, to inform the men at Agar-town and elsewhere of what had occurred, and to fetch the gangs off the works. Fears being entertained that the navvies would proceed to attack the Belgians, information was given to the police, but fortunately their aid was not required. The foreman of the Belgians was warned to leave the works.

A Parliament of Workmen.—The Emperor of the French has, it is said, sanctioned a curious experiment. A Parliament of workmen, consisting of 302 delegates, elected by all the trades in France, is to assemble in Paris during the Exhibition, to discuss all kinds of questions connected with their work. Official rooms have been assigned them, and they are to be allowed considerable freedom of debate.

The Eight Hours Movement in America.—Illinois is the first American State that has adopted the eight-hour system, but Illinois has made the exceptions greater than the rule. By the law recently passed in that State, it is provided that from the 1st of May eight hours of labour between the rising and the setting of the sun are to constitute and be a legal day's work in all mechanical trades, arts, and employments, and other cases of labour and service by the day. But the Act is not in any way to apply to farm-labour (Illinois being a great agricultural state), nor to labour or service by the year, month, or week, nor to prevent parties from agreeing for as many hours of work as they think proper.

IMPORTANT TO ENGINEERS.

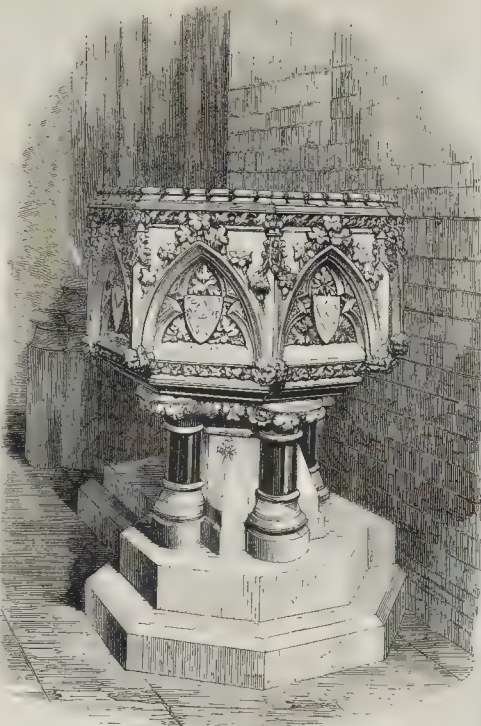
A CASE of importance to engineers was heard at the Liverpool Assizes, before Mr. Justice Mellor, in which the administrator of the late Mr. W. Stubbs, C.E., Liverpool, sought to recover a sum of money, alleged to have been due to the deceased as salary, from the Holywell Railway Company. It appeared that at the construction of the Holywell Railway the deceased had been engaged as engineer for fifteen months, to receive 500*l.* as remuneration. The money was to be paid quarterly by instalments of one-fifth. At the end of the first quarter the money was paid, with 10*l.* as travelling expenses, according to previous agreement. No more money was drawn, and at the end of the third quarter Stubbs died. It was therefore now sought to recover two quarters' salary and travelling expenses. For the defence it was urged that the deceased was engaged to do certain specified work, but he had died before the most important part of the work was done.

Witnesses were called on both sides, and while on the one hand it was contended that Stubbs's

MODERN FONTS.—MESSRS. FRANCIS, ARCHITECTS.



St. Mary's, Acton.



Christ Church, Mayfair, London.

services were worth 300*l.*, on the other it was urged that the 110*l.* already paid fully compensated him. A verdict for the plaintiff was returned for 160*l.*, 10*l.* being for expenses. Leave was given to move, but his lordship thought the defendants had better let the matter rest.

THE NEW PUBLIC PARK FOR CHESTER.

This park is being laid out and decorated with ornamental shrubs by Mr. Kemp, landscape gardener, Birkenhead, and it is generally understood that the Marquis of Westminster intends to present the park to the city for the use and recreation of the inhabitants. In November, 1865, a subscription was originated by his lordship's tenantry and by the citizens of Chester, for the purpose of raising a testimonial to his lordship. Upwards of 5,000*l.* were very soon contributed, and it was ultimately resolved that the testimonial should take the form of a statue and be erected in a prominent place in the new park, the formation of which at that time was just commenced.

The site of the park is on the south-east side of the city, on the banks of the Dee, commanding fine views. Immediately facing the river-front of the new grounds is Queen's Park, which is approached by a suspension bridge some distance lower down the river.

The new park, as described in the local *Courant*, is enclosed partly by a stone wall, and partly by wrought-iron fencing on a low stone plinth. The main entrance, opposite the new City-road, is from Foregate-street, and consists of a large pair of gates in the centre, with a

smaller gate on each side. The gate-piers throughout the park are each worked out of a single block of Irish granite; the chief pair of the main entrance measuring 10 ft. 6 in. high. To the right-hand side of the Foregate-street entrance stands the Lodge, which is built in the timbered style, in accordance with the ancient character of the city of Chester. The gables are enriched with carvings in oak, the most prominent features of which are the figures of William the Conqueror and the seven Earls of Chester. The tiles with which the roofs are covered are glazed ones of special manufacture, and were made by Mr. Peake, of Tunstall, Staffordshire. The woodwork in the gables, roof, &c., of the Lodge are of oak. In addition to the living accommodation for the keeper of the park there is a board-room provided for meetings of the committee; also other offices for the use of the public.

There are two main walks, or avenues, 15 ft. wide, leading to, and intersecting at right-angles, the site upon which the statue is to be placed. At the bottom of the hill is the well-known "Billy Hobby's Well," over which has been erected a cover, with sixteen shafts of polished red granite, having curved capitals and bases.

Mr. Douglas, of Chester, is the architect of the buildings, which have been executed by Messrs. B. & O. Owens, of Chester, with the exception of the river wall and other masonry, which have been done by Mr. Henry Wigginner. Almost the whole of the ironwork (with the exception of the entrance gates and railing between the park and St. John's Churchyard) has been executed by local tradesmen, in accordance with the desire of the Marquis of Westminster.

MODERN FONTS.

ST. MARY'S, ACTON; CHRIST CHURCH, PICCADILLY.

The parish church of Acton having been rebuilt, it was necessary that the whole of the fittings should be made to harmonize with the new structure. Most of the more prominent fittings were the gifts of friends or parishioners, either as memorials, or as showing the individual interest taken in the work. The font we illustrate was presented by a parishioner to replace a very meagre specimen of modern work in the old church. The materials used are Caen stone for the upper portion, and Bath stone for the base; the small shafts supporting the arches being in polished Devonshire marble. The shields in the trefoils contain emblems of the Passion, surrounded by foliage, with monograms of our Lord and the Virgin Mary alternating below, the church being dedicated to St. Mary.

The font in Christ Church, Mayfair, represented by the second engraving, was presented to the new church in Down-street, Piccadilly, by the widow of the first incumbent designate, the late Rev. A. B. Wharton, who died from the result of an accident in Hyde Park before any steps had been taken to erect the permanent building. The material, as in the former case, is Bath and Caen stone, with Devonshire marble shafts to base. The shields in trefoils around the bowl are in alabaster, and contain suitable emblems, alternating with the monogram of Mr. Wharton.—A. B. W. A brass inscription on the wall above records the memorial character of the font.

Both these fonts were executed by Mr. F. G. Anstey, of Alpha-road, Regent's Park, from the designs of Messrs. Francis, architects.



SMITHFIELD MEAT AND POULTRY MARKET: CENTRAL ROADWAY.—MR. HORACE JONES, ARCHITECT.

SMITHFIELD MEAT AND POULTRY MARKET, LONDON.

The preparatory works for the new Meat Market in Smithfield have so far advanced that the "first stone" is to be laid almost immediately. Many of its brick arches, on iron girders and columns, which will form the floor of the market, are turned, and the basement walls for the four towers, at angles, are in course of execution.

At the close of our last volume we gave a view of the market externally, a section of the roadway, and descriptive particulars of the proposed building.* We now add a view through the central roadway, which depends mainly for effect, as we before mentioned, on the screen of oak framing, filled in with cast-iron scroll-work, which is carried up to the spring of the roof-timbers, and on the dressing of the curved principals. Our readers may remember that the building is being erected under contract by Messrs. Brown & Robinson, under the superintendence of the City architect, Mr. Horace Jones.

The money has been raised by the issue of City Debenture Bonds at par, bearing 44 per cent. interest, and redeemable in 10 years, secured upon the rents of the markets, as well as upon the general estates and property of the Corporation.

PROVINCIAL NEWS.

Cambridge.—The London and County Bank premises, of which we gave a view and plan in the *Builder* for last year (p. 426), have been opened. The building has been erected at the corner of Trumpington and Bene's streets, and is in the Tudor style, and built of white brick with Bath stone dressings. It is 60 ft. in height, and has a frontage to Trumpington-street of 49 ft. and 85 ft. in Bene's-street, the main entrance being at the corner of the two streets. In Trumpington-street, on the first and second floors, are two oriel windows, with gurgoyles on the top of each, the shutters being Bunnell's iron rolling ones. The architects of the building, which, it is estimated will cost about 10,000*l.*, are Messrs. Francis, Brothers, of London; and the builders, Messrs. Myers & Sons. The staining has been executed by Mr. H. S. Gray, of Cambridge. The main entrance is of carved stone, with encaustic tiled floor and stained oak doors. The banking-room in dimensions is about 39 ft. each way. It is lighted by four large windows, and has a panelled stained floor ornamented with bosses and leaves, varnished. The floor in front of the counter is inlaid with Minton's encaustic tiles, of the star pattern, and the fireplace is built of Corsham stone, with marble columns and shelf. The manager's and waiting rooms are similarly fitted up. In the basement of the building is a fire-proof strong room, 19 ft. 6 in. by 18 ft. 6 in., built of fire-proof bricks, with double iron doors, fitted with Hobbs's patent locks. The manager's house is situated over the banking-room. Adjoining the manager's house in Bene's-street, a private house forms part of the whole building. The whole of the roof has an iron cresting. The chimneys are stone capped.

CONSECRATION OF ST. PAUL'S CHURCH, CHARLTON, S.E.

The church of St. Paul, Charlton next Woolwich, consists of nave and aisles, chancel, north and south transepts, organ chamber, vestry, two north porches, south porch, and vestry porch. There will be a tower and spire (190 ft. high), at the south-west angle, standing external to the church, and containing the south porch, but from want of funds this is not yet built. There are no galleries. The accommodation is for 8,896, and the cost has been about 5,500*l.*, including lighting, heating, reredos, font, &c. The style is Gothic, of the Decorated period. The internal dimensions of the church are,—Nave, 84 ft. by 24 ft.; aisles, 14 ft. 2 in. wide; chancel, 35 ft. by 24 ft.; and transepts, 19 ft. by 17 ft. each. The height from floor to ridge is 460 ft. The nave is separated from the aisles by an arcade of five arches on each side, supported on Hollington stone shafts and responds, with moulded bases and carved caps. The chancel is

separated from the transepts by similar arches (two on each side), shafts, &c. The clearstory above is pierced with ten double-light windows, with traceried heads. The aisles and transepts are lighted by three-light windows, with heads filled in with tracery; and the west window, of seven lights, and the chancel window, of five lights, have elaborately traceried heads. The principal north porch has clustered shafts, of Lizard Serpentine marble, carved caps, and moulded stone archivolts and bases, similar marble being used for the vaulting shafts to the chancel arch. The tower is to be of four stages, the lower containing the south porch, with belfry over, and two light windows in the upper stage, with marble shafts, traceried heads, &c. The church is of brick and stone, the interior being faced with Suffolk white, red, and blue Staffordshire bricks, in bands, devices, &c.; white brick arches to the nave and chancel, and coloured bricks to the rear arches of doors and windows. The brick decorations are elaborate, and the details display care in the arrangement of colour. The roof is open timbered, with curved principals, the rafters being exposed, and boarded on the upper face. The principals are supported on stone caps (carved), stone shafts, &c. The stalls to the chancel are of oak, with carved oak standards, and oak fronts with traceried panels. The other seats are of deal, with wrought, cut, and moulded standards. The whole of the woodwork, save oak, is stained and varnished. The paving to the chancel is of Minton's encaustic tiles, and to the gangway of nave, &c., of blue and red quarries laid in patterns. The reredos is designed of stone, with marble shafts, carved caps, crockets, finials, &c., and is partially inlaid with marble. The centre panel contains in alto-relievo the conversion of St. Paul, the figures being two-thirds full-size. The side panels will be filled in with the Commandments. The sedilia is of Caen stone, with black marble shafts. The canopies are carved, and in the head of each are carved coats of arms of the sees of Canterbury and London, and of the patron, Sir T. M. Wilson, bart. The sedilia was the gift of the architect. The bowl of the font is X shaped, the angle of the cross being filled in with carving, and is supported on a cluster of eight serpentine marble shafts. On the faces of the bowl are quatrefoil panels, with emblems of St. John, &c. The carving is emblematical. The contract for the church was taken by Mr. Robert Abraham, of Poplar. The reredos, font, and carving were executed by Mr. S. Sansom, of Lambeth. The architect is Mr. W. Wigginton, under whose superintendence the work was carried out. Mr. H. Pulman was clerk of the works.

CONSECRATION OF THE BOROUGH NEW SYNAGOGUE.

The Jewish community resident on the south side of the Thames have erected, in Albion-place, Walworth-road, a new synagogue, which has just been consecrated. The building is in the Italian style, the front being a portico of the Doric order. The vestibule is floored with ornamental tiles, and flanked by stone staircases leading to ladies' galleries. Two doors from the vestibule give access to the floor of the synagogue, which will accommodate 200 or 250 persons. In the centre, occupying the whole breadth between the aisles, is the platform on which the service is performed. This is enclosed with an ornamental iron railing, and at the back are seats for the choir, the reading-desk being placed in front. The desk is covered with an embroidered cloth of purple velvet, and the smaller desk placed upon it is fringed with amber silk. In front of the desk on the floor of the synagogue is the pew of the wardens, beyond which are seats for the congregation reaching up to near the steps leading to the sanctuary. These steps are of polished marble, and form the approach to a semi-octagonal recess, flanked by Corinthian pillars and covered by recessed arches, on the outer of which is the inscription, "Know before whom thou standest," in Hebrew. The interior is roofed with amber glass, which sheds a mellow light in front of a curtain of purple velvet, on which is embroidered a wreath of gold surrounding an inscription in Hebrew embodying a prayer that the Lord would hear worshippers in the house, the whole being surmounted by a jewelled crown. The galleries which run along the two sides and the western end of the building are supported by

light iron pillars, and, like the platform, are surrounded by an ornamental iron railing in a framing of varnished deal. The ceiling is divided into coffers by ornamented beams, which are supported on trusses. The central coffers are furnished with gaslights. The galleries will accommodate about 200 ladies, the whole synagogue thus affording room for about 450 persons in all. Adjoining the synagogue, which is placed diagonally on its plot of land, are houses for the ministers, and a school for 150 boys, with suitable accommodation for teachers, &c. The whole work has been designed and superintended by Mr. N. N. Collins.

RAILWAY MATTERS.

Communication between Passengers and Guards. Matters are moving at last towards the point so often urged by us. Experiments have been made on the Great Western line between Paddington and Windsor, as to the practicability of carrying out a union of Mr. Spagnoletti's electrical communication with a "safety-cage" for railway guards, invented by a Mr. Baker. A number of gentlemen, including the Duke of Sutherland, Captain Mangles, and the inventors, Messrs. Spagnoletti and Baker, accompanied the train. The electrical communication, on the pulling of a handle in a carriage, ignited a coloured light and rang a bell in the guard's van. The safety-cage (respecting the merits of which special plan of moving along a train we know nothing personally as yet) consisted of an iron framework, having two grooved wheels at the top and two at the bottom, running on an iron guide-rail fixed on the outside of the carriages, extending the whole length of the train. The groove of the top wheels also run along close under a guide-rail fixed on the top of each carriage to keep the cage-frame steady. The guard on entering the cage attached to the moveable frame could, by pulling or pushing, propel it along the sides of the carriages until he came to the carriage from which the signal was given. By means of this invention the guard could at any time during the running of the train make an inspection of the whole of the carriages, thus preventing the necessity of stopping the train to ascertain the cause of the signal. The inventor, Mr. Baker, on receiving the signal from a first-class carriage, issued from the guard's van several times during the trip, placed himself in the cage, and propelled himself along the side of the train, visiting the compartments from which the signals had been given, with, it is said, the greatest ease and safety. But what of bridges and tunnels? some of them, we fear, would not admit of such a cage traversing the trains in transit.

Metropolitan District Railway Company.—At the fifth half-yearly general meeting of this company a report from the engineers was read, giving a description of the present state of the works. It appeared from this report that the works and line between the West London Extension Railway and the Kensington and Gloucester-road joint stations were so far advanced that this part of the railway may be opened for public traffic within a few months of the present time. The stations in the inner circle of the line at Kensington, Gloucester-road, Sloane-square, and Victoria (Piccadilly) were now being roofed in. The railway works at Westminster were completed before the opening of Parliament. On the portion of the line between Brompton and the Broadway (Westminster) the works were in progress at several points, and a considerable part of the whole work of construction was finished or in hand. On the west side of the Fulham-road the retaining walls had been built to their full height for some distance, and the remaining property was now being cleared to the Brompton station. At Sloane-square the excavation and arching of the railway and the ironwork for the Ranelagh Sewer were being actively carried on. Between Sloane-square station and Upper Ebury-street nearly 200 yards of retaining wall and arching had been finished with the requisite girder covering and sewer crossings. Between Belgrave-street South and Buckingham-row a length of 850 yards was nearly completed, including the crossing of the King's Scholars' pond Sewer, by an iron tube of 14 ft. diameter, and other important sewer works, gas and water mains.

Traffic Receipts.—The traffic receipts of railways in the United Kingdom for the week ending March 22, 1867, upon a mileage of 12,537,

* See vol. xxiv., pp. 855, 857.

amount to 632,529l., being equal to 56l. 9s. per mile. For the corresponding week of last year the receipts were 640,325l., the number of miles open 12,364, or 51l. 1s. per mile. A comparison of the two weeks shows a decrease in the aggregate receipts of 7,796l., and an increase in the number of miles open of 173.

Railway Fares and Charges.—We hear that the railway companies are thinking of raising their rates and charges to the public. The subject, it is said, has been mooted amongst the leading companies during the last couple of months, and such of them as are under their Parliamentary powers will, it is probable, shortly advance their rates. Some, however, already charge to the utmost allowed them, save in return tickets.

The Moscow Railway.—It is said that the Russian Government is in negotiation with a private company for the sale of the Moscow railroad, and that the price demanded is about 12,000,000l.

Canada.—Our Parliament, by a majority of 247 to 67, has guaranteed a loan of 3,000,000l. to the new dominion of Canada, to enable the great inter-colonial railway to be constructed.

THE BURLINGTON HOUSE SITE.

IN the House of Commons, on Friday, the 6th, Mr. Layard called attention to the buildings now in course of erection on the site of Burlington House, especially with reference to the pledge given to Parliament last year, and moved for copies of correspondence between the First Commissioner of Works and the London University, relating to the buildings in question. Burlington House, he remarked, was to be gutted, and made a sort of portico to the buildings to be erected behind it. The colonnade, which was a very important and interesting feature of Burlington House, would altogether disappear, and what was proposed round about Burlington House would be something like marrying a short man to a very tall woman. It was proposed, therefore, to add a story to the present building, and to give it something like strength at the base, a colonnade was to be erected, uniting the two ends of the building. As the house itself was entrusted to Mr. Smirke, the facade in Piccadilly to Messrs. Banks & Barry, and the buildings behind to Mr. Pennethorne, it might have been supposed that these gentlemen would be required to consult together, in order that one architectural idea might be carried out; and 300 people out of 1,000, if they had been asked what style should be followed, would have said,—"The style of Burlington House." Mr. Pennethorne proposed its elevation in the Palladian or Classic style, as say one else would have done; but a change had taken place in the Government, and the noble lord who had become First Commissioner of Works having unfortunately an attachment to Gothic, a design was sent in by Mr. Pennethorne in the Italian Gothic style. He was puzzled to know what was meant by Italian Gothic. Was it the chaste Early Franciscan order, the style of Milan Cathedral, or what? Mr. Pennethorne was directed to retain the plan of the building, but to convert it from Classic into Italian Gothic, which was an absurdity, because the interior arrangements that would suit a Palladian building would probably be unsuitable to a Gothic building. The London University appeared not to have been consulted in the matter. After making several attempts to induce the noble lord to withdraw this Italian facade, they passed another resolution on the 25th of March, to the effect that, having regard to the design, the modern style of architecture would be preferable either to Medieval or Italian Gothic. The answer they got was something like telling them to mind their own business, and that the design was to be carried out as a whole. He had seen the elevation for the additional story to Burlington House, and for the wings added to the Piccadilly, and he admitted that they were very handsome, and that Mr. Smirke had done all that he could to improve the building. On the whole, this grand entrance in Piccadilly, and the lofty ornamental buildings in the Palladian style, did great credit to Mr. Smirke and to Messrs. Banks & Barry; and he trusted that when members saw the plans, as they would do, in the library of the House, they would meet their approval. During the discussion respecting the enlargement of Burlington House, there was a distinct pledge given that no more money would be asked for until the plans had been submitted to the inspection of hon. members. These pledges had been violated, although 20,000l. had been voted, on the distinct understanding that the House of Commons was to have the power to approve or disapprove of the plans. It appeared now that the noble lord held that the head of a department was not bound by the pledges of his predecessor; but if that theory were to hold good there would be no confidence in any department, and some explanation were not given he would certainly move that the vote be rejected, and the building stopped until the House had the opportunity of inspecting the plans.

Lord J. Manners said, he had never desired Mr. Pennethorne to make a design in any particular style; but when he found that the House had voted 20,000l. for building the university, and when the Chancellor of the Exchequer said it was desirable that the works should commence at once; and when, further, he found that his predecessor had instructed Mr. Pennethorne to prepare specifications, his clear duty was not to stop the works, but to take the necessary steps to carry them on to completion. What blame could be attached to him for carrying out the wishes of his predecessor, he was at a loss to say. The hon. member said that there were important documents at the London University to show that he had instructed Mr. Pennethorne to design a Byzantine facade; all he could say was that he had never seen those documents, and knew nothing about them. The Royal Academy were to erect a gallery in the rear of Burlington House at their own expense. What style did the hon. member think would be adopted for that building? Did he expect it would be Palladian? [Mr. Layard.—"I hope so."] That style was entirely unsuited for the exhibition of pictures, which was all that the Academicians had in view. No one would

ever suggest that every house in the street called Burlington Gardens should be in the same style of architecture. All the arrangements were now complete, and plans would be placed before the House prior to any fresh vote being asked for.

Mr. Cardwell said, he did not believe that if the elevation which it was proposed to erect in Burlington Gardens for the University of London had been exhibited in the library before the vote was taken, the House would have contributed a single shilling. The noble lord thought it absurd to suppose that because the Royal Academy was to be in a certain style the University of London should be in the same style. The House might possibly entertain a different opinion. It appeared to him that there was a great deal to be said in favour of harmonising the buildings upon one site. He should be glad if the noble lord would state what amount of smart money would have to be paid in order to get rid of the present elevation, and to substitute another; and, as there had already been two plans prepared, he hoped that a third would be obtained, and at no very distant date adopted.

Mr. Beresford Hope said the present discussion had shown how ill advised the House was in the last Parliament when it threw over what would have been a consistent, easy, and cheap scheme, namely, that of building the National Gallery on the site of Burlington Gardens, so that the nation might have had one uniform and harmonious structure. A distinct promise, he remembered, was given to lay the plans and elevations of the contemplated buildings before the House. With respect to the proposed building for the London University, he was of opinion that it ought to be treated entirely upon its own merits, and not in relation to Burlington House. Whether Mr. M. Pennethorne proposed a plan, he did not know, but he thought that it should be examined, and what was bad in it rejected or altered, but if so it should be corrected upon its own merits alone.

Mr. T. St. John expressed an opinion that a building after the model of Somerset House was admirably adapted for all such purposes as the proposed building was intended for. He suggested that an elevation should be prepared as well as plans, and laid upon the library table, so as to give hon. members some idea of what the front would be like.

Mr. C. Benbow thought that if the building was to be erected they should endeavour to make it proceed in the London University, it has now been decided that the directions that the building should not be designed by until the designs were in the library of the House.

Lord E. Russell expressed an opinion that the works should be stopped until the designs were produced.

Mr. Cowper admitted that the undertaking referred to had been given, and was still of opinion that the plans and elevation should be laid in the library. Italian Gothic was a style in which many beautiful buildings could be constructed, but he thought if there ever was a place suitable for a building in Italian Gothic, it was the site of Burlington House.

With respect to this discussion, Lord John Manners has since stated to the House that, regarding the works of the London University, it has now been decided that the works shall be proceeded with without prejudice to the style of architecture; and he added that the probable extra cost of changing the style would be between 7,000l. and 9,000l.

DAYLIGHT IN THE MINES.

A MAGNESIUM hand-lamp has been made on Mr. Larkin's principle; and, as we have seen and examined it, we may here briefly describe its peculiarities. The magnesium is not supplied to the light in wire or ribbon form, requiring something like clockwork in its management. The metal is in the form of a granular powder, either alone or mixed with sand, and is merely supplied by a tap through a tube to the flame of a spirit-lamp, which ignites it; and the instant that the magnesium smoke is formed, it passes off through a funnel or chimney, which meets it at the spot where it is formed. The lamp or lantern, therefore, is kept almost entirely free of smoke, and the light is in no degree obscured by it. Much of the smoke is arrested in the chimney, and a condenser is being applied to it, whereby this may be still more effectually accomplished. The magnesium powder, though considerably cheaper, we are told, in use than the wire or ribbon, is still rather costly, being 5s. an ounce; but, manufactured on a large scale, the price would be much less; and we would suggest that experiments should be tried with lime, a mixture of which with the magnesium powder might, perhaps, economise the expenditure, by yielding a light equal to the magnesium light with half the quantity of the metal. The phenomena of the lime-light, though produced upon a different principle, and those of lime, indeed, even in the crucible on the fire, certainly give feasibility to such a suggestion. The lime, no doubt, should be anhydrous, and not the soft and clinging slaked lime.

The light given by Larkin's lamp is splendid, and in its power of displaying colours closely resembles day light. It is now proposed to apply this very portable lamp in the exploration of the roofs of coal-mines, every crack and crevice of which could be seen by its means, so that where any danger existed lives could be saved;—and the lives lost in mines from roof-falls is said to be as three to one lost by explosions. Railway tunnels might thus also be examined, and cavernous spaces, generally, explored. The lamp is not much heavier than a spirit-lamp, and the light can be raised or lowered instantaneously by the mere turning of the tap, so that

it is completely under control, and need not be used a single moment except when wanted, as the spirit-lamp, when lighted and screwed on, sets fire to the magnesium as fast as it is supplied to it through the tap. The management, therefore, is both simple and economical. We should think this lamp very suitable for photographic use, if, as is said, portraits can be taken by means of the magnesium light.

ANCIENT CANOPIED SANCTUARIES.

THE parish churches of Brilley and Michaelchurch in this county (Hereford), lying on the north bank of the Wye, between Hereford and Hay, the former of which has been, and the latter is about to be, restored, under my superintendence, contain in their chancel arrangements a peculiarity of infinite beauty, which, so far as my experience goes,—having never met with a similar example,—is by no means usual.

Neither of these churches ever had chancel-arches, but both have had chancel-screens and rood-lofts. That of Brilley had lost its chancel-screen, but not the timbers sustaining the rood-loft. The chancel of each is some 30 ft. long or thereabouts. In each case the sanctuary or altar end has been enclosed by a screen eastward of the choir, advanced about 10 ft. from the east wall or rood-end.

I now come to the peculiarity I wish to mention. Against the east wall are carved oak posts, corresponding in position to similar posts, forming the support to the sanctuary-screen; others are placed along the north and south sides, and together uphold an enriched cornice and a canopy formed of panelled work, with oak moulded ribs, the intersections in the case of Michaelchurch being concealed with carved heads. Each canopy is of the width of the chancel, and extends from east to west from the chancel-wall to the sanctuary-screen. These canopies are much below the chancel roof, the timbers of which are seen passing over them. Doubtless this arrangement has its prototype in the canopy-covered altars of the ancient basilicas; but it is so unknown to our experience that I draw your attention to it in the hope that examples of a kindred nature may be brought to notice; and I should be much obliged to any incumbent or churchwarden, aware of such examples, who would inform me of them.

No similar instances of a canopied sanctuary, as exemplified in these churches, are known to me, either from personal observation or from works on the architecture or ancient ritualistic arrangement of the chancels of this country.

Sanctuary screens are in themselves by no means common; there being, as I believe, but one solitary example left, at the present day, that in the cathedral of St. David's; but evidences are to be found in some parish churches of their previous existence.

The effect of what I have been describing is exceedingly impressive, and very much enhances the interest attaching to these otherwise rude, though characteristic, country churches.

J. NICHOLSON.

FREE TRADE IN ARCHITECTURE.

SIR,—Will you allow me to say a word on the all-important subject of architectural competition, and the new Manchester Town-hall that is to be. To my mind there seems only one way for the future, and it is indicated in the terms of this very competition; but, unfortunately for architecture, only half indicated. If the Royal Academy consider it enough for the finding out of the capacity of a proposed student that he should produce one plan, one section, and one elevation of a building, these three drawings on a single sheet of double elephant paper ought to be enough to guide any Town-hall Committee in its selection of a competent architect, or architects to do its work. But, and this is why I trouble you with this note, this drawing or drawings should be autographic—the work of the architect himself, his own personal architectural handwriting, and not merely that of his clerk, or improver, or pupil, as is now pretty nearly always the case. Whatever is done afterwards by assistants, these first signatures should be genuine, and truly descriptive of the art mind, and hand of the artist who exhibits them.

Mr. Fergusson says there is no modern architecture. Of course there is not, and never can be while the present system lasts; for surely it is not in the working out and elaborating a design that progress, *i.e.*, individual mental movement, takes place? Another of your correspondents suggests that in all cases it would be well if some few well-recognised architects were to be at once fixed on: a process, to my mind, at once fatal to art; for what is it but protection in its very worst form? It is the simply selecting some half-dozen architects to do everything, *i.e.*, through their clerks, from the well-thumbed books of precedent! It may surprise your correspondents to be told so, but there never has yet been an architectural competition at all in its true sense by architects. The Law Courts competition, with an exception or two, is a competition between clerks and pupils and water-colour draughtsmen: the "magnificent signatures" are theirs, not their masters'. An architectural competition and exhibition of architectural handwriting has yet to be; and until we see it, neither Mr. Fergusson nor any one else is or can be competent to determine what the true state of the architectural capacity of the present time and middle of the nineteenth century really is. One single drawing, I contend, by the architect himself, is and must be worth a thousand by his clerks, however able they may be; for it is his own, mentally and manually and progressively. The beginning has yet to come, but the public must wait for it.

C. B. A.

CHANGE OF NAME IN LONDON DISTRICTS.

Sir,—In the insertion which you were good enough to make in the *Builder*, page 229, of "Change of Name in London Districts," there are three slips; and, although I am quite aware that they are more owing to my indistinct writing than to the want of attention in your compositor, I feel it desirable for the sake of accuracy to request of you the kindness to notice them. "Old Bread-street" should be "Old Broad-street" (where Gresham House stands); "Knock Fingers" should be "Knock Fergus"; and "Aog-lane" should be "Hog-lane." To my former observations I may add the following, leaving you to notice them or reject them as you may deem best—most of which I do not find on any modern map, though some may possibly still exist:—*viz.*, Red Cow-lane, now Cleveland-street, Little-end; World's-end, Stepney; Ducking-pond, White-chapel; Half Farthing, and Half Farthing-lane, Stepney; somewhat analogous to Farthing is public-house in New-road, Marylebone, and Farthing. The turnpike-gate, long existing in front of it, Castle-yard, Holborn, now Castle-yard; Cony-court, now Gray's Inn-square, in the Inn of that name. Of Cut-throat-lanes, referred to in my last, I remember several others, popularly so called, though not so marked on maps,—indeed, most of the retired narrow lanes around London were so designated. This reminds me of what a friend, now dead, told me many years ago, *viz.*, that his father informed him it was common for parties wishing after dark to walk from the City to Islington and adjoining parts to wait at the outskirts until, by a accession of persons arriving, a party was collected sufficiently numerous to enable them to defend themselves from attack, and thus to prosecute their journey in greater safety as a body. I notice two, *viz.*, one at Shadwell, and one by Lion House, Brentford; while there was Woody Bridge, at Knightsbridge; and Thieving-lane, at Baling; and Gaggie Goose-green, at Shepherd's Bush. Petty France, Westminster, is disappeared, and York-street is substituted; while Little Britain, City, still holds its own. I suppose out of compliment to our country. Ragwort, and Hockley-in-the-Hole, Clerkenwell, near Warner-street (referred to in my last with little ending) is also situated; Cod-Piece-row (*sic*), near these, now Coppice-row, must, I think, be a mistake of the engraver. The latter name is far more likely of the two to have been the original (could the engraver have been studying colonial armour?). Devil's Lane, Hornsey, with Myrtle-lane (since called Duval's-lane, and now Myrtle-lane, Hornsey-road), leading to it, must, I assume, have been his Satanic majesty's summer residence; since I observe Bottomless Pit, near Myrtle's (*sic*) Marsh, by Tooting Common (I suppose a warmer place for his winter quarters). I will only add the foregoing are all recognised names, and taken either from Rocque's Map of

London, 1748, or Gibson's, of 1769; and very probably more equally curious names might be gathered. I am the more disposed to believe this because I feel assured I have in some map seen "Blowbladder-street," as marked at the south end of St. Martin's-le-Grand, between Newgate-street and Chapside, though I do not observe it on either of the two above named.

A. Z.

Sir,—If your correspondent "A. Z." will walk to Snow-hill, he will find Cock-lane running into Giltspur-street; and he will also find Pye-corner at the corner of Cock-lane, with an inscription over the door of "The Fortane of War" public-house referring to the stopping of the Fire of London. He will also find Pudding-lane running from Eastcheap to lower Thames-street, and containing thirty-five houses, mostly orange merchants'. There is a manifest connexion between Cock-lane and Giltspur-street.*

P. P.

MINTON AND FINE ART.

Sir,—Minton had acquired a high standing in fine art manufacture; and the distinctive title of "Minton's ware," like that of Wedgwood's, was by the public accorded to him, ere the honours were bestowed upon him which he so well deserved. And yet Mr. C. Bruce Allen would now posthumously seek to lower him in the public estimation, for the sake of enhancing his own theory, as to the relative merits of all the parties concerned in the production. This is both ungenerous and unwise, and particularly when, upon the authority of his own mere memory, and without the attendant circumstances in explanation, he quotes a here and there casual sentence of the man whose reputation he seeks to lower from confidential converse. I presume that Mr. Allen is unaware that our late friend was indebted to the Baron Marochetti and other distinguished men for some of his most successful designs of vases, &c., and was ready to give any sum to any artist who would produce him a design calculated for his class of manufacture. Mr. Minton was a man most shrewd, playful, and witty in his conversation and remarks, and I can easily imagine that the expressions quoted had a higher significance than was appreciated by his assailant.

THOS. L. DONALDSON.

* * Here the correspondence may end.

THE PROPOSED ROAD FROM HYDE PARK CORNER.

Sir,—In the article in last week's *Builder* on "Park-lane Improvement," and on Mr. Snell's plan for the accommodation of the public traffic between Hyde Park-corner and Stanhope-gate, it is stated you "understand that, if not the Board, at least some of its officials, have said that Mr. Snell's scheme is not original." When the Park-lane Improvement Bill was before the Committee of the House of Commons, with the Right Hon. W. Monell as chairman, in 1855, I suggested to some of the officials of the Metropolitan Board of Works a scheme almost identical with that now proposed by Mr. Snell; and, at the same time, Mr. Blackburn, then M.P. for Strilingshire, also produced a plan somewhat similar. He proposed to set back the Hyde Park arches to the same place as in Mr. Snell's plan, but the public road from thence was to cut through Hamilton-gardens to somewhere about Hertford-street, whence a road was to be carried through to the bottom of South Audley-street. In my plan, the new public road from Hyde Park-corner to Stanhope-gate was identical with Mr. Snell's proposition; but I was rather at a loss to know what ought to be done with the Hyde Park-corner gates. Of course, they would have to be moved; and I thought, as the traffic in and out of the Park is very great at that spot, that in any alteration of the entrance at Hyde Park-corner, some should be made to allow at least four carriages to enter or leave the Park at the same time. The present gates afford but two entrances for carriages, and only one exit; so I suggested either that the present gates should be reconstructed with that object in view, having the two centre gates opposite Grosvenor-place, or that new and more convenient gates should be erected there, and the present structure be moved to Stanhope-gate or to some other place where there is less traffic than at Hyde Park-corner. I think, however, that the position of the altered gates, as proposed by Mr. Blackburn and Mr. Snell, is better than any I suggested.

In calling your attention to this subject, I have no wish or intention to bring myself into notice respecting these plans, or to detract in any way from the merits of Mr. Snell's proposition. My object is to inform you that some, at least, of the officials of the Board were aware that such a scheme was suggested in 1855; and also to join you and Mr. Snell in calling the attention of your readers to the great simplicity and obvious convenience of the plan, which could be carried out at a very small expense, and would undoubtedly be much more satisfactory to the public than any possible widening of Park-lane could be.

* Not certain. The name of Giltspur-street is supposed to have had some connexion with the Knights and the Tourney Ground, Smithfield.—ED.

In alluding to the Hamilton-place scheme, you state that it was abandoned on account of the bad gradient of the road. That scheme was put forward as an alternative plan to the Park-lane Improvement Bill by the opponents of the Bill before Mr. Monell's Committee. Mr. Penneborne, in his evidence for the Bill, stated that the worst gradient in Hamilton-place was 1 in 34 for 60 yards, and that part of Park-lane is 1 in 31; but that he considered that the gradients in Park-lane were very far superior to those in Hamilton-place, because the steeper part of the inclination is much further removed from Piccadilly; but neither of these gradients is such as to interfere with any ordinary traffic.

The Committee were unanimous in rejecting both schemes, and the chairman further intimated "that it was possible that a third scheme might be better than either the one which was contained in the Bill or the one which had been suggested by the opponents of the Bill." He evidently had in his mind some such scheme as is now suggested by Mr. Snell.

W. M. M.

* Mr. John Murray, Whitehall, states that he sent a plan almost identical to the Office of Works about two years ago, and that it was acknowledged by Mr. Cowper.

WIRKSWORTH'S WONDER.

Sir,—Allow me to call your readers' attention to a new style of architecture, or rather the combination of several existing styles in one. The Independents of the above place are erecting a large chapel, at a considerable cost, which it was hoped would be an honour to the denomination, and a credit to the town. When you have read the following remarks you will see how far these I opes have been realized.

The doors and windows are the simplest Early English, disfigured by most absurdly small hood-mouldings. The coping of the main gable of the principal elevation is a decided Grecian moulding. The angles of the chapel are ornamented with Roman rusticated quoins.

When we fondly think that art-education is making progress in this country, and that the perpetration of architectural monstrosities belongs to the past, it needs but such a fact as the foregoing to painfully undeceive us. I believe an architect was employed in the first instance; but his designs have not been acted upon. Whether he was not sufficiently facile to carry out ideas which should embody the several tastes of the gentlemen on the committee I am unable to say. Certainly it is no easy task successfully to blend the Early English, Grecian, Roman, and nondescript in one harmonious whole.

A. RUSTIC.

GIVE EVERY ONE HIS OWN.

Sir,—May I ask you to make public the circumstance of the so-called "Pugin roof" and its origin. A letter in the *Standard* of April 10th has called attention to the design of the Franciscan Church, Peckham; and on visiting this building I find the roof to be a repetition, slightly modified, but hardly carried out, of an original form of roof which I designed in 1850, when competing with Mr. Pugin and others for the Catholic Cathedral at Cork.

We have seen and heard so much of the adoption of old-world's conceptions that the above, I submit, is worthy of notice.

S. J. NICHOLS.

Marylebone-road.

PLASTER DECORATION.

Sir,—Will you allow me to state that the work on the Testing House at the Paris Exhibition, in connexion with which you have mentioned my name in your number for last week, is a revival of an ancient treatment, which is, as far as I know, disused at the present day. I hope shortly to have an opportunity of laying it before the profession and the public; and in the mean time shall be most happy to give any information to you or others and liked it at Paris.

E. J. TAYLOR.

"ARCHITECTS AND PROVISION DEALERS."

Sir,—Permit me to contribute the subjoined "Card," from the *Thames Guardian*, to the amusing list given in the *Builder* a few weeks ago under the above heading. I have altered the names. I would remark that it is well understood in the place that the nominal partner has no existence at all, and that the "offices" are in rear of the "residence," and are, therefore, practically one and the same thing.

QT18.

["A Card.]

MR. A. LEEY LOOKER,

(Mem. ARCHT. ASSOC. LOND.)

CIV. ENG. ARCHTCT, AND SCVPTOR.

Residence: ———— Margate.

Plans, Designs, Specifications, Surveys, Estimates.

LOOKER AND FLOATED,

ATTORNEYS, BROKERS, AND VALUERS.

Offices: ———— Margate.

Families removing can Warehouse their Furniture in Messrs. L. and F.'s New and Commodious Furniture Stores."

COMPENSATION CASE, DERBY.

Mr. Barton Borough and The Midland Railway Company.—In this case the company sought to take 37 acres of land belonging to Mr. Borough, near the London-road Bridge, Derby, for the purposes of the new curve. The land required by the company is next to Mr. Eicher's Park, but the front part nearest the turnpike-road is not included in the purchase. The company availed themselves of the compulsory powers of the Lands Clauses Consolidation Act, but did not make an offer. Mr. Charles Sanders was the arbitrator nominated by the company, and Mr. Richard Baylis acted in that capacity for Mr. Borough. Mr. H. A. Hunt, of London, was appointed umpire. The first meeting was held at the Midland

Hotel, Derby, in November last. Mr. Lloyd (barrister) appeared for the company; and Mr. Field, Q.C., and Mr. Day, were counsel for Mr. Borough. Mr. John Shaw, Mr. E. S. Gibson, Mr. Edwin Thompson, Mr. Wm. Pool, Mr. W. Seth Smith, Mr. John Parkin, and Mr. Thomas Adsett were called as witnesses for the claimant, and their valuations ranged from 28,000l. to 30,000l. An adjournment took place to the company's offices in London, when Mr. Alfred Wills (of the Midland Circuit) appeared for the company, and Mr. Leach continued the case for Mr. Borough, and called Mr. Thompson (borough surveyor), and Mr. E. S. Norris, of Nottingham, as further witnesses. The case of the company was then opened, and Mr. Gratton (the company's surveyor), Mr. Benjamin Wilson, Mr. John Bromley, Mr. Wood (builder), Mr. Matthews, of Birmingham, Mr. Cowley, of Manchester, Mr. Thomas Madeley, and Mr. Jeffery Etches were called as witnesses for the company. Their valuations ranged from 14,000l. to 18,000l. The arbitrators being unable to agree upon the amount of compensation, Mr. Hunt (the umpire) was called upon to decide it, and he has just made his award, giving Mr. Borough 24,200l. for his land, the company paying all costs.

A QUESTION OF WAGES.

Gilespie v. Marland.—At Southwark County Court, before Mr. C. S. Whitmore, Judge, the plaintiff, a plasterer, who resides in Carile street, Lambeth, sued the defendant, a master builder, who conducts his business in Walworth-road, Walworth, for the sum of 5s. 2d., for wages due and money paid.

The plaintiff stated that he was in the employ of the defendant on a job at Godstone Park, Surrey, at 8d. per hour. On a few Saturdays since he was paid off, and that without any previous intimation. In consequence, he claimed for half a day's wages, time lost, and his railway fare from Godstone to London Bridge Terminus.

His Honour, addressing the plaintiff,—"When does your week end?"

The plaintiff replied, at one o'clock on the Saturday. It was customary for the men to have their railway fare paid to and from the country by the masters, and the lodging money also. The defendant, on his discharge, gave him 2s. 2d., the charge of third-class fare from Godstone to town. But as there was no train until long after eight o'clock in the evening, he paid excess and returned in a second-class carriage.

The defendant said that he paid the plaintiff 8d. per hour; and on his going down to Godstone he paid his railway fare, and during his being there his lodging money was paid also. When he discharged the plaintiff he paid him his fare back to town. He contended that he was not bound to pay the return fare, inasmuch as, whenever a man is discharged in the country that is not allowed. He had been in the trade during the whole of his life, and could vouch for the fact that no such allowance was ever made. At Christmas he paid the railway fare of all his workmen to and from town, in order to allow them a holiday with their friends.

The Judge remarked that he could not see that the plaintiff had any claim on the defendant. The payment was not by the day, but by the hour, and for some time the rate of wages had increased until 8d. per hour was reached. As to the service of trains with third-class carriages, they could not be fitted to suit every person in the country at any particular hour. There was no corroborative evidence on the part of the plaintiff to prove that the fare should be paid at all when a man was discharged in the country. There was no pretence for wages. He should give judgment for the defendant. The costs were not applied for by him.

DEAD.

M. Hittorf, Architect.—The artistic world has sustained a great loss by the death of M. Hittorf, architect, of the city of Paris, and member of the French Institute. He was a native of Cologne.

Mr. Baddeley, C.E.—The death is announced, after a long illness, of Mr. Baddeley, C.E. He was the inventor of the patent canvas now used by the fire brigade, the patent hose reel, the farmers' fire-engine, and was for years connected with the *Mechanics Magazine*.

Mr. C. H. Bennett, the Artist.—Mr. Bennett's first sketches appeared in *Diogenes*, and were signed in the corner with the figure of an owl. To *Funch* he contributed numerous sketches. After a very short illness, Mr. Bennett died in the 38th year of his age.

CHURCH-BUILDING NEWS.

West Camel (Somerset).—The re-opening of West Camel church has just taken place. The church has been restored at a cost of about 1,100l., according to plans prepared by Mr. E. Christian, architect.

Middleham.—As a memorial to the late rector, the Rev. J. A. Birch, it has been resolved to erect a new pulpit for the parish church.

Urmston.—The Lord Bishop of Manchester has laid the foundation-stone of St. Clement's Church, Urmston, a village near Stretford.

Accommodation is provided in the new church for 360 persons to begin with, and a future north aisle will hold nearly 200 more. The plan now being carried out gives a chancel, with the fittings such as are now usual in most new churches, including provision for seating a choir. The south chancel aisle will be given up to the

school children: the north one is to serve as organ-chamber and vestry. The body of the church comprises a nave and south aisle, divided from each other by an arcade of four arches borne by pillars, with different flowered and moulded capitals. The church is approached from the north side, towards the western end of which is an inclosed timbered porch. On the same side are three large traceried windows, one of three lights, and two of two lights each. The belfry is hexagonal, and stands in the corner that is formed by the west wall of the vestry and the north wall of the nave. The lower part is of stone. Then comes an open wooden story, in which the bell hangs, and the whole is capped by a slender slated spirelet, terminating with a gilt vane. There is one gabled clerestory window of the south side. The west gable of the nave contains three tall windows, that in the middle being of two lights, flanked by a single light on each side. The whole of the external walls are faced with stone, three colours being used to give relief. The roofs are slated in two colours. The architect is Mr. J. Medland Taylor, and the style Geometrical Decorated Gothic. The contract has been taken by Mr. M. Fogget, for 2,125l.

Forden.—The new church for the parish of Forden, near Montgomery, in the diocese of Hereford, was together with an addition to the churchyard, consecrated on Tuesday, the 19th, by the Bishop of Worcester, who officiated for the Bishop of Hereford. The church is in the Early Decorated style of architecture, and consists of a nave, north and south aisles, chancel aisle, vestry, and organ-chamber, and a detached south-western tower. The cost has been about 3,000l., but the spire is not yet added to the tower, and forms no part of this outlay. The architect was Mr. Thomas Nicholson, of Hereford, the diocesan architect.

Leyburn.—At a meeting of the committee for the erection of a church at Leyburn, Lord Bolton in the chair, it has been agreed that the plans of Mr. Wray, of London, be carried into effect, and that the contract of Mr. Jones be accepted.

Birmingham.—A lady well known for her thoughtful benevolence, says the *local Journal*, has placed at the disposal of the Bishop of Worcester the munificent sum of 10,000l., for the purpose of church extension in Birmingham.

Thornton-Hough.—The foundation-stone of a new church has been laid at Thornton-Hough, in the parish of Neston. Mr. Joseph Hirst, the purchaser of Thornton House and the domain around it, purchased the site, and it is to build, at his own cost, the church and parsonage, and a school and school-house, and endow the same. The style of the church is Gothic of the thirteenth century. The edifice will consist of nave, chancel, and transepts, adjoining to which will be the organ-chamber on one side, and vestry on the other. At the south-west corner there will be a tower and spire. The nave will be divided from the chancel and transepts by five arches, supported by circular pillars and corbels. At the west end there will be a large five-light window. The chancel and transepts will each have a three-light window. Those in the nave and chancel will be of two lights, filled in with tracery. The whole will be erected of stone from the neighbourhood; the walls of red sandstone, and white ashlar for the dressings, from Stourton quarries. The roof will be an open one, constructed of red deal, stained and varnished. The pulpit, reading-desk, screens, and rails will be of oak, all the rest of the woodwork being pitch-pine varnished. The whole will seat 450 persons. The architects are Messrs. Kirk & Sons, of Huddersfield and Dewsbury. Near to the church, the parsonage, schools, and teacher's residence are in course of erection, in the same style of architecture as the church, and of the same class of materials. The cost of the whole (exclusive of the ground) will be 7,000l.

Aughton.—The foundation-stone of a new church has been laid at Aughton, a rural district in the neighbourhood of Ormskirk. The new edifice, which is being erected from designs by Messrs. W. & J. Hay, of Liverpool, architects, is to be the Flowing Decorated style of the fourteenth century. The estimated total cost is about 6,000l.; but as only two-thirds of the required amount have yet been collected, the church will not in the first instance be completed. As a whole, it will present a chancel, nave, and aisles, and a massive tower occupying a central position at the west end, terminating with a quatrefoil balustrade, pinnacles rising at the angles, the south-east corner having, however, an octagon stair-turret, terminating

with a pinnace. The north side of the chancel will be occupied with a vestry and organ-chamber, having separate entrances. The materials used in the structure are local stone known as "pitch-faced conersers," the interior being lined throughout with ashlar. The seats which will provide accommodation for 500 or 600 persons, will consist of moveable open benches. The chancel, which will be large in proportion to the other parts of the church, being 40 ft. long and 23 ft. wide, the dimensions of the entire edifice being 75 ft. by 58 ft., will be reserved for addition at a future time when sufficient funds have been provided. The work is being carried out by Mr. Harris, of St. Helen's.

Leicester.—The building hitherto known as the Collegiate School has been opened as a place of worship, after being altered and adapted to its present use. Accommodation has been provided for 600 persons. The building is in the Tudor style, with open-framed hammer-beam roof, and mullioned and traceried windows. A system of heating has been introduced by Mr. Gimson, and the gas-fittings have been supplied by Mr. Webb, both of Leicester. The architect for the alterations were Messrs. Bidlake & Tait, of Wolverhampton and Leicester; and the general contract has been carried out by Mr. Roberts, of Leicester.

STAINED GLASS.

Iytham Church.—A stained-glass window has been put up in this church. It consists of two openings, and contains two representations of the Virgin mother, with the inscriptions, "Mater dolorosa," and "Stabat Mater." The detail consists of canopy work and borders, styled thirteenth century. This window is erected by the Rev. W. Selfe, rector, in memory of his late wife, and is from the works of Messrs. Edmundson & Son, Manchester.

Parish Church of Bolton-le-Moors.—The teachers connected with the Sunday Schools of this church have erected a window to the memory of the late Canon Slade. It is in two lights, which are filled with figures of the "Good Shepherd," and the "Charge to Peter." The decorative portion of the window is filled with foliated work, and inscriptions and the armorial bearings of the canon are introduced in the tracery opening. The work was executed by Messrs. Edmundson & Son, of Manchester.

Redenhall Church (Harleston).—A stained-glass window has recently been put into one of the chancel windows of this church, to the memory of the late Mr. and Mrs. James Aldous. The subjects of the window are intended to represent Christ's Sermon on the Mount. The window was designed and executed by Mr. Baillie, of London.

St. Oswald's, Durham.—A stained-glass window to the memory of the late Mr. George Wilkinson, of Oswald House, has just been erected in the parish church of St. Oswald, Durham. The window contains two lights, the upper one representing "Christ blessing little children," and the lower one "The good Samaritan." The window was executed by Messrs. Clayton & Bell, of London.

DISSENTING CHURCH-BUILDING NEWS.

London.—The memorial stone of a new chapel to be called the Barbican Congregational Church has been laid in the New North-road. The new building is intended to supply a vacancy in the number of Congregational places of worship caused by the appropriation of the site of the chapel in Barbican to the purposes of the Finsbury extension of the Metropolitan Railway. A peaked gable, of Gothic design, will front the road, and in the centre of the façade will be constructed a large window, also of Gothic design, and interspersed with carved stone-work. The entrance will be in unison with the general style, an oaken door opening upon a porchway leading to the interior of the building. The internal fittings will be chiefly of Mediaeval design, the numerous sittings being open, and of varnished timber. The chapel proper will accommodate 900 persons, 427 on the ground floor, and 473 in the galleries; and besides the space thus appropriated there will be room set apart for two vestries. The basement floor will contain a lecture-room, or school-room, for 600 children, two class-rooms for 40 scholars, and two infan-

class-rooms for 100 infants. Messrs. Landell & Sedells are the architects; and the builders are Messrs. Brown & Robinson.

Kettering.—The New Wesleyan Chapel in Silver-street will soon be completed. It is in the Italian style of architecture, and built of red bricks: the front and sides are faced with Bath stone carved. The interior will seat about 700 persons. Mr. George Woolhouse, of Bolton-le-Moors, Lancashire, is the architect; and Mr. John Watkin, of Northampton, the builder. The entire cost is about 3,000l. Mr. John Tordoff has announced his intention of supplying an organ, free of cost, in addition to 1,000l. already given.

Forest Hill.—A new Congregational church, in Stanstead-lane, was opened on the 2nd inst. The walls are built of Nutfield stone, in random courses, with Bath stone dressings. It is a Gothic building, without tower or turret; but portions of the front gable are recessed, and the centre pierced with a large five-light tracery window. The church will seat nearly 500 persons, and has two tiers of windows on each side, in anticipation of galleries being required in a few years. The ceiling is semi-croce-decagonal in shape, and is boarded diagonally in panels. Iron arched ribs are used to strengthen the spaces of the roof. Mr. H. Fuller was the architect employed, and his designs have been carried out by Messrs. Staines & Son, builders, of Great St. Helen's. The cost has been somewhat over 1,000l.

Miscellaneous.

INTERNATIONAL ARCHITECTURAL CONFERENCE.—It has been determined by the Society of the Architects of France to invite architects of all the world to an international conference, to be held in the month of July next, to take into consideration the methods in use in architectural education, and all questions connected with the subject, and especially to inquire into the tenacity of the modern architecture of all nations.

MANCHESTER ARCHITECTURAL ASSOCIATION.—At an ordinary meeting of this Association was held on Tuesday evening, April 2nd, the president, Mr. L. Booth, in the chair. After the transaction of the usual business, Mr. Ludwig Hoppenheimer, of Brunswick, read a paper on "Archæology, its application and manufacture." The paper was illustrated by a large collection of specimens, many of which exhibited considerable nicety of workmanship.

WORKMEN'S DINNER AT THE PRINCE CONSORT'S MEMORIAL, HYDE PARK.—Last Saturday, Mr. G. G. Scott gave a dinner to the men engaged at the Memorial, in token of his satisfaction as to the way in which the work is being done. Mr. Coad, who inspects the work under the architect, took the chair, and a pleasant afternoon was spent. The health of the architect, Mr. J. H. Kolk, was drunk with much warmth. Mr. Cross, the manager of the works, the Chairman, Mr. Chinchin, Mr. Hubber, and others concerned, were also toasted with heartiness. We are glad to see that progress is now being made in setting up the prepared work; the main arches are being turned.

FIRE-PROOF FLOORING: CUNNINGHAM'S PATENT.—Several methods of fire-proof floor-construction have been patented by Mr. J. Cunningham, of Liverpool, architect and civil engineer. Iron rollers, weighing 42 lb. per lineal foot, and having a bearing of 30 ft., are placed 7 ft. apart, and carry sheet iron joists; this strength of material is carrying 2 tons per superficial yard. Plaster is applied direct upon the underside of sheet iron joists; and if a tiled floor is wanted, the plaster can be bedded in concrete or cement, as the case may be. If a deal floor is necessary, battens can be fixed in the concrete to carry the flooring boards. Under the heading of "Advantages," the patentee says:—"In the case of schools, offices, houses occupied in flats, by different families, or buildings in which numbers of people are occupied, or live, fire-proof floor is of great importance. With the patent iron flooring there is—1. No transmission of sound; 2. Great strength, with little weight; 3. No lateral movement; 4. No dry rot; 5. No harbour for vermin; 6. Plaster applied to ceilings below, and a rubber flooring can be laid on battens, fixed in the concrete or cement." The additional cost between an ordinary wooden floor and Mr. Cunningham's patent iron joists is stated to be about 9s. 6d. per superficial yard.

TRAMWAYS.—The promoters of tramways, who had projects before Parliament this year for London and Liverpool, have failed to carry their Bill, through technical errors in matters governed by the "standing orders" of the Houses of Parliament. The promoters of the Dublin tramways guarantee cheap and rapid communication, combined with personal safety, no matter how defective the state of the thoroughfares; and they promise an ultimate considerable saving in the cost of repairs to the streets. There are many portions of the suburbs of Dublin very inadequately supplied with means of transit to the city, which could be materially improved by a system of tramways properly carried out.

TREDINGTON CHURCH SPIRE, SHIPSTON-ON-STOUE.—In June last, during a thunder-storm, this spire was struck by lightning, and much damaged. The Vestry received tenders for its restoration, and the contract of Mr. George Frith, of Coventry, was accepted. Mr. Frith ascended the spire, which is 180 ft. high, by means of pulleys and ropes, drawing himself up with ease, and, upon reaching the top, he took hold of the cross-bar of the weather-cock and sat upon it. Afterwards, with two of his men, he ascended, taking up bellows and forge, and the spindle of the weather-cock being out of the perpendicular, it was soon heated to a white heat and made all right. The operation, it is said, was accomplished as readily as it would have been at a blacksmith's forge.

BRECON INDEPENDENT COLLEGE.—This college is to be built at Sunny Bank, close to the town of Brecon, and above the railway. The ground was purchased from the Marquis Camden, and is situated in a beautiful spot having a south-west aspect, upon a gravelly soil, about three acres in extent. Mr. T. Thomas, Swansea, is the architect. The quantities were supplied by Messrs. Curtis & Son, and Messrs. Rake & Rawwell. Seven contractors were invited to compete for the buildings, and the following four completed:—

Williams Bros., Brecon	£8,950 0 0
Thomas, Watkins, & Jenkins, Swansea	8,050 0 0
John Griffiths, Brecon	8,400 0 0
Jones & Son, Gloucester	8,000 0 0

THE KENSINGTON AND OTHER IMPROVEMENTS.—At a recent meeting of the Metropolitan Board of Works, it was resolved to adopt a report of the Finance Committee, recommending the acceptance of an offer of 150,000l. at 4½ per cent. from the Bank of England, for the purposes of the Kensington improvements; the money to be advanced in three instalments of 50,000l., in April, July, and September. Mr. Dalton, in moving the adoption of the Finance Committee's report, expressed a doubt whether the money would be wanted even in September; and if the Board did not get on faster than with the Whitechapel Improvement, it would not be required for two years. Mr. Newton said, with regard to the Holborn Improvement, if he understood the present arrangements correctly, the whole of the property there was to be paid for by June next, and was to be put into the hands of Messrs. Pullen, Horne, & Eversfield at Midsummer-day. With respect to the Whitechapel Improvement, there were two or three cases under arbitration now, which, when settled, would cost that Board some thousands.

PARLIAMENTARY OUTLAY ON ARCHITECTURE AND ART.—The estimates for the current year on buildings for what may be called artistic purposes comprise the following sums:—For completing the Clock-tower and works in New Palace-yard, and approaches, including the erection of the arcade, 12,196l. Railing of Parliament-square, 6,000l. St. Stephen's Crypt, Royal Gallery, and Robing-room, 5,140l. Works of art in decoration of Parliament House, 4,600l., which is thus apportioned: Mr. Herbert, for the "Judgment of Daniel," 1,000l., part of 4,000l.; Mr. Ward, three pictures, 600l. each, with augmented amount on completion of whole, 800l.; two statues of sovereigns in the Royal Gallery, 800l., out of 1,600l. New Foreign Office, 8,500l. (no further sum will be required for this building). 33,500l. are now asked for furnishing the same, decorating the grand staircase, removal, &c., the total estimated cost of which is 40,200l. Besides these sums, 7,000l., out of 12,836l., are asked this year for the completion of a quadrangle. The original estimate for this building was 233,516l. National Gallery enlargement, 32,000l. (nearly 89,000l. have been already spent on this head). Westminster Chapter-house, 10,000l. of total estimate of 25,000l. National Gallery of Ireland, repairs of building, 347l.

FAIRLOP OAK IN ST. PANCRAS CHURCH.—It may not be generally known that the pulpit and reading-desk in St. Pancras Church, in the Euston-road, are made out of the celebrated Fairlop oak, which gave its name to Fairlop Fair in Epping Forest, and which was blown down about fifty years ago.

SHEFFIELD SCHOOL OF ART.—The annual conversation and exhibition of this school have been held. There was a large attendance, and an address was given by Dr. Gatty, who distributed the prizes to the students. Among the works of art exhibited was a large collection of those of the late Mr. Godfrey Sykes.

REMOVAL OF ANOTHER CITY CHURCH.—A scheme has been prepared for the removal of the Church of St. Mildred at the eastern end of the Poultry. For many months past it has had no congregation. By the removal of the church a large space will be obtained for the improvements which have long been required in that neighbourhood.

THREE MEN BURIED ALIVE.—At London-derry, a number of workmen are at present engaged in razing a block of old buildings on the east wall, adjoining the shambles, to make way for the new market premises which are about to be erected; and while employed at the side wall of one of the houses it suddenly gave way, burying three of the men. One of them is not likely to recover.

ACCIDENT IN ELAND CHURCH.—On Sunday night, intense alarm was caused in this church, during divine service, by the falling of one of the clock-weights, of 26 cwt., in the church tower. A part of the screen near the tower was forced down and the whole building shaken. The impression appeared to prevail that the tower was falling. Something like a panic immediately took place; but nobody was hurt.

THE KNIGHTSBRIDGE BARRACKS.—We are glad to learn that a committee of gentlemen, headed by Earl Grosvenor, are getting up a petition to the Secretary of War for the removal of the tumbledown cavalry barracks at Knightsbridge, with their concomitant public-houses, dancing saloons, and brothels. The sweeping away of these barracks, as a disgrace to the locality, was long since, and repeatedly, urged in the *Builder*.

PROPOSED EXHIBITION IN COVENTRY.—The use of the new market-hall has been formally granted to an exhibition committee at Coventry. Various sub-committees are now actively engaged in making necessary arrangements; and the proposed Exhibition is receiving support not in Coventry alone, but from Birmingham and other large towns, so that success is considered as well nigh a matter of certainty. An office has been opened in the arcade of the new market-hall, and there exhibitors will be able to obtain any information they may require.

WORCESTER CATHEDRAL.—On the north side of the cathedral cloisters the figures and other ornaments in groining have been well brought out by the process of cleaning away the plaster and whitewash, and many figures that were not known to exist have been shown. In May, 1863, one of the bells in the second peal at this cathedral was missed. It was then ascertained that thieves must have broken up the bell (which weighed over 5 cwt.) before removing it, but all that was left to support this supposition was a large crowbar. Rewards were offered for the discovery of the thieves, but nothing was heard of the missing bell till a few days ago, when the workmen engaged in restoring the tower found under a beam in the belfry a large piece of bell-metal, which, upon examination, proved to be a portion of the stolen bell.

LODGERS IN THE METROPOLIS.—The following returns for each borough in the metropolis, moved for by the Earl of Shaftesbury, have been ordered in the House of Lords:—1. The estimated adult male population; 2. the number of adult male householders; 3. the estimated male adult population who are not householders. To the following, also moved for, the Duke of Buckingham objected, on account of the difficulty and cost of obtaining them, and they were therefore not ordered:—4. Reports from the overseers of each parish, stating, so far as can be ascertained, the proportion of lodgers who pay for unfurnished rooms 4s. a week or upwards, and the proportion who pay less than 4s. a week; 5. such reports to state the lowest weekly amount per lodger paid by any considerable number of lodgers within each parish.

been adopted by many large firms. Also a modified arrangement, by Single Entry, suitable for small Builders.—Address, E. A. 4, St. George's road, Regent's Park.

The Builder.

VOL. XXV.—No. 1263.

The Paris International Exhibition.

AY by day the works progress, and completion is nearer. The Paris public are beginning by degrees to believe and to go. Once or twice there has even been an inconvenient crowd at certain points. The flooring of the building, we have omitted to mention, is for the most part of *déton*, on the ground; and there are small pits at intervals, with gratings over them, to receive the dust. It seems to have been the best arrangement possible under the circumstances of the site. A boarded floor on joists would have increased the cost greatly. The flooring is wetted overmuch in the morning for walkers with thin boots: but the right course in this respect

will be found out anon. Of the extent to which *déton*, by the way (a hot-water, hand-made, and concrete, so to speak), is used in France, we spoke last week.

Entering from the Pont d'Iena, on the left-hand side of the avenue, will be seen a Gothic chapel of brick, stone, and cement, with vari-coloured roof, ornamental lead work, and terminal statues. This has been erected at the instance of Charles Lévêque, glass-painter, of Beauvais, and originated in the same desire that produced the English architectural court,—a desire to bring together in a prominent position specimens of the various art-works required in architecture. In M. Lévêque's case it is connected to ecclesiastical art, and the idea has been carried out very fully, no fewer than seventy-five individuals and firms,—sculptors, metal-workers, glass-painters, tile-makers, chasers, enamellers,—having co-operated to bring about the result. The organiser had entertained the intention for some years; and when the present exposition was first talked of addressed a memorial to the Imperial Commission proposing the erection of a fitting up of a larger and more comprehensive building than in consequence of difficulties that supervened was ultimately put up. He had, in the first instance, that the building should display the various styles of architecture, and occupy a large area of ground. A grant of land, however, was gradually obtained, and the building took its present shape. Externally it is very amenable to severe criticism. Internally it has been fitted up in a costly manner; the floor displays various descriptions of pavements, the columns and buildings are coloured, the window openings are filled with stained glass; each chapel has an altar of elaborate and in some cases elegant design; metal grilles enclose the sanctuary, and carved woodwork, enamelled figures, polychromed statues, candelabra, seats, chaises, fonts, and other church fittings fill up

every available site. On another occasion, when the interior is more complete than was the case when we saw it, we may give opinions on the taste and skill displayed by the various exhibitors. For the present suffice it to say that M. Lévêque is entitled, as it seems to us, to great praise for the energy and persistency he has shown in carrying out his scheme. His chief aim is, as he says, to raise the character of the arts applied in the service of the church. About 200,000 francs (8,000*l.*) have been spent upon the chapel, we are told, but the greater part of this will come back, as all but the shell will, of course, be useable elsewhere.

The Tunisians must have spent a great deal of money upon the handsome and characteristic structure they have erected in the Park. It is good both in mass and in details. Within the Exhibition building they have an apartment with its furniture complete, pipe-racks, divan, finely embroidered saddle, and other accessories. Near it are some modelled characteristic groups, including a dromedary and its load.

The copy of a Mexican temple that has been put up has a flight of twenty-eight external steps to the main apartment, and is painted all over with Mexican gods, or devils,—they are much the same. The walls of the upper chamber are covered with figures in high relief (moulded in paper), which are Egyptian, not Mexican. The whole has a made-up and apocryphal air.

The end of the Park next the École Militaire must by no means be left unvisited. Here will be found an extraordinary assemblage of conservatories, garden buildings, summer-houses, and rock-work. One conservatory, with rock-work approach, is particularly ingenious. To the summer-house formed *in cement*, in imitation of stems and branches of trees, we will not give any praise, cleverly as the thing is done. The Venetian blinds covering whole conservatories, from top to bottom outside, are worth notice. There are, we suppose, arrangements to protect them against the effect of wind.

Russia has come out remarkably well. The pictures sent by her and her wooden buildings, we have already alluded to, but we may add a few words as to the latter. The walls of the houses are constructed of round timber, simply stripped of the bark and trimmed with the axe. The ends of the side wall timbers project through those of the front wall. Each piece of timber is halved to receive that which lies across and above it, and has two mortises below to receive the tenons in the halving of the piece below. The halving, the tenons, and the mortises are all produced by the axe alone. On the outside the timbers are left round, but within the rooms these are cut down until only a V-shaped joint is left between the adjoining pieces. No nail or spike is used in the whole construction.

According to a writer in the *Engineer*:—

"The building of a peasant's house of the plainest kind does not cost, in the neighbourhood of Moscow, Toul, and other great towns, more than 80 to 140 roubles, that is to say, from 12*l.* to 20*l.*, materials, labour, furniture, and stove, all included; the furniture, it should be explained, consists simply of one large table, and benches which stand round the room in the daytime, and form—two put together with a hard mattress on the top—the beds of the family at night, except in the coldest season, when father, mother, and children find a warm corner on the top of the stove, which is nothing more than an oven composed of bricks and faced with ornamental tiles. To explain this extraordinary cheapness the price of wood must be stated. A plank of best fir wood, 21 ft. long, 8½ in. wide, and nearly 2 in. thick, costs 50 copecks, or 1*l.* 4*s.*, and oak is only worth from 2*s.* 3*d.* to 3*s.* 4*d.*, the cubic foot. The wood is very carefully seasoned, being built up in stacks with interstices, and submitted to the action of steam, and is full of turpentine and resinous matters."

The walls of these houses are caulked like the deck of a ship, either with the large moss of Russia, or, where that is not to be obtained, with oakum, and this is driven in with an iron instrument specially adapted to the purpose, and the caulking is dressed with turpentine. Finally the angles are filled in with a cement composed of lime, cow-dung, and coarse flour or meal.

Within the building the Russian domain is marked by a screen of woodwork, similar in character to that seen at the Isbah and other structures in the Park, and suggests Tunbridge ware and the interlocking wood puzzles of our boyhood. Within the Court will be found a very fine and large piece of mosaic work. The design, two groups of the saints of the Russian calendar, is by Professor Neff, of the Academy of the Beaux Arts of St. Petersburg; the mosaics are in enamel, and the effect of the work is truly admirable. The expression of the heads is good, and the colour most harmonious and agreeable. Nothing of the kind equal to it was elsewhere opened when we were there. Some cabinets with the raised mosaic work decorations in which they excel, flowers and fruits, are also very fine: and they send some first-rate photographic portraits, and a mass of malachite in its natural, sluggy state, said to be the largest ever discovered. This looks about 7 ft. long and 3 ft. in diameter in the centre: a portion of it has been polished since it was set up. At the Russian Restaurant, by the bye, where their tea is in great demand, the waiters wear silk tunics of bright colour,—one red, one yellow,—and white trowsers. At some of the restaurants a great business, we may mention, is being done. According to the proprietor's own statement at the French establishment (Gousse's) on the Sunday preceding the opening, 7,000 dinners were served, and on the opening day a larger number still. The kitchen is found much too small, and is wanting in ventilation.

The screen put up in the building by Italy is elegant of its kind, and must have cost a considerable sum of money. So with many of the other nations. The style of that erected by Portugal is their strange mixture of Gothic and Italian. In the machinery zone that country has an enormous trophy of the same character formed of wood and plaster, and rising high into the air.

The productions of Sèvres and Gobelins, china and tapestry, have a court to themselves, and make a splendid whole, though we fail to observe the slightest advance in either; in fact, we can scarcely avoid impression of an apparent decline. We did not observe anywhere, except in the machinery zone, that France has made much advance during the last ten years. Nevertheless, her artistic furniture and other works of luxury maintain a high place. Christofle & Co., for example, have a wonderfully fine centrepiece of silver, for the city of Paris, similar in character, but superior in result to one they exhibited in 1862. A ship in the centre has four figures, carrying a fifth that typifies the city of Paris; and there are other figures at the end, with tritons and river gods. The modelling is of high character. This work was executed from the designs and under the direction of Mr. Baltard, architect, eight sculptors and modellers co-operating. In this way a fine thing may be produced.

It seldom happens when a model of a building is adopted by a manufacturer to show his wares, that the result is endurable. In the case, however, of the trophy set up by Waters & Co., of Manchester, displaying reels and balls of cotton, and which takes the shape of the Manchester Albert Memorial, the spire somewhat enlarged, we have, thanks to the cleverness of James Thomas, their joiner, with help from the architect and a copy of the *Builder*, in which we gave a view of the Memorial, a very agreeable result; so agreeable, indeed, that it has been brought forward by the Executive near to the Norwich gates, so as to be seen from the principal avenue. We can praise both form and colour.

It is but just to say that Messrs. Clark & Co. have completed very satisfactorily their engagement to fix their self-coiling steel shutters to all the entrances to the building; and we may add, as another piece of personal glorification, that

the Emperor has bought from the stand of Messrs. Defries & Son a service of engraved glass. More than one of our manufacturers have already received praises from the imperial lips.

REDEMPTION OF RAILWAY PROPERTY.

THE House of Commons was engaged the other evening in what we cannot call the performance of a comedy, for the comic element was wanting, and there was a deep tragic interest underlying the subject of discussion, but in a display which bore the same relation to farce that humour bears to wit. The honourable member whose name is most intimately connected with the history of the unfortunate and "irrepressible" London, Chatham, and Dover Railway, after having been for some time strenuously urged on in the daily newspapers, at last brought forward a motion for inquiry into certain matters of public notoriety in this sad case, and the business-like unanimity and good feeling that seem to pervade all discussions connected with railway property were evinced by an attempt to fix such a tag to Sir S. M. Peto's motion as should throw a slur on certain other honourable members for their connexion with a perfectly different, though unfortunate, enterprise. The form of the motion was such as to leave little room to reply to the objection raised by the Chancellor of the Exchequer against a proceeding that would afford a precedent for a further extension of the omnifarious occupations of the House of Commons. The temper of the House was such as to evince that every latitude would have been given for a full and detailed personal vindication, had such been attempted, or had such been possible; but the occasion for such a mode of satisfying his friends was not seized by the proposer of the motion. The debate had little result except to show that Torre del Greco is not the only place where people can make merry over the slumbering fires of a dangerous volcano.

While there can be no doubt that any effort to extend the too numerous functions of the House of Commons should be steadily resisted by all who prize the constitutional character of that assembly, and who deprecate its gradual transformation into the likeness of a constituent assembly or a caucused congress, we yet see cause to regret that no single voice was uplifted, during the course of the debate to which we have referred, to say what most present must have thought, or to point to what all ought to have laboured to do. Whatever amount of blame may be due to any individual in reference to the wanton depreciation of railway property, there is at least one greater culprit, and that is the legislature itself. Common honesty will condemn the men who have induced others to subscribe to railways of which the sole and exclusive object was to enrich the projectors at the cost of the public; but in the eyes of the English commercial morality of the day, which is different from common honesty, such men but act as sharp men of business. But when, to enable projectors to carry out their schemes, the grave sanction of legislative action is required, and when this action, the most responsible duty with which Englishmen can be entrusted, is so freely placed at the command of speculators as to supply them with an Act of Parliament for every five miles of a duplicate railway, the prostitution of legislative power can not be too strongly reprehended. It would have been more becoming for honourable members, in presence of a great calamity, bitterly felt in many a ruined family, to have acknowledged their misdeeds in having created by the laws which they voted a state of almost hopeless confusion, and to have taken the best means in their power to seek to discover a remedy, than to pass lightly over so grave a case even if somewhat irregularly brought before them. "*Amicus Peto—amicus Petrus jucundus—sed major amicus veritas*," was the resolution passed by the House, with the omission of the four final words.

In presence of the helpless indifference of the House of Commons, and of the unquenched party animosity of the leaders of the railway world, the only hope of improvement in the present condition of railway property depends on the exertions of the press. For some time past this fact has been acknowledged with more or less distinctness. It would be idle to speak of the "unerring instinct" of railway proprietors; but, unless the common sense of the great body of owners of railway property be aroused

to check the policy of the boards of direction, there is little hope of improvement. We have just seen a memorable example of a check being given by the good sense of individual members of a party to the inconsiderate party spirit of their leaders. In all governments, from the vice-royalty that rules with more than regal pomp (as things go in Europe) over 120,000,000 dusky Asiatics, to the pettiest railway or parish board, the policy of aggression and of extension seems to be normal. One governor-general after another was sent from this country to Calcutta in the earlier days of Indian rule, with express instructions rather to restrict than to extend the limits of English empire; but, as surely as he took his seat in the Government house, did the new-comer carry out the course of conquest that seemed inspired by the air of the place. So it is with railway warfare. Dissident shareholders have made themselves conspicuous at half-yearly meetings by opposition to the policy of the directors. As individuals, or sometimes *en masse*, they have replaced those whose proceedings they have condemned, but whose policy they have continued to carry out. Unless the real, sound, commercial interest of the dividend to be earned be regarded as a more important question than the rivalry of contending boards, dividends will continue to dwindle and disappear, and directors will continue to congratulate their hungry constituents on important victories.

It is in this state of the case that an influential City authority has urged a scheme of railway federation, and calls out in extremity for "even a Hudson." That sooner or later, under the pressure of Government, or by some caprice of the Legislature, or even by the slowly-awakened conviction of railway shareholders, some scheme of consolidation will be carried out, we have never doubted. That it can be at once, and now, carried out, we fear to be impracticable. So great a step can hardly be taken without previously testing its practicability by some tentative process. It has been, therefore, with a distinct view towards future unity of interest and of action that we suggested the scheme for consolidating the debenture debt that was published in our last number. To that scheme, after mature deliberation, and consultation with men able to form shrewd opinions on the subject, the objections that withstand the execution of more complicated and more sweeping measures, do not, we think, apply. The trustees of the consolidated debenture stock would form a nucleus for consultation and for co-operation, but would not so menace the existing authorities with extinction as to insure their hostility to a man. A step would be taken in the direction of unity; but it would be a step not too precipitate in that direction. The practicability and the advantage of common action would be tested, but no secretary would be swamped, no chairman would be uneaten, no existing powers would be annihilated; union would be gradually effected; and unity, if approached, would not be enforced with the strong arm as now suggested.

It has been since the scheme which we suggested was prepared, although before its publication in our columns, that an important portion of its outline has been adopted by several companies, and that with signal success. The result of setting apart a distinct portion of revenue as primarily applicable to the payment of debenture interest has been most satisfactory. When this plan has been adopted by individual companies, the result has been to facilitate the renewal of their debentures. As to the rate at which such renewals have been effected we must wait to be informed; but, in times like the present, renewal at all, on any terms, is a godsend. If such be the effect of a single part of the scheme, applied only to gain temporary relief, what may not be expected from the permanent benefit to be derived from the adoption of the whole, and from the consequent abandonment of the system of the renewals of loans almost *in toto*? It cannot be too distinctly borne in mind by railway proprietors, that their present earnings, properly handled, are enough to give a very fair return on the money. Stop all profligate expenditure, avoid Parliamentary conflict, husband existing resources, and replace the floating debenture debt by permanent 4 per cent. stock, and the result would be this—4 per cent. for the new stock, 6 per cent. for all preference shareholders, and 3 per cent. for all original shares. This, of course, is a mean. To make it so, not only as matter of figures, but as matter of fact, requires no further outlay of any capital, except of that

which is so rare,—the stock of patience and of common sense.

Connected with the future revenue of railways—as yet we have only spoken of their actual earnings, gross and net—is the important question of the proper character of branch lines. It is in the construction of branches that the greatest loss has been incurred, and that the greatest want of foresight has been shown. It is clear that a town or village deprived of railway accommodation is cut off, to a great extent, from the world. Property in such places is depreciated to a great extent as compared to the value of land in more accessible localities. The country, therefore, demands branches, and each trunk railway, naturally and properly, desires to supply such part of the demand as consists with their own system. But the fatal error has been here. In almost every case the extending company has made, not a branch, but an extension. No traveller, nay, no engineer, not familiar with the district through which he is travelling, can tell whether he is on a main line or a branch. The permanent way and the works of art that are required for the safety of a rapid and heavy through traffic are repeated on the merest country branch—with, perhaps, the sole exception of the use of a single instead of a double track. This great and useless waste of capital is incurred by one simple fault. The class of engine fitted for the one case is used in the other. The expense of a railway as far as way is concerned, and to a great extent as far as works are concerned, is a function of the weight that is put on the driving-wheel of the locomotive. Limit the weight on the driving-wheel to the weight placed on the carrying-wheels, securing adhesion by a proper adaptation of the locomotive, and a branch becomes a question of 3,000, to 6,000, per mile instead of three times the amount, and a well-considered extension of the system will bring at once lucrative traffic to the railway companies and adequate accommodation to the public.

TILES AND TERRA COTTA.

THERE is an accessible mine, conveying very useful information concerning various building materials—such as building stones, marbles, woods, glass, metals, cements, plasters, manufactured ceramic wares, fireproof floors, bricks, asphalt, slate, &c.—which appears to us to be little known, or, at all events, but little used. This is in the terra-cotta court and the long gallery by which it is approached, in the South Kensington Museum. We may call attention to this collection as a regular architects' and builders' gallery, full of building contrivances, appliances, and inventions. Many of the objects exhibited in it have been on view for some time; but there are some recent acquisitions in terra-cotta which we are about to mention, the more especially as it is at all times a matter of difficulty to find full information as to the extent to which manufacturers have developed the capabilities of this material. Every manufacturer, of course, is ready to forward his price-list on application; but he is not to be expected to furnish any information concerning the wares of his rivals; nor, doubtless, is he aware of the extent of the world-wide competition with which he is surrounded. In this court and gallery there are numerous specimens of English, French, Italian, Danish, Swedish, Austrian, and Australian terra-cotta; some glazed, some enamelled in colours, others left *au naturel*; and besides these, there are fragments showing the material in different periods of antiquity, in examples of Old English, Italian, and ancient Roman date.

The capabilities of terra-cotta are so elastic that it is scarcely too much to say that "everything and more" might be made of it. Full-length statues, groups of sculpture, busts, and lofty columns are among its triumphs; while mouldings, panels, trusses, archivolts, medallions, friezes, fountains, stoves, candelabra, tracery, shafts for mullions, brackets, finials, chimney-tops, cornices, balustrades, and string-courses, are some of its every-day uses.

The principal difference between ancient and modern terra-cotta seems to consist in the fact that the ancients dried their clay in the sun, whereas the modern manufacturer bakes his in kilns at a high temperature. It is, perhaps, needless to say that the term *terra-cotta* of the Italian, or *terre cuite* of the French and Belgians, means earth, or clay, baked; and that the modern mode of dealing with it makes it more durable than that pursued by the ancients. To

the potter's clay are added fine sand and pulverized potsherds, all of which are well mixed together with water. At this stage it can be either modelled or cast, the latter process requiring that the consistency of the mass should be reduced to that of thin paste, and that the moulds used should be sufficiently porous to absorb the water. The objects are then dried in the air before being placed in the kiln. When Wedgwood first re-discovered the art of producing ornamental works in clay, it was expected that a large use would be made of this facility to beautify our streets at a moderate cost. The end, so far, has not justified the expectation,—perhaps, to some extent, from the want of the precise information we are now about to offer. We must premise that we shall not be able to give the exact prices of all the articles now manufactured in English or foreign terra cotta, on account of their fluctuation. Foreign and native firms sending specimens have sometimes submitted prices, but when they have received orders after the lapse of three or four seasons, there has been such a considerable variance between those they quoted at the time and those of the present market, that they have discontinued the practice. The exact cost of any of the articles we shall particularize can, of course, be ascertained by communicating with the firm that manufactures them.

The ancient foreign examples serve best to impress us with the nobility of the material. There are several of these in the Museum, in the small cloister courts leading out of the main courts, in the immediate neighbourhood of the fountains. A Florentine group of the Virgin and Child, executed in the second half of the fifteenth century, standing beneath a niche of floriated architecture, 5 ft. 6 in. high and 3 ft. wide, for which those intrusted with the responsibility of purchases did not refuse to disburse 300*l.*, is a fine example of the exaltation with which terra cotta may be treated. Another Virgin and Child, by Jacopo della Gherardina, 1430, from the Gigli-campagna collections, illustrates the same power. Nor is it the fact of the artist being a celebrated master that in any way leads to a high price being set upon this class of work, for the bust portrait of an unknown Flemish gentleman, wearing a flat cap with a doublet of figured damask and a robe bordered with fur, by an unknown sculptor, in the early part of the sixteenth century, was acquired at the large cost of 48*l.*; while the head of a saint, in terra cotta, 11 ft. 8 in. high, second half of the fifteenth century, partly enamelled, a portion of a large composition, the work of Andrea or Lucca della Robbia, cost but 2*l.* There is to be seen here a work in alto rilievo of great firmness and delicacy, representing the birth of John the Baptist, ascribed to Lorenzo Ghiberti, 1381-1455; and we may also mention as worthy of note a bas-relief, 2 ft. 4½ in. high and 1 ft. 7 in. wide, of the Virgin and Child, of fifteenth-century Florentine work, which cost 25*l.*, in the manner of Desiderio da Settignano; an alto-relievo of the same subject, in its original wooden frame, of fifteenth-century Florentine workmanship; and a full-sized bust of our Lord, with the drapery and crown of thorns enamelled, ascribed to Lucca della Robbia. The facility with which the last-mentioned artist embodied his thoughts in this material is further shown in a bas-relief of a woman writing. In the great south court, beneath a richly ornamented marble-arched shelter recess, are four figures, full-sized, representing the Pietà where the dead Christ on the Virgin's knees is shown in a manner at once touching and masterly. This group cost 515*l.* Of classical and general subjects there are numerous examples of groups intended for fountains; two amorini bearing dolphins, 12 ft. 1½ in. high, of fifteenth-century workmanship, purchased for 10*l.*, and two nude boys of the same period being noticeable among them. The fine massive head of a lion, of fifteenth-century workmanship, ascribed to Andrea del Verrochio, indicates quite another field for the use of the material. The great name of Michelangelo has also fallen upon terra-cotta. A colossal head, known as Michelangelo's head, 10 in. high, has been acquired from the Gherardina collection, and several of the great master's works have been reduced, by his admirers, in this material; as in the instances of the group of the Pietà, a contemporary Italian reduced copy of the original, in St. Peter's, Rome, purchased for 6*l.* 6*s.*, and a statuette model of his figure of Jeremiah in the Sistine Chapel. Bassi reliefs in terra-cotta were much used in the cinque-cento and preceding centuries. To Geo. Bologna is

attributed a sketch of the "Rape of the Sabines," 2 ft. 10 in. wide, by 2 ft. high, which may be seen in one of the cases of the richly-stored courts whose contents we are now mentioning as evidences of the versatility of the material. The very delicate manipulation of a full-length figure of St. Catherine having a nimbus with a legend on a scroll upon it, holding in her right hand a wheel and in her left a sword, 1 ft. 3 in. high, by 8½ in. wide, presented by Mr. G. K. Moreland, sends into strong contrast the bold manner of such busts as that of the Duke of Lorraine, 1 ft. 6 in. high, of eighteenth-century workmanship, which was valued by its last owner at 18*l.* Delicacy of treatment has its admirers as well as the more powerful mannerisms, as we may note by the prices given for the objects which exhibit it with any degree of superiority. A small French statuette, by Clodion, most minutely treated, of a fawn running away, only 17 in. high, of the second half of eighteenth-century workmanship, cost 42*l.*; another, 2 ft. 6 in. high, of St. Sebastian, date 1490, 8*l.*; and another of St. Jerome, 1 ft. 6 in. high, Italian seventeenth century, 6*l.* Around the principal innermost courts is a series of modern brackets, fixed to the pillars of the arches, on which are placed busts, all, until minute examination is made, of similar merit and of equal antiquity, but in reality of curious difference in value,—one of an aged emaciated man costing 2*l.* 15*s.*, and another as much as 68*l.* Another terra-cotta bust, not in this series, deserves especial mention for the curiosity of its subject, which is that of an immensely stout lady, belonging to the Lupari family, 1461. It is painted.

Beginning now, however, at the foot of the ladder with the humble modern pantile, we perceive that foreign manufacturers are in the field armed cap à pied with enterprise and taste. It is needless to say that the clumsy, heavy pantiles that cover so many of our homesteads with red ripples are not their models. From force of long association of ideas, some people have arrived at a conviction that the ruddy clay ripples in question are picturesque; but they have only to look upon the foreign ones to unsettle their minds on this point; or, perhaps, we should say, receive a directly-contrary impression. The nearest in form to them, though not in tint, are the pale, red-coloured Spanish tiles manufactured by Vickman & Co., Seville. These are 9½ in. wide, and 1 ft. 2 in. long, and are placed in rows forming similar corrugated lines to the English pantile; but the difference in colour, and the addition of conical caps 1 ft. 7 in. in length, tapering from a base 7 in. wide, clearly mark their foreign origin. The Belgians have a curved tile something like this, only of a smaller size, which is used with the recurrence of the conical caps at intervals. *Tegole Belge* are also made in black, red, and coarse grey colours by M.M. Josson & De Langhe, Niel, d'Anvers. A spade-formed tile, pointed at its base, with a raised ridge down its centre, having a sort of terminal raised arrow-head as an ornamentation, measuring 1 ft. 3 in. in length, and 11 in. wide, is manufactured by them in black, and in a greyish black, as well as in red, at an expense of 70 francs le millier; and the same ogee-formed tile measuring 11 in. by 7½ in. is made both in black and red for a price of 40 francs the thousand. A convex pantile, measuring 11 in. by 8 in., with straight lines at the edges, is also made in the three colours mentioned above, the black, weighing 2,030 kilos, the thousand (price 75 francs per thousand); the red, 1,780 kilos, (price 100 francs per thousand); the coarse grey, 1,900 kilos, (price 50 francs per thousand). A concave tile, measuring 1 ft. by 9½ in., is also manufactured by the same firm in black and in red; as also *tuailes fatidières*, or ridge-tiles, in blue and mixed tints.

A Neapolitan manufacturer, Sig. P. Carafa di Noia, Naples, exhibits in the long gallery of building materials a set of tiles showing the differences between those of England, France, Belgium, Rome, Italy, and Naples. He selects a plain square tile as a specimen of our English make; and chooses from Belgium varieties that which nearest approaches our common curved and scolloped pantile. The Italian tile has the angles of base scalloped, and measures 1 ft. 4 in. by 7 in. The Neapolitan tile is corrugated and rolled, and the Roman flat and rolled. Sig. Carafa di Noia does not supplement his otherwise comprehensive and interesting display of nationalities in *tegole* with a price list. He is not the only Neapolitan manufacturer. Sig. F. G. Colonese, Naples, exhibits an ornamental roof tile of what he calls a French pattern, 1 ft.

3 in. in length by 9 in. in width, which is furnished with a bold ridge at one side with which to overlap its neighbour, and a boldly-raised diamond ornament on the centre. The angles of the base are scalloped off. A Parmese manufacturer, Sig. P. Rondani, Parma, shows us a graceful cream-coloured tile, 1 ft. 8 in. in length by 9½ in. in breadth, which has a raised flat ridge to each with which to overlap each other; it is scalloped on the edge and has a boldly-raised ridged lozenge-formed pattern on the centre of each. Signori Leoncini, Brothers, Rotta, Pisa, contrast this with some large flat red tiles which overlap each other at the joints vertically, 1 ft. 5 in. long by 1 ft. 2 in. wide, furnished with tapering rolled caps, 6½ in. wide at the base; and show a ventilating dormer projecting from one of the flat surfaces. As these specimens were originally sent to this country as samples only of Italian manufactures for the International Exhibition they have not been selected with any view to their fitness for this especial climate, nevertheless there are many purposes for which they would be useful as well as ornamental. The roof of the training-school attached to the museum is covered with an Italian tile manufactured by Brown, of Sarbinon. It consists of vertical rolls, like draining pipes, alternating with flat tiles, somewhat resembling those of Signori Leoncini. There is no ridge; and it has the appearance of the rolls of a lead roof, recurring much more frequently, and being of a larger size. The present effect as to colour suggests that they are somewhat porous, as they are reddish with a green tinge here and there as though with lichens. The sides of the dormers in this roof are covered with small flat tiles with ornamented edges.

The French manufacturer who exhibits the most specimens is M. A. Courtois, 145, Rue St. Lazare, Paris. One of his tiles bears his own name, and is known as the "tile courtois." The effect of it, when grouped in its place, is at once simple and pleasing, having the appearance of a series of diamond-shaped scales. He states that each one weighs 45 lb., and 180 of them are required for a square of 100 superficial feet, making a weight of 810 lb. for that amount of covering, the expense of which is 44*s.* It is a flat tile, 1 ft. 4 in. square, placed cornerways, having a raised rim round two sides of it, and a turned-up clip between them, and a turned-down edge to the other two sides, with a turned-down clip at the angle between them, by which a hold is gained by each tile upon the next. A lozenge tile manufactured by M. Bardin, of Lyons, is highly ornamented. It is thin and light, the single tile weighing scarcely more than the "tile courtois," though more complicated in form, and ornamented by a rib along its centre, and a tongue formed. A square weighs 770 lb. It is made, however, in three dimensions, running 150, 250, and 350 tiles to the square, and costing 6*l.*, 3*l.* 12*s.* 6*d.*, and 3*l.* 4*s.* the thousand tiles, according to those sizes; or 18*s.* the square for the first two, and 22*s.* 6*d.* for the smallest. The colour is a dull red. M.M. E. Muller & Co., of Paris, engrave upon the manufacture of tiles a system of ventilation. They not only provide a covering, but they make provision for the introduction of open and fixed ventilation tiles and skylights, and manufactured tiles as a flashing to chimneys. To describe their tile in the words of its exhibitors, it "has the fillets or flanges along its lower edge slightly returned parallel to the face of the tile; this return being locked into a corresponding recess in the tile next below it, more effectually secures it from the action of the wind, and at the same time gives a watertight joint without the necessity of a high pitch. The longitudinal joint is formed by two small fillets on the face of the one tile fitting into two grooves in the reverse of the next, thus being secured by three edges lapping over two." 150 of these tiles go to cover a square, which weigh 850 lb. The roof of the Sheepshanks Gallery is covered with the "tile courtois."

There is a scaly tile made in plates, having nine scales upon each tile, which is manufactured by Faconnnet, Chevalier, & Co., 52, Rue de Transit Vauregard, Paris. Each tile is flat and diamond-formed, the scales standing up about a sixteenth of an inch; and the measurement is 1 ft. 3 in. in length and 1 ft. in width. They are made to hook on to the roof, each tile being simply rabbeted into each other and bedded in mortar; they are 1½ in. in thickness. There are few purposes for which these would be preferable to those that overlap; but they are, doubtless, intended as an improved mode of procuring the effect of miniature tiles. M. Gastellier, Montan-

faust, Seine et Marne, manufactures a flat red tile pierced with two holes, with a slightly raised ornament on it. An Austrian tile shown exhibits the peculiarity of being glazed on half of its extent, the half that is covered by the tile that is destined to overlap it being left unglazed for economy's sake.

There are three makes of ridge tiles, besides their immense variety of pattern; the first and most general of these being cast in the solid in lengths; the second having the ornament only cast into lengths; which fit into grooves prepared to receive them; while the third provides sockets, into which each upright ornament on the ridge is inserted. As the latter would be liable to be loosened in windy weather, it seems that either of the former would be preferable, except for the facility with which those placed in sockets could be replaced without any disturbance of the ridge in case of injury to them. R. Langley, East Cowes Park, Isle of Wight, manufactures, in red and yellow, lengths of ridge tiles having three well-formed flours-de-lys on the apex, in the solid. He also manufactures the small 11 in. by 6½ in. tiles with ornamented edges, which are thinner and therefore lighter than the usual make. The grooved ridge tiles for ornamental purposes are manufactured in red, green, and terra-metallic, by Robert Brown, Surbiton, as are those in which each ornament is placed in a separate socket. Thomas Peake, Iwerley, Tunstall, Stafford, makes a strong ridge tile, having little pyramids on its summit, cast in the solid. He also makes lepped and grooved varieties.

Passing on to objects more removed from the sky-line, we will indicate some of the specimens of these to be seen in the modern terra-cotta court. In the centre of this compartment stand two lofty ornamented columns, examples of those used in the south arcade of the Royal Horticultural Society's Garden, on either side of a fountain, with a group of sculpture on a pedestal, rising out of the tazza, by Minton. A second fountain, with a group of two boys holding up a cup, by A. Carrier, Paris, price 80*l.*, is another striking object. Around are grouped some fine statues, notably a beautiful Bathor, of a yellow tone, for which 52*l.* 10*s.* was not withheld; a bust of Rossini, by M. A. Carrier, Paris, priced 32*l.*; another of Newton, with some disparity, or by some good bargain, priced 10*l.*; and a full-sized erect and draped figure of Galileo, in the usual reddish tint of the material, by Sig. Boni, Milan; and close by is an enormously large slab of Dura marble, which serves as the base of a case containing small fine, delicate specimens of works in terra-cotta. Of these a lovely little statuette of Night, which cost 15*l.*, deserves especial examination. On the front of the gallery which crosses one end of the court are two medallions, representing Summer and Winter, by Devers, Paris. On the walls, and on the ground-space immediately in front of them, are displayed productions in terra-cotta by manufacturers from most European countries, those of our own makers, a handsome vase from Australia, and numerous examples of Chinese work.

Some of the Swedish clay used for terra-cotta is white, and this, when glazed, very much resembles the effect of porcelain. There are some fine examples of it in the court. The colour of Danish terra-cotta is similar to that of our own. Several objects, especially some ornamental capitals by C. Vidal, Forsight and Rensing, illustrate this resemblance. Prussian terra-cotta is represented in a Corinthian capital, 1 ft. 8 in. high, by E. March, Charlottenberg, Berlin. It is of a lighter colour than the Danish. M. Boni, Milan, has made very successful attempts to produce highly ornamental work in this material, which a panel for a pilaster, priced 25*s.*, a good-looking twist-moulding at 20*d.*, the yard, trusses, fragments of friezes, and samples of archivolts, illustrate. Stoves made in terra-cotta are improvements in appearance for green-house purposes to those in cast-iron. Signori Purlani & Co., Florence, show stoves of a pedestal form, ornamented with wreaths, on square bases, about 3 ft. high, which are priced at 25 francs. Ferneries have been thought of by English manufacturers in connexion with terra-cotta; and a red brick, 18 in. square, with a hollow in the centre with a drain in it, called the Watsonian brick, for growing ferns and building ornamental works for ferneries, is shown by F. & G. Rosher, Swan Wharf, Chelsea. The same idea is produced in a smaller brick of a Gothic pattern by the same makers. The hollow is destined to receive earth and the root of the fern. Terra-cotta flower-boxes for window-sills are shown by Clay & Co., Bishop Waltham. To

return to indoor objects, candelabra come out well. A fine specimen in this court, by Blashfield, looks worth its cost, 16*l.* 15*s.* Chimney-pieces are good vehicles for the material, some of the French samples being magnificent works. The Renaissance style is very happily compassed by terra-cotta. A copy of an antique chimney-piece in this style, by M. Virebent, Tonloue, is admirable; and the doorway leading into the court, with caryatides, is another fine specimen of the capabilities of his manufactory. An ornamental window, with cornice and string-course, indicates resources as complete in the possession of M. Garraud, Paris. The whole of the tracery of a double-light window is shown, in four different patterns, in one casting, by Louis Thomson, Wisbeach. The Chinese samples consist of tiles and caps, with ornamented glazed ends, parapets and ridges glazed, balcony fronts glazed and unglazed.

Two medallions in terra-cotta, by Wedgwood, bought at the De la Rue sale for 5*l.* and 5*l.* 10*s.* a-piece, have been quite recently added to the contents of the Museum. The first of these has a group, in high relief, of a Centaur and Bacchante; and the second a group, also in high relief, of Cupid on a dolphin, bearing a letter to Polyphemus. Both are after the Herculanean fresco. After looking at larger works for constructional purposes, these curiously exemplify the extremes of boldness and exquisite delicacy with which it is competent to treat this durable and not costly material. Under a glass case in the South Court are some additional works, without mention of which a notice of the capabilities and realizations of terra-cotta would be incomplete. These are some minute objects of modern English manufacture of great finish:—A vase and cover; Diana and Actæon, diameter 5½ in., priced 8*l.* 3*s.*, modelled by Willis, Brothers; and a group of Titania and Bottom, by the same artists, 5*l.* 5*s.*, which compare not disadvantageously with the last-century work by Clodion, of a fawn running away, which we mentioned above as a sample of fine finish, purchased for 42*l.* Terra-cotta as a medium for grand and minute ornamental works is not yet sufficiently understood.

STRIKE,—BUT HEAR!

THE large suburban population whose daily occupation depends on the more or less punctual service of the Brighton Railway have cause to rejoice that the state of open warfare between the directors and the engine-drivers of that line was not allowed to extend beyond forty-eight hours. We should gladly join in the congratulations that are pouring in on all sides but for the single consideration,—why should such a state of things have been allowed for even a single day? What new light upon the justice of the demands, or the propriety of their concession, has been derived from a dislocation of all arrangements depending on the locomotive service of this line for so short a period? Did the directors disbelieve that the men were in earnest, without this definite and costly proof? Did the men find one black Monday enough to send them back, as repentant prodigals, to their engine-sheds and their cooke-ovens? Or was there, on either side, a point of honour involved, as in the Italian campaign? Did either party think it necessary to look the other in the face on a stricken field before consenting to treat? These questions are more likely to be multiplied than to be answered; but that a strike terminated in a day should never have been allowed to occur,—that the ultimate settlement would have been all the more satisfactory if it had not taken the form of an *ultimatum*, there can, we think, be no room to doubt.

We were silent on the subject of the dispute between managers and drivers while it was in progress for more than one reason. The rapid course of events, the doubtful state of probable results from day to day, were less suited to be treated of in the pages of a weekly journal than in those which never allow a topic to come cold before the public. And then the interests concerned were so grave, the disputants on either side had so much to say for themselves, that it seemed hardly permissible to treat the subject without devoting to it as much preliminary care and study as if we had been dealing with it in the character of an umpire.

Now, however, that all matters of dispute seem for the time, at least on this line, happily adjusted, it may be useful to call atten-

tion to some of those more important features of the case that are left to be lost sight of in the hurry of fight, or in the rejoicing attending reconciliation. A heavy price has been paid by the metropolis for the experience gained that Monday. What use is to be made of that experience? What are we to have for the price? The general, and, we think, the correct opinion on the case, before the stoppage, was, that most of the demands of the men were reasonable. On the other hand, the idea of not yielding to menace is native to the English character, and long may it remain so. And the position taken by the men as to equality of pay, at the same time that they hinted that an inequality might be maintained by raising the maximum, was at once indefinite and threatening. "Settle your disputes between yourselves," was the verdict of the public; "the real amount of divergence is not so great as to render friendly arrangement impossible; but do not make us pay the penalty of your misunderstanding. Do not let us witness the resort, by a skilled and educated body of men, to that weapon which reduces all who make use of it to the level of the idliest and least skilful of their body. Do not lose public sympathy by causing public inconvenience."

Now we are not ashamed to own to a very strong sympathy with the men. It is unnecessary to say that we do not sympathise with a strike. It is urged—what else can we do? We think much else can be done, and that with, instead of against, public sympathy. A strike is a very terrible weapon. It is a two-edged instrument, cuts both ways, and infallibly injures those by whom, as much or more than those against whom, it is employed. It gives a blow that is difficult to parry, and that is certain to injure by recoil. When once resorted to it leaves a sense of soreness in the defeated party, and a feeling of might being more than right in the victorious party, that are likely to prove prolific sources of future disputes. But above all other evils of this kind of warfare, we rank the injury inflicted on the men of most skill and eminence in their calling, who voluntarily reduce themselves to the ranks, and throw into the common fund of aggression all that naturally would place them at the head of their fellow-craftsmen. A successful organisation, resting on the power and the threat to strike, invokes the permanent degradation of the best workmen to the level of the worst.

In the case of the men to whose care is committed the active conduct of the traffic of the country, there are peculiar features. They are men who must possess for the proper discharge of their duties qualities of no mean order. Vigilance, sobriety, and presence of mind; strength of hand and clearness of vision; acquaintance to some extent with machinery, at least as far as the details of the locomotive are concerned; and sufficient strength of memory and perspicuity of thought to read complicated signals at a glance and at full speed,—all this must be had, and is had,—we must say cheap,—at the rate of 40*s.* to 45*s.* per week. Then the actual physical exposure is at times very severe. Ten hours' work in blinding sleet, or in parching sun, with no shelter for the head, with a fierce fire within a few inches, with no possibility of withdrawing the attention for even a short rest without danger; service of this kind by night as well as by day; the eye, the most delicate part of the organization, constantly on the stretch, and liable to constant irritation from the dust of the cooke,—all this is no sinecure. Gentlemen who are fond of driving, and who think the post of engine-driver rather jolly, should spend a week's worktime on the foot-board; and they would find the salary that came in on Saturday night very fairly and very hardly earned.

Now, if we go to a body of men of this description,—men who do public service by day and by night, with their lives in their hand (for in any case of accident the engine-driver is the most likely victim),—with the argument that would hold good against a more numerous body of workmen, naturally including those of every degree of industry and of skill, we are met with a ready answer. There are, or there ought to be, no inefficient drivers. Every man to whom so responsible a post is intrusted must be fit for that post, or the consequence is far more than the debated 6*d.* or 1*s.* per diem. Here, then, we think the men have the best of the argument,—the best, but not altogether the correct view of the case. Every man intrusted with the control of a locomotive ought to be a man of capacity and of character, deserving a very good rate of

wages. We are not attempting to fix that rate: call it five shillings or call it seven, it is the same for our argument. Let us say that any engine-driver has a right to expect a high minimum pay; and that no employer, who values his own character, would seek to engage a driver on lower terms.

But there are differences in the demands made upon the drivers. Much is demanded of every one; more is demanded of some. All qualities of alertness and endurance are more put to the test in the conduct of very swift trains than of slower and more ordinary traffic. All such qualities are more called for by night service than by daily duty. Both additional demands are made on the drivers of the night mails. That certain services, then, should be more highly remunerated than others, and that those services should be performed by the men whose claims were not alone those of seniority, but of seniority combined with greater aptitude for the task, is to the interest alike of managers and drivers; and by keeping in mind this view of the case, the question of permanent rate of wages can be justly and satisfactorily decided.

Then, again, as to the firemen. It is alike to the interest of the drivers and of the managers that the firemen should be apprentice engine-drivers. No one, in a perfectly-organized railway system, should be admitted to the tender, except in preparation for the future management of the engine. In any case of accident to the driver, the stoker has to supply his place. This necessary education should be systematised. Young men employed as firemen should be educated to some extent at the lathe and at the bench. The privilege might be given to engine-drivers of a certain seniority to take apprentices. And so soon as it became understood that such was the natural future of the stoker, the question of minimum pay would cease to be that of the utmost importance in his eyes. He would be content with a moderate present that ensured a definite future.

By placing matters on this footing, that degree of satisfaction and content would be established among the men that arises from a sense of being justly dealt with. The case should be that not of order, but of office. No officer expects an extra majority to be attached to his regiment because he has distinguished himself. Good service is the best claim to promotion, when vacancies occur, but not to the creation of brevet posts. Night-mail drivers, express drivers, and drivers of whom any unusual amount of vigilance or of endurance is expected should have adequately higher pay, as the pay of these superior posts, and that graduated scale of remuneration which is the life of all good service would thus be established on intelligible principles, and with justice to all parties.

There remains another consideration, and one as to which it is marvellous to reflect that it has been lost sight of by the numerous daily commentators on this memorable strike. Those men succeed best in their conduct of affairs who enlist human nature on their side. Managers are too apt to forget this. Discipline must be maintained, they say. The word of command must be given sharply. That is true under arms. But in dealing with Englishmen in civil capacities a soft word goes a long way. Kindness and consideration on the part of a manager will go further than many extra shillings tossed at the pay-table like bones to hungry dogs. But we mean something far more positive than this. The rate of the locomotive expenditure of a company is to a great extent in the hands of the drivers and firemen. The difference between a fair ordinary rate and a carefully economical rate of locomotive cost is one that would be distinctly felt in the half-yearly accounts.

From a fairly-paid and justly-contented staff the companies have a right to expect, and no doubt will receive, the fair attention to duty that will avoid extravagant cost. To do more than this they must interest their staff in effecting economy. Cases are of daily, and even of hourly occurrence, when the engine-driver has to choose between ease and economy. He may save the fuel and stores of the company, but he does it at the cost of his own fatigue. In all such cases the ordinary action of mankind is to save their own labour at the cost of their employers. It is a part of the privilege of employment, and is so regarded, more or less, in all services. The patient, untiring, self-sacrificing vigilance, that makes so much difference in the rate of constant expenditure, is not to be had without some direct inducement. So much, more or less, you may have from conscientiousness. Much more than

this, however, is to be obtained, but there must be some direct stimulus applied to obtain it. Now, this constant and wholesome stimulus to the maximum amount of care and of economy is only to be certainly obtained by giving the workman an interest in the results.

The problem which it should be the unconscious effort of his whole day to solve should not be how to get the most out of his employers, but how to earn the most for his employers, while participating to some extent in the gain. We do not seek to enter into the details of the mode by which the account is to be regulated. The principle once adopted, the details will readily follow. A certain rate or proportion of expenditure must be regarded as normal. By all reduction on that expenditure the servants of the Company through whose exertions it is effected ought to benefit in participation with their employers. If this principle be clearly laid down and fairly acted upon, and if the locomotive staff be placed on the same footing with respect to seniority and promotion that a military locomotive superintendent, were such an officer in existence, would naturally arrange, not only will the public have no need to fear any further engine-drivers' strikes, but it will have received an equivalent for the loss, the inconvenience, and the alarm of the 25th of March, 1867.

VITAL STATISTICS: LONDON AND PARIS.

THE extension of the limits of the city of Paris to the fortifications on the 1st of January, 1860, has somewhat interfered with the comparison of the vital statistics of recent years with those recorded before the alterations in the boundary. The following results, however, which have been deduced from the "Statistique Générale de la France," from the monthly bulletins of M. Haussmann, prefect of the department of the Seine, and from other authentic sources, may be relied on. The Bulletin des Lois, which records the results of the recent census of France, states that the population of the city of Paris in 1866 was 1,825,274. In 1861 it was 1,696,141; the increase in the five years being at the rate of 1.48 per cent. per annum. The estimated population of London in 1866 was 3,037,991. The increase of population in the ten years, 1851-61, was at the rate of 1.73 per cent. per annum. The population of Paris is distributed over 19,280 English statute acres (7,802 hectares), the density of population in 1866 being ninety-five persons to an acre. The population of London, extending over an area of 77,997 acres, gave thirty-nine persons to an acre in 1866. The proximity of the population, upon the hypothesis of equal distribution, was 7.7 yards in Paris; while the inhabitants of the English metropolis were 12.0 yards asunder. As the results of sanitary reform only become apparent after an improved system of hygiene has been in operation for some time, the full effects of the alterations in the water supply, sewerage, street-ventilation, and house reform, commenced some years ago in Paris, have only been recorded of late years in a marked decrease in the rate of mortality.

In the two years 1857-8, the average annual rate of mortality to every 1,000 persons living was 27.3; in the three years 1859-61, it was 26.5; and in the three years 1862-64, it was 25.0. The annual rate of mortality per 1,000 of population in each of the two capitals, Paris and London, was 25.3, and 22.5 in 1860; 25.7 and 23.2 in 1861; 24.6 and 23.6 in 1862; 24.7 and 24.5 in 1863; 25.3 and 26.5 in 1864; 28.5 and 24.6 in 1865; and 27.0 and 26.5 in 1866. The cholera epidemics interfere with the comparison between the two capitals, in the years 1865-6, but looking at the results as a whole, it may be said that more people die in Paris than in London, in proportion to their respective populations. As far as the hygienic conditions of the two capitals are concerned, the inhabitants of London have the advantage of their Parisian neighbours. Much has been done of late years to improve the sanitary condition of the French capital, but it still labours under the great disadvantage of retaining in cesspools, for a certain time, the refuse which should be allowed to pass away by a system of sewerage; the underground drainage, which has been carried out on such a grand scale, being almost exclusively confined in its application to surface drainage. With regard to the improved system of water supply in the city of Paris, it may be

stated that, as the service is seldom carried higher than the first floor, the occupants of the upper stories of the houses are but imperfectly provided with water. The poorer classes draw largely from the filtered waters of the Seine, from which also the *porteurs d'eau* derive their supplies; but the quality is objectionable, as the water is exposed to much contamination. In 1860 Paris received only 32,503,028 gallons of water per day, and a considerable deduction was made from this quantity for municipal purposes. This summer the quantity will be increased to 47,000,000 gallons per day, and when the works in progress are completed, Mr. Burnell states that the supply will be increased to 105,000,000 gallons per day. London is now supplied with 100,000,000 gallons per day. Not only to deficiencies in the drainage, and in the water supply, may the slight excess in the mortality of Paris over that of London be attributed, but also to the dense overcrowding of the population that obtains in some parts of the French capital. The area of London—with a population not amounting to twice that of Paris—is four times as large as that of the French capital. The improved hygienic condition of the latter city in recent years, as compared with that of former periods, is, doubtless, partly owing to the removal of buildings that were injurious to health; but, nevertheless, some parts of the capital are too densely populated. The number of births per 1,000 of population in each of the capitals, Paris and London, was 30.37 and 34.80 in 1864, and 30.63 and 35.51 in 1865. The proportional number of illegitimate births in 1864 to every 1,000 children born was 283 in Paris, and 44 in London. The marriage-rate in 1864 (persons married to 1,000 of population) was 18.4 in Paris, and 21.4 in London.

NEW STYLE.

WHY is all this banking after a new style? this dissatisfaction with a resuscitated architecture? this condemnation of new forms clothed with ancient graces? In fact, what is it that these learned writers want? They advise the study of old art, and at the same time condemn the use of it as a precedent. Truly this is not sound criticism, or language fails to express what it is they desire, and we need from them something more than words, some explanation with the pencil of the point of their meaning; yet I deem it difficult for them to give this. Do they really intend to affirm that the great revival that is in progress is all wrong? that the looking at old things has warped the imagination, and caused the wreck of common sense? Nay, rather is it not that those who disregard the great things of our forefathers, and either work upon their own resources, or passionately introduce novelty as the panacea of art are the men who produce nothing noteworthy or something that may be designated as architecture gone mad? I can have no sympathy with these restless incoherent ideas, for they seem to me to belong to a phase of criticism that is deficient in the encouragement of excellence and abundant in detraction. Where would have been the Roman style if it had not grown out of the Grecian that preceded it? Where would have been the Medieval Gothic if it had not gradually arisen out of the weary periods of Romanesque? Where would have been the Italian Renaissance without a maternal precedent? and where, I will say, will be the English,—say, the European development,—if the present active and varied exertion, founded on a knowledge of former deeds, were to be nipped in its spring by an unwise hypercriticism? We have in many new buildings a great attainment of excellence, as exhibited by their vigour, their originality of treatment, their beauty of form and detail, their suitability to their purpose; and, though it is true that none of them show a style that is wholly and solely Modern English, or Modern European, I fail to perceive that such a marked character is as yet either needful, or desirable, or possible. Let me, by negative and affirmative, look at our requirements. We do not want actual copies of any thing that has existed before, either in the mass or in particular parts. We do not want ill-contrived arrangements, nor anything that is unsuited to its use. We do not want extravagance or parsimony. We do not want a rejection of anything that science or knowledge may contribute towards the formation of a good building; but we do want walls, windows, doors, roofs formed with decorative fea-

tures, and having proportion, symmetry, variety, harmony, grace, colour, expression; and the attainment of these is practicable, and has been effected in a considerable degree in many modern structures that have no direct resemblance to former works, beyond the fact that they are the offspring of master-minds imbued with the principles and feelings that actuated other master-minds that have preceded them. It will not do to reply that these works have round arches, or pointed arches, or any other peculiar feature of a kind used before, and therefore that they have no originality, no new style, none of the excellence that should distinguish the architecture of the nineteenth century, an era which, in the eyes of some, appears to be one of wisdom, of enlightenment, and of purity, beyond all former precedent. Surely the assertion that architecture is in a retrograde state is a cruel libel. I thought it to be quite the reverse of this; and who that can remember its condition thirty or forty years ago, when it was emerging out of timid puerility and enervation, does not think so too? But I ask again, what do the writers want? If they expect that a new style is to start up fully grown and equipped, like Minerva from Jupiter's brain, they are surely the persons who disregard common sense, and architects are the men who make use of common sense to develop the art of design out of former experiences. It has always been thus since the creation of the family of man. No art was ever developed at once; all has grown out of something that went before, and all has partaken of some of the feeling whence the new work has been derived; and no attempt has ever been made to cast aside precedent. But again I say, let them show us what they want, and then we will tell them whether their new style has common sense combined with beauty or not. It must be easy to do this if there be 5,000 new styles in prospect, but I altogether demur to this enumeration.

E. N.

INQUISITION AS TO THE CAUSE OF FIRES.

A COMMITTEE of the House of Commons has been sitting for some time under the designation of a Fire Protection Committee, and has already placed upon the record a large mass of valuable evidence, upon all branches of the subject of fire insurance, fires, and their causes. Last week Mr. Smith, secretary of the Scottish Union Insurance Office, was examined at great length: his prolonged experience in connexion with fire insurance enabled him to give evidence on numerous points connected with the subject. The witness considered that the insurance-tax, imposed about 1702, was originally, and had always been, a war tax, which he considered it impolitic and unjust to continue in time of peace. He had computed the value of the property insured against fire at about 1,200 millions of pounds sterling about 1855, but the property insured now was much greater in value. Fires had increased in a much higher ratio than the increase in insurance business. He attributed many of these fires to incendiarism, and believed that at one time there had been, if there were not at present indeed, organised gangs of incendiaries in different parts of the country, and that the number of fires the origin of which could not be satisfactorily accounted for had been progressively on the increase for many years past. The insurance business was in consequence decidedly bad; some offices paying dividends to proprietors, but many others paying no dividends at all. Greater caution was being exercised by almost all offices in the acceptance of risks (his office refused many), and the number of fires, and value of the property destroyed by them, had been considerably diminished by attention to the construction of buildings and the storage and classification of goods insured. Some great fires he believed might be attributed to warehouse-thieves, who resorted to this means of concealing their depredations. Many others were doubtless attributable to culpable carelessness. The remedies he suggested for these evils were, that authority should be given for judicial investigation into the causes of fires, and he considered that the coroners of England and the procurators fiscal of Scotland would be competent officers to conduct such investigations.

He also recommended that the insurance offices should have a common defence fund, as bankers had, for their protection against unfair claims, as at present the offices never prosecuted

for arson, and would rather let a criminal escape than risk the reputation of being litigious, or the character of being disposed to resist the payment of claims. He quoted figures relating to Baltimore, U.S., showing that the appointment of a fire-marshal had reduced the number of fires in that city to a small fraction of what it was before criminal investigation into the causes of fires was authorised. He had no doubt that, if the Salvage-corps of London, a comparatively modern institution, which was composed of the most intelligent men selected from the Fire Brigade, were authorised to investigate, or to initiate the investigation, into the causes of fires, they would speedily greatly diminish the number of conflagrations, especially of those accounted for by the term "spontaneous combustion,"—a phrase rarely, if ever, heard of forty years ago;—pointing to an important fact nevertheless, say we.

GROSMONT CASTLE.

GROSMONT is one of five strong places disposed along the right or south-west bank of the Munnnow river, the others being, below it, Skenfrith, and above it Oldcastle, Longtown, and the fortified house of Perthi. Monmouth Castle, and the town beneath its protection, occupied the junction of the Munnnow with the Wye. These are some of the fortified buildings scattered broadcast over the Welsh marshes, and especially abundant in the county of Monmouth, and the remains of which, always picturesque, are often tolerably perfect.

In the rear of these castles on the Munnnow were those of Brecknock, Tretower, Crickhowell, and Abergavenny, upon the Upper Usk, and over the whole of that country there is scarce a hill-top or point of vantage which is not occupied by some defensive earthwork, showing the importance attached to it by each of the several races, Celt, Roman, Saxon, and Norman, who in turn either attacked or defended this devoted soil.

Grosmont, about four miles above Skenfrith and five below Oldcastle, is placed, like the former fortress, upon the high concavity of a sharp bend of the river, about a hundred yards from its margin. Very near to it is the fine old cross church, which, having shared in the prosperity of the castle, has escaped its decay, and still remains in tolerable repair, although requiring a few subtractions and restorations at the hand of a judicious architect.

The castle is composed of a court or ward of irregular plan, more or less rectangular, with projections upon the south side, the wall of which contains a space of 110 ft. by 70 ft., strengthened on the south by a larger and a smaller three-quarter mural tower, having a gateway upon the east face, and on the west traces of a building exterior to the curtain wall. The north side is occupied by a hall, also exterior to, or rather replacing the line of, the curtain, three of its four walls forming a part of the exterior defences of the building.

The whole is placed within a ditch of great depth, and, indeed, the earthworks generally are of so laborious a character as to make it probable that they are earlier than the present building, or than any other work in masonry. The actual platform occupied by the walls and contained within the crest of the ditch, is about 150 ft. in diameter.

Outside the ditch, to the east and south, and covering the entrance of the castle, is a large demi-lune, or platform of earth, scarped towards the field, and upon which are traces of walls and a defence of the nature of a barbacan. The main ditch, now traversed by a modern embankment, was evidently at one time crossed by the usual bridge, of which a part lifted. The gatehouse, if such it can be called, presents two lateral cheeks of wall, projecting on either side of the bridge, and thus forming a covered way, from each side of which a cruciform loop is directed along the ditch. The pointed vault of the entrance is broken, but there remain the ragged grooves for the portcullis, and the two holes which received the large wooden bar confining the gate.

Entering, on the right, is the shell of the hall, 80 ft. long, by 27 ft. broad, out of all proportion to the area of the defences. The floor, of timber, was laid 6 ft. above the level of the court, so as to give height to a spacious basement store-room or cellar, but which, however, has a large fireplace in its east wall. The hall has windows at each end, and four in each side, but probably

only the six to the east belonged to the hall, the other two lighting a withdrawing-room. The position of the fireplace on the north side seems to mark the centre of the hall.

On the left of the entrance the curtain extends to the south-east or smaller drum tower, and probably supported a spacious lean-to roof marked by the corbels or bearers for the upper wall-plate. This south-east tower seems to have been massive, but low, and to have been altered and enlarged at the gorge, on the side towards the court, which now projects inwards in a rectangular form. When this addition was made the tower seems to have been raised to three or perhaps four stories, and near its summit is a bold cordon.

A strong curtain extends from this to the south-west drum tower, of larger dimensions, and broken down towards the court. The floors of these two towers were of timber. Between them, and parallel to the curtain, seem to have been some buildings, probably barracks.

The buildings outside of and built against the west curtain projected boldly into the moat. They are in great decay. Here was the fireplace, the fine from which, wrought out in the substance of the curtain, rises above it as an elegant octagonal chimney shaft, the summit of which is crowned by the elegant lantern or spiracle which has so often been drawn, and is so well known.

Grosmont, as it now appears, is of moderate size and much mutilated; but its towers and walls, though stripped of their ashlar, are still standing, and the earthworks are large, bold, and well defined.

Whatever may be its primeval history, the present building presents nothing earlier than the reign of Henry III. The additions seem to have been in the Earlier Decorated style, and, probably, are of one date, that of the reign of Edward I. After the S. Welsh conquest, Grosmont was one of the numerous De Braose castles, and passed by inheritance to the Cantelopes. It then fell into the possession of Henry III., who granted it to Hubert de Burgh. In the well-known war waged by the Welsh and Richard Marechal, Earl of Pembroke, against Henry III., it was besieged by Llewellyn and relieved by the king, who occupied it as head-quarters during the latter part of the campaign. After De Burgh's fall, Henry re-granted the castle to the Earl of Lancaster, and it has since, with the somewhat earlier castles of Skenfrith and Whitecastle, remained attached to the duchy. Henry, Crouchback's grandson, was here born, and hence styled Henry of Grosmont. Probably he was the author of the principal additions.

The adjacent church contains a late Norman font, with cylindrical base and octagonal bowl; and the pier arches of the central tower are also Pointed Norman. Most of the remainder of the church is Early English, and probably of the date of the castle; but there is a Decorated north porch, and some other parts in the same style, which may have been the work of the artist who completed the additions to the castle, and its elegant chimney shaft and finial.

LOCAL BOARDS.

THE evils sustained by the public at large from the utter insufficiency of local Boards and other corporate bodies to meet their desired ends, cannot be too strongly agitated. To do this effectually, the means afforded by the powerful influence of a scientific public journal like the *Builder* are of inestimable value; and there can be little doubt that the letter of Mr. Rees, published in your issue of March 30, will have been read with interest by the majority of your readers. And it is to be trusted that the insertion of Mr. Rees's statement, taken in conjunction with the deliberately uttered and weighty judgment of many eminent authorities, like Mr. Hawkesley, pronounced upon the corporation control of engineering matters, will lead the public to a proper consideration of its interests. One urgent need is a thoroughly-searching investigation by select commission into the history of the manifold important enterprises affecting public health and convenience, whose sole control is vested in the hands of the divers public bodies composing the municipal government of this country. Let such an end be resolutely and persistently pursued; and, once attained, it cannot be doubted that then, and not till then, may we expect to see so gross a combination of official ignorance and jobbery deprived of the

absolute sway which forms its present privilege.

Having in common with numberless others of my profession suffered from the injustice of lying estimates in engineering schemes, winked at or overlooked by local Boards, I suggest, in the name of the public good, which, in nine cases out of ten, is sacrificed to the interests or prejudices of the authorised Boards, it be requested, by some considerable member of the House of Commons, that a return be made from every town and district in England of the actual cost of their respective works for water supply and main drainage, together with their original estimates and present efficiency for their destined purposes, and that means be taken to ensure the rigid accuracy of such return.

I have not an unbounded faith in the practical business genius of the Briton in sight relating to that Old Man of the Sea who haunts him in the shape of the mayor and corporation of his borough, extracting heavy toll with a remorseless hand which stretches forth to take, but which never yields back. But I believe—nay, I am sure—that the rays of light so directed would disclose so infinite an aggregation of shameless imposition upon a long-suffering public, that a continuance of the like would be impossible in the future. Without some such remedial step as this, we cannot in reason hope to avoid reaching the condition of corporate management recently exposed in New York, if, indeed, in some of our towns we do not already rival it.

At this present moment the town council of this borough (Leeds) are on the eve of committing the ratepayers to the final adoption of a gigantic addition to their existing system of waterworks. The brief history of this scheme is as follows:—Mr. Filliter, the borough engineer, constructed during last year a certain scheme for the supply of water. Of the details of this scheme I will say nothing, save that, having been professionally engaged over every foot of his gathering-ground, I know of none more certain to supply water impregnated with peaty essence. The scheme was laid before the Board, and it being, as usual in this borough, a Whig and Tory question, the former party procured its adoption. The estimated cost was £50,000; upon the strength of which powers from Parliament were applied for. The ratepayers were assured that this estimate was in excess, and that the consulting engineer would certainly reduce it. That gentleman (Mr. Hawkley), however, having no desire to compromise his public reputation for the sake of private interests, has estimated the same work at £20,000; and to this must be added £30,000, since it appears that certain lands valued at £5,000, or £6,000, are to be paid for to the tune of £6,000, part of this latter sum being, I suppose, in settlement of opposition; so that, in spite of its deficiencies, the preamble of the Bill has been proved.

Possibly we may term this a more gross and flagrant instance of public credulity than usual. In appearance, granted that it is so; in reality it will be found no uncommon example of local misgovernment. It may be asked, what motive can a reputable body of men have in so pillorying their incompetency, or worse?

In reply, I would ask, what motive can a man, unscrupulous and powerful, with private interests to serve, with no official responsibility, with strong personal resentments, and with inflated party bias, have in serving those interests, in using that irresponsibility, in gratifying those resentments, and in furthering the views of his party? I do not hesitate to state a well-known fact, that all these disturbing ingredients are component parts in the constitution of our various bodies corporate, who, like Judas, "carry the bag."

Without any inclination to trespass unduly upon your space, I will, under sufferance, give another instance where it would appear that public scrutiny is needed. The commissioners of Leytonstone, in Essex, have recently invited competition for the drainage of their district, stating that information would be supplied by Messrs. Houghton & Wragg, 15A, St. Helen's place, London. On applying to these gentlemen, by letter, I received no answer. I again wrote, and was told I had turned my attention to what was not worth my while, and that I could get information, by applying in person, at their offices. Once more I requested some particulars, and again I was informed I could get them on personal application.

What I wished was, of course, to ascertain whether it was worth while to take the matter

in hand or not; but such knowledge I could not obtain. Since then a friend, also an engineer, has applied for particulars, and has received no reply. In this place I would ask these gentlemen if the appointment was made prior to the advertisement that it was deemed a waste of time for any one else to take the matter into consideration?

One illustration is weightier than many arguments, and the foregoing faithfully represent, in most instances, the value of those unpaid public servants who, without let or hindrance, exercise the functions of purse-bearer and purveyor-general to the public. Is there any specific reason why the supply of water to the public should not be regulated by private enterprise with unlimited competition? It is certain that no private company would be biased by personal regard in favour of professional advisers; no matter what their virtues. Your engineer or contractor might be after your own heart in politics, might attend your own place of worship, or might be married to your own daughter; but, my good common-councilman, alderman, or mayor, your ear would be deaf to all these potent qualifications when opposed to professional capacity, if you, and not the public, were to reap the profit and loss.

M. P.

HILLINGDON CEMETERY CHAPELS, MIDDLESEX.

THESE new chapels have been recently completed; that for the Episcopal Church having been consecrated by the Bishop of Rupert's Town on March 13. The latter has a polygonal apse and a bell gable turret. The Dissenters' Chapel is situated near the Episcopal one. There is also a massive gate-house and entrance-archway to the cemetery. The general material of the walls is Kentish rag, with Bath Box-ground stone dressings. The roofs are covered with plain red tiles. The works have been carried out under the superintendence of Mr. Ferrey, F.S.A., at a cost of about £1,800. The contractors were Messrs. Fassinidge & Son, of Uxbridge.

"THE CONTRACTOR AND THE WORKMAN."

A MILLIONAIRE mason, in a story told in the *People's Magazine*, explains how it is that he is better off than the mass of the companions of his working days. A discontented working mason is the narrator:—

A large case occupied the end of the room, divided into compartments, and each labelled, and on a bureau were heaped bills and estimates. The contractor stopped before the great table, and showing me a water-coloured plan, said:

"This plan requires modifying. They want to reduce the building three metres, but without diminishing the number of rooms, and you must also find a place for the staircase. Sit down and make a rough sketch of the thing."

I looked at him surprised, and told him I could not draw.

"Then examine these measurements for me, and see if the estimates are correct."

I answered that I was not up in such work as estimating prices and verifying measurements.

"What necessary legal forms I must comply with, in regard to the three houses I am about to build?"

I braquely answered, "I was no lawyer."

"And as you are also not a banker you are, without doubt, ignorant how to arrange your payments, and what interest you ought to receive on your capital to avoid bankruptcy. As you are not a merchant you would find it difficult to tell me where the best materials are to be procured, and the proper time for purchasing, and the most economical means of transport. As you are not a mechanic it is useless to inquire whether that crane, of which you see the model, is likely to save labour, and therefore expense. As you are not a mathematician you will in vain attempt to judge of this new system of bridge-building I am about to try on the Lower Seine. In short, you know nothing but what a hundred others among your companions know: you, like them, are only fit to handle the hammer and the trowel."

I was completely disconcerted, and I twisted my hat instead of replying; indeed, I had nothing to say.

"Do you understand now why I live in a fine house, while you inhabit a garret?" continued the contractor, elevating his voice. "It is because I exerted myself; it is because I have learnt all you have neglected to attain; it is in consequence of voluntary study I am become a gentleman while you remain among the recruits. By what right do you demand the same advantages as your superiors? Ought not society to reward each according to the service he renders? If you desire that society should treat you as it has treated me, do as I have done: deny yourself even bread to buy books: spend the day in work, and the night in study. Be ever on the look-out for instruction, as a merchant looks out for profit; and when you have shown that nothing discourages you, when you shall have learned rightly to understand value things and men, then, if you still remain the inhabitant of a garret, come and tell your tale, and I will listen to you."

ROCKHURST, WEST HOATHLEY, SUSSEX.

THERE are few places within thirty-five miles of London possessed of so many natural charms as is the estate now known as Rockhurst, on the East Grinstead line of railway, including, as it does, pasture, trees, rocks, and water; and here the owner of it, Mr. Charles Hill, F.S.A., has recently built a not large but compact residence, from the designs of Messrs. G. & H. Godwin, architects. We give a view of the house, showing particularly the entrance-front, and we add plans of the principal floors.

The walls are constructed of sandstone quarried on the estate, with brick inside, a space of 2 in. being left between the stone and brick. Galvanised-iron ties at short intervals keep the two together. Some bands of Mansfield stone are sparingly introduced, and there are a few ornamental coloured tiles in the window-heads of the garden front. The arches of the carriage-porch are ornamented with carved honeysuckle, and in the cornice is running ivy; executed, as was all the other carving, by Mr. Jaquet, of Stamford-street. The contractors were Messrs. Fuller & Longley, of Worth.

The plans show the accommodation afforded on the ground-floor and one-pair story. There are besides offices in a basement formed below part of the house (gained through the slope of the ground), and half a dozen good servants' rooms in the roof.

The dining-room has been fitted up with some old carved oak panelling, and has a panelled ceiling.

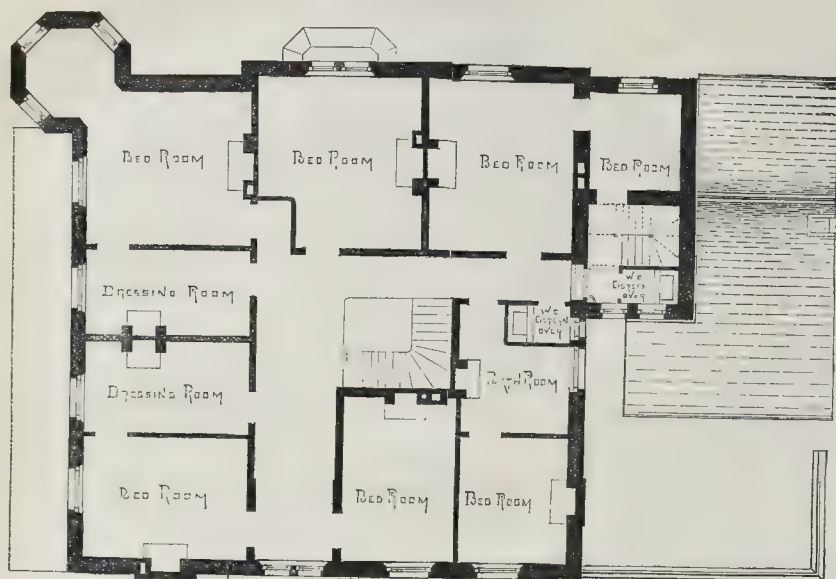
The capitals of the various columns at the entrance-doorway and elsewhere, and the bosses ending the string-courses, are enriched with stone carvings of the ferns found growing in the grounds, or in the immediate neighbourhood. Abounding as the situation does with chalybeate springs and sandy rocks, few places offer such a fitting habitat for these favourite plants. In a semi-natural, semi-artificial fernery on one side of the house, and completely overshadowed with trees, is a large collection of British ferns and shade-loving plants growing in the greatest luxuriance. Amongst the most noticeable, perhaps, of the latter in this ferny hollow is the one complete green carpet at the bottom, of golden saxifrage (*Chrysosplenium oppositifolium*).

The well from which water is supplied to the house is about 80 ft. in depth. The stables are at a short distance from the residence, near the old house originally occupied by the owner of the estate.

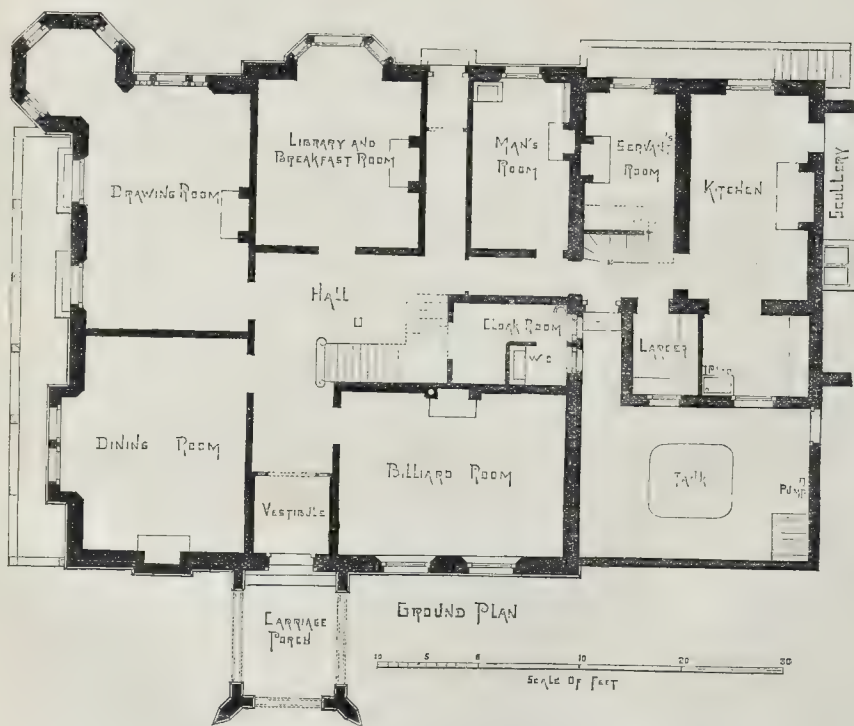
The new building is erected on an eminence commanding the fertile grounds, which form an undulating valley of pasture and woodland. In the dense plantations of the latter are many large well-grown trees, principally of oak, fir, and larch. The view from the house is varied and superb, terminating with the fine range of Sussex Downs, embracing Chantebury and other well-known eminences. Towards one boundary of the estate, and overlooking an ancient and now dried-up river-bed, is a long series of colossal, rugged, and toppling sandstone rocks, irregularly stretching, side by side, or one over the other, for a great distance. These huge stones are undermined, piled upon each other, thrown down, or balanced in apparently the most dangerous and fantastic manner, and by our forefathers have been variously inscribed and tattooed, many names and dates upon them being more than 200 years old. The side of one dark and frowning cave, more within the estate, bears an ancient inscription, telling the spectator it is the veritable "CAVE ADVLAM," but perhaps the most astonishing of all the rock groups is one that has been known for centuries in the neighbourhood as "Great upon Little." In this we have an enormous sandstone rock, weighing some hundreds of tons, so nicely balanced upon an infinitely smaller stone, that to all appearance the slightest touch would displace it. In the dry river-bed below, are to be seen many half-buried stones that have evidently been displaced from the parent rocks above.

A botanist would probably find no end of rarities amongst the cryptogamic and other plants that abound on these huge masses of porous sandstone, covered as they are with ferns, scale-mosses, and liver-worts. Amongst many other species, may be noticed growing on the wet shelving ledges of some of the amberaceous caverns, the *Tanbridge Film Fern* (*Lycopodium Lun-bridgeense*), and on the humid, dripping sandstone rocks are many luxuriant liver-worts.

ROCKHURST, WEST HOATHLEY.



CHAMBER PLAN



GROUND PLAN



ROCKHUNT, WEST HOATHLEY, SUSSEX.—MESSRS GEO. & HENRY GODWIN, ARCHITECTS.

THE NEW ASSEMBLY ROOM, BRIGHTON.

The stables of the Pavilion Palace have now been converted into an Assembly-room, and a trial of its acoustic properties has been made, the result, it is said, being satisfactory. The dome, and chandelier of 1,300 gas jets, are the chief features of the Assembly-room. The area under the dome is 80 ft. diameter in the clear of the columns supporting the gallery front, and the site of the former stables is 22 ft. on each side, thus making the extreme diameter 124 ft. The dome is composed of twenty-four bays. The whole of the old glass, and great part of the lead work, have been replaced with new; and the sixteen larger bays have been filled in with a boarded ceiling, in which are the stained-glass windows that light the room during the day. The windows are composed of circles, &c., variously grouped, and the design of the glass is also varied to suit each case. The panels have arabesques in chocolate on a buff ground; those of the eight narrow bays are filled with richer arabesques on blue ground; and the decoration of the dome is completed by the principal ribs being painted with alternate panels of a running pattern of suitable design. The gallery front, which retains more of its original form than any other part of the building, is decorated with a warm chocolate ground, and the cusped fillets of the arches are all gilt. The lower part of the dome, where the stables stood, have been greatly altered: the fronts, partitions, and fittings have been entirely removed, and the timber uprights cut away, and iron columns and brackets have been substituted for them; these columns are coloured in maroon, and the capitals and brackets are gilt. The orchestra is on the south side of the room, and occupies the width of three large bays of the dome. The front forms an arcade of three decorated arches of Moresque design, supported by slender iron columns. The detailed drawings and specifications were prepared by the surveyor, and in September last the tenders were accepted for the performance of the work, as under:—

For the builder's work, Messrs. G. Cheeseman & Co., Brighton	£3,710
For the decorator's work, Mr. T. Dury, of Warwick	420
For the gas-fitter's work, Mr. H. Green, Pavilion-buildings	1,430

PROVINCIAL NEWS.

Birmingham.—The unoccupied space at the corner of New-street and Stephenson-place is about to become the site of a public improvement, by the erection of a building for the Midland Bank, which has outgrown its present accommodation in Union-street. The piece of ground obtained by the directors (on a ninety-nine years' lease) from the governors of the Free Grammar School) has a frontage, according to our authority, the local *Journal*, of about 60 ft. on New-street, and of about 150 ft. to Stephenson-place. The whole of the space, however, will not be occupied by the bank buildings. Part of it, near the bottom of Stephenson-place, and having a frontage to the new street proposed to be made into Pinfold-street, will be reserved for the erection of offices; and by arrangement with the corporation, the angle of New-street and Stephenson-place will be rounded off, and the building line fronting New-street will be slightly set back. The bank will also be erected within a railing, designed to protect the basement story. The style is described as Classical, the front towards New-street being arranged in three, and that to Stephenson-place in eight compartments, divided on the ground floor by Ionic rusticated pilasters, resting on a plain basement; and on the first floor by attached Corinthian columns, with coupled pilasters at the angles. Each division will be pierced with a window of suitable design. Above these will be an enriched cornice, surmounted by an open balustrade, carried higher at the angles, and finished with coupled pilasters. The principal entrance will be in New-street, and will be distinguished by a portico, with four detached columns, of the Ionic order, the shafts and bases being of polished granite. The main fronts will be executed in Portland stone. The interior of the building will consist of a room (the "bank" proper) 92 ft. long, 49 ft. wide, and 30 ft. high, lighted by nine semi-circular headed windows, each 18 ft. high, and also by a dome or lantern, 37 ft. by 18 ft. On the same floor there will be private rooms for the managers; and on the first floor will be a board-

room (fronting New-street), private rooms, and living and sleeping rooms for the resident clerks and porters. In the basement provision is made for dining and cloak rooms and lavatories, for the clerks; and also for store-rooms, especial attention being paid to "the bullion-room," which is to be defended by triple walls of great thickness, and a strong iron lining. The whole building will be warmed and ventilated on Van Hecke's plan.

FROM SCOTLAND.

Glasgow.—A new tidal basin which has been constructed on the south side of the Clyde, about half a mile below Glasgow Bridge, has been placed in communication with the harbour. The basin occupies an area of five acres and a third, and is surrounded with quays, on which sheds for the reception of merchandise are about to be erected. It is to be dredged to a depth of 22 ft. below high water of spring tides.

Dunfermline.—A report by Dr. Stevenson Macadam on the water of seven of the public wells in Dunfermline has been sent to the managing committee of the parochial board by the town-clerk, on the instruction of the Police Commission, as the local authority. Dr. Macadam reported that the specimens of water sent to him presented a good appearance, and were devoid of colour; but that the water differed materially in composition. Two of the samples contained organic matter, accompanied with nitrates, and which, along with other peculiarities, indicated contamination of the water with decomposing organic matter of animal origin, such as might be derived from house cesspools, surface street drainage, or imperfect sewers. After some conversation on the report, the meeting instructed their law-agent to take the necessary steps to close up Strachan's Well. It was agreed to procure samples of water of the private wells in the parish, for the purpose of having them analysed. The Lord Provost, who presided, submitted to the committee meeting a statement of the rate of mortality for the past month, which showed that in the royal burgh there had been five deaths out of a population of 8,401; in the Parliamentary burgh, nine from a population of 5,103; and in the landward district, seven out of a population of 7,448. In submitting the statement, the Lord Provost said it was for the interest of the ratepayers to look into the cause or causes why there was so great an increase in the rate of mortality in the suburbs, and it was resolved that the committee should inquire into the causes of this great increase of mortality in the district, and how it could be remedied.

Leith.—The Public Institute building, which is situated about the centre of Tolbooth Wynd, has now been completed, and inaugurated. The Institute is a brick building, with a doorway of stone. On the ground-floor is a reading-room, 48 ft. by 26 ft. Adjoining the reading-room is a committee-room, 15 ft. by 12 ft. From the lobby, a staircase leads to a gallery, which has been fitted up with shelving sufficient for 10,000 volumes. Of this number, nearly 8,000 have already been acquired. For works of reference, a room has been specially set apart, measuring 23 ft. by 14 ft., which is entered from the gallery. At the further end of the reading-room, a stair leads to bagatelle and smoking rooms, which occupy the back part of the building. The roof is open-timbered with large windows. The architect was Mr. James Simpson, the assessor for the burgh. The whole structure, together with its furnishings, has been reared at a cost of somewhat less than 1,300l.

The Wallace National Monument at Stirling. Since we drew attention, in October last, to this memorial, and inserted a subsequent letter from Mr. Burn, a member of the building committee, the workmen have been making such progress as was practicable in the winter season. The building committee have lately issued a report, in which they say:—"The great tower has now reached the height of 175 ft., including a portion of the open crown, and what remains to complete this, the chief portion of the design, consists in closing this crown, which, if necessary funds are supplied, may be done in the course of the approaching summer, when the tower will appear in all its contemplated amplitude and symmetry. It also appears, as the result of a very careful calculation by the architect and superintendent, that, even at such enhanced prices, a further sum of 1,200l. will suffice for this purpose; after which, all that is required to complete the original design is the erection of

the warder's house, by which the base is broadened and rendered effective, the foundations having been already laid: this, according to the same careful estimate, will cost the sum of 1,400l. The total expense has turned out to be greatly in excess of the original estimates and contract. But the committee state, with confidence, that this has not arisen from anything under their control. At present they have on hand funds sufficient for about two months' operations."

New Lighthouse on Dhuhaich Rock.—The Commissioners of Northern Lighthouses, according to the *Scotsman*, are about to commence a work of no ordinary difficulty,—the erection of a lighthouse tower, from the designs of their engineers, Messrs. D. & T. Stevenson, on Dhuhaich Rock, lying fifteen miles to the south-west of Iona, and exposed to the full fury of the Atlantic Ocean. It will light up the gap between the Rhins of Islay and Skerryvore, and lead vessels clear of the Torrion Rocks and into the shelter afforded by Colonsay. The rock on which the tower is to be placed is a rounded mass, about 240 ft. in length, and 130 ft. in breadth, and is surrounded on all sides by deep water. The landings are likely to be attended with much inconvenience, while the distance from land (being about one-third greater than in the case of the Eddystone or the Skerryvore) will further tend to increase the difficulty. The tower, which is to be a parabolic shaft, rising to the height of 101 ft., is to be surmounted by a first order fixed dioptric apparatus. The dwellings for the light-keepers and crew of the tender are to be on Earraid Island, in the Sound of Iona; and the cost of the works is estimated at 56,900l.

Leith.—A young man employed at the new docks, while working a travelling-crane used for raising and lowering stones required for the erection of the quay wall, accidentally lost his footing and fell to the ground, whereby he has been seriously injured. Besides other injuries sustained, his right arm was fractured in two places, and the arm has been amputated.

STRIKES.

Cardiff.—The whole of the carpenters of this town have struck for an advance of wages. They want 30s. per week, being an advance of 3s. The masons have given notice that after the 1st of next month they intend leaving off work at one o'clock on Saturdays. The Cardiff Builders' Association have issued a broad sheet, in which they give the public an explanation of the circumstances. They state that "a demand was made in October last for a rise in the rate of wages of 6d. per day, to commence on the 1st of April, the wages at that time being 4s. 6d. per day. After interviews with the carpenters' deputation, in which attempts were made to settle the dispute, the Builders' Association felt obliged to refuse the demand. They, however, proposed to compromise the matter by offering 6d. per hour, and payment by the hour, which would have amounted to 26s. 9d. per week. The men refused to accept this offer, but made a counter proposition of 4s. per day rise, payment by the day, with a promise by the masters of 2d. further rise twelve months afterwards." Among the reasons stated for their refusal to give the advance demanded, the masters state that, "The Carpenters' Union have singled out the house-builders for attack, leaving the Taff Vale Company, the Rhymney Railway Company, and the Bute estate, unmolested, thus making a cat-paw of them and their men;" and that "the building trade is at present in a depressed state, both in Cardiff and the surrounding district, and they think it their duty to prevent the men forcing the wages by combination above the market rate." The present rate paid by the town builders, they say, is 15 per cent. higher than that paid by the Taff Vale Company, and equal to that paid by the Bute estate; and it would be 25 per cent. higher in the one case and 10 per cent. higher in the other, if the advance were granted.

Barnsley.—The strike of joiners at Barnsley has, we learn, come to an end. At a meeting of the masters and men, after a short discussion, the masters agreed to grant the hour per day reduction in the working time, and to give 1s. per week more money than was paid prior to the strike.

Railway Employés.—The engine-drivers and stokers on the Darlington section of the North-Eastern line of railway have struck work for an

grocers and fruiterers, 19; laundries, 12; oil and colourmen, 17; rag merchants, 12; stables, 29; tailors, 15; tinnermen and braziers, 10; tobaccoists, 12; and houses being built and under repair, 20. There were also 2 at firework-makers, 2 at gasworks, 1 hospital, 5 lucifer-makers, 3 match-box makers, 8 marine-store dealers, 1 music-hall, 2 newspaper offices, 1 powder-mill, 8 schools, 1 tar distiller, 5 warehouses, 8 wine and spirit merchants, and 3 work-houses.

Of the 1,338 fires, the causes of 559 were unknown, and 7 doubtful, leaving 742 ascertained causes, amongst which were,—candle, 171; sparks from fire and chimneys, 52; gas, 139 (including 58 from escape of gas, 2 from seeking for escape of gas with lighted candle, and 2 by heat from sunlight burner); airing bedding and linen, 14; children 27 (including 19 playing with lucifers and 8 playing with fire); lucifers, 17; fires blocked up, foul, over-heated, or defective, 78; hot ashes and cinders, 23; lamps, 21 (including 14 paraffine accidents and 1 cat up-setting a lamp); stoves—over-heating, bad pipes, and defective setting, 59; smoking tobacco, 17; light thrown down area, 10; boilers, coppers, furnaces, and ovens, 20; crinoline, 2; fireworks, 2; fumigating bugs (in lodgings), 2; fuses, 3; incendiarism, 4; lime-slaking, 6; naphtha (exploding and upsetting), 2; paraffine, 1; spontaneous ignition, 6 (1 at a marine-store dealer's, 1 at a rag-merchant's, 1 at a printer's, and 1 at a newspaper-office); and wax-tapers, 2.

Fires do not appear to occur especially at any particular seasons of the year.

BRICK PATENTS.

APPARATUS FOR MANUFACTURING AND PRESSING FIRE BRICKS.—C. J. Condracs & J. Field. Dated 17th January, 1866.—Upon the main driving-shaft of the machine, which is driven direct by a steam-engine of suitable power, is keyed a bevel wheel, which, by means of a similar wheel keyed upon a vertical shaft, drives a pair of grinding stones mounted upon a horizontal axis carried by the said vertical shaft. These stones roll upon a circular bed, and are for the purpose of grinding up the clay or other material, which then falls into a receiver beneath. From this receiver the ground clay or other material is carried up and deposited in the pug or puddling mill by means of an endless travelling chain of buckets passing over rollers and driven by toothed gearing from the same main driving-shaft. The clay or other material is kneaded and brought to a proper consistency by means of knives or paddles fixed to a vertical revolving shaft driven by a pair of bevel wheels. Beneath the pug or puddling mill is a cylinder, into which the clay or other material passes by gravitation, the lower end of the cylinder being contracted and furnished with plates which slope towards a square receiver, the bottom of which is divided into two openings, each of the form and size of a brick. Below this receiver is a sliding frame provided with two pairs of moulds, and caused to slide backwards and forwards by means of a chain actuated by a mangle-wheel and pinion driven from the main shaft by a pair of bevel wheels; or the sliding motion may be obtained by a crank. At each side of the pug-mill is a press driven by a crank shaft or an eccentric, in such a manner that their action is alternate, and takes place at the precise moment when the sliding frame is at the full extent of its movement in either direction, and before its motion is reversed by the mangle wheel or crank. The distance between the two pairs of moulds is the same as the distance between the receiver and either of the presses, so that, whilst one pair of moulds is being filled with clay, the other pair is under the action of one or other of the presses, and *vice versa*. As each pair of bricks is successively pressed, they are elevated from the moulds and placed upon endless travelling belts by means of an elevating apparatus driven by a crank or eccentric actuated by the same crank shaft which drives the presses.

BRICK-MAKING MACHINES.—J. H. Johnson. A communication. Dated 29th June, 1866.—This invention relates partly to certain improvements in the brick-making machine for which letters patent were granted to G. Haseltine, 8th July, 1863, and has special reference to that class of machines wherein bricks are made from untempered clay; also to a peculiar arrangement and combination of machinery or apparatus for controlling or stopping and starting brick-making

machines. According to this invention it is, among other features, proposed to place inside the inclined hopper which supplies the granulated clay to the reciprocating mould-plate or frame, a movable partition, vibrating on a fixed centre in the hopper, and actuated by means of a rod and vertical lever, which derive their motion from the reciprocating mould-plate. The object of this arrangement is to change periodically the direction of the current of clay from the set of filled moulds to the set of empty or partially-filled moulds in the mould-plate. The pistons or followers, together with the bricks contained in the moulds, are slightly elevated or started preparatory to expelling the bricks by causing the lower ends of the piston-rods to pass on to fixed inclined planes, whilst the mould-plate is moving in one direction or the other. Heads or flanges are formed on the lower ends of the piston-rods of the two sets or groups of moulds in the mould-plate, and these heads or flanges, as well as the two fixed inclines before referred to, are divided in the direction of motion of the mould-plate, one-half of the contact surfaces being raised or made to project slightly beyond the other half, the raised surface in the head or flanges of the two sets of piston-rods and their corresponding inclines being on opposite sides, so that when the heads of one set of piston-rods traverse over one side of the said inclines, they will be slightly elevated thereby, but will remain depressed whilst traversing over the other incline. At the higher end of each of the fixed inclines there is situated a wheel or pulley of two diameters, the periphery of the larger diameter projecting slightly above the level of the raised side or half of the incline, and being in a direct line therewith, whilst the smaller diameter coincides with the sunk portion or half of the incline. Now as the heads or flanges of one set of pistons pass in succession over this pulley, they will each be still further elevated by causing the corresponding piston to compress the clay in the mould against the under side of a fixed plate which extends across and is in contact with the surface of the mould-plate. There are two of these fixed plates, viz., one just outside each side of the hopper, and, if desired, they may be made hollow, so as to be heated by the introduction of steam therein. After passing over the wheels or pulleys above referred to, the several heads or flanges of one set of pistons enter the groove of a lifter, which serves to expel the bricks from the mould by elevating the pistons flush with the surface of the mould-plate.

IMPROVEMENTS IN THE MAKING OF BRICKS.—H. A. Bonnevillie.—A communication. Dated 2nd July, 1866.—This invention relates to certain improvements in the manufacture of hollow bricks for the construction of ceilings in rooms and apartments. To attain this the bricks are provided at each end of their extremities with a projection, which, when they are placed between the beams that support the flooring, rest upon and are maintained by pits which run along the sides of the beams. The lower part of each brick is so disposed as to cover about half the interior side of the beam, so that when all the bricks are fixed and placed together, their lower surface presents one uniformly plane superficies which forms the ceiling.

MACHINERY FOR MANUFACTURING BRICKS.—D. Nicholls and W. B. Leachon. Dated 4th July, 1866. The object of this invention is not only to form or mould the brick of the required size, but likewise to press the clay during the operation of forming or moulding, and thus to deliver it a pressed brick. For this purpose, on two strong and suitable side-frames, placed parallel to each other, the patentees mount transversely, and on the same horizontal line, two crushing rollers, set at convenient distances apart for the admission of clay, which is furnished from a hopper placed over the rollers, and screwed to the side frames. The rollers may, if desired, have smooth peripheries, but the patentees prefer to have them slightly grooved spirally and in opposite directions—that is, right and left-handed, in order to produce a superior crushing effect when foreign matter is mingled with the clay, and also to prevent the caking of the same. On the front part of the frame they mount the driving shaft, which may be either put in motion by ordinary gearing, or by belt. On this shaft they place a double-grooved cam. In the one groove they place a pin connected to a die rod, which has a reciprocal motion, and works horizontally underneath the crushing rollers, the die being of the same dimensions in length and depth as the required brick. The groove on the opposite side of the

cam has a pin connected by means of a guide rod and pin to a horizontal lever, which in turn is connected to a knife working in half grooves horizontally over the die. The knife cuts off or separates the clay in the mould from that which is in the space between the rollers and the mould. The mould is formed of fixed and movable pieces, the latter being the sides and top of knife. The horizontal lever above named, which is connected to the knife, carries also a pin, which works on the slotted shorter arm of a lever keyed to a cross shaft between the frames. The longer arm of this lever is connected by means of a rod to a bell-cranked lever at the delivering or back part of the machine. The upper arm of this latter lever raises or depresses a door, which forms one of the sides of the mould.

THE BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

A LIST of subscribers and donors to the 31st of March has been issued, from which we are glad to learn that fair progress is being made towards the complete establishment of this Institution. The Committee have already 500*l.* in hand, and a numerous list of annual subscribers. If all who ought to exert themselves were to do so, as only a few have hitherto done, the first annual meeting in August might carry everything before it in a very remarkable manner; and we hope that all interested will rouse themselves to a sense of what they ought to do towards an end so important to the widow and orphan as the establishment of this benevolent institution.

THE INSTITUTION OF CIVIL ENGINEERS.

On April 2nd, the paper read was "A Memoir on the River Tyne," by Mr. W. A. Brooks. It contained a description of the tidal phenomena of the river, in its condition previous to being placed, in 1842, under the charge of the author for its improvement, as contrasted with the phenomena which were found to exist after the completion of the river works. These works consisted, mainly, in the first instance, of timber jetties, subsequently connected by river walls, formed of rubble mixed with ships' ballast, which was brought into the harbour and discharged into the line of the river works, affording an example of how much good might be effected in a port by the judicious application of available materials. The whole of the works, on both sides of a navigation of 10 miles in length, forming what were locally called "The Tyne Improvement Works," were executed out of a revenue applicable to them, not amounting to more than 5,000*l.* a year, or to 80,000*l.*, spread over a period of about sixteen years. Northumberland Dock, inclosing a reclamation from the river of above 70 acres, and the Tyne Piers, had been, or were being executed, out of separate funds.

Much of the interest of the paper consisted of a dissertation upon the cause of the formation of bars at the mouths of rivers, and the means available for their amelioration, according to the well-known theory of the author, that "Bars owe their existence to the conflict which takes place between the current of the early flood tide and that of the ebb, where shoals exist, preventing the free drainage of the backwater during the proper period of the discharge of the ebb."

"GIVE EVERY ONE HIS OWN."

SIR,—Your correspondent, "Mr. S. J. Nichol," has endeavoured to play a part, which I venture to believe he will hardly be equal to sustain. He appears in your pages as the injured originator of a style of roof, the principle of which I have adopted at Peckham and elsewhere; and I have no hesitation in saying that had his memory been better, or had he looked further, he would have said less.

The facts of the case are these.—In 1859, Mr. Nichol, myself, and several other architects, competed for the church of St. Peter and Paul, Cork. My original drawings, which were exhibited both in Cork and at the Architectural Exhibition in London, show the design now called in question. This fact, I humbly submit, is sufficient to clear me from the charge of "plagiarism." The first time I saw Mr. Nichol's drawings was some months after the competition had taken place, when 10th designs appeared in the same exhibition. I was then somewhat struck and aware that the same principle had been adopted by Mr. Nichol; but knowing him to be an architect of some original power, I imagined at the moment that he had both hit upon the same idea. It never occurred to me that he might possibly have seen my church in Eldon-street, Liverpool, which was designed two years previously, and actually

carried into execution towards the end of 1858, almost two years previously to the competition. In order that there may be no misunderstanding, I transcribe copies of two letters from the builders, who tendered for the church altered, to both of which bear out and verify my statement.*

After your readers have perused the above, probably, I shall be the only person who will not be led to the conclusion that Mr. Nichol simply describes his own *modus operandi*, whilst most unjustifiably attaching it to my name.

E. S.—With regard to the insinuation that I was the author of the account of the opening of Peckham Church, I beg emphatically to deny it.

MEPHITIC ATMOSPHERE OF THE UNDERGROUND RAILWAY.

SIR,—The reason of the deleterious state of the air to which your quotation from the *British Medical Journal* refers is, that the condensation of the visible smoke only has been aimed at, and not the removal of the source of evil. The engines are said to consume the smoke, but this is no more than rendering it invisible without lessening its really injurious action on the lungs. What is required is the complete removal of the products of combustion; this could be accomplished by erecting ventilating shafts near the middle of each length of tunnel, and establishing an upward current. Hot expansive steam and smoke would ascend these much more readily than condensed vapours, and the additional expense of the new form of engine might be saved.

A. J. B.

"GIBBS'S FIRE-PLACE LINTEL."

SIR,—There is a short notice of this invention in your number for March 16, p. 197.

The lintel is of cast iron; would a district surveyor allow its use in London? The Building Act, s. 20, r. 3, states that "an arch of brick or stone, or a bar of wrought iron, must be laid over the opening of every chimney to support the breast thereof."

E. W. T.

RAIN THROUGH PORTLAND CEMENT.

THE rain comes through Portland cement on one part of the front of my house when the wind blows very strongly. Is there any wash which will render this no longer possible? and of what does it consist? or will painting be necessary?

C. W.

THE ROAD FROM HYDE PARK CORNER.

SIR,—It has often occurred to me that Mr. Snell's plan of opening a public road from Hyde Park-corner to Stanhope-gate is at once the most obvious, simple, and economical mode of diverting the traffic from the narrow portions of Park-lane. As explained in a recent number of the *Builder*, and as shown on the plan, the proposed road would, I think, be rather an improvement than otherwise to the park itself. I should not presume to suggest a further improvement, were I not encouraged by the approval bestowed upon it by his Royal Highness the late Prince Consort, when named to him some years ago.

By opening out and levelling a small corner of the Green Park, and the unsightly length of road which runs parallel with Grosvenor-place, a thoroughfare on the east side of the gateway might be obtained, and the latter would stand an elevated triumphal arch in the centre of a handsome place, out of which the road to Constitution-hill would pass, at a right angle. The gateway, as it now stands, is an obstruction to the stream of traffic: its awkward position and the narrowness of the gorge leading into Hyde Park-corner, will at once be perceptible to any one approaching it from Grosvenor-place.

I venture to think the suggestion, if worked out by an architect of taste, might contribute still further to make Hyde Park-corner what "it should be."

R. E. EGERTON WARBURTON.

Arley Hall, Northwich.

CHURCH-BUILDING NEWS.

Washington.—The parish church of Washington, near Storrington, Sussex, has been restored. About eighteen months ago the church consisted of a nave, with north aisle, of Early English date. Attached to the west of the aisle was the remnant of an Early English tower; whilst alongside of it stood a tower of the fifteenth century attached to the end of the nave. The chancel was a modern building. The south side of the nave has been greatly modernized, and the roof of the nave and aisle, as well as the north aisle wall, were in a ruinous state. This aisle and the nave have been

rebuilt, with the exception of arches at the side of the nave, and a new aisle has been added on the south side. The modern chancel has been wholly rebuilt, in keeping with the rest of the edifice, the style followed throughout being that of the thirteenth century. The chancel is enriched with a carved reredos of alabaster and marbles of Ippelepe and Galway, and with a stained glass east window (by Messrs. Lavers & Barrad). Both the reredos and window are the gift of Colonel Sandham. The fittings are of stained deal, varnished, and the pavement is in Portland stone, divided into patterns by bands of Minton's tiles. The masonry is of Scamshell sandstone, with the carving and mouldings in the native grey chalk. The architect employed was Mr. Gordon M. Hills, of London; and the builder, Mr. Bashby, of Littlehampton. The total cost of the restoration is about 2,500l. The new schools, which stand at a short distance from the church, have been erected at a cost of between 700l. and 800l.

Carlisle.—The new church of St. John the Evangelist has been consecrated. It has been erected upon a plot of ground in London-road, which formerly formed part of nursery gardens. In 1863 the Dean had succeeded in raising among friends at a distance from Carlisle nearly 1,500l.; and a competition among architects resulted in forty-one designs being submitted to the committee. Most of these were in the Early English style; and the successful competitors were Messrs. Clarke & Son, of Nottingham. The original estimate of the cost of the building was about 3,343l., the contract being let for that amount to Messrs. C. & J. Armstrong, of this city; but the sum did not include certain contemplated extras; and the additional expenses involved for architect's commission, salary of clerk of the works, and other expenses incidental to the work, swelled the total cost to a little over 5,000l. The progress of the work was much delayed in consequence of the strikes in the building trade. The church is built entirely of white stone, from the Fairloam quarry of the contractors. A bell turret at the eastern side of the nave, with a stone spire, surmounted by a vane, gives a character to that side of the fabric. Interiorly the aisles are separated from the nave by pointed arches; the pulpit and reading-desk occupy similar positions at the opposite sides of the church; and a pointed arch spans the entrance to the chancel. Above the nave arches, and forming a feature of the interior, is a clerestory, with triple lancet windows in each bay. The large window at the west end is plain, but the east is filled with stained glass. To the north of the chancel is a vestry-room, 14 ft. by 10 ft.; while on the corresponding part of the building on the south side is an organ-chamber, 16 ft. by 14 ft. The vestry communicates with the north aisle by an arched doorway; while the organ-chamber communicates with the aisle and chancel by low arches resting upon solid columns. The dimensions of the nave, it may be added, are 87 ft. by 24 ft.; the aisles 87 ft. by 13 ft. each; and the chancel, 37 ft. by 22 ft.

Worcester.—St. Nicholas's church has been reopened. The alterations consist of the partial renewal of the roof, which was in a bad state; the high pews have been substituted by open sittings, with kneeling-boards and book-boxes; additional accommodation has thus been obtained. The tall prayer-desk and pulpit have been done away with, and a low reading-desk and new pulpit, in keeping with the other alterations, have been substituted. The high gallery front has been replaced by an open one—an oak arcade, ornamented with wrought-iron work, executed by Messrs. Skidmore & Co., of Coventry, who also supplied similar decorations for the open work of the pulpit and new Communion rail. The chancel and aisles have been laid with encaustic tiles supplied by Messrs. Godwin, of Lugwardine. The side windows have been reglazed, the small diamond-shaped panes substituted by larger ones, which it is intended eventually to surround by a border of coloured glass. The building is lighted by means of bracket burners and a central snail-gas burner, and is warmed by Haden's hot water apparatus. The ventilation will be obtained by means of the sunlight burner. The contractors were Messrs. Wood & Son, and the amount of their contract was 2,000l. Mr. J. W. Hopkins was the architect employed.

Haggerstone (Shoreditch).—The church of St. Augustine, the first of the three new Haggerstone churches, has been consecrated. The style of the church, which is from the design of Mr.

H. Woodyer, of Grafton, Guildford, is Middle Pointed, and it is constructed to accommodate 986 persons. The building has cost about 9,000l., the site having cost in addition 2,000l. A parsonage and boys' school have also to be erected, for which funds are required. The organ is erected by Mr. Willis, a portion only of it being put in the church of the value of 300l. towards which only 100l. have been raised. Most of the ornamental part of the church has been omitted, to be added at a future period, when funds can be raised for the purpose.

Books Received.

The International Horticultural Exhibition and Botanical Congress, 1866: Report of Proceedings. Printed by Truscott & Co., Suffolk-lane, City.

THE International Horticultural Exhibition, held in London from May 22nd to May 31st of last year, was excellently well conducted, and a decided success. The subscribers have had good reason to congratulate themselves on the result, and now they will be presented with a voluminous and valuable report of the proceedings, including various papers on cognate subjects, read at the Congress, and here printed in full. The volume contains between 400 and 500 pages of matter, imperial octavo, and is illustrated by engravings.

VARIORUM.

THE April No. of the *Art Journal* contains, as promised, the first part of the Illustrated Catalogue of the Universal Exhibition, with a wealth of engravings, some of them beautifully executed,—gems of wood engraving. On Sunday last, Mr. S. C. Hall had the honour of presenting the first number of the catalogue to the Emperor, at the Tuileries. We are not surprised to hear that it was most graciously received, his Majesty observing,—"It will be a wonderful work, when completed." The whole number, including the catalogue, for half-a-crown, is a marvellous specimen of cheap goodness.—The *Quarterly* has a clever paper descriptive of Westmoreland, and a paper on Railway Finance, which falls short of completeness.—Debrett's "Illustrated House of Commons," and the Judicial Bench, 1867, (Dean & Son) is a worthy companion of the "Peerage and Baronetage." It includes short biographies of all the members and their armorial bearings.—The April number of the *Revue Artistique et Littéraire* gives an account of the *Union Centrale des Beaux Arts appliqué à l'Industrie* established in Paris, and shows that it will have a wide scope and is destined to play an important part. The number is altogether an interesting one.—"Byron," for sevenpence, and sixteen illustrations (Dickes). It would be preferable at a shilling with better paper. Those who want the complete works must go to Mr. Murray.—The completion of vol. I. of "Scientific Papers read before the Royal Irish Academy," and published in its proceedings (Gill, Dublin, printer to the Academy), has been issued. It contains the title-page and table of contents, with papers on the construction of ancient galleys, by Lord de Ros; on armour-plated ships of war, by G. C. Garnet, M.R.I.A., and others, with plates illustrative of some of the papers.—"Journal of the Bath and West of England Society for the Encouragement of Agriculture, Art, Manufactures, and Commerce," 1866 (Ridgway, Piccadilly). This volume contains various papers of more or less interest, on disinfectants, application of sewage, management of ponds and wells, the Gloucestershire Bacon-curing establishment, the culture of fruit in unheated glass structures, and others, with an account of the machinery and implements at Salisbury in the Show of 1866.

Miscellaneous.

THE INVENTOR OF THE READING MACHINE.—At the Haddington Farmers' Club lately, the chairman stated that he had received about 700l. towards a testimonial to the Rev. Patrick Bell.

THE NEW EXCHANGE BUILDINGS, LIVERPOOL.—The large new room in the new west wing of the exchange, of which we have already given engraved views, has been completed and opened.

* It is unnecessary to print these.—Ed.

WATERWORKS FOR KIDDERMINSTER.—An inspection of the neighbourhood is being made with a view to finding the most eligible part for obtaining a water supply in case waterworks are established here. The estimated cost of the works is 20,000*l.* The income anticipated is 2,850*l.*; working expenses and collection, 733*l.* This, with 1,300*l.* for interest, would make 2,033*l.*, leaving a surplus profit, as estimated by the mayor, of 817*l.*

MEMORIAL OF THOMAS GRAY, THE POET.—It is proposed to erect in the church of Stoke Pogis a memorial window in honour of Thomas Gray, who lies buried in the "country churchyard" hard by, which he immortalised in his verse. A subscription has been commenced, and the committee for carrying out the proposal includes the Duke of Leeds and the Bishop of Oxford. Contributions may be sent to the Rev. Vernon Blake, Stoke Pogis Vicarage.

ST. THOMAS'S SCHOOLS, ISLINGTON.—The new schools of the district parish of St. Thomas, situated in Hemmingsford-road, Islington, have been opened. Earl Granville presided at the ceremonial. They have been erected from the designs of Mr. Coldwell, and will accommodate in the three chief rooms, independently of class-rooms, 600 children in attendance, and so practically provide for the education of about 1,000 children. The total cost of site and buildings is estimated at 4,200*l.*, towards which the Bishop of London's Fund has supplied 1,500*l.*; the National Society, 185*l.*; and the Privy Council, 680*l.* The subscriptions have amounted to 1,356*l.*, leaving a deficiency of about 500*l.*

THE LATE FINE ART AND INDUSTRIAL EXHIBITION AT YORK.—The guarantors of this exhibition have carried into effect the scheme fore-shadowed for the disposal of the surplus which accrued from the Exhibition. They have resolved that the amount shall be invested, and be allowed to accumulate until it shall reach such a sum as, when added to expected donations, will be sufficient to erect a permanent gallery of art and industry in the city of York, and at the same time provide a home for the York School of Art. Nine or ten thousand pounds, says the local *Herald*, will probably be required before the committee will feel themselves justified in erecting any building; but, with some 2,000*l.* as a nucleus, many years ought not to elapse without the completion of the project, and we venture to say that such will be the fact.

DISTRIBUTION OF AWARDS AT THE INTER-COLONIAL EXHIBITION, MELBOURNE.—The order of procedure at the distribution was, first, the reading of a report upon the work undertaken by the jurors; then, a short reply by his Excellency, the Governor of Victoria; and, finally, the presentation by the jurors of their several lists of exhibits. This was to conclude the regular business of the day with reference to the Exhibition, but the opportunity of the presence of his Excellency and a distinguished company was taken to make a presentation of prizes to the successful competitors in the late Rifle Association matches. The commissioners of the Inter-colonial Exhibition have issued a circular, addressed to the various exhibitors, requesting their assistance in "forming the nucleus of a collection of objects, adapted to further the formation of a museum." The South Kensington Museum is to be taken as the model on which it is desirable to form the projected Melbourne Industrial Museum.

ENGLISH REFRESHMENT DEPARTMENT, PARIS EXHIBITION.—The English Refreshment Department for Messrs. Bertram & Roberts, of the Crystal Palace, Sydenham, has just been completed. The interior decorations, which have been done by Messrs. J. & W. Sanders, of Guildford-street, are in the Italian Renaissance style, and the whole of the work has been executed by English workmen. The most important feature is a wall-screen, 66 ft. long by 24 ft. high, which is divided into five bays of arches on coupled columns decorated in black and gold. The bays between the columns are formed with inlaid mahogany, and filled in with panels of embossed glass, which is relieved from the mahogany by gilt mouldings. The archivolts are composed of black and gold intrados and extrados mouldings, panelled between with mahogany, inlaid with ebony and satin-wood. Over the arches a series of inlaid panels run the whole length of the screen, which is crowned by a frieze and cornice of simple design. The work was designed by Mr. W. Young, of Pimlico.

RAILWAY RETURNS.—The traffic receipts of railways in the United Kingdom amounted for the week ending March 30, on 12,745 miles, to 672,704*l.*, and for the corresponding week of last year, on 12,498 miles, to 709,516*l.*, showing an increase of 247 miles and a decrease of 30,812*l.*

PROPOSED PUBLIC HALL FOR SHEFFIELD.—A meeting of gentlemen favourable to the scheme for erecting a public hall in Sheffield has been held in the Cutlers' Hall, the mayor in the chair. The scheme has been considered by the committee and members of the Choral Union. They propose that the hall shall be in a central situation, and capable of accommodating 3,000 persons, and to cost 15,000*l.* This sum they propose to raise on the building society principle—500 shares of 30*l.* each nominal value, payable by instalments, or at the option of the shareholder. The letting of the hall, it is calculated, will realise at least 1,000*l.* a year. A committee was appointed to put the scheme into such a shape as would justify them in seeking the assistance of the public. One-fifth of the capital required would be contributed by the members of the Choral Union.

THE MAYER MEMORIAL, LIVERPOOL.—At the last meeting of the town council the proceedings of the library, museum, and education committee were read, comprising a recommendation to adopt the following resolutions, viz.—

"That the munificent donation by Mr. Joseph Mayer to the town of Liverpool of a collection of art treasures of great value, and in many respects unrivalled, requires at the hands of this corporation such an acknowledgment as shall not only mark the present public appreciation, but which may commemorate to future generations the taste and liberality which could accumulate such a collection, and the generosity which could devote it to the public benefit."

"That for this purpose a statue of Mr. Mayer be erected in St. George's Hall at the expense of this corporation, and that the library, museum, and education committee be authorised to take the necessary steps for carrying out this resolution."

Mr. Picton delivered an able and interesting speech in support of the resolutions, which were agreed to by acclamation.

A TIMBER-BORING INSECT PLAGUE IN AUSTRALIA.—A new and extraordinary insect plague is mentioned by the *Wood's Pencil Leader*. It says that a small species of beetle, of a most peculiar construction, arrived in myriads at the Alpine Brewery a few days before, and set to work riddling the beer-barrels. The proboscis forms an excellent gimlet, with which the little insect penetrates the hardest wood in an incredibly short time, while the hinder portion is shaped like a shovel, and is employed in getting rid of the sawdust. They make clean holes through the staves; and some of the full barrels are leaking in fifty places. In a wine-cellar thousands burrow into the wine and spirit casks. As soon as they get nearly through the wood, the liquor begins to ooze out, and the animal, of course, gets killed. Every description of box or barrel is full of them, also the doors and timber in the building. Almost every store in the township is infested with these mischievous insects. The head is red, with a proboscis somewhat resembling a parrot's bill; and the body is like a small black glass bugle broken off at the end; the whole length, one quarter of an inch.

THE ABBOT MEMORIAL SCHOOLS, GATESHEAD.—Ten sets of competitive plans for the erection of the Abbot Memorial Ragged and Industrial Schools, at Gateshead, have been on private view in the Hall of the Gateshead Mechanics' Institute. The competition originated in the offer of Mrs. Abbot to erect a ragged-school building, in memory of her late husband, and his father (of the Gateshead Iron Works), at a cost of about 2,000*l.* The sub-committee to whom the matter was entrusted offered a premium of 25*l.* for the best design,—the building to include accommodation for educating, boarding, and lodging 85 boys and 25 girls, with day schools for 300 boys and girls, master and matron's residences, work-rooms, and other necessary appliances of Ragged and Industrial Schools. It was understood that no money would be expended on ornamentation, and the outlay was limited to about 2,000*l.* The lowest estimate in connexion with any of the plans sent in is, however, 2,500*l.*, and it is believed that it would take double that sum to erect a building from some of them. Nearly all have resorted to various modifications of Gothic. The competitors are Messrs. Austin & Johnston; Robert Fairbairn, of Gateshead; W. L. Moffatt, of Edinburgh; John Johnston, Thomas Oliver, S. Oswald, J. G. Varley, A. Swan, and J. E. Watson, all of Newcastle-upon-Tyne.

THE LAW COURTS DESIGNS.—Several correspondents inquire if the designs can still be seen. The exhibition is, strictly speaking, now closed to the public; but we have reason to believe that persons applying would not be refused admittance.

INDIAN JOINT-STOCK COMPANIES.—It appears from a return recently printed in the *Calcutta (Official) Gazette* that eleven joint-stock companies were registered in Bengal during the past year, with an aggregate capital of 1,164,000 rupees. During the same period twenty-four companies, possessing a total capital of 20,216,500 rupees, were wound up. Three of these latter were steam-tug associations, and a like number were established for the purpose of promoting steam-navigation.

THE WELLINGTON MONUMENT FOR ST. PAUL'S. In the Commons Mr. J. Goldsmid asked the First Commissioner of Works when the Wellington statue for the erection of which in St. Paul's Cathedral 20,000*l.* were voted in 1853, was likely to be finished. In reply Lord J. Manners said this was more than a mere statue, and, when finished, would be one of the largest monuments erected in any church in England during the present century. It was now in a state of satisfactory progress, and there was every reason to hope that it would be completed in about two years from this time. We have, privately, a good account of the model.

SERVANTS' CLUBS.—A prize of 5*l.* is offered, through the medium of the Working Men's Club and Institute Union, for the best essay on the subject of servants' clubs. The points to be kept in view are,—1st. A history of the clubs from their commencement to the present time—their rules, and general mode of operation; 2nd. a statement of the evils resulting from the present system of carrying on these clubs; and, 3rd, suggestions as to the best means of placing them on a better footing, for the benefit of the large class of persons directly interested, and for the promotion of a more satisfactory relation and understanding between employers and domestic servants; reference being made to working men's social clubs. The Earl of Shaftesbury, Mr. Hodgson Pratt, and the Rev. Henry Solly are to act as adjudicators.

PUNNING MOTTOES.—Looking over the pages of "Debrett's Illustrated Peerage," the number of families who introduce the family name into the motto borne with their arms is very noticeable. For instance, we have the Duke of Devonshire, whose family name is Cavendish, taking for his motto "Cavendo Tutus" (Safe by caution). Lord Lyveden (Vernon) takes "Vernon semper viret" which may be translated as "Vernon always flourishes;" or it might be written, *Ver-non semper viret* (Spring does not always flourish). This motto is also Lord Vernon's. Then we have Lord Byron, "Crede Byron" (Believe Byron); Lord Lyons, "Noli irritare leones" (Do not rouse the lions); the Duke of Buckingham (Temple), "Templa quam dilecta" (How beloved are thy temples); Earl of Ellenborough (Law), "Compositum quis fasque animi" (Law and equity); the Earl of Clan-carty (Le Poer Trench), "Dien pour la Trench: qui contre?" (God for the Trench: who is against him?); Earl Fortescue, "Forte scutum salus ducum" (A strong buckler is the safeguard of generals). This motto is said to owe its origin to a Sir Richard Forte (from whom this family claim descent) having protected William the Conqueror at the battle of Hastings, by bearing a strong shield before him. The motto of Lord Fairfax is "Fare fac" (Speak and do). The barony of Fairfax, one of the oldest in the Scottish peerage, is involved in much obscurity, the residence of the present peer, as well as his brothers and sisters, being unknown. The late peer seems to have been a clerk in the Supreme Court of California. One of the best family mottoes is that of Earl Mansvers, whose family name is Pierrepont, which is thus written in the motto, "Pie-reponte-te" (Repouse in pious confidence). In Lord Montagu's motto the pun is on the title, the family name being Spring Rice, "Alte fert aquila" (The eagle mounts with me on high); Lord Fermoy (Roche), "Mon Dieu est ma Roche" (My God is my Rock); the Earl of Enniskillen (Cole), "Deum cole, regem serve" (Worship God, serve the king); the Earl of Abergavenny (Nevill), "Ne vile velis" (Form no mean wish); the Earl of Hopetoun (Hope), "At spes non fracta" (But my hope is not broken); the Earl of Westmorland (Fane), "Ne vile fano" (Disgrace not the altar).

THE BATTLE OF LIFE.—A clerk being needed in the office of building surveyor to the Corporation of the City of Manchester, the applicants, we are told, were 123 in number.

HOUSES FOR THE LABOURING POOR.—Mr. Ayton having charged the Corporation of London with objections to this Bill, a notice of motion has been given for a "Return of the number of houses or dwellings for the labouring poor erected or adapted by the Corporation of London in the last ten years; the amount laid out in respect of the same; and the returns in the way of revenue up to the date of making the return." It will be shown by this return that the Corporation has already provided three blocks of buildings of this nature.

MOOSAIC WORK, FULHAM PALACE.—The new chapel in Fulham Palace has just received a mosaic picture at the east end. The cartoon was made by Mr. Alexander Gibbs, of London, under the direction of the architect, Mr. Butterfield. The mosaic was executed by Salvati & Co. The subject represented is "The Adoration of the Shepherds at Bethlehem." It is treated throughout as a surface, without any attempt at perspective, so as not to interfere with the architectural idea of a solid wall. The centre figures are those of Our Lord in the manger, the Virgin Mary, and St. Joseph. The Shepherds occupy the space on either side. The drapery is in most instances finished or fringed with gold, or colours, in a manner which adds considerably to the appearance of finich. The background is blue, studded with gold stars, and relieved with horizontal lines.

PROJECTED PUBLIC WORKS IN BRISTOL.—A correspondent, signing himself "W. H.," sent an interesting communication to the *Times* and *Mirror*, relative to works of a public character which have been projected and are likely to be prosecuted in Bristol. After briefly referring to the various projects, he summarised their probable cost thus:—

New joint terminals.....	£100,000
Street improvement schemes.....	250,000
New Theatre Royal.....	15,000
New Literary Institute and Library.....	10,000
Improvement of river and docks.....	200,000
New Avonmouth Dock.....	300,000
New railway (under the Downs).....	160,000
Harbour Junction Railway.....	115,000
New wharf at Wapping.....	50,000
New Post-office.....	10,000
New hotel in Broad-street.....	35,000
Cathedral restoration, &c. (say).....	15,000
New Congregational "Cathedral".....	8,000
	£1,224,000

or, with the extras which attach, the sums "intended to be spent by Bristol in large and important works amount to a million and a quarter." Then, in addition to these public works, a thousand houses are being or about to be erected on Fyle-hill; a hundred houses are proposed to be built at Ashley-hill; and at Russell Town, Lawrence-hill, hundreds of houses are springing up in every direction.

THE TIME AT THE BOAT RACE.—Every one has heard by this time that the time occupied in the Oxford and Cambridge Boat Race, the other day, was taken by Benson's chronograph, but they may not know what the chronograph is. Well, then, it consists of an ordinary quick train lever movement on a scale sufficiently large to carry the hands for an 8-inch dial, and with the addition of a long seconds hand, which traverses the dial, instead of being, as usual, just above the figure six. The peculiarity of the chronograph consists in this second hand and the mechanism connected with it. The hand itself is double, or formed of two distinct hands, one lying over the other; the lower one at its extreme end is furnished with a small cup or reservoir, with a minute orifice at the bottom. The corresponding extremity of the upper hand is bent over so as to rest exactly over this puncture, and the reservoir having been filled with ink of a thickness between ordinary writing fluid and printer's ink, the chronograph is ready for action. The operator, who holds tightly grasped in his hand a stout string connected with the mechanism peculiar to this instrument, keeps a steady look out for the fall of the starter's flag. Simultaneously with the start of the race the string he holds is pulled by him, and the upper hand immediately dips through the reservoir in the lower and leaves a dot or speck of ink upon the dial. This is repeated as the boats or horses pass the winning-post, so that a lasting record is afforded by the dots on the dial of the time, exact to the tenth of a second, which is occupied in running the race.

REBUILDING CHAPELS.—Where property is held by trustees to be employed in the repairs of a chapel, and any surplus is to be distributed among the poor of the parish, the trustees are not authorised to rebuild the chapel, instead of merely repairing it, although it is in a very dilapidated condition, and unequal to the wants of the inhabitants, and the trust estate has increased very largely since its first institution. This was the decision of Vice-Chancellor Wood upon a question raised under "The Booth's Charities Act, 1846," containing provisions for the repairs and maintenance of Trinity Chapel, Salford.

VALUE OF LAND, SOUTH KENSINGTON.—Mr. Humphreys, the Middlesex coroner, and a special jury, have settled a compensation case, "Lord Kensington v. The Metropolitan Railway," for a piece of freehold land—the sixteenth part of an acre—at Cromwell-lane, Brompton. On one side the value was said to be about 2,000l., and on the other side about 800l. Mr. Hawkins, Q.C., and Mr. Morgan Lloyd were for Lord Kensington; Mr. Lloyd and Mr. Holloway were for the company. The assessor reminded the jury that the value put on it on the part of Lord Kensington was about 30,000l. an acre, and his lordship had sold to the railway property to the amount of 150,000l. at the rate of 4,500l. an acre. The jury awarded 1,350l., after an hour's deliberation.

PUBLIC-HOUSE CLOSING ACT.—From a parliamentary paper just issued, it appears that fifty-four towns have adopted the Public-house Closing Act, 1864. This Act it may, perhaps, be remembered provides that no public-house or refreshment house shall be open between the hours of one and four o'clock in the morning, unless by special permission from the local authority. The Act is compulsory within the limits of the Metropolitan Police district; but clause nine gives the power of adoption to corporate boroughs and improvement commissioners. Manchester was the first to take advantage of clause nine; and it was followed by Preston, Great Yarmouth, Birmingham, Brighton, Salford, and Liverpool. By the end of the year it had been adopted by sixteen towns. In 1865, thirty, and in 1866, eight towns took advantage of it. The Act does not apply to railway refreshment rooms.

LOCAL BOARDS OF HEALTH.—The question in the case of Hattersley v. Burr arose upon a conviction under the Local Government Act, 1858. A local Board had, under the 34th section of that Act, made a bye-law requiring a person intending to erect a new building to give a month's notice to the Board of his intention, and to deposit plans; and a person who had given notices commencing to build within the month, and without approval of the plans by the Board, had laid an information against him for contravening the bye-law, upon which he was convicted. The Court of Exchequer held, upon these facts, that the Board had no power to make such a proceeding an offence by their bye-laws, and that the person so giving notice had a right to commence building when he pleased, subject to the Board's right to pull down or alter his building, if built in contravention of their bye-laws.

TENDERS

Accepted for villa residence at Ellongton, Yorkshire. Mr. William Kirby, architect:—

Bricklayer and Plasterer's Work.	
Kirby.....	£350 0 0
Mason's Work.	
Wilson.....	125 0 0
Carpenter and Joiner's Work.	
Curtis.....	200 0 0
Slater's Work.	
Dawber & Son.....	29 10 0
Plumber, Glazier, Painter, and Ironmonger's Work.	
Halliday.....	131 10 0

Accepted for National School at North Ferry, Yorkshire. Mr. William Kirby, architect:—

Bricklayer and Plasterer's Work.	
Kirby.....	£139 0 0
Mason's Work.	
Heron.....	94 0 0
Carpenter, Plumber, Glazier, Painter, and Ironmonger's Work.	
Browne.....	316 0 0

For works at Baker-street, Enfield, for Alderman Chas. Mr. Thomas J. Hill, architect:—

Patman, Brothers.....	£510 0 0
Cushing.....	490 0 0
Farhead.....	445 0 0

For works at Tottenham, for Mr. W. Robinson. Mr. Thomas J. Hill, architect:—

Anley.....	£1,028 0 0
Baley.....	985 0 0
Bayes.....	895 0 0
Chapman.....	895 0 0
Philips.....	895 0 0
Patman, Brothers.....	818 0 0

For additions and alterations to 64, Harley-street. Mr. C. Eales, architect:—

Stevenson & Watson.....	£1,775 0 0
Brace & Son.....	1,650 0 0
Clemence.....	1,548 0 0
Clarke & Mannoch.....	1,507 0 0
Philips.....	1,498 0 0
Saunders.....	1,462 0 0
Scrivener & White.....	1,453 0 0

For building a public house in the Albert-road, Peckham, for Messrs. Day, Roakes, & Sons. Mr. Elkington, architect:—

Shapley & Webster.....	£1,398 0 0
Eustace.....	1,383 0 0
Tarrant.....	1,379 0 0

For repairs and decorations of the interior of Stranrair House, Maids Hill. Mr. Francis Cadogan, architect:—

Gibbs.....	£2,300 0 0
Sykes.....	207 0 0
Goodwin (accepted).....	215 0 0

For four semi-detached villas at Leyton, Essex. Mr. W. A. Longmore, architect:—

Walter.....	£1,676 0 0
Hedges.....	1,584 0 0
Gibbs.....	1,250 0 0
Elms (accepted).....	1,240 0 0

For building lodges, gateways, entrances, and enclosing Finsbury Park. Quantities supplied by Messrs. Rake & Rowell in conjunction with Messrs. Curtis & Son:—

Foster (accepted) Southwark.....	£3,930 0 0
" " Finsbury.....	3,100 0 0

For alterations and additions to St. Peter's Schools, Southwark. Messrs. Strudwick & Mennie, architects:—

Brass (accepted).....	£1,093 0 0
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For building new rector-house for the West Ham Gas Company. Mr. E. H. Thorman, engineer:—

Ashby & Sons.....	£3,523 497
Munday.....	3,511 167
Rivett.....	3,493 160
Perry & Co.....	3,237 110
Hedges.....	3,060 —
Hill & Kedell.....	3,124 30
Emor.....	3,168 270

For erecting a house in the London-road, Enfield, for Mr. Easter. Mr. F. G. Widdows, architect:—

Bayes.....	£1,150 0 0
Widdows.....	1,115 0 0
Patman, Brothers.....	1,067 0 0
Field & Sons.....	900 0 0

For alterations to No. 80, Bishopsgate-street, for Messrs. Jackson & Townson. Mr. F. G. Widdows, architects:—

Axford & Whillier.....	£563 0 0
Ashby & Sons.....	464 0 0
Emor.....	480 0 0
Child & Son.....	425 0 0

For new brewery at Maidenhead, for Mr. W. Nicholson. Mr. C. Cooper, architect:—

Vickers.....	£2,619 15 0
Worcebridge.....	2,627 10 0
Silver & Son (accepted).....	2,569 0 0

For works at 81 and 83, City-road. Mr. Thomas J. Hill, architect:—

Anley.....	£487 0 0
Perry.....	480 0 0

For new porch at All Saints' Church, Wistow, near Selby. Mr. William Kirby, architect:—

Lead Roof.....	£480 0 0
Slate Roof.....	124 2 6
Triplady.....	112 12 0
Padbury (accepted).....	104 12 0

TO CORRESPONDENTS.

J. W. W. (a good floor can be made with Portland cement)—Bury all alum to keep wet out of walls if we attended to all requests we should have to repeat the rec'ps every week. Inquirers must look out for themselves.—F. M. N. (quarrelled)—Having appeared elsewhere, N. & B. (send your own particularities)—I. L. (if an architect charge only for his drawings he would be obliged to deliver those drawings to the proprietor before he could receive)—J. G. (next schooled)—W. R. G. & G. M.—R. W. & R. B.—Mrs. R. A. M.—P. C.—T. F. W.—J. W.—W. H. W.—W. K.—F. M. M. F. Constant Reader—X. Y. Z.—T. R.—B. & M.—W. C. G.—J. B.—B. & Son—W. A. L.—A. Develin—J. G. N.—C. F. H.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

N.B.—The responsibility of signed articles and papers read at public meetings, rests, of course, with the authors.

Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m., on THURSDAY.**

The Publisher cannot be responsible for ORIGINAL TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

The Builder.

VOL. XXVI.—No. 1264.

Easter at Westminster.

HERE is no place nor room for sermons in our columns, not even for those with which stones are said to be vocal. Other stones than those of Venice may be full of a significance higher than that of art, but it is our task only to present to the mind the features of the outward form, leaving the inner lesson, when there is one, to become clear by its own light; as Æsop was wont to lay before his auditors the brief

outline of ancient fable unincumbered by the one-sided "moral," and the yet more obnoxious "application" by which his admirers have made his memory to rot. It is not as indulging in an exception to so wise a rule that we refer for a moment to Easter morning at Westminster, an occasion which few who had the privilege of witnessing it can lightly forget. It is neither of the worship, perfect as was its rendering of that most perfect of earthly liturgies, the full choral cathedral service, nor of the sermon, as regarded in its religious or moral aspect, that we wish to speak. But those who love the most noble of our ministers must rejoice to feel that Westminster has found a tongue. Dean Stanley, though apparently in feeble health, read with a low clear voice so suited to the pitch of the building,—to the acoustic state to which the performance of daily service seems to have educated the very echoes of the place,—that hardly a word was lost even by the distant auditors. On a former occasion, to which we referred at the time of its occurrence, when a meeting was held in the Chapter-house, with the object of promoting its restoration, under the presidency of the very reverend Dean, a somewhat hesitating and uncertain manner very much marred the force of his remarks. But in the pulpit this defect entirely disappears. While nothing can be further from a dramatic style of reading than are the tones of Dean Stanley, nothing can be more appropriate to the spot, nothing could more fully command the breathless attention of a large and reverent congregation. To those of us who can remember what the service at Westminster was twenty or thirty years ago, the improvement is both a wonder and a delight. Language simple and precise, but full of picturesque colour, breathed the very spirit of the spot. One or two references to Jerusalem, by the simple use of appropriate—exclusively appropriate—adjectives, told those who knew to what the words referred that the speaker had been himself a pilgrim to the Holy City; but it was in the few yet stirring references to our own history, to the saints and kings who had founded and restored the walls, to the great names of which the memorials are sculptured around, to the long line of English monarchs crowned in that sacred spot, that the Dean unwittingly told how his dreams had been haunted by the genius of the place, and how his

thoughts and his affections were hallowed by the shadow of the cloisters. We are promised a history of the Abbey from his pen. The purely historic tone of a portion of his address—the quiet enunciation, without one controversial word, but with a weight sufficient to silence controversy, of those portions of the history of the Eastern and Western Churches that bore upon his subject,—the references, on such points, to the history and custom of the Abbey itself, all these were given in a tone which, if maintained in the promised history, will make it worthy of the subject, and the noblest of monuments for its author.

There is, perhaps, no spot on earth so deservedly dear to those of us who believe that the present is the issue of the past, as is the Abbey Church of St. Peter's at Westminster. Dating its consecration in the very year of the Norman Conquest, it is the last gift of the Saxon dynasty to the English people. The quaint and mutilated carvings illustrative of the life of the Confessor have more reality as representations of a past and almost forgotten national life than are readily to be found elsewhere. The characteristic form of arch identified with the second founder of the Abbey, carries back the imagination to the time when our kings first became truly and exclusively English sovereigns by ceasing to be French peers. The very helmet and shield of the Victor of Agincourt rest high above his tomb. The architectural and social revolution of the days that preceded and prepared for the union of two hostile sceptres in the fated hands of the House of Stuart, is represented by one of the finest buildings in the world, which, gem as it is in itself, yet harmonises with the more ancient structure. The features of Elizabeth, calm, clear, and noble, seem to bear incontrovertible testimony to the fact that the estimate of her character that lingers in the tradition of the people is more true, as well as more exalted, than that which is to be formed from the perusal of the pages of her latest historian. Above all, the sacred stone that forms the seat of the coronation chair, if no longer regarded as a palladium, is yet a relic of unrivalled interest, connecting us, on the one hand, with the shadowy line of kings reaching far beyond the memory of the "gracious Duncan," and on the other with the pride of the present and with the hope of the future. A fitting "History of Westminster Abbey" would be a grand book in the English language.

So much has been done for the Abbey of late that we are hopeful in wishing for something more. The carved work of the choir has assumed tints and echoes suited to the harmony of the building. Colour is creeping over the windows. The organ, removed from its obstructive position between choir and nave, fairly rivals that at St. Paul's. The noted irreverence of the service is a thing of the past. Vergers and beadles are more reverent, more intelligent, and more civil than in earlier days. The exhibition-air of the building has vanished with the surrendered twopennies. At the close of the choral part of the service on Sunday morning, when old associations led one to expect a rush to the doors, hardly an individual stirred, unless it were to gain a step or two towards the pulpit. And the reredos, with its richly-carved cedar table, and its lace-like canopies of tabernacle-work, is a noble screen. We do not wish to pause to criticise now this addition to the adornment of the Abbey, but we cannot pass the occasion to remark that the little scenes in the Gospel history which are represented on the frieze are hardly worthy of the material or of the position. Reproductions, no doubt, in taste, if not actual copies, of wood carvings of a very low style of art, they would have been tolerable, perhaps admirable, if they had illustrated the life of the Confessor, and replaced those inimitable groups which are crumbling in

the chapel of the founder, and which ought, if only from respect to the memory of a great man whom the present age is too busy to appreciate, to be perpetuated by the sculptor. As it is, they tend, in our judgment, to spoil the screen, and this illustrates that which we wish to suggest. Cannot the funds of the Abbey or the liberality of the public support a special curator of the monuments,—a man who should be, not a vergers, but an artist? The preservation of the memorials treasured in the Abbey is a subject in some respects requiring different treatment from the care of the fabric itself. The question of preserving the statues from the corrosion of accumulated dust is not altogether simple. On the one hand, it seems undeniable that great injury, first to the colour, and then to the texture, of the marble, is caused by accumulated dust, and in the more delicately-wrought statues the ill effect is the most marked. We can point to one, by no means of this class,—the effigy of the Duke de Montpensier,—in which the purity of the colour of the marble is rapidly departing. On the other hand, the removal of the dust should be entrusted only to artist hands. The ill-directed energy of a single broom might do more injury than a century of neglect. It is not from the process of cleaning, however, that the most observed piece of sculpture in the Abbey, the terrible "Death" of Roubiliac, has been deprived of its jaw. It seems to have been the sacrilegious hand of some casual visitor that inflicted so great an outrage. Is it not the intention of the authorities to take the best advice as to restoring so essential a part of this wonderful figure? For such, and similar questions, it would seem that the presence of an artist as curator of the monuments is demanded. No less important would be the counsel of such an officer in case of fresh applications for room for monuments. Full as Westminster is, we are not so convinced of the degeneracy of the day as to hold that the list of great names to be commemorated on its walls is closed. It is impossible to look at many existing monuments, which rather disfigure than adorn the walls, without a painful impression of the injury to the effect of sepulchral statuary which results from a want of rapport between the sculptor and the architect. The former may design a group or a cenotaph, worthy of admiration in his studio, and simply distracting when fixed in some chance location in the Abbey. As to the past, it is, perhaps, unsafe to attempt amendment; but, as to the future, offences against taste may be avoided, although they can only be avoided by establishing a relation between locality and design before the latter be carried into execution. Especially do such remarks apply to those monuments which are not works of art, properly so called, but simple memorials. With the exception of the very noblest triumphs of the sculptor, such simple slabs appeal most powerfully to the imagination. If the Argyll "Eloquence" be the finest instance of embodied poetic imagination in the Abbey, the second place must be given to the epitaph of Spenser. Now there can be no reason why space should be wasted, architecture should be outraged, and the sense of awe and of reverence should be put to flight, by the vagaries of the stonemason. A bas-relief of a sarcophagus, with an urn on the top, an unmeaning canopy—a hideous chernub, serving only to give prominence to an epitaph,—such efforts to call attention, injure alike the taste of the living and the memory of the dead. The usual style of mural tablets resembles the violent efforts by which the advertiser covers neglected buildings and decorates railway stations, rather than seems to be the result of a feeling of love and honour for the departed. What reason is there that memorial slabs should not be inlaid into the walls of churches as part of the original design, to be inscribed, as occasion demands, with the names of the loved

and honoured ones whose ashes are laid to rest beneath the shadow of the sacred building? Serial inscriptions of this kind, like those of the names of benefactors to be found in some of our older churches, would harmonise with the character of the place. Quite sufficient distinction could be given to each name by a proper regulation of type. Each new epitaph would take its rank among the memorials of departed worth, or virtue, or beauty, in honourable fellowship, instead of endeavouring to protrude its recent grief by violent and inharmonious ugliness. Our churches would gain in every way; the memory of the departed would no longer be turned into an offence against the taste of the living; and those who, being dead, yet speak from the walls of minster and of cathedral, would speak in a tone of grand and consistent harmony.

ARCHITECTURAL ARTS COURT, PARIS INTERNATIONAL EXHIBITION.

On the general show of art-workmanship we must speak at present with some reserve, as it is in somewhat of an incomplete state; and recollecting the labours of the committee, we wish to speak with due consideration. We know what unforeseen obstacles have over and over again started up, and had to be overcome by their perseverance—how some who promised to contribute have failed at the last, and have but blank spaces to show;—but, in fact, while we congratulate these gentlemen on what has been accomplished, we condole with them (and we are sure they will accept it all in good part) with what has not been done. For there are names in all the classes undertaken to be represented by this committee which are altogether wanting, and the owners of which we feel sure will in the end regret that they did not bestir themselves in time to secure a place in the Architectural Arts Court.

For whatever may be said of the building itself, or the particular arrangements of the whole, there can be no doubt that this year will be in speech in the history of nineteenth-century industry and art, and that the Exhibition of 1867 will remain as a fact—and perhaps no one yet knows how important a one—in the minds of at least the present generation.

To particularise, however, we may commence by stating that of the workers in metal we have Hardman, Hart, Skidmore, Deubam, and Barnard, Bislop, & Co., all good and well-known names, and those will be found in the special catalogue, for the British department, under Group V., Class XL., "Mining and Metallurgy;" with the exception of Hardman, who is to be found under Group III., Class XXI. This will show that once low scattered would have been the British architectural art-workmanship in metal had they not been grouped in this manner (a reference to each name is made in this catalogue, to the Architectural Court, though there seems to be no reference special to this court in the list, &c., &c.); and also how rigid, to use no stronger word, the classification must be which admits of only one notion with respect to a material, viz.—its origin, which idea is in effect lost entirely when the material is so wrought by the hand of man as to become a work of art. It would show its absurdity to carry this classification one step further, and range oil paintings amongst the oleaginous productions of the earth. There are four exhibitors of ceramic and other tiles, viz.—Minton, Maw & Co., Godwin, and the Architectural Pottery Company, at Poole. Of these Messrs. Minton & Maw have an equal space, and fill it very well, but only small spaces, and these with not especially good specimens, are filled by the two others mentioned. All these in the official catalogue are placed under Group VI., Class LXV., "Civil Engineering, Public Works, and Architecture."

Ramsden's patent concrete stoneware, Blashfield & Paul and a terra-cotta, the stone carvings of Konyth & Seymour, and the mosaics of Jesse Rust & Co., come also under the same class and group, as also do the "prize objects in arts cognate to architecture," exhibited by the Architectural Museum, but which, however, we have not yet discovered, although they are mentioned in the official catalogue.

The Group III. of the general classification, which had been supposed to include the foregoing works as articles of "Furniture and other objects for the use of dwellings," will be found to include the rest of the works exhibited in this

court, though under various classes, and in the first of these, Class XL., appears only the name of the Hon. Secretary himself, Mr. C. F. Hayward, who exhibits a carved cabinet, designed by himself. We shall best progress with our description if we mention at once that it is of oak, elaborately carved by Baylis, and seems a very far from giving a flimsy effect, as is so often the case. The ends of the cabinet are decorated with paintings by Dante Rossetti, but are so carefully subordinated to the whole that they are not too obtrusive. It is a great thing to and we congratulate the designer on this as well as the more mechanical, but still excellent, execution of the top, which is of enamelled slate, by Magnus, of Pimlico. Having said this much, we need not refer to this class again, in connexion with this Architectural Art Court, although some of the objects to be hereafter described would seem more appropriately included in this class, which is otherwise composed of the works of our chief well-known furniture manufacturers, who, though not exhibiting in connexion with the Architectural Committee, show some excellent work, which might well be placed in their court. Under the head of "Decorative Work," Class XV., we find Messrs. Clayton & Bell exhibit their cartoon for the mosaic picture, since executed by Salvetti, and probably seen by most of our readers last autumn, in the Jerusalem Chamber at Westminster, awaiting the necessary preparations for fixing it as part of the reredos for the Abbey. This is hardly the place to criticise the design, so we pass on to mention the names of Harland & Fisher, and Heaton, Butler, & Bayne; also in the same class, under the head of "Church Furniture, &c.," we find Jones & Willis, Cox & Co., and the Rev. Robert S. Baker, who most unaccountably heads the list of Architects' and Architectural Drawings, in Group I. of the official catalogue, with the very same object—a carved lectern! but to bear him company in this anomalous position we notice the name of Woollams (W. H. & Co.), who exhibits some special paper decoration, designed by Mr. Digby Wyatt and others.

Class XXVI., with the general title, "Leather-work, Fancy Articles, and Basket-work," has a separate division of "carvings," and herein we find the names of Baylis, and Kendall of Warwick, both well-known wood-carvers; the one exhibiting his skill in the working out of Elizabethan ornament to a clock-case, and the other in a natural ornamental foliage, &c., in panels. The incongruity of this classification is evident.

To complete our abstract list we ought to have mentioned before the names of Strode & Co., and of Pritchard (Llandaff),—or rather, Leaver, of Maidenhead, whose work in metal, from the designs of that gentleman, we shall speak of hereafter, but whose names are altogether out of their proper places in the catalogue.

Of late years, and under the special guidance of those architects who practise chiefly in the Medieval styles, no branch of art development has progressed further or more vigorously than metal-work. The art of the smith is essentially one of strength, and the idea of human power as well as skill is indissolubly connected with works in iron and brass, from the time of Tubal Cain down to Quintin Matsys, and to the present hour. And we are happy to know that what we see of exhibited cunning workmanship in these materials is but a tithe of what may be found, and is cultivated every where in England. The village carpenter may show little taste, and the village painter less, while the country carver, but seldom rises to any special skill, notwithstanding the opportunities of study in the objects around him; but the village smith is seldom wanting in sturdy honest work, and is very frequently capable—when directed—of the highest art cultivation. We are not surprised to find, therefore, seven metal-workers to four carvers—including stone and wood—exhibitors in this court, though each exhibitor takes his own peculiar line. Messrs. Deubam might have done more than exhibit a single specimen, showing rather their capability of work than their special skill. We do not admire their brass eagle lectern as a whole, nor the eagle itself in particular. The painting of the base is no improvement to the form adopted. This, by the way, is but one of many eagles which seem to have found a nest in this court, and to such an extent do they flourish that there is some chance of the whole group being re-

tained in France to add to the necessary stock of that bird required to be produced at the shortest notice. In truth, however, it has been remarked that it is complimentary of British architects to exhibit no very fine specimens of the "national" birds. Messrs. Barnard, Bishop, & Co., of Norwich, have a case of delicate wrought-iron work finished in black. One specimen, forming a small toilet-table, with frame at the back for a looking-glass, is of small iron bars, bent when cold; but, though very like an imitation of basket-work, the colour is not so favourable, and gives an unfinished look to what should be a very finished article of furniture. A stand for a vase, with a thin stem ornamented with beaten-out leaves, is very delicate in treatment, and, like many other articles in this case, is from the designs of Mr. Jeckyll. When a base or foot is made as this is, however, of two pieces or scrolls of wrought work not welded together, but connected with a wrought band, however "truthful" the construction, we may be sure it will become loose before long, and the stand be unsteady. Altogether we commend the works of Messrs. Barnard. We have already spoken of some elaborate gates exhibited by them in another part of the building, which show their skill in other and more important works, and are a great improvement on what they exhibited in 1862.

Of course Messrs. Hart & Son make a fine show,—they always do,—and always some new combination of good workmanship. Here is an important work in the shape of a candelabrum, 14 ft. or 15 ft. high, wrought out in the most conscientious manner, and built up, coloured, and painted on the spot by the designer, a young man named Rice, in Messrs. Hart's employ. Then we have besides a variety of iron and brass work; a considerable show of church plate and articles of domestic use not calling for special remark, as we are so well acquainted with them at home, but which will be doubtless objects of great interest where they now are.

Some portions of Messrs. Skidmore's work, which would have been of the greatest value in this court, and which would have adorned the model of the work they are intended to adorn, viz., the Prince Consort memorial, are, as we have previously said, exhibited elsewhere, owing to the actual want of space—height and width—in this portion of the Exhibition Building; so they will be seen amongst the machinery, and we trust they will not be found to be too appropriately placed there, but in truth they are specimens of art-workmanship on a very large scale. We prefer examining the smaller articles of more delicate and refined skill, as shown in the case bearing Messrs. Skidmore's well-known name and upholding their well-earned reputation. Messrs. Strode are not largely represented, but they exhibit a standard light, or the central part of a larger standard designed for the Duke of Cornwall Hotel at Plymouth, composed of beaten brass work and decorative glass balls. The design seems adapted to the purpose, and is reasonably simple, though there is no novelty in the use of glass bosses or balls; but, as specimens of artistic metal work applied to gas-fittings, they are creditably designed compared with what we have seen with regret adopted in most of our large metropolitan buildings of this class, as good enough to adorn a carefully-designed architectural interior. Similar standard lights, of very different character, with pendants or coronas, are shown by Mr. Pritchard, architect, as his design, executed by Leaver, of Maidenhead. To our surprise Messrs. Hardman exhibit but one specimen of plate, and no object of any kind besides this.

Perhaps the most important, if not the most interesting "exhibits" are those of terra-cotta, a material connected intimately with artistic construction in former times, and capable still of an indefinite development. To see what is being carried out in this substance, however, it will be necessary to visit several departments of the Exhibition; and we have already referred to the great example of terra-cotta work executed for the new building at South Kensington, and which is so large that it had to be placed in the great machinery zone, and to some of the foreign specimens of it in the same zone. We will first bespeak attention to the examples sent by Mr. Blashfield, of Stamford, to exemplify how far he has progressed in the manufacture. Blashfield's name is well known to be a guarantee for excellent workmanship, and a peculiarly wise and intelligent application of scientific information is brought to bear on every work taken in hand by him. Two win-

to be erected at the new Dulwich College, and designed by Mr. Claus Barry; the other a copy of those already erected in the tower of the Duke of Cornwall Hotel, Plymouth, designed by Mr. C. F. Hayward,—are built into the walls. These form very prominent features in the court, and we venture to say both of them show a great novelty in design, at least, to our *confrères* in Paris. Both are combined with granite, though in an entirely different manner. That for Dulwich is set in a red brick wall; while that at Plymouth is combined with grey granite jambs, set in limestone walling. Each is a round-arch two-light window, with a central column; but the one has an enclosing arch, deeply recessed, in the tympanum of which is a richly-moulded circular panel, containing projecting head or bust; the other, without any enclosing arch, is so formed that the mass of terra cotta should work in with the walling itself, and the round arch of each light is capped by a pointed one, the spandrel resulting between them being decorated with flatly-treated foliage. The specimen for Dulwich College is altogether the more elaborate, and has jamb shafts, as well as a central engaged shaft of polished red granite; while the Plymouth example has a shaft of terra cotta itself, with a beautiful and sharply-moulded cap, decorated with foliage of Early English style. The former is, of course, the more costly and important piece of work; but the latter shows a constructive application not generally met with; while the simple manner of its use in combination with ordinary materials, so that no special workmen are required to fix it, is highly commendable. How much further the design in this material is to be carried in the case of Dulwich College may be understood from a model exhibited close by; and we learn that the Plymouth specimen shown is but one of a series of windows in the tower, and all the first-floor and second-floor windows are of a more elaborate and studied character. Indeed, one of the columns of a two-light or three-light window on the first-floor is also exhibited, built up of five pieces, base-above in two pieces, with band between, and cap. Such a combination to carry the weight here put upon it, requires to have the hollow spaces in the shafts, &c., and, indeed, all the hollow portions, filled in solid with broken terra cotta and Medina cement. Dowels also are required of any hard material or metal,—but iron, for reasons very well understood.

Another window-head is shown as a specimen of those used at the Sun Fire Office, Charing-cross, designed by Mr. Charles Freeman; also some examples of spandrels very richly decorated with foliage made for the Ornamental Screen, Victoria Garden, Bombay, and designed by Messrs. Scott, McClelland, & Co.

Some small figures in panels (though not novelties) show the higher art which we know at one time was the chief end and aim of this manufacturer; and we regret that some more important high-class sculptural objects have not been sent to be set beside the utilitarian works. Nevertheless, a few vases of pure classic shape, and of even colour—anglized, though very highly finished—attest the capabilities of the manufacturer and the material in an entirely different direction.

There is also an interesting and highly ornate—perhaps too rich and delicate—specimen in the form of a chimney-piece, for the new India Office, designed by Mr. Digby Wyatt, after the Renaissance, with pendant “swags” of fruit and foliage. This is of red terra cotta, while the exterior work of the windows, &c., is all of a peculiarly creamy or warm stony tint, though we believe this is not on account of any difference in the texture of the material or wear of the colour.

Messrs. Henry Doulton & Co., of Lambeth, exhibit also some terra-cotta heads; but the only other important exhibitor is Mr. Pulham, of Broxbourne, who has a specimen of a window, with reveals, eills, heads, &c., shown as it would be built into the brickwork of the wall. Also a large and a small column, with caps, and a large cornice for the top of a building. The moulding of these is very good, and the hardness seems equal to other similar works; but when such objects are placed in a position sufficiently elevated to show—as they should do,—their general effect in position, it is difficult to get near enough to judge accurately of the closeness or hardness of the material.

Mr. Pulham also considers terra cotta a suitable material for fronting houses with instead of stone, as certain “diamond building blocks,” which he exhibits, attest. We wish, indeed, we

could have found the prices and other particulars attached to these, and the curator of the court ought to be furnished with them if any comparison is to be made. At any rate, one thing is certain, that as stone of all kinds is so perishable in our climate, anything which offers so good a substitute, and seems so likely to endure, should be thoroughly investigated, and all its qualities, good and bad, made known, as well as any peculiar advantages or disadvantages attending its use. Perhaps the catalogue, which, we understand, the Committee are about to publish, will afford this information. We must not omit to mention that Mr. Pulham exhibits, near the “Testing House,” Mulready’s tomb in terra cotta, of which we have previously spoken; the credit of the manufacture of which, and not the modelling, belongs to his name. It is curious that this is the only exhibit of Mr. Pulham’s mentioned in the official catalogue; his name is omitted from the list of exhibitors in this Architectural Court. Other objects of a more ornamental character, such as vases, terminals, a small fountain, &c., complete our list; and now, before we leave this special subject, we must record our regret that the desire of the committee to make their collection complete was not more warmly responded to; and we cannot but think that Blanchard, the Coalbrookdale Company, and others, might have spared some specimens to place beside those we have been describing, and that some of the disadvantages of not doing so must accrue to those who were backward in responding to the invitations sent out.

In close connexion with the foregoing are specimens of Ransome’s patent stone, a material now recognised as applicable to all styles of architectural design. We find columns and chimney-tops executed for, and designed by, Mr. J. P. Seddon, as well as portions of a circular wheel-window of Gothic design, with specimens of balcony panels and ornaments in Elizabethan, and balusters, key-stone ornaments, and so on, of a more classic character. The best application of this process is in the thin, flat, diaper slabs—for internal (or, indeed, if required, external) wall decoration,—a real “wall unit,” to use Mr. Ruskin’s phraseology. For this, bearing in mind the comparatively small cost at which it can be supplied, it ought to commend itself to architects. The colour generally might be improved, but we need not say anything as to the design. It now seems understood that it is of the utmost importance to have the form of even the specimens of any material properly designed by architects, who take the trouble to study the peculiarities of the manufacture, and to adapt it to the wants of their art; in fact, to place each in its proper place in relation to the rest of the materials with which it may have to come in contact.

THE LATE SIR ROBERT SMIRKE.

THE English school of Classic architecture has lost an able architect. Sir Robert Smirke has passed from “temples made with hands,”—in plainer language, from among men,—at the ripe age of eighty-seven. He died at Cheltenham on the 18th instant.

His father Robert Smirke was an eminent painter, and member of the Royal Academy of Arts in London. He was born in 1752, and died January 5, 1845.

Smirke, like Sir William Chambers, was not a church architect. The only example we have of his skill in this way is the Church of St. Anne, at Wandsworth, in Surrey, completed in July, 1822, but not consecrated until the 1st of May, 1824. Smirke’s extreme love of Greek and Roman architecture forbade his becoming acquainted with the resources of the Gothic. He sinned in this way with a greater man,—with Sir Christopher Wren.

It was the good fortune of the elder Smirke to live to see three of his sons eminent in their callings. First, Sir Robert; then Sydney Smirke, an able architect, whose works are known and deservedly admired; and Edward, whose skill in Old English records,—and their bearings on history,—and biography, commands the approbation of scholars.

Four architects, juniors in election to Smirke, have been taken by death from the ranks of the Royal Academy since the date of Sir Robert’s election in 1811. Let us name them:—Sir Jeffery Wyattville, elected in 1824; Wilkins, elected in 1826; Cookerell, elected in 1836;

Deering, elected in 1838; and Sir Charles Barry, elected in 1842.

I have no intention of asking space in the *Builder* for any remarks of mine on the merits and defects of Sir Robert Smirke as an architect. His career as a follower of Sir William Chambers, of Dance, and the elder Hardwick, affords a rare illustration of what he lived to see done to and done with one of his own works. The Carlton Club, in Pall-mall, of Sir Robert’s design (and it had many merits), has been totally effaced by the loftier and abler work of his younger brother, Mr. Sydney Smirke, R.A. Let us hope that it will be very long before the College of Physicians and the Union Club-house (the whole west side of Trafalgar-square, and of Sir Robert’s designing) are pulled down for the work of some “Ripley with a rule.”* Illustrious Sir Christopher Wren, what has been the sad fate of your College of Physicians, honoured by the frequent visits of a Radcliffe, a Sloane, a Mead, an Arbuthnot,—

“And then a long Et Cetera!”†

The *Builder* has always exhibited an interest in the London residences of eminent men. The London homes of Sir Robert Smirke deserve to be chronicled. Mr. Tite will probably be pleased to be reminded of them.

In April, 1807, then in his 27th year, he was living in the Albany, Piccadilly, No. 1, H—that is, he was in fashionable chambers, and possibly unfitted with an aim, having, by fits, a longing to be a great actor; and, happily, a still greater longing for the reputation of an architect, and to become “*what’er Vitruvius was before*.”‡

From the Albany he removed, in 1809, to No. 13, Berners-street, Oxford-street; led thither, we may pleasantly suspect, by the recollection that Sir William Chambers, the architect of Somerset House, had lived in that street. His house in Berners-street was two doors from the house of Henry Bone, the famous enameller. Bone’s house was No. 15.

His next “*sitting*” was (1815) to No. 3, Upper Fitzroy-street, whence he moved (1821) to No. 5, Stratford-place, Oxford-street.

The father of Sir Robert Smirke died at No. 30, Osnaburg-terrace, Regent’s Park, on the 5th of January, 1845, in his 93rd year. His son, it was thought, would have reached the same great age. When Wilton the sculptor died, in 1804, the father of Sir Robert was elected by the Academicians to succeed him; but the election was not confirmed by King George the Third, and Fuseli was appointed. The principles of the elder Smirke were “*revolutionary*!” so, at least, the good king had been taught to believe.§

In one great respect, as an architect, Sir Robert was unfortunate. He lived to see the Covent Garden Theatre of his building destroyed by fire, and a new one of a very different kind stand “*in its stead*.” There were many merits about Smirke’s Covent Garden Theatre. It is well represented by six capital plates in Britton’s “*Edifices of London*.”

The mother of Sir Robert died at No. 3, Upper Fitzroy-street, Fitzroy-square, on the 12th January, 1824, aged 67. The mothers of able men deserve to be remembered. Since Sir Robert was chosen a Royal Academician, in 1811, there have been seventy-seven new members elected, very many of whom are dead.

P. C.

THE LATE M. HITTORFF, ARCHITECT.‖

JACQUES IGNAZ HITTORFF was born at Cologne, August 20th, 1792, and was early taught, after the old German manner, to prepare himself for his future career by handling the mason’s tools. In 1810 he went to Paris and pursued his studies under the architect Belanger, a very able master and kind friend, who constructed the glass dome of the Halle au Blé, to cover the vacant area of the Central Court as originally left. He continued to attend the schools of the École des Beaux Arts, where Percier recognised the abilities of the young architect, and ever after proved his constant

* Pope.
† Cowley,—The Chronicle, a Ballad.

‡ Pope.

§ A room full of little Smirkes—humorous and theatrical subjects—would form an attractive roomful at the British Institution. The Sir George Beaumont had the good sense to secure two or three of them.

‖ By Professor Donaldson; read at the Royal Institute of British Architects.

riend. Upon the return of the Bourbons to France in 1814 Monsieur Belanger was confirmed in his appointment of architect of the public fêtes and ceremonies, which he had previously filled, and he appointed his young friend Hittorff as his assistant inspector, having for his colleague M. Lecointe. This public appointment influenced materially the future professional life of our friend, for ever after we find him constantly employed by the public authorities in connexion with the public ceremonies, in the municipal buildings and embellishment of the open spaces of the French metropolis, and in the erection of the places of amusement and recreation.

With his colleague, M. Lecointe, he designed and superintended the funeral pomp and burial of the Prince de Condé, of the Duc de Berri, and of Louis XVIII., as also on festive occasions, the marriage of the Duc de Berri, the baptism of the Duc de Bordeaux, and at Reims the coronation of Charles X. They also reconstructed the interior of the Salle Favart, and in eight months rebuilt the graceful and commodious theatre of the Ambigu Comique. In 1820 to 1823 he visited England, a part of the North of Germany, the South of France, Italy, and Sicily. In his journey to the latter country he was accompanied by his pupil, Herr Zanth, and his friend, Herr Stier, and returned enriched with a fine collection of sketches and drawings of the several monumental buildings of those parts. The lamented Zanth, you will recollect, gentlemen, as one of our honorary and corresponding members, when architect to the King of Württemberg, and who, on his death, bequeathed to us one of his beautiful drawings of Monreale in Sicily: and Herr Stier became the eminent professor at Berlin.

In 1826 M. Hittorff published, with M. Zanth, the results of this journey in the "Architecture Moderne de la Sicile, fol. Paris, 1835," and in the "Architecture Antique de la Sicile, fol. Paris, 1837." I must first call special attention to the work on Modern Sicily, which, for variety of subjects, exquisite drawing and tasteful illustration, offers a rich collection of novel ideas for the architect in the churches, hospitals, convents, palaces, Saracenic remains, and for the number and decorations of the public fountains (in which Sicily is unrivalled). The work on the Ancient Architecture of Sicily is the first volume of an intended series, illustrating only a portion of the ancient monuments of that country, and is executed with the conscientious precision and with the enlarged intelligence, which previous works on Greek antiquities afforded to minds so inquiring as those of the authors. The restorations of the temples of Segeste and of Selinus were drawn out to a large scale, and with the usual artistic distinctness of the French school; and the exhibition of them before the Institute of France at once procured the approval of its distinguished members. It would ill become me to draw a parallel between the publications of previous or subsequent writers, such as St. Non, in the "Voyage Pittoresque," the volume of our own Wilkins, or the more recent tomes of the Duc de Serradifallo; but the experienced professional intelligence, the more profound acquaintance with antique monuments, and the artistic feeling of M. Hittorff and his companions, invest their publications with more than ordinary importance. I am happy to inform you that the concluding volume on the "Sicilian Antiquities" was just completed by M. Hittorff for publication. All the plates are ready, and I learn from his son that he was, at the decease of his father, engaged upon the revision of the last part of the text, so that we may soon expect its appearance. It will be a most interesting section, as it contains the total restoration of a Greek Doric temple in all the integrity of its minutest parts, and many of the vexed questions will be solved according to his views, with the reasons elaborately explained.

You who are so well acquainted with M. Hittorff's predilections of classic taste, and his immediate subjects of study, will readily understand how these special researches in regard to such remains as those of Pompeii and Sicily, which contain profuse evidences of colour as an essential feature of the decoration of the edifices of antiquity, made a deep impression upon the mind of our late colleague, excited by the essays and pamphlets which had appeared already in Germany, France, and England, upon the subject of polychromy, as practised by the ancients in their works of art. All these influences concentrated with immense effect upon his artistically

impressible susceptibility; and whether in the ruins of edifices, in the fragments preserved in museums, in the vases, tiles, pottery, Etruscan tombs, or other sources of evidence, he sought to discover the principle which guided the Greeks or Romans in the application of colour. Seconded by the erudition of his learned friend Letronne, he enlisted the evidences of all the ancient authors, who had ever by mere indirect expressions alluded to a subject, which, recognised as it doubtless was by all antiquity, required no more direct allusion as witness to the universality of its practice. This noble work on the polychromatic architecture of the Greeks, or restoration of the Temple of Empedocles at Selinus, concentrates all the evidence procurable on the subject, and sums up the results to be derived from them. The careful elaboration of the design and the exquisite execution of the coloured plates, with the learning of the essay, which minutely justified each step in the elaborate investigation, placed his work as the climax of proof and reasoning on the subject, and exhibited the extent of his antiquarian knowledge, and the practicability of its application to some of his own buildings.

In 1832 M. Hittorff published with M. Olivier, the celebrated architectural engraver, a French edition of the English work on the "Inedited Antiquities of Attica," in order to complete the series of translations of the English works, which up to that period had appeared on Greek antiquities, as "Stuart's Athens," and the previous volumes of the Dilettanti Society upon the monuments in Asia Minor. He dedicated this work to his old master and friend, M. Percier, in a few touching words of grateful affection. The plates, which in the original are shaded, are in this edition in outline: several restorations were added, and notably one very useful plate containing a parallel of all the monuments drawn to the same scale, affording the opportunity of a comparison of their relative sizes and designs, and many judicious notes were given in further explanation of the text.

Hitherto I have briefly dwelt upon some of the studies of the scholar and the productions of a brilliant author, rather than upon his other more immediately practical labours as an architect: and it might be imagined that such publications would fully engage the whole time of a professional man. On the contrary, they were (I might almost say) the relaxations of an elegant mind amidst other absorbing matter-of-fact occupations. I think his earliest work in the Champs Elysées must have been the circular Pantheon at Rome, and the roof of which he supported in a most original manner on the summit of twelve iron cables, and which admitted the uninterrupted passage of the light upon the picture of the circumference. It was described in July, 1842, at one of our ordinary meetings. From that time to this the Champs Elysées have been the arena on which he has exercised most happily his fertile imagination in the erection of fountains, restaurants, cafés chantants, and other constructions for the amusement of the people, the most important, however, of which is the Grand Cirque Olympique, now called of the Empress, built in 1839. This is well known to all who have visited Paris as a sixteen-sided building, capable of holding 4,000 spectators, for equestrian exercises, above 134 ft. in diameter, and covered by a roof without a tie beam, the stability of which depends upon the circular or polygonal curb against which the feet of the rafters rest: attached is stabling for the horses of the troupe.* The decorations are conceived in the best taste, so that the vastness of the area, without any central pillars, and the elegance of the ornamentation, place it in the same rank with the large and most costly productions of the like nature of the times of the ancients. M. Hittorff mentioned to me an incident, most gratifying to himself, that occurred in the erection of this responsible work. His employer left him *carte blanche* with the obligation of completion within a certain period. The construction was so difficult on account of the nature of the soil, and the whole matter so novel in every respect, that M. Hittorff spent several hours every day upon the spot; and he observed in like manner that his employer was always there, critically observing all the operations. At length M. Hittorff asked him the reason of his close surveillance, to which the reply was, "I have felt naturally anxious, both

as to the progress of the work and the outlay, and I was determined myself to be witness of what was going on. M. Hittorff, I have seen the unwearied attention you have bestowed on your work, which I feel will be as advantageous to me as it will be honourable to you. I have proved that there is no need of my presence to urge on all concerned, or to induce a careful economy, and you will not see me here any more till the conclusion." The success of the whole was, in fact, so complete, that the circus was opened at the period named, and a very few years sufficed to pay off the necessarily considerable cost of the erection. In 1851 a larger and more sumptuous circus was erected on the Boulevard des Filles du Calvaire in nine months, with increased reputation to the author, and enriched, as was also the other circus, with the sculptures of the eminent Pradier and Duret, and the pictures of M. Berrias. M. Hittorff assisted in the erection of the obelisk of Luxor, in the Place de la Concorde, and designed the pedestal. His inquiring mind was not satisfied with the rude condition of the rough, and, as it were, fractured apex, and it occurred to him that it could not have been left so exposed by the ancient Egyptians, all of whose works are finished off with such precision, regardless of labour or expense. At length it occurred to him that there must have been some artificial finish to the summit of the monolith, and further research proved to him that it must have had a bronze gilt capping, or pyramidion, a conclusion which he fully justified in a pamphlet that he published at the time; but his suggestion was not carried out, and the apex still remains in its fragmental state.

To M. Hittorff's graceful taste is due the design for the colossal fountains in the Place de la Concorde, combining sculptural and architectural forms in an admirable manner, and the jets casting forth volumes of water, more abundant than those even of St. Peter's at Rome, and in magnificent contrast with our squirts in Trafalgar-square. He also materially modified in other respects the original conception by Louis of what may be considered the most magnificent Place of all Europe, surrounded as it is by the gardens of the Tuileries and of the Champs Elysées, the Garde Meuble, the portico of the Old Chamber of Deputies, with the avenues commanding views of the Madeleine, the Arc de Triomphe de l'Etoile, and the Tuileries Palace.

M. Hittorff was associated in the erection of the Basilica Church of St. Vincent de Paul, near the station of the Chemin de Fer du Nord, with the estimable and accomplished M. Le Père,* father of Madame Hittorff, with the latter of whom, through all the varied joys and trials of professional life, he passed a happy wedded union of above forty years, in tastes and feelings most congenial, and which rendered the domestic hearth the happiest of homes. I know not to what extent the conception of this great church was due, respectively, to the genius of one or the other of its architects, but the death of M. Le Père occurring in the course of the work, the completion was necessarily directed wholly by his son-in-law. The Basilica of the Romans was a favourite theme of M. Hittorff, as we know by his published restoration of the Basilica of Fano from the text of Vitruvius. On the present occasion he sought to realise some of his early impressions, reconciling them with the special purposes of a Roman Catholic place of worship. The nave and side aisles, divided by a line of columns two stories high, with a gallery and flat roof, and hemicycle at the altar end, have a very grand effect, and Christianise, as it were, the heathen elements of such a disposition. The whole of the details and embellishments symbolically treated, and the colouring and gilding are of the most refined Greek taste; and notably are to be admired the magnificent series of stained-glass windows, and the decorations of the podium between the upper and lower ranges of columns, consisting of a procession of the saints, male and female, of the Roman Catholic Church, painted by the imitator and lamented Flaminio, the first of ecclesiastical painters of the present period. The church lies on the sloping side of a hill, which required a magnificent flight of steps to reach the portico, and this is realised by a

* M. Le Père, born at Paris, 1761, deceased 1844, was member of the Scientific Expedition to Egypt, and prepared many important drawings for the large work on that country. He was joint architect with Gondouin for the bronze column of the Place Vendôme, and subsequently contrived a most ingenious scaffolding, fixed on the capital, for raising and placing the statue on the monument.

* Illustrations will be found in the Builder.

series of divisions of easy ascent and varied plan, ranked by balustrades, forming a grandiose basis to the church itself. M. Hittorf had contemplated the decoration of the walls of the portico with paintings, as shown in one of the plates of his work on Polychromy, illustrating subjects from the Old and New Testaments, to be executed on enamelled slate or stone, in the general adoption of which enduring process he took great interest, as being peculiarly adapted for mural decoration of public buildings. These paintings were partly executed, but did not seem to meet public favour, and have since been removed.

The notice of this church leads me to observe some of the peculiarities of Paris in regard to its religious edifices. The whole city is divided into arrondissements, with a like ecclesiastical distribution. In each municipal division there is (or intended to be), a central basilica, of gigantic proportions and cathedral-like arrangement, each one at a cost of one or two hundred thousand pounds, or even more, subordinate however to the metropolitan cathedral. Of this class on the north side of Paris are the Madeleine, Notre Dame de Lorette, St. Vincent de Paul, and the churches in the Boulevard Malesherbes, and in the quarter of the Champs-Élysées. Antin, now nearly completed, and forming so many ecclesiastical centres grouped around the mother church of Notre Dame.

The municipality provides a like class of edifice for the local civil administration of each arrondissement, consisting of a mairie, carried out in the like sumptuous way; for happily our neighbours are not satisfied with the erection of their buildings, intended for public purposes, in humble and miserably economical manner, as our police offices, but require that they should add to the dignity of the metropolis. These mairies combine various functions for daily and occasional use, and they thus afford the opportunity of considerable architectural effect. M. Hittorf executed one on the Place du Panthéon, the staircase of which is a very striking feature; and he completed the suite of buildings opposite the eastern façade of the Louvre and close to the Church of St. Germain l'Auxerrois, by a communal school, distinguished for its arrangements; a presbytery; and a mairie for the quarter, in the Renaissance style; repeating some of the leading features of the adjoining church. This, however, cannot be cited as one of his successful compositions. He enlarged and completed near the Barrière du Trône, for Her Majesty the Empress, an institution for the reception and education of 300 daughters of workmen; and he carried out a distribution of art of the Bois de Boulogne, in conformity with an original sketch by the Emperor, which he once showed me as one of the curious treasures of his study. He designed the circular series of edifices surrounding the place of the Trocadero, and from which radiate various suburbs to different parts of Paris and the environs.

Time would fail me to recite all the works which our late colleague either designed or executed during his long and active life of professional experience. In Paris alone, whether to the north or south, the east or west, or very remote, we find monuments of his skill and taste so profusely scattered. I have not dwelt upon their distinctive merits, nor have I paused to analyze their disposition or arrangement, the styles he adopted for each, or the more or less success of such effort; I address myself to his professional brethren, who are fully capable of forming their own judgment, and who require no critic to lead them to a conclusion. It is enough, in such a rapid notice as this, to indicate the most notable that the history of our art cannot fail to record, and which are the best tests of his various powers, and which procured his reception in the Imperial Institute of France in 1853, the award of our Royal Gold Medal in 1856, the election in numerous foreign academies, and crosses and honorary distinctions from various continental sovereigns.

The last great work of our friend, and which he left in effect a colossal one, is the terminus at Paris of the Great Northern Railway of France. This propylon, as it were, of the Egyptian and Greek type,* consists of three circular-headed archways of the Ionic order and tetrastyle treatment, each crowned with a pediment and gable, standing in size, and with intervening Doric colonnades, the whole consisting of purely

Greek detail, and enriched with sculptures of the highest class. I must own that, impressed as I was when I first saw it, I felt staggered by the audacity with which all the usual canons of art were disregarded in the general composition, and yet producing on the mind a most imposing, and, it may be said, solemn effect. I have stood at periods before it to study the elements of the design, and how the like impression could be produced by any other more severe treatment, but in vain; and I could not but render homage to the genius of the architect who, by a most capricious mastery of his subject, could successfully render himself independent of the ordinary conventionalisms of his art. This is a most striking instance of the different treatment with which such stations are handled in France and England. With them, it is to be a monumental object, to impress the stranger with the imperial greatness of the capital of France, and to develop its taste for all the resources of architecture and the sister arts; with us it too often results in a huge magazine or shed, or an enormous refuge of a colossal hotel to receive the wearied traveller.

I have also mentioned his larger publications as an author,* but his pen and fertile imagination were unceasingly at work, embodying in memoirs from time to time the practical results of his own observations upon the passing topics constantly arising in such an artistic circle as that of the French metropolis, and among numerous biographies one of our distinguished colleagues, the late Sir Charles Barry, in 1860. Another of his most recent essays read before the French Institute drew attention to the analogy existing between the fresco decorations of the Roman baths and of Pompeii and the rock-cut façades in the valley of Petra, showing a complete identity of the two, and that the wall-paintings of the Romans were not merely capricious exercises of the painter's fancy, but actual, and therefore valuable records of existing buildings. The decease of our late friend is the more to be deplored, as in him we lose the sole surviving earnest disciple and most able exponent of pure classic art.

We have thus briefly considered our late colleague as an architect and artist, as also as an author; and we have seen how accomplished, learned, and profound, and ready he was with his pencil and pen. These impressions were confirmed if you saw him in his elegantly-arranged study, there even from early morn, surrounded by exquisite drawings, choice marbles, terra-cottas, casts, library of rare and costly books and other memorials of the finest monuments of all ages and in all countries, from ancient Egypt to modern Europe,—himself the refined, the rare interpreter of their excellences, and of the hidden mysteries of design and treatment, which render the architecture of the past the types for future generations to study and emulate. Follow him into the inner recesses of his home, itself an atmosphere of art, adorned almost exclusively by portraits of those near and dear to him, by his valued and venerable friend, the illustrious Ingres, whose decease preceded his own by only a few months. In this home you saw the tender husband and parent, the warm, devoted friend. In public life he was the generous competitor for fame and honours, the encourager of the youthful aspirant in science, art, or letters; in fact, he was a man by whom it was a privilege to be known and esteemed, and a bright example besides for imitation.†

* He wrote many articles in the "Encyclopédie des Arts et Métiers," treating on architecture and history, and on the Sphyratlon or moulding in repoussé work in metal, as practised among the ancients and moderns, and as applicable to colossal statuary; on artistic journeys in the Pyrgia, Basilica, Caucasus, Persia, Greece, &c. The catalogue of this Institute contains the titles of most of his works.

† The official programme of M. Hittorf's titles and distinctions is as follows:

Membre de l'Académie des Beaux Arts de l'Institut de France, Architecte du Gouvernement, Officier de l'Ordre Impérial de la Légion d'Honneur, Chevalier de l'Ordre pour le Mérite de Prusse, décoré de la Grande Médaille de la Reine Victoria, Commandeur des Ordres de l'Aigle Rouge de Prusse, de St. Grégoire le Grand, d'Albert le Valeureux de Saxe, de Mérite de St. Michel de Bavière, du Sauveur Grèce, Chevalier de l'Ordre de la Couronne de Wurtemberg, Membre Honoraire et Correspondant de l'Institut des Architectes Britanniques, Membre des Académies des Beaux Arts de St. Louis, de Berlin, de Vienne, de Munich, de Belgique, de Copenhague, de Milan, d'Amsterdam, de Rio Janeiro, de New York.

See also the "Biographie universelle et contemporaine" sub *nomine*, and M. Raucourt's "Biographie d'après J. J. M." and the eulogy by M. Lehmann, vice-president of the Imperial Institute of France, delivered at the tomb on the occasion of the interment, published in the *Moniteur* of the time.

THE FRENCH OPERA AND THE THEATRE ROSSINI, PARIS.

GREAT efforts are being made to push forward the works of the New French Opera-house, with sufficient rapidity to render the façade of that magnificent structure one of the most conspicuous features among the monuments of Paris at a period while visitors of all nations will be still flocking to the Universal Exhibition. It is now calculated that at the present rate of progress the whole of the front will be completed by the middle of August. The external design is very striking—even picturesque—and yet does not transgress the bounds of that due severity and purity of style which ought always to characterise a great national monument, especially such a one as the home, or rather temple, of French Opera must be considered, when it is recollected what vast sums are lavished on the culture and display of that branch of national art. The chief effects of the façade are obtained by means of strong contrast of light and shade; and also, by the introduction of powerful, yet sober, contrasts of colour. Broad and deep shadows are obtained by means of the recesses of a magnificent loggia, which forms a kind of massive covered balcony to the grand saloon; and the picturesque character of this striking architectural feature is aided by the abundant enrichments which display unusual beauty of design. The contrasts of colour are obtained by the profuse and yet judicious introduction of richly-coloured marbles, the full tones of which relieve with great brilliancy the soft cream-colour of the stone which forms the main body of the structure. The marble columns, of various kinds and colours, in the façade, and in the entrance-hall and staircase, will exceed 150 in number, and the rich effect produced by such a profuse introduction of rich colours and polished surfaces may be readily conceived. The external steps and the entire pavement of the great hall are also of marble, and are said to have been so judiciously managed as to have cost less than stone—their cost being estimated at about 143,000 francs; while stone for the same purposes, at the ordinary rates of material and labour, would have amounted to 160,000 francs. The columns in the front of the loggia are of a soft, but full and rich violet tone; and those of the great approaches of a warm, ruddy-brown tint. The pilasters of the interior staircases are of the Vosges and Morvan marbles, while the lateral staircases have pilasters of the Jasper of Mont Blanc, which, since the annexation of Savoy, may also be deemed a national product. The saloon is to have a number of columns of the beautiful native marble of Campan. The hand-rail of the great staircase is to be composed of Algerian onyx, a colonial product of the French empire. The employment of these rich and truly monumental materials, to the exclusion of the lath-and-plaster work which but too often forms the basis of the internal structure of our own national monuments, indicates the scale of munificent expenditure which the French Government is applying to the erection of one of the great national theatres. The nearest approach is, perhaps, the entrance-hall to the lecture-rooms in Trinity College, Dublin; the noble columns of which consist of specimens of marble from different parts of Ireland, among which the most conspicuous for their great beauty are those from the quarries of the celebrated mountain range known as the Twelvepins, in Galway. That marble is of a light and brilliant apple green, and when obtained in masses large enough for entire columns is unrivalled in the world for brilliancy of effect in architectural combination. It will, however, be somewhat approached in colour by the beautiful *vert de Suède*, which is to form the balustrades of the great staircase of the French opera.

Even in its present incomplete state the façade already attracts daily a crowd of spectators, in spite of the floating cloud of lime and stone dust that always envelopes the scene of operations, and the occasional fall of small but dangerous fragments of stone, the warning for which, "*Gare en bas!*" is generally heard a few seconds afterwards. An accident occurred the other day, which is related in the following manner.—A spectator on joining the observant manner—A spectator who quivered over his sense of prudence, perceived a well-dressed man moving his head rapidly and throwing up his arms, as though in great agony. The new spectator inquired the cause of his seeming pain. "Lime, lime! a quantity of lime has fallen into my eye as I was looking up, and the agony is

* The total length of the front is 518 ft., and the total height, to the top of the statue of the City of Paris, is 116 ft. The lofty columns of the interior, and other cast-iron work, were executed in Glasgow!

extreme."—"What can I do to relieve you?"—"Lift the eyelid gently—gently—and blow upon the surface of the eye,—it is the only cure mode of relief. Yes, yes—the relief is immediate. But, go on. Ah! merci!—a thousand, thousand thanks: you are the preserver of my eyesight; another moment and—"—"Oh! pray do not mention it; I only did what every—" But the person he addressed—the poor grateful sufferer—had disappeared, and along with him the watch and portemonnaie of the new spectator, a very respectable gentleman from the provinces. It is said that a precisely similar accident occurred to the poor sufferer from the lime-dust at the still incomplete building of the Great Exhibition only the very day before. "Some men are destined to be for ever pursued by evil fortune," was remarked by a cynical moralist on the occasion.

The interior of the French Opera, which at one time it was hoped might be the scene of a series of magnificent performances during the great period of the Great Exhibition, will not, as now stated by the architect, M. Garnier, be completed in less than three years from the present time, if all details be wrought out on the scale of splendour desired by the Emperor, who takes much interest in every step of this important structure. It is planned to contain 2,181 spectators, while the old house, in the Rue Le Pelletier, is only capable of containing 1,837. The new theatre at Passy, which appears to be intended for operatic performances, in conjunction with those of a simply dramatic character, is but a miniature structure when compared to the vast edifice destined for the seat of the National Grand Opera, but is by no means so when its dimensions and aspect are considered purely on their own merits. The appearance of its facade is at once grandiose and severe, and is well worthy of study as a work of its class. The interior is entirely different in style, and when the spectator enters the theatre, still impressed with sober elegance, amounting to a certain kind of grandeur, of the exterior, he is, at first, somewhat disagreeably struck with the gaudy contrast of colour and trenchant prominence of the ornamentation of the interior. The eye, however, soon becomes accustomed to this somewhat glaring style of treatment, for the sale is both spacious and lofty, and the abundant space is soon felt to lend a softening influence to the decorations which a little time and use will probably subdue into a more harmonious whole. All the approaches to the different parts of the house are most convenient and ample, and the space allowed to individual seats, as in the new opera, is greatly beyond that esteemed sufficient in the older theatres, which in Paris (as in London) are miserably inconvenient. This is in necessary accordance with the demands of the age for a greater amount of comfort. Those who have become accustomed to the space and comfortable adjuncts of a first-class railway-carriage, for instance, would never return to the "six-inside" arrangements which were deemed sufficient in the old coaching days.

It has been observed that the only fault of the Théâtre Rossini is, that it is too big for the locality, and that even on the festive solemnity of the "fête night" it was but scantily filled. The application, however, from an audience comprising a pretty large section of the *déjà* of the Parisian press was unmistakably cordial, and it is thought, of all events during the excitement of the Exhibition, that the Théâtre Rossini will prove a remunerative speculation. In the absence of the great Maestro, whose name has been bestowed upon the Opera-house of Passy, his bust was, of course, in true Parisian fashion, crowded with appropriate laurel, and much display of enthusiasm. The venerable Maestro himself, who resides in the immediate neighbourhood, had noticed that early hours form an essential part of his present régime.

NEW OPERATING THEATRE, GUY'S HOSPITAL, LONDON.—The old theatre at Guy's being insufficient for its purposes, a new one has been built from the designs of Messrs. Newman & Elliot. The old theatre was taken down, so much of the surrounding parts of the hospital added to the old site, as to render the superficial area of the new theatre about twice the size of the old one, additions being made where necessary to the lobbies and passages adjoining. The area is considerably enlarged, giving ample space for the attendants, visitors, staff, and dressers in the respective places allotted to them.

MULREADY'S PROJECTS FOR IMPROVEMENTS TO HIS HOUSE IN BAYSWATER.

When it was announced that Mr. Creswick had purchased Mulready's house, and intended to retain the great modern painter's painting-room as he left it, every one felt that this was a graceful homage rendered to one artist by another. Every foot of ground in London being precious, this retention is not likely to have been made by any one who was not an enthusiast in art-matters, or a sorrowing friend of the departed painter. The rest of the house has, indeed, been transformed. The curious in such things have had an opportunity of seeing the sketches made by Mulready when he was conning over his scheme to build, for they have been placed in one of the rotatory stands in the South Kensington Museum. Here they may have seen how this lord of colour would have dealt with the little narrow strip of land that Londoners deem themselves lucky to possess; how he turned from his gorgeous canvas to dip a pen into the faintest ink, and draw the tiniest plans and sections, and make the most precise calculations; how he intended his *maisonette* should be furnished; and, finally, how he plotted out the small spare space for a garden. His designs are shown, as we have indicated, in a series of minute drawings, some in faint ink, and others in pencil, with marginal explanatory notes. Each sheet contains six, seven, or eight sketches, and notes written in small writing, and mounted uniformly with the drawings. Among his queries are the following:—"What should be the rent of the house? What would the improvements cost? What additional taxes and rates would they cause? What term of years, and what yearly rent should I agree to in consideration of my money sunk in improvements?"

One sheet consists of seven minute, faint, pen-and-ink sketches, mounted with a gilt-edged *passé-partout* to each. The first of these, 6 in. by 8 in. in size, is a sketch for the construction of a square hip roof; the second, the dimensions of which are but 1½ in. by 2 in., is a section of a staircase; the third, 3½ in. by 4 in., shows the construction of a double doorway without a pillar; the fourth, 1½ in. by 2½ in., a double fireplace; the fifth, 1½ in. by 2 in., a longitudinal section, showing four rooms; the sixth, 1½ in. by 4 in., a plan; the seventh is another small section. The principal curiosity among these is the third, in which Mulready has pondered over the possibility of making a double doorway,—one half formed by a straight lintel and the other by an arch,—support itself without a central pillar. He indicates that he thinks this may be done by making the thrust of the arch fall upon slanting bricks over the lintel along its whole length, the last one of all receiving the full weight of it. So sustained, he divided the arch would hang without support from below.

Another sheet, consisting of five sketches, likewise mounted with a gilt-edged *passé-partout*, contains quite a different plan, showing that the whole were projects, rather than designs, that he had determined to carry out. These sketches are also minutely drawn, partly in pen and ink and partly in pencil, but they contain neither reference nor explanation. The painting-room seems to have been, in each instance, his first care. On another sheet he shows the smallest plan that he would build upon. He says:—

"The professional parts are as good in this as they are in the others, putting the closets attached to the painting-room out of the question. It would be put upon a plot of ground with 30 ft. in breadth by 50 ft. in length. The ground would secure me against any building directly in front of my painting-room, for the body of the house would stand upon 45 feet of length. The outer office of the kitchen might occupy 10 ft. beyond this, and leave 20 ft. for garden drying-ground. A house as good as any of the others, considered with itself, might be built upon this plan by a slight modification of the kitchen offices."

Again, he shows an oblong block plan divided into three compartments, the third, 10 ft. wide and 26 ft. long, being apportioned for a painting-room. This, he adds in a note, is something narrower than he likes, but it enables him to retain two useful rooms besides.

Another sheet of eight sketches treats of furniture, and is dated 1831. Here he shows a desk with Doric columns for legs, a sofa with Greek guilloché ornament about it, a bookcase, and a brass and mahogany fire-screen. Not less interesting than these are his sketches for the embellishment of his garden. In these he places the block plan of his house close against one of the long boundary-lines of his site, so as to leave

as much space at the other side of it as possible, and then he raises up a rockery, lays out paths and indicates with horticultural precision the position of every tree and its kind.

Linden-grove, Bayawater, is a somewhat shadowy, gloomy *cul-de-sac*, noiseless and chill, with a leaf-strewn aspect, as though Autumn had gone into it and had been unable to find his way out again. Here Mulready lived for thirty-seven years, holding an art court, as it were, in his painting-room, to which the rest of his private and diurnal house was counted by his admirers as but an ante-chamber. His plans were never carried out in their integrity, and no interest was attached to any part of the house but the painting-room, which Mr. Creswick has a feelingly incorporated into the much larger lighter building he has erected for his own occupation. Mr. Stephens, the biographer of Mulready, states, "The space of a generation in time passed over his head, and but little was done for the fruition of such devices (improvements). Something, however, was in the first instance attempted. Messrs. Loddiges, of Hackney, the horticulturists of the day, supplied choice plants, shrubs, and flowers, which were placed out in the garden, and interior arrangements were at least partially made to correspond with the design. Some of the furniture that was sold at the dispersal of his effects had been wrought in accordance with his own designs at this period, and for a time, at any rate, designed according to his intentions." Like other men, the great painter found it easier to build castles in the air or upon canvas, than upon *terra-firma*.

INTERNATIONAL STATISTICAL CONGRESS.

Dr. MAESTRI, chief of the statistical department of Italy, has recently submitted his report on the programme of the forthcoming International Statistical Congress, to the Organizational Committee. The congress, which is to be held in Florence, will extend from the 27th of September to the 5th of October of the present year. It is the sixth session of the Congress, and his Royal Highness the hereditary Prince Humbert of Savoy, Prince of Piedmont, has consented to become president. Dr. Maestri has invited the co-operation of his statistical colleagues in different countries, in preparing a list of subjects of general interest for discussion. The following heads of sections, however, are submitted as a basis for the programme, 1st section—Theory and technicality of statistics. 2nd section—Topographical statistics. 3rd section—Agricultural statistics. 4th section—Statistics of the commune. 5th section—Financial statistics. 6th section—Moral and judicial statistics. 7th section—Military statistics; and, 8th section—Educational statistics.

The main object of the congress, in its first conception, was to bring the statistical information about population, property, agriculture, industry, commerce, and administration of civilized states, into forms, in some respects identical, and always admitting of strict and ready comparison. The utility of statistics, after long experience, is universally felt; and statistical inquiries are now instituted in every state in Europe. It has been suggested that a general statistical Board should digest the national statistics of a country, so as to exhibit the principal facts and their relation to each other in a small compass. The more detailed statistical returns, and reports of the several departments, as well as those called for by the Houses of Parliament, might be thrown into good, well-considered forms, the trouble of consulting and using them being greatly diminished by the publication of the necessary calculations. In England the blue books, issued by the Board of Trade, which contain a mass of useful information, are tabulated somewhat on the principle recommended by the Congress; and Lord Stanley, when presiding over a section of the British Association, at Birmingham, called attention to the little yearly volume, entitled "The Statistical Abstract." He described it as being "full of useful information, packed into the smallest compass, and arranged with a careful rejection of trifling and unimportant details." But he stated that he should be glad to see the scope of that publication extended, and references added, so as to include the principal results of all official inquiries, showing in a tabular form where fuller details on the subjects dealt with might be found.

Dr. Maestri states in his report, that the sitting of the International Congress will extend over a period of six days, but the official delegates are expected to assemble some days before the discussions in the different sections commence, in order to confer about the important subject of organization, a question which was not decided at the last Congress, held at Berlin, in 1863.

CENSUS OF NEW YORK.

A TONDEROUS volume of 869 pages, containing the results of the recent census of the State of New York, has just been issued. The population in 1865 amounted to 3,531,777, including 14,708 coloured persons. In 1860 the population was 3,880,735, showing a decrease in the five years of 348,958. The enumeration of 1866 shows an excess of females over males of 61,536; while in 1860 the excess was only 3,681. The relative decrease of males has resulted in a great measure from the late war, which was followed by the emigration of young men to the southern and western States. The number of males living at ages 45-50 are overrated, and the numbers living at ages 20-35 are evidently understated. These mis-statements have resulted through fear of enrolment for military service.

A sad result of the late war is observable in the returns of the conjugal condition. The proportional number of widows to 100 of population in 1855 was 2.75; in 1865 the proportional number was 3.67. The population of the city of New York was 813,669 in 1860, and 726,886 in 1865, showing a decrease of population in the five years of 11 per cent.

A curious return relating to families shows that 25 per cent. of the families living in the State of New York were without children; 19 per cent. had one child; 13 per cent. had two children; 14 per cent. had three children; 9 per cent. had four children; 6 per cent. had five children; and 3 per cent. had six children. There were 4,641 families each with eight children; 1,630 families each with nine children; 451 families each with ten children; 136 families each with eleven children; and 35 families each with twelve children.

An Appendix records the particulars of the deaths of 23,294 New York troops who were engaged in the late war. An official report of the Provost-marshal states the numbers for New York who were killed, or who died afterwards from wounds, at 14,445; by disease 17,407; total, 31,852. The total number of troops belonging to the loyal States who were lost through the war, was 280,420. The number of men furnished under all calls, reduced to the three years standard, was 381,496 for New York, and 2,154,311 for the United States.

THE SUEZ CANAL.

THE INSTITUTION OF CIVIL ENGINEERS.

On April 16th, the paper read was on "The Suez Canal," by Col. Sir W. Denison, K.C.B. It was stated that the scheme of the Suez Canal might be said to comprise two distinct undertakings. The first, and principal, was the construction and maintenance of a broad and deep water channel on one level, from Port Said on the Mediterranean, and Suez on the Red Sea. The second, preliminary in point of time, and indeed essential to the construction, as well as to the beneficial use of the canal, was the maintenance of a supply of fresh water sufficient for the wants of the population congregated along the line of canal, and specially at its two extremities. The arrangements for the last-named undertaking had been completed and were described. The opinion arrived at by the author, based upon what he saw and heard during a visit to the canal, and upon a consideration of the correspondence between M. de Lesseps and the late Mr. R. Stephenson, and of the report of Mr. Hawkshaw, dated February, 1863, was—First, that (subject, of course, to the condition that the relative levels of the Red Sea and the Mediterranean were as stated by the French authorities), there would be no extraordinary difficulty in carrying an open salt-water channel from the Mediterranean to the Red Sea of the depth proposed, namely, 8 metres. Secondly, that no special difficulty in maintaining this channel need be anticipated. Thirdly, that it would be necessary to modify the section proposed by the French engineers, making the side

slopes much more gradual. And, fourthly, that the cost of maintaining the above-mentioned depth of water would be found at first to be largely in excess of the amount estimated. Eventually, it was by no means impossible that means might be found to fix or check the drift of sand, or to shut it out from the canal. But for some years 't must be expected that the ordinary action of the atmosphere, which had filled up former excavations made in this dry desert, would have the same effect in the new canal. Looking at the work as an engineer, there did not appear to be any difficulty which a skilful application of capital might not overcome.

THE RUINED TEMPLES OF CAMBODIA.

ARCHITECTURAL INSTITUTE OF SCOTLAND.

At a meeting of this Society on the 11th inst. Mr. James Gowan said, Mr. Thomson having been kind enough to offer to exhibit his photographs of these temples, I undertook to make some notes which might draw out discussion upon the probable origin of buildings so interesting to such an institution as ours. The feeling I had when I first saw these photographs was that not only of admiration, but wonder as to the origin of a style of building so classic and Greek-like in its detail, seeing that the country in which they exist has no history extending further back than a few hundred years which can be relied upon. From the Greek or Roman appearance of the structures, one is inclined to ascribe them to models derived from either of those two countries; and a hypothetical supposition from history may be raised in this way, by giving the credit to the followers of the Macedonian Alexander, who fought his way into India just at the time that the Greeks had attained to the highest excellence of their architecture. The seeds of a Greek model may have been sown in this way; and this view of the architectural origin of these buildings is one that, at first thought, agrees with the popular belief we have in this country of the derivation of all styles of building. It is no doubt true that the architecture of a people will extend beyond the limits of their geographical boundary; but if you find buildings such as these of Cambodia, so far distant from the examples which they resemble, and which must have been erected at a time when intercourse between one people and another was so difficult, I am inclined to fall back upon the theory which I brought before the Institute many years ago as to the geometric basis of all true styles of architecture. I have, since I read my first paper, repeatedly advocated this principle; and I am not weakened in my views when I come to consider the probable origin of these buildings. If setting aside the copying or imitation ideas, and resting upon the geometric, we at once see how such buildings could be designed by people without having intercourse with those who, on the opposite side of the globe, it may be, were raising up structures almost identical. The requirements of architecture are utility, stability, and true proportion of parts, so as to give beauty, and these are altogether dependent upon geometric principles: there are geometric lines which regulate the use of stone, iron, and timber, in a constructive sense; and if a people apply the geometric lines which belong to stone structures, they should arrive at the greatest possible stability, as well as architectural feature, so that acting upon this principle there may be spontaneous styles of architecture altogether independent of copying or borrowing from any one. And, perhaps, I may be allowed to repeat what I, at a former time, stated to you as to the origin of the Greek and Gothic styles—the former, as well as the latter, being based upon geometric figures, which symbolised as truly as figures could their religious belief; the cube and the circle, with its elliptical development, giving the Greek, while the circle and the equilateral triangle gave the Gothic; in the case of the Greek these figures symbolising the unknown God whom they worshipped, while the circle and the equilateral symbolised to the Christian the Trinity or Three in One. Architecture in all countries seems to have reached its crowning point in the erection of religious structures, the Christian, the Buddhist, the Athenian, and the Cambodian all culminating at the same point, and very naturally and properly so. Mr. Thomson has kindly given me some figures which show the proportion, and from these I am inclined to think that a careful study of the building in its

details would give a scale of proportion as accurate as that which we have for the Greek or Roman style. I find that the figure 7 predominates throughout the entire building of the great temple. Having these views, I have made the following note of points for discussion:—1st. The view which a copyist would have as to the origin of these buildings. 2nd. The view which an advocate for geometric origin would maintain.

Copyist's Views.—1st. Wonder as to their origin and who the mighty architects could be. 2nd. People barbaric. 3rd. No ancient history to be depended upon. 4th. People evidently snake worshippers. 5th. From detail of buildings, inclination to ascribe them to Greek or Roman models. 6th. Question—Whether Greece borrowed from them, or they from Greece? 7th. Many examples of Indian architecture, Classic in style. 8th. Alexander the Great's followers, when he fought his way into India, may have sown the seeds of this style of architecture. 9th. Egypt said to be the source of Greek architecture, why not China? 10th. Judging from a copyist's point of view, the Roman Doric seems to have been the model, although the pillars are rectangular, and not circular.

Geometric View.—1st. Evidence that the designers worked upon a geometric basis. 2nd. A people working on a geometric basis may create a new and true style of architecture. 3rd. The civilization of a people does not necessarily carry with it a true style of architecture unless they work from a geometric foundation. 4th. Hence purity of architecture is not to be altogether depended upon in an ethnographic sense. 5th. The religious belief of a people, whether English, Greek, or Cambodian, influences the character of their architectural designs—next the material with which they have to deal, whether stone, iron, or timber. 6th. The want of the arch principle is no evidence that the builders were unaware of it; the corbelling principle which has been adopted was necessitated by the serpent-like form of the roof. 7th. The ornamentation is very geometric, and all of one type.

Some discussion followed the reading of Mr. Gowan's papers. Messrs. J. Dick Peddie, and David Macgibbon, architects, objecting to the geometric views, and ascribing the buildings to Asiatic origin.

Some illustrations of these buildings were given in the *Builder*, p. 224, ante.

LABOURERS' DWELLINGS AT AMIENS.

THE Amiens Industrial Dwellings Company have issued the particulars of a competition for designs for labourers' dwellings. The competition is open to architects of all nations. Designs will not be received later than May 31st of the present year. The conditions may be obtained from the secretary, M. Charles Noyelle, 17, Place Longueville, Amiens.

REREDOS IN CHRIST CHURCH, MAYFAIR.

THE reredos of which we give an illustration is placed in the church lately erected in Down-street, Piccadilly, and called Christ Church,—a building in the French Gothic style, from the designs of the Messrs. Francis. We gave a view of the font recently. The reredos is well carried out in all its details, by Mr. F. G. Anstey, of Alpha-road, Regent's Park. The length of this screen is 12 ft. 6 in., and its height 12 ft. 6 in. It is executed in Caen stone, and consists of five bays, with ribbed arches springing from carved caps, supported by Derbyshire marble shafts. These bays are subdivided into two smaller bays, arched, and having a central shaft also of Derbyshire marble. In the heads of the main arches are shields, with emblems of the Passion. The spandrels of the arches are filled with angels carrying a band with suitable legends. The six centre panels are filled with subjects, the six acts of Mercy. The table immediately below these panels is supported by marble columns, enriched with carved caps. The bays beneath and at the back are filled with, or rather will be filled up with encaustic tiles. We believe this reredos and the window of stained glass are intended as memorials of the late Mr. Henry Thomas Hope, of Deepdene, Surrey, by his widow, at whose cost they have been placed in the church.



PEREDOSS IN CHRIST CHURCH, MAY FAIR, LONDON.—MESSRS FRANCIS, ARCHITECTS.

THE DESIGNS FOR THE PROPOSED LAW COURTS.

The design given in our present number is by Mr. Raphael Brandon, known as well by various creditable executed buildings as by his "Analysis of Gothic Architecture," and other published works.

The principal objects, according to the architect, sought to be secured in arranging the plan of this building were to provide separate and convenient accesses to the various courts for the judges, the legal profession, the suitors, witnesses, jurors, and the public. For this purpose the judges have three entrances, two in Bell-yard, and one in Clement's-inn; the bar and attorneys, two entrances from the streets, one in the Strand and another in Carey-street, besides two others on the court-level, by means of bridges from the Temple and Lincoln's-inn; the suitors, witnesses, and jurors have two entrances, the one from the Strand, the other from Carey-street; and the public have two entrances from the Strand, whence they can reach the spectators' galleries in the various courts, by means of separate staircases, exclusively for their use.

The judges from their entrances have private access to their respective courts and means of intercommunication with their various rooms and chambers. They could also enter their courts and rooms, if desirable (as on state occasions), from the Central Hall. Their rooms are all on the Bench level, and in most cases their retiring-rooms open from the Bench.

The legal profession have their rooms on the level of the Central Hall, and in every case the various members of it have their separate entrances into the different courts; the lobbies forming the entrances to their different seats

being outside the courts, and thus obviating the necessity of having passages in the court.*

The witnesses and jurors can reach their rooms, and thence the courts by separate staircases, without the necessity of using the Central Hall. Thus each department of the business public has its own separate entrance and approach to the courts, without interfering with that of others, and the spectator public is kept entirely distinct from the business part.

The designer claims that the Central Hall may be kept (if desired) exclusively for the use of the legal profession and the suitors, though the witnesses in waiting for causes coming on might, he thinks, with advantage be allowed access to it.

Especial attention has been devoted to the lighting of the various courts and rooms, all enjoying good window light, without the use of sky or borrowed light.

The dimensions of the large Central Hall may be stated as 365 ft. long by 130 ft. wide. This space is divided into a central chamber 250 ft. by 60 ft. wide (from the centres of the shafts supporting the clearstory and vaulting); round this runs an ambulatory 17 ft. wide from the centres of shafts, and from this ambulatory the corridors between the courts are reached by lobbies 25 ft. by 17 ft.; between these lobbies areas of about 23 ft. 6 in. by 16 ft. 6 in. are formed to give light to witnesses' corridors and other accommodation below the court floor. In these areas are placed the staircases for the public spectators and all parties not engaged in the suits: they may be approached either from the Central Hall, or from the lower part of the building; but, as we are disposed to think, with

this design, it would be scarcely possible to exclude this portion of the public from the large Central Hall. The weight to be attached to this fact the judges will have to determine.

The two Record towers for fireproof accommodation, and the clock-tower, stand detached; the former extending westward (75 ft.) from the main block, and the latter at the south-eastern angle of the line of the Strand boundary of the site.

The other projections from the general line of the building are in reality buttresses, the main structure being advanced between them in a line with their outer faces, and thus made available for accommodation. The north-eastern, north-western, and south-western angles of the plan are rounded off, and with these exceptions the building is a parallelogram in form, with comparatively very small projections so as to make all the space available, the architectural effect being produced principally by the skyline. The buttresses already alluded to, and which, as has been described, are rendered useful for accommodation, serve a still more important purpose, as by means of them the walls being carried up above the roofs and all the openings in them internally being shut with double iron doors, the building is divided into fireproof compartments, so that supposing any part of the offices to take fire, the possibility of its spreading would be prevented. There are sixteen of these fireproof towers, each of which would be furnished with a large water-tank in the roof, from which any part could be instantly deluged with water.

We have already made some general observations on the design and need not therefore repeat them.

The estimated cost is 1,414,913l.

* This was made a stipulation in the instructions; but has not been generally complied with.



DESIGN FOR THE PROPOSED LAW COURTS.—By MR. RAHAEL BRANDON, ARCHITECT.—The Strand and West Front.

ASPHALTE PAVEMENT.

EXTENSIVE works are now in progress on the west side of the new railway station in Broad-street, in the City. A monster goods station is slowly developing itself from a vast chace of bricks, stone, iron, and timber. Huge columns of iron stand like giant sentinels in stately rows, and ponderous girders lie prostrate on the ground and seem to defy all the efforts of mechanical science to raise them. Several of these enormous girders, however, are already lodged on their lofty resting-places. A long series of arches presents to the eye a striking effect of perspective, and affords platforms for the rapid loading and unloading of merchandise. These platforms are now nearly finished, and like everything around them, they are large. Their surfaces are as smooth as marble and as hard as granite, being covered with Pyramont Seyssell Asphalt, laid on a bed of carefully levelled concrete. They are in every way similar to, and for the same duty as, those that have been in constant use for many years at the Great Northern and North-Western depôts for goods at King's-cross and Camden-town. The adoption of asphalt at all these places arose from its use at Messrs. Pickford & Co.'s depôt in Wood-street at the time it was erected in 1843. The whole of these works have been confided for execution to Mr. Jay, the well-known railway contractor.

The extensive use in Paris of Asphalt for roadways suggests the inquiry if it could not more often be usefully so employed in this country.

CATHEDRAL RESTORATIONS.

Gloucester.—The Dean of Gloucester some months ago started a proposition for the raising of 50,000*l.* for the restoration of Gloucester Cathedral. Reparations have been going on at the expense of the chapter for some years, but this was to be a special and exhaustive effort. Mr. Scott, architect, has embodied the results of a survey he made in a detailed report he has just presented to the dean and chapter. He proposes reparation and restoration, the estimated cost of which is 45,000*l.*—17,000*l.* for external, 22,000*l.* for internal works, and 6,000*l.* for incidental expenses. The estimate includes 1,000*l.* for gas lighting. "My main aim," he says, "is the limitation of the works of restoration in such a degree as to render them as conservative as possible of ancient work. I should earnestly desire not to renew a stone which is not so decayed as absolutely to demand it, and to decide all questions which occur with a leaning to conversion rather than to restoration or removal." He suggests the substitution of an open screen for the not very old one now in existence; and two pulpits should, he thinks, be provided, one for the choir and one for the nave. It would be possible to place the organ above the screen, as at Overwessel, on the Rhine, or to erect it beneath the arch of one of the transepts. Mr. Scott gives in detail a list of the restorations. The stonework of the choir must be cleaned; the screens, and many monuments and chapels restored; all mutilated stonework to be repaired; and so on. The redressed should be untouched. If anything is done with reference to stained glass, he strongly recommends that the work should be given to Mr. Hardman, of Birmingham, some of whose windows in the north aisle of the nave are mentioned as the most successful restorations of fifteenth-century glass he has ever met with.

Worcester.—A circular has just been issued by Lord Lyttelton, in which he says:—

"I ventured, as Lord-Lieutenant, to invite the attention of the county to the restoration of Worcester Cathedral. The restoration at that time, under the auspices of the Dean and Chapter, had made considerable progress. Upwards of 30,000*l.* had been expended from Capital Funds, mainly in the external restoration of the fabric east of the tower, the repair of the west transept, and a new window in the north-west transept, and, interiorly, in removing plaster, &c., repair of the vaulting, and repainting of the chapter-room. The new work then designed, consisted of the restoration of the nave and north porch, a new west window, and the repair of the cloisters; internally, of the repair of the floor of the nave, a new lighting and warming apparatus, a new choir screen and rood, reconstruction of the organ, and the fire remodelling of the choir. The cost of these works was estimated at about 22,000*l.*; to which, by vote of the general meeting, was added the external restoration of the tower, raising the total sum required to 30,000*l.* Large sums, as this sum, in the three years that have since passed by, great progress has been made in the undertaking. . . . The result is that the above works have been completed, with some unforeseen extras, that need not be specified, except the floor, the

lighting, and the remodelling of the choir, including the organ and screen. But the last item—that of the choir—is by far the most important part of the internal work, and the most costly. The present subscription is more than exhausted. The estimated sum now required for full completion is 16,000*l.*"

The Joint Committee to whom the work was entrusted called a public meeting, to be held at the Guildhall, Worcester, on April 25, and the circular solicits support at the meeting. The plans were to be exhibited before the meeting, at the Guildhall; they are by Mr. Scott, and have the approval of the Joint Committee. It is proposed, adds the circular, that the subscriptions shall be payable in five annual instalments.

Ely.—A new stone pulpit is progressing in Ely Cathedral. The enlargement of the organ is also proceeding. Another panel has been added to the Old Testament series of reliefs in the canopies of the choir-stalls.

THE MUNIMENT ROOM, TRINITY COLLEGE, CAMBRIDGE.

ONE competent to judge says,—A scheme is on foot at Trinity College, Cambridge, which should not be allowed to pass without protest. It is proposed to abandon the old Muniment-room, in King Edward's Tower (which has been used for the purpose for centuries), and to convert the room in Queen Mary's Gateway into a Muniment-room. Now, it may be safely affirmed that there is not a drier or more secure place for preserving valuable documents in the college, than the old room. The proposed room is in a narrow lane, which is known by a name the unsavouriness of which cannot be repeated to polite ears, though we believe it was once whispered to the late Prince Consort; on the opposite side of which are the kitchens and hall of another college, in which a fire not very long since broke out. It is contemplated to make the proposed room fire-proof, but however feasible the construction of an entirely new building which shall be fire-proof may be, it is simply absurd to suppose that that object can be effected in the present instance. Besides which it is impossible to say what will become of this ancient gateway if it is pulled about in the way which is intended.

Upon the whole, I cannot point to a more foolish proposal, except the plan proposed last year by the same author for constructing a room for holding the college archives behind the chapel, where damp and darkness would soon have rendered it unnecessary to have any Muniment-room at all.

It should be known that the proposed change is contrary to the wishes of the most experienced persons who are interested in the matter, and would probably have been summarily rejected but for the absence of one of the members of the Board.

FROM SCOTLAND.

Perth.—The Circuit Court-house for Perth and Fifeshire has been completed and officially opened. The exterior appearance of the old building remains almost unchanged. Internally, however, the whole building may be said to be remodelled. The hall is now lighted by a large cupola, the ceiling being divided into square compartments or panels. Access is obtained from the hall to the several apartments by wide, well-lighted corridors right and left, and to the galleries of the Court and upper floor by the old broad double stair, improved to suit the new arrangement. The judiciary court-room is situated immediately behind the hall, and on the site of the old court-room; but the relative position of the bench and audience have been reversed. Instead of the old semi-circular court-room, with its narrow passages and accommodation for only about sixty jurymen, there is now a court-room about 45 ft. long by 35 ft. wide, capable of accommodating upwards of 170, and having free access to the corridors on the right and left of the court, and separate doors for the magistrates, jury, counsel, witnesses, and public. The ceilings of the two court-rooms and of the two principal retiring-rooms are all panelled, that of the judiciary court-room having the stiles and mouldings enriched, and the walls decorated. A new block of buildings has been erected on the opposite side of South-street, for the accommodation of the procurator-fiscal, clerk of supply, county police, &c. These new offices form a termination to South-street,

with a return towards the river in the line of the now projected Tay-street. The whole buildings have been furnished chiefly in oak and morocco. The court-rooms, corridors, and record-rooms, &c., are all ventilated, and warmed by hot water. The improvement and extension of the buildings have been planned and carried out by Mr. D. Smart, architect, Perth, at a cost of about 14,000*l.* The following are the contractors for the work, viz.—Mr. D. Brand, Montrose, mason work; Messrs. Brand & Wadie, Montrose, joiner work; Mr. D. Donaldson, Perth, plumber work and gasfitting; Messrs. D. & P. Reid, Perth, alator work; Mr. Jas. Annan, Perth, plaster work; Messrs. John Bryden & Sons, Edinburgh and Perth, bells, blades, &c.; Messrs. Taylor & Finlayson, Perth, and Mr. Wm. Imrie, Perth, grates and ironmongery furnishings; Messrs. Stalker & Boyd, Perth, painter work; Mr. H. Purnell, Glasgow & Edinburgh, warming and ventilation; Messrs. Robertson & Son, Perth, furniture, &c. Mr. George Wells acted as clerk of the works.

Glasgow.—The large common sewer now in course of construction in Glasgow-green is progressing. The cutting is about 20 ft. in depth in some places. The workmen have been digging out a huge oak tree, found in forming the sewer. It was embedded nearly 20 ft. beneath the surface. Although the track of the sewer is mostly through a bed of sand, two embankments of clay have been come upon, and the formation of these is such as to lead to the belief that they were constructed by men's hands.

Prehistoric Building in Orkney.—At a recent meeting of the Society of Antiquaries of Scotland, a notice, by Mr. George Petrie, of Orkney, of ruins of ancient dwellings at Skara, Bay of Skail, Orkney, recently excavated, was read. Mr. Petrie's paper, which was illustrated by plans and drawings, gave a detailed account of these remarkable ruins, which have been dug out of great accumulations of sand and refuse by Mr. William Watt, of Skail. The general plan of the building at Skara is described as a group of chambers and cells, arranged on both sides of an opening into a long zigzag or winding passage, which runs nearly parallel with the line of beach. In some of these, central hearths were defined by flags on edge, and were filled with ashes and burned bones. In others, stone beds were inserted in the walls; and the external walls appear to have been coated over with clay. A human skeleton was found in one of the apartments, doubled up. In the ruins and a relative kitchen midden of great depth, many bones of animals and fish were found, with manufactured implements of stone and bone of great variety of type.

FROM MELBOURNE, AUSTRALIA.

THE "Guide to the Intercolonial Exhibition" gives some interesting comparisons between the present and previous Exhibitions. At the first colonial Exhibition, held in Melbourne in 1854, there were 428 exhibitors, principally of imported goods. At the next Exhibition there were 703 exhibitors. The receipts for admission at that Exhibition, for the ten weeks during which it was open, amounted to 3,400*l.*, the gross number of persons admitted being 67,405. At the present Exhibition, the gross cash receipts for admission, including season tickets, from the 24th of October to the 8th of December, a period of forty days and evenings, amounted to 6,268*l.* 17s. 3d., and the number of registered admissions was 122,849; the highest number on any one day and evening being 9,586, and the lowest 1,293. A comparison is also made between the number of exhibitors at the last Exhibition and the present one, as under:—

Victoria	542	1,479
New South Wales	470	273
South Australia	77	103
Queensland	33	36
Western Australia	68	196
Tasmania	118	738
New Zealand	113	88
New Caledonia	nil	35
Netherlands India	nil	3
Mauritius	nil	6

Totals

2,965

Collins-street Independent Church.—The foundation-stone of the new Independent church, in Collins-street, has been laid. The architects of the building are Messrs. Reed & Barnes; and Mr. John Young is the contractor for the work. The *Australian News*, a spirited local paper,

gives a good engraving of the edifice, with a description, from which the following particulars are gleaned. The style of architecture adopted is the Lombardo-Romanesque, and the walls are to be built of ornamental brickwork, standing on a high plinth or subbase of bluestone. The basement of the tower will be of cube bluestone, and that of the main building of first-class rubble-work of the same material. The general exterior surface of the walls is to be constructed with dark-coloured bricks from Hawthorn, while the quoins, arches, and ornamental devices introduced in various parts of the work will be of white and bright red bricks, from Brunswick; and the excellent Omara stone, from New Zealand, will be employed in the parapets, pinnacles, copings, cills, columns, and other dressings. The whole of the exterior is to be tuck-pointed, and the roof-slates will be arranged in ornamental patterns. The general block plan of the building is nearly a square, measuring 91 ft. 6 in. by 91 ft. 6 in., and 43 ft. high, from the ground to the top of the parapets; 65 ft. 1 in. to the apex of the gable; and 150 ft. high to the top of the tower. The plan is designed much on the same principle as that adopted for theatres, with such variations as are necessary to meet the requirements of a place of worship.

COMPETITIONS.

Abbot Memorial Schools, Gateshead.—At the last meeting the committee resolved,—"That the plans of Mr. Oliver and Mr. Swan be referred back to their authors, with instructions to amend them so as to reduce the cost to 3,400*l.*, and that the premium be awarded after the receipt of the amended plans."

Grentham Townhall.—The second premium was awarded to Mr. R. W. Edis, of London, architect.

Selson Park, Liverpool.—The site of the proposed park lies a little way beyond Prince's Park, and is bounded on the east by Mossley-hill, on the south by Mossley Vale, on the west by the Aigburth-road, and on the north by Ullet-lane. Three hundred and seventy-five acres of land were purchased from the Earl of Selkirk for a quarter of a million of money, and of these about 200 are to be appropriated to the park, the remainder being sold as sites for villas, and by this means it is hoped a great portion of the outlay will be recouped. Plans were sought for in November last, and it was then decided, upon the recommendation of the Improvement Committee, to offer two premiums for the best plans of laying out the park—one of 300 guineas, and another of 200 guineas. The following are the names of the competitors, and the sums at which they estimate the work indicated in their plans can be carried into effect:

Competitors.	Cost.
1. William Worley, Liverpool	£92,168 1 8
2. Edmund Andre, Paris, and Lewis Hornblower, Liverpool	85,000 0 0
3. William Henderson, landscape gardener, and David Walker, architect, Liverpool	123,500 0 0
4. Gay & Swallow, Bradford	76,000 0 0
5. R. W. Barnes, Manchester	89,004 0 0
6. Hans F. Price, Weston-super-Mare	100,000 0 0
7. Rev. James Bateman, Congleton	62,953 6 8
8. Alexander Black, Falkirk	27,285 0 0
9. François Duvillers, Paris	29,000 16 3
10. Rogers & Marsden, South Lincolnshire	38,000 18 0
11. A. Stansfield & Sons, Tadmorden	37,516 19 2
12. Henry May, Bedale, Yorkshire	33,002 0 0
13. Charles Eastwood, Luddenden Foot	67,000 0 0
14. Thomas Mercer, Liverpool	156,657 0 0
15. Thomas D. Barry, Leamington	100,360 0 0
16. Reinhardt Johns, Liverpool, 1st plan	48,929 0 0
(Two plans)	72,919 0 0
17. Alexander McKenzie, London	110,192 8 0
18. J. S. Tyerman, Liverpool	97,978 1 0
19. Maurice Young, Godalming, Surrey	62,263 15 6
20. J. A. Mason, Burton-on-Trent	25,000 0 0
21. J. Hart, Bradford	51,000 0 0
22. John Barnett, Shifnal	56,045 0 0
23. J. A. Hall and George Middleton, Liverpool	98,299 18 9
24. J. H. Hirst, Bristol	100,000 0 0
25. J. W. Cottee, Chelmsford	153,835 0 0
26. Joseph Newton, London	54,689 4 10
27. John Gibson, jun., London	55,964 4 9
28. D. Brade, London	108,580 0 0
29. Edward Milner, Sydenham	122,560 0 0

No. 2, the joint production of M. E. André, of Paris, and Mr. Lewis Hornblower, is a good design, illustrated by a large number of plans, drawings, and sketches, showing the park on the flat and in perspective, and the various matters of detail. An excellent proportion is observed between the space devoted to the park proper, and to the portions for building. The general arrangement of the park is such that from the principal entrance in the Prince's Park-road

vistas open out in several directions with pleasing effect. The "Rotten-row" is here, and is of considerable extent. No. 26, by Mr. Joseph Newton, is amongst the best of the designs exhibited. The designs for the conservatories and botanic gardens are liked. This plan includes provision for a hotel and sanatorium. In No. 27, Mr. John Gibson, jun., of London, exhibits a creditable plan. No. 29 is sent by Mr. Edward Milner, Sydenham, and deserves mention. No. 18, by Mr. J. S. Tyerman, of Liverpool, receives considerable attention. The committee have the advice of Mr. Robson, the borough architect and surveyor.

Calne.—Designs having been invited for a new Free Church in a limited competition, those sent in by Mr. W. J. Stent, architect, were selected, and the work will be proceeded with at once.

Bedfordshire Public School.—Several assertions are made as to doubtful circumstances in this competition; but we cannot publish mere rumours.

Ellesmere Memorial.—Sir: While restricting architects to a memorial costing 800*l.*, the committee have selected three designs for the decision of an eminent architect, two of which would, without doubt, cost more than double that amount. It was hoped that the connection of the monument with the noble family of Ellesmere would have insured fairness in the decision, and the restriction would have been abided by.

ARCHITECT.

THE GOVERNMENT SAVINGS BANKS, INSURANCES, AND LIFE ANNUITIES.

The Savings-Bank return for 1866, just issued, shows an increasing transfer of accounts from the old savings-banks to those of the post-offices. At the close of the savings-bank year, ending November 20, 1861, there were 1,580,359 individual depositors in the old savings-banks, and their deposits amounted to 38,697,205*l.*; and the deposits of charitable institutions and the smaller friendly societies (not keeping their account direct with the National Debt Commissioners) brought the total up to 41,546,475*l.* In September, 1861, the first Post-office banks were established; and in five years, by November, 1866, the deposits in the private savings-banks had fallen off to the extent of more than 5,000,000*l.*, and the Post-office banks had obtained deposits amounting to 8,000,000*l.* The friendly societies keeping a direct account with the commissioners had 1,799,648*l.* in their hands in 1866; in 1861 they had upwards of 2,000,000*l.* But these decreases are more than counterbalanced by the 8,000,000*l.* of Post-office bank deposits, the growth of the same five years. Under Mr. Gladstone's scheme of 1864, at the close of 1866, 1,150 insurances had been effected with the Government, through the post-offices, for sums payable at death, amounting together to 86,593*l.*; 282 immediate annuities, amounting to 6,423*l.*, had been purchased of the Government, and 107 deferred annuities, amounting to 2,119*l.*; charges for management, 636*l.* This was business done in about twenty months. In 1866 there were also 5,944 life annuities payable, amounting to 123,141*l.* a year, purchased of the Government through the private savings-banks and parochial societies, and fifty annuities for terms of years amounting to 890*l.*, besides 460 deferred annuities, amounting to 9,914*l.*, not yet become payable.

PROVINCIAL NEWS.

Birmingham.—The Birmingham and Midland Banking Company are about to build new premises in New-street. The site has a frontage of about 20 yards to New-street, and about 50 yards to Stephenson-place. The style of the buildings will be classical, the front towards New-street being divided into three, and that towards Stephenson-place into eight compartments, divided on the ground floor by rusticated pilasters, having Ionic pilaster caps on a plain basement. The first-floor will have three-quarter attached columns of the Corinthian order, with coupled pilasters at the angles. The upper cornice will be proportioned to the total height of the building, and will be crowned by an open balustrade, the angles being carried higher and treated as coupled pilasters, with separate caps and cornices. The public entrance will be in the centre of the New-street front, under a portico having four Ionic detached columns, the shafts and bases of which will be of polished granite, each in one piece. The banking-room will be 92 ft. long, 49 ft. wide,

and 30 ft. high, lighted by nine circular-headed windows, each 18 ft. high, and by a lantern light in the centre of the roof, 27 ft. by 18 ft. 6 in. The private entrance will be in Stephenson-place, and the board-room and ante-rooms on the first floor. The rest of the upper portion of the building will be occupied by private rooms for managers and apartments for the resident clerks, porters, &c. The strong rooms are all far removed from the external walls, and have double doors; and the bullion-room, in addition to the system of construction which has been adopted for the walls, ceilings, and floors of the strong rooms generally, will have an inner lining of wrought-iron, half an inch thick. The books, bullion, &c., are to be raised by means of a hydraulic lift. It is proposed to erect the main fronts in Portland stone, and the interior walls and decorations of the bank and principal rooms will be executed in Martin's cement. The fittings will be of polished mahogany, and the bank and other principal rooms are intended to be warmed and ventilated by Dr. Van Hecke's system, introduced into this country by Mr. W. W. Philipson, C.E. As soon as the remaining old buildings are pulled down, the works will be commenced.

Newcastle-upon-Tyne.—The foundation-stone of the "Exchange New Buildings West," about to be erected at the foot of the Side, has been laid. Mr. Matthew Thompson, of Newcastle, is the architect for the buildings; and the contractor is Mr. Walter Scott. The buildings are intended to be in the Italian style. They will be composed of shops, warehouses, and offices, the whole, when finished, occupying a frontage of 166 ft. This is the first of the town improvement schemes, and it is intended to widen the street materially.

THE TRADES' UNION COMMISSION.

This examination before the Royal Commission on Trades' Unions of Mr. Coulson, whose evidence on the building trade was given in the *Builder* of last week, was followed by that of Mr. George Howell, also a bricklayer, and at present the Secretary of the Reform League.

This witness had heard the evidence given by Mr. Coulson, and corroborated that evidence. He said there was a general objection on the part of bricklayers to working with persons not qualified to work at the trade, and they showed that objection in other ways than by sending to Coventry; the persons, inasmuch as they struck against them. He had never been a party to any measures which would occasion distress to a man beyond refusing to speak to him, and though accusations had been brought against the union men of using violence, none of these had been supported. The wages fixed by the society were the minimum of what a skilled man ought to receive; but, though union men were told to limit themselves to this payment, and might give as much more as they liked, yet they seldom did so, unless it was to make a man a "bell-horse" to lead his fellows on to do more work than they properly could;—a form of "chaining" as it was termed among the masons. A foreman might give a good and more than ordinarily skilled man an extra hour a day, but this was, he said, an underhand way of paying a man. There was no objection to a man doing as much work as he could; but the men decidedly objected to the "chaining" principle, and they also decidedly objected to piecework for lower wages than the minimum. The men would object to work with a non-society man who received less than the minimum wages. The evidence seemed further to point out that there was not among the brick industry such a strong feeling as among the masons, and one pleasing fact came out. Mr. Roebuck asked, "Supposing that a man were sick and enticed by bad health, but still a very good workman, he could not do perhaps so much as other men. Supposing he were to ask for work and to take less wages, would you object to that?" Witness.—"Yes; but in such a case, this is what the men would do. In the first place, the foreman, if he were a foreman of any judgment whatever, would put him where his skill would be made available without any great injury to his health. In the next place, there are but few men who would not feel pleasure in adding a brick each to enable that man to do the ordinary amount of work. Supposing five workmen were working on what is called a line, those five men would divide the whole length of the building into five spaces, and if one man was known to be ill or feeble, the other four would, as a rule, leave him the smallest portion of that work. They would not do that naturally, but without any hesitation." The witness stated, further, that the union had increased wages, lowered the hours of labour, and tended to decrease drunkenness among the men.

Mr. Thompson, on whose evidence before the commission the *Times* made some remarks, offers the following explanation of a passage in which it was said, "It appeared to me that it is commendable for a workman to consent to do such and such a thing, in putting a fly stone in a building." Mr. Connolly replies, "To explain the relation of owner, contractor, and workman, we take for example, one of those stone buildings now erecting in the City. The proprietor employs an architect to design it and draw up a specification; the architect, on behalf of the owner, enters into a contract with a builder to provide all materials, and execute all workmanship necessary for the due completion of the works. When the works are commenced, the architect employs a clerk of works to see that his designs are fairly carried out, and that the call to do the work equal to the description in the specification. The stone is generally sent worked from the builder's yard, and masons are sent to fix it or build it in. If a stone is not, and the clerk of works objects to it, he orders the mason to take it out of the wall; the workman calls his foreman, and if he says it must be taken out the workman does so at once; the

Mr. C. Aldridge then read a paper on the architecture of Northern Italy, remarking that when using the word "architecture," he did not intend to include any buildings in the Renais-

sance or Classic style, but those which were of the Gothic or Medieval period. He divided the subject into two sections, viz., secular and ecclesiastical. In the first he included such buildings as town-halls, exchanges, palaces, castles, piazzas, and domestic work; and in the second, cathedrals, churches, baptisteries, campaniles, pavements, mosaics, frescoes, stained glass, &c. The town-halls in the Lombard cities were all more or less interesting as examples of Medieval civil architecture in the days when every city had its own parliament or assembly. The Broletto was consequently the most important building, after the cathedral, in every city of Northern Italy. That at Como was a charming specimen, built as it was of coloured marble from the neighbouring quarries. Having described the brolettos at Bergamo, Brescia, Verona, Padua, and other cities which he had visited, he pointed out the difference between the architecture of Venice and that of other Lombard cities. In domestic architecture the balcony formed a desirable and necessary appendage to every house, providing a delightful means of enjoying the cool of the summer evening. These balconies contrasted favourably with the long rows of hideous ironwork which formed such an eyesore in a London street. Travelling in a southerly direction from Venice, it would be found that in Bologna and Florence another style of architecture prevailed in the public buildings. That of Venice was light, elegant, and almost profusely decorated with ornamental details and rich marble; while the other was severe and simple, trusting mainly to the great size of the buildings and their consequent imposing appearance. Passing to the ecclesiastical architecture of Northern Italy, the earliest examples were the churches of S. Ambrogio and S. Eustorgio, at Milan; S. Michele, at Pavia; and S. Mark's, at Venice. S. Mark's, at Venice, like few other churches in the world, stood alone and unique in its peculiarity and style, and it might be said that no architect had ever ventured to copy it in its entirety. Having described in detail many of the best examples of the round-arched Lombard style, and the Gothic architecture of Bologna and Florence, noticing the early brickwork applied to ecclesiastical purposes, Mr. Aldridge concluded with a few general remarks and criticisms on the peculiarities to be noticed in Italian Gothic architecture, and as to the lessons to be learned from those peculiarities, more particularly with regard to their adoption in this country. First, with respect to secular architecture, he thought most people would agree with him that solidity and simplicity were the ruling elements, more particularly as exemplified in the town-halls and public buildings. It was true there were some notable exceptions to this rule, particularly the Ducal Palace at Venice, and the Palazzo delle Razioni at Padua, which exhibited signs of weak construction, necessitating the use of iron ties and such-like additional means of gaining strength; but these were cases in which the architect had departed from the beaten track, and had either attempted a novel mode of construction, or else had tried to introduce too much ornament at the sacrifice somewhat of his construction. Putting these exceptions, however, on one side, and studying carefully the general rules adopted by the Medieval architects in their secular work, he thought they were entitled to credit for honesty, both as regards construction and ornament. The construction was rarely concealed, and was generally capable of performing its object. The ornament was generally subsidiary to the construction, or else sufficiently ornamental materials were employed to do away with the necessity of much extra ornament. With regard to ecclesiastical work, and more particularly brick churches, the architects were not in all cases entitled to so much credit for honesty, as there were too many sham west façades with low-pitched gables covering the roof and aisles, and looking the reverse of handsome. Modern architects had, he thought, many valuable lessons to learn from the works of the Italian architects of the Middle Ages, and particularly with regard to ornament and colour. A study of their works suggested whether we should have in England cheap decorative ornament badly copied from Medieval examples at home or abroad, building our churches like small models of cathedrals, or else adopting a more economical mode of construction, and expending the money thus saved in decorating the interiors. In his opinion, exterior ornament, and more particularly carving,

should be less frequently employed in this country (where we had such a trying climate), but rather let us use an honest mode of construction in the exterior, the ornament consisting chiefly of decorative material and good mouldings, reserving all colour and carving for the interior; and he still hoped to see the day when our churches would glow with colour and paintings, done with a true feeling of religion and art, although not by the hand of Giotto or Fra Angelico.

ARCHITECTURAL EXHIBITION SOCIETY.

THE Architectural Exhibition in Conduit-street will be opened on Tuesday evening next, the 30th, with a *conversazione*, whereat the President, Mr. Hope, will deliver an opening address. In conjunction with the Architectural Museum four lectures are to be given on every alternate Tuesday, beginning with Tuesday, May 14th. The price of a season ticket, admitting also to the lectures, is so small that a large number ought to be taken.

RAILWAY INTELLIGENCE.

A NEW line of railway was opened last week, about twenty miles in length, connecting the towns of Grantham and Lincoln, by a direct route, and thereby bringing the latter city one hour nearer to the metropolis. It is an extension of the Great Northern system, and has five stations. Fourteen villages lie on the line of its route, with a large grazing country on the west, and a corn-growing one on the east. The line is double throughout, with fish-jointed rails, 22 ft. long, and creosoted sleepers, 2 ft. 6½ in. apart; 35 lb. chairs, keyed inside, and rails supported on oak cushions. The crossings are of cast-steel, and switches from Bessemer steel rails. There are twenty-eight bridges on the line, one of which at Leadenham, carries a road that is banked 12 ft. above the land level, and at the same point the railway is in 32 ft. cutting; besides traversing it at an angle of 45 deg., the road rises 1 in 15, and the railway in passing under, 1 in 182: it is therefore a peculiarity of construction, and is built of coursed masonry. The arches are all of Portland cement. The signals are of iron (Steeple) pattern.

The station buildings are of red brick, with blue bands of Staffordshire. One station is of coursed stone, roofed with Taylor's patent tiles. The construction has been under the superintendence of Mr. Bower, the resident engineer. Messrs. Kirk & Parry were the contractors.

LONDON POSTS AND PAVEMENTS.

In the "History of Signboards," by Larwood & Hotten, recently published, I find (at p. 29) the following passage:—

"With the signboards, of course, went the signposts. The removing of the posts, and paving of the streets with Scotch granite, gave rise to the following epigram:

"The Scottish new pavement well deserves our praise:
To the Scotch we're obliged, too, for mending our ways;
But this we can never forgive, for they say
As that they have taken our posts all away."

The covert allusion of this epigram lies evidently in the double meaning of the word post, as in the epitaph (1736) on the Lord Chancellor King's carpenter, at Ockham,—

"Posts oft he made, yet ne'er a place could get,"

and I can easily believe that the epigram is of the time of Lord Bute's ministry, when so much jealousy was entertained of his patronage of his own countrymen. But I imagine that the authors of the "History of Signboards" have very much misapprehended the lines. I think they bore no allusion either to "Scotch granite" or to the signposts. I think the change to which they relate was not in the roadway, but the foot-pavement. I remember being shown by a relative, between forty and fifty years ago, some remains of a peculiar curb-stone to the foot-pavement, much narrower than our present curb-stone, but descending deeper into the soil, and that curb-stone, he told me, came from Scotland. It existed in Westminster, and perhaps was coeval with the formation of Parliament-street (circa 1756). It was, I suppose, when this curb-stone was adopted, that the posts, either of stone or timber, that had been previously

erected for the protection of foot-passengers and are to be seen in many old views of London streets, were no longer considered necessary. At the moment I am now writing these stone posts (intended to protect the foot-passengers) are lying prostrate, ready to be carted away, in St. James's-square, where they have remained up to the present time, but are dismissed upon the foot-pavement being extended to greater width.

I should be glad to have my ideas confirmed by any more positive memorials of the "Scottish new pavement" introduced into London in the middle of the last century. And when a Scotch granite first adopted for the roadway J. G. N.

MEPHITIC ATMOSPHERE OF THE UNDERGROUND RAILWAY.

THE removal of the noxious air would, indeed, be a desideratum; but the suggestion of "A. J. B." would, I think, hardly meet the case. Ventilating-shafts from the crown of the tunnel would be inconvenient above, while they would most probably fail to effect the object of the erection, the foul gases being so much heavier than the usual mixture of common air. A more likely plan appears to me to be the reverse syphon principle; the shorter end of the tube terminating in large gratings between the metal on the permanent way, while the longer arm might be continued indefinitely under the pavement, &c., and rise in convenient out-of-the-way spots, where fans and gas-jets might be used to promote the efficiency of their action. Heavy air would thus be drawn or drained from below, while dilution would be going on the influx of fresh air from the ordinary gratings at the road-level above. An apparatus of this kind would, I think, be nearly self-acting. THOS. GOODCHILD.

FLATS FOR THE MIDDLE CLASSES.

I AM extremely glad to see you in your interesting periodical stirring the useful subject of residences for the middle, and, I hope, the upper middle classes. I am myself acquainted with many cases where, perhaps, two individuals live together,—mother and daughter, two sisters, brother and sister, or even an elderly married pair, who might be extremely well pleased to find themselves able to rent two or three large handsome rooms, and a moderate accommodation for one or two servants, in place of a small eight or ten-roomed house, with but two-thirds of the rooms unoccupied, and one room of comfortable handsome dimensions. I think if in attractive spots, where there is so much beauty of scenery, and within easy reach of good town, a house or two, with handsome exterior and good rooms, divided into several residences under one roof, and surrounded some ornamental ground, were built, the separate tenements would let quickly. The widows, officers, of the better provided clergy, of small incomes, &c., would find a separate portion of a handsome house, standing in ornamental grounds, greatly preferable to a many-roomed small house in a petty garden. There should be a little kitchen, and one or two small rooms for servants in the same parcel, with two or three handsome rooms. X. Y. Z.

P.S.—Such spots as the close vicinity of Torquay, Bath, Cheltenham, &c. (or two or three miles from London), &c., should be chosen.

PLAGUE PITS IN UNDERGROUND EXCAVATING FOR SUBURBAN RAILWAYS.

Sir,—I think this subject is well worthy attention. It is not long ago that a road at Lewes was obliged to be diverted owing to the surveyor coming across a burial ground of those slain at Lewes in the old harvest war. The thing of a plague-pit at Whitechapel Workhouse, making a sewer;—and I this day read ("History of Paris, 1835") that on the opening of the vaults of the ancient French kings at St. Denis by the French Directory in 1799, the corpse of Francis I. and others of his family in all, buried about 1647, emitted so intolerable an odour after a lapse of twenty-five years, as to be highly offensive; but those that were buried in another vault, from 1627 to 1761, were in many instances so degenerated as to exhale a black, thick, infectious vapour, and the workmen were seized with diarrhoea and fever; but no harm then did, owing to the loading of gunpowder in six vaults to dissipate the foul air. I believe in 1830, a plague in Malta was communicated from one parish to another by the stily throwing the rag containing money pay wages from one person to another across a stream

running water (notwithstanding cordons sanitaires); and as all authors coincide that plague is easily communicated by mere touch, and is the sure effect of malaria during a continuance of hot, dry, vapoury weather, combined with disturbed atmospheric influences for two or three successive summers, as stated in the old Latin work of John Constant Palmer, who practised during the Great Plague of London, it is worthy the attention of the Legislature whether the suburban railways pass through the site of any of the old pits wherein the dead were buried in 1665, during the Great Plague. Infection may be the consequence, very widely spread in London, being communicated by the navies' clothes.

ONE WHO HAS READ MADDEN AND OTHER WORKS ON THIS SUBJECT.

THE SPARROWS ON THE CHURCH TOP.

PERHAPS no portion of Her Majesty's domains contains a greater number of sacred edifices than the good old city of "St. Mungo." Upon the cornices and projections of one, birds have been in the habit of congregating and building their nests. An impudent sparrow,—let us hope it was a young and ignorant one,—made a deposit upon the garments of an elder of the kirk. "Great events from little causes spring," there is now no "jutting frieze, but trees, or cognis of terror or torture to any temple-loving martlet" who dares presume there to make its pendent bed and procreant cradle. It is enough to make the ghost of Charles Waterton rise from his grave, and denounce broken crystal being put to such a use by those who forget "there is special providence even in the fall of a sparrow."

JANUS.

MANCHESTER BUILDING SURVEYOR.

SIR.—In your issue of the 29th inst. I observe, under the heading of "The Battle of Life," you state that the services needed in the office of building surveyor to the corporation of Manchester, the applicants were 123 in number. The appointment was that of "building surveyor itself," and, after advertising for applicants, the committee appointed a clerk from the office of their own city surveyor.

ONE OF THE 123 APPLICANTS.

CREMORNE GARDENS: CHELSEA SANITARY BOARD.

THE summer heats are approaching, and it may not be mine to require as to whether proper drains exist in connexion with closets; and also, whether water is laid on to whether cesspools prevail, and privies exist without water supply.

If the latter, no time should be lost in laying drains, and in securing a water supply. CAYENDE TETES.

SUN-DIALS.

CAN any of your readers give me a simple rule for finding the angle of the gnomon of a sundial for a house; also, to divide the hours properly? G. W. T.

LONDON-BRIDGE TRAFFIC.

INSTEAD of widening this bridge, as seems now contemplation, has the erection of a story over foot-traffic, similar to that of the temporary scaffriars-bridge, ever occurred to you? Such story, by leaving the whole width of the present bridge for horse-traffic, could be made at once most useful, practically and surely, also, an effective architectural feature. H. FIELD.

* Such a suggestion has been made with reference to another bridge.

BUILDERS' TENDERS.

THE Harrow Local Board of Health received following tenders for the proposed works estimated in the *Builder*, namely to lay down 50 ft. of 15-in. pipe-sewer; take up 1,200 ft. 12-in. and 9-in. sewer pipes; provide and add 100 yards of gravel; and other work, at enbail, within the district of the said Board:

Young & Russell,* about	£200 0 0
Coppel	581 0 0
Knight	563 0 0
Sinclair & Farnborough	518 0 0
Ayers	603 0 0
Bloomfield	500 0 0
John Woodbridge	450 0 0
Burgess	450 0 0
W. Woodbridge	430 0 0
Farke	427 0 0
Hubbard	395 0 0
Bolton	340 0 0
Yoss	320 0 0
Kendall	285 0 0

Bolton's tender was accepted.

WILLIAM SMITH, Surveyor to the Board.

* Given in per lineal yards.

WORKMEN'S EXCURSIONS TO THE FRENCH EXHIBITION.

THE Council of the Society of Arts have resolved to raise a fund to be employed in aiding a limited number of English workmen to proceed to Paris for the purpose of studying the present French exhibition. One condition is, that every man so assisted shall, on his return, make a report to the Society of what he has observed during his stay, in reference to the special industry in which he is engaged; and another is, that one-third of the amount be retained until his report shall be supplied to the society. In order to raise funds the Council have determined to appeal to the members of the Society for subscriptions for the furtherance of the undertaking, and they have voted 100 guineas from the funds of the Society towards that end, and have also been making arrangements in Paris for accommodation and food at reasonable rates for those who go under the Society's auspices.

A COMMITTEE of the Metropolitan District Association of Working Men's Clubs and Institutes have for some time past been making arrangements for the visits of large bodies of artisans and others to the Paris Exhibition. Mr. Hodgson Pratt, vice-president of the Association, has just returned from the French capital, after obtaining from the Imperial Commission the concession of a Government building, with beds, furniture, &c., for the exclusive use of those visiting Paris under the auspices of the Association. This will enable the committee to provide accommodation for at least 200 visitors per week from the 4th June until the end of October. Arrangements have also been entered into with Mr. Cook, Excursion Manager of the Newhaven and Dieppe route, for the transit of the excursionists to and from Paris. According to a circular just issued by the committee, the expense of the journey both ways, and lodging for one week, will be only 3 s. As regards the cost of living in Paris, Mr. Pratt has supplied information showing that the daily expenses of an artisan need not exceed from 3s. to 4s., while an Exhibition society ticket costs 5s.; so that 3l. would defray the expense of a visit from London. Through the liberality of Mr. Henry Hoare, the treasurer, who with great public spirit has offered to advance the funds necessary to carry out the arrangements, the committee are able to offer accommodation of a superior kind, including a good meat breakfast, at a cost of 4s. 6d. for the return journey, including dinner, tea, and admission to the Exhibition, the total expense of a visit under this arrangement will be less than 4l. Mr. Lyard is the president of the committee, and has taken the warmest interest in promoting this undertaking.

PROPOSED NEW BRIDGE AT CARLTON TERRACE, PADDINGTON.

THE inhabitants of the western portion of the parish of Paddington, and the adjoining districts of St. Luke's, Chelsea, and Kensington, have for some months past been agitating for the construction of a bridge over the Grand Junction Canal at the commencement of Kensal New town and Carlton-terrace, by which means through communication will be made between Maida-hill and Kilburn on the north, and Westbourne Park, Baywater, and Kensington on the south. At present persons are either obliged to take a circuitous course of two or three miles in passing from north to south, or to trust themselves to a frail boat, in which a late takes passengers across for a consideration.

The subject was discussed at the Paddington vestry on Tuesday, when it appeared that the cost of the proposed bridge would be £4,000.

Mr. Vigers said he had obtained promises from Sir John Neill of a subscription of 500l. towards the erection of the bridge, and from the Dean and Chapter of Westminster of a similar sum. Mr. Philip Wilkinson had also promised 100l. Under these circumstances he would make a proposition to the vestry that the bridge should be completed in all respects a bridge 40 ft. in width between the parapets, with such span, height above water, and waterways as shall be approved by the Canal Company, and from the design and specifications of the vestry engineer, provided the vestry contributed 2,000l. towards the cost of a bridge. In order to secure a due performance of the work, he proposed that a sum not exceeding 5 per cent. on the total cost of the bridge should be deducted from the vestry contribution and applied towards the payment of the engineer and superintendent of works, or let the vestry give him 1,750l. and pay their own officers.

After a lengthened discussion, it was resolved by a majority of the Board that the vestry do contribute 1,000l., and that application be made to the Metropolitan Board asking them to contribute another 1,000l. towards the 2,000l. required by Mr. Vigers to complete the bridge.

ACCIDENTS.

A FIRE has occurred in St. Martin's Church, near Oswestry. The fire raged with great violence for some time, until the doors at the entrance were entirely burnt; the woodwork in the entrance, under the belfry, was also burnt, and the fire soon forced its way through the belfry-floor. The fire, however, was got under before it reached the interior of the church, which entirely escaped. The mischief, of course, as usual, originated by overheating the stove on Saturday night. The stove is in dangerous proximity to the woodwork around it.

The fire does not appear to have arisen from the flues, but from the stove itself igniting the woodwork, though the flues were dangerously heated. The damage is roughly estimated at about 200l.

The church of the commune of Mantours, in France, had been for several months past in course of reconstruction, and only the nave had been preserved for divine service. Recently, while a considerable number of people were assembled, a loud cracking was heard, and the scaffolding and roof of the building, composed of tiles and wooden rafters, fell in to the extent of 18 yards, burying many of the congregation in the ruins. Four persons were killed on the spot, and twelve others received contusions, more or less severe. Two stables in Chapel-place, Brompton, with living-rooms over them, fell on Saturday morning at about half-past nine. The party wall gave way, bringing the flooring and roofs with it. The rooms were occupied at the time: one woman was hurt and taken to St. George's Hospital. Two horses, after some trouble, were liberated. From the appearance of the remains, the wonder is they had not given way before. The premises here generally should be at once examined, as many look to be in a dangerous state. The same observation would apply to many buildings in London and the suburbs at the present time.

Books Received.

VARIORUM.

THE *Gazette des Architectes et du Bâtiment* (No. 1, for 1867) contains some interesting speculations on the country and the works of Wilars de Honecourt. The writer, M. P. Bédard, arrives at the belief that the choir of the church of St. Quentin is the work of Wilars.—Messrs. Rosser & Russell, as heating engineers, have issued a very useful Trade Book, calculated to assist architects in deciding upon the relative applicability of various modes of warming buildings.

Miscellaneous.

THE POLYTECHNIC INSTITUTION.—There are striking novelties here, especially a new optical illusion. The lectures by Professor Pepper illustrating popularly Spectrum Analysis is very interesting.

ART-UNION OF LONDON.—The annual meeting for reception of the report and distribution of the funds will take place at the Adelphi Theatre on Tuesday next. We shall, as usual, give full particulars and the official list of prizeholders.

INTERNATIONAL ARCHEOLOGICAL CONGRESS.—The Archeological Congress that was to have been held in Antwerp last year, and was postponed, will be opened there on the 25th of August next, and will close on the 1st of September.

PROPOSED PUBLIC HALL FOR HADLOW.—It has been resolved at a public meeting held at Hadlow to open a subscription-list towards the erection of a public hall for the town. The building is to cost about 500l., and the architect is Mr. Friend.

THE ROYAL MICROSCOPICAL SOCIETY'S SOIRÉE. Amongst the many remarkable objects exhibited at King's College, on Wednesday evening last, we especially noticed the singular globular bodies recently discovered in coal-ashes: they are almost invisible to the naked eye, but the microscope displays them as metallic granulated spheres of various sizes; they are agitated in an energetic manner on a magnet being placed near them. Living creatures belonging to the animal kingdom were abundantly displayed, for we had "human fleas," "cat's fleas," water-fleas, cheese mites, and snails, as well as fish-hatching. The circulation of the blood was shown, in the tongue and foot of the frog, in the tail of the carp, and in the body of the tadpole. The vegetable kingdom had representatives in living desmids, and the cell circulation was shown in the American weed, and other plants, of our rivers and watercourses; nor must we omit to mention in connexion with the "lively fleas" above referred to, several excellent preparations of the so-called "gregarine" on human hair. The rooms were crowded with men of science, and the exhibition of first-rate microscopes was unusually good.

TESTIMONIAL TO AN ARCHITECT.—On the 23rd inst. a handsome silver cup was presented by the builders of Torquay to Mr. H. H. Bridgman, architect, who is about to leave the town. Many strong expressions of respect and good feeling were used by those who had been connected with him in business. It is a creditable incident in a young architect's career.

THE NEW PALACE OF WESTMINSTER.—Two more frescoes by Mr. C. W. Cope, R.A., are now being placed in the peers' corridor. The subjects are—"The setting out of train bands from London to raise the siege of Gloster," and "Speaker Lenthall asserting the privileges of the Commons against Charles I. when the attempt was made to seize the five members."

THE CHELTENHAM SEWAGE QUESTION.—By a majority of fifteen to eleven the town commissioners have rescinded the resolution previously come to for the purchase of land for sewage irrigation. The plan was to purchase 120 acres of land at Staverton, for 10,000l., and to distribute the sewage thereon, the total cost of the land and works being estimated by the surveyor at 17,000l. The land selected was considered to be not nearly large enough for the purpose; the cost disproportioned to the results; and many of the farmers in the neighbourhood had withdrawn their offers to take the sewage over their land. By carrying the sewage further into the country, it was urged, land cheaper and of greater extent would probably be obtained, and the neighbouring occupiers would be disposed to take the refuse with greater readiness and on more remunerative terms.

PROPOSED MEMORIAL FOUNTAIN IN LEAMINGTON.—At a public meeting it has been resolved, "That the esteem and regard entertained towards the late Mr. Hitchman by his fellow-townsmen and friends, for his long untiring energy in promoting the interests and prosperity of Leamington, and his benevolence and kindness to the poor, render it incumbent that some public memorial of him should be established in the town; and that a public fountain or some other ornamental structure bearing his name would, if found practicable, be an appropriate memorial." The cost and decoration of the structure will be regulated by the amount of subscriptions. As to the site, the open space fronting the Holly Wall has been suggested as the most suitable, or, if the authorities purchased the Avenue-walk, in Dormer-place, then it could be erected there. A committee was appointed to carry out the object of the meeting.

THE ANTIQUITIES OF BATH.—A memorial has been presented to the Bath town council by the Bath Royal Literary and Philosophical Association, and the Bath Natural History and Antiquarian Field Club, expressing a hope that all the discoveries of Roman or other ancient buildings in excavating, will be carefully recorded as to site on the large corporation map of the city, and drawings made of such remains for preservation, with notes and drawings of other relics of antiquity, while such relics are also carefully preserved. The memorial was referred to the Borough Property Committee, leaving them to consider the best means of carrying out the suggestions it contained. A similar application has been made to the Grand Pump-room Hotel Company, who have instructed their architects, Messrs. Wilson & Wilcox, to take proper care for the preservation of any Roman remains that may be found in the course of the excavations on their property.

ROYAL ITALIAN OPERA, COVENT GARDEN.—The subscribers have had every reason to be satisfied with the opening of Mr. Gye's season in respect both of variety and excellence. Madame Vilda has well sustained the remarkable position she took as the new *Norma*; Signor Mario is singing with renewed freshness; and Madlle. Lucca has delighted her audience in "L'Africaine" (gorgeously mounted) and "Fra Diavolo." A new barytone, Signor Cottogini, made a very favourable impression in the first of these operas, acting as well as singing with discretion and power. On Tuesday evening Graziani re-appeared, and contributed greatly towards a most admirable representation of Verdi's "Un Ballo in Maschera," an opera that, like other works by the same composer, makes friends as it grows older. Madlle. Fricci sang the part of the unhappy *Amelia* with great pathos, and the *ensemble* was perfect. Madlle. Nau, who, as the puge, made her first appearance, is at present wanting in dash, and her voice is somewhat thin, but it has much flexibility, and her appearance is good.

USEFUL AMERICAN INVENTIONS.—At the Franklin Institute, Philadelphia, some new mechanical contrivances, or new applications, have been exhibited, one or two of which are worth notice. A national lifter, as it is called, or portable crane, is so constructed as to be easily moveable from place to place, and set up by one man, and yet is capable of raising at least ten tons. A pulley with cam-wheel, if the rope should break during the hoisting, immediately clamps the rope, and so prevents the fall of manufacturer in Massachusetts having observed that his workmen lost 12 per cent. of their time in screwing up and unscrewing the vice at which they worked, has invented a vice in which that defect is obviated, and the jaws can be opened or closed with a single pull or push, and the article operated on is held as tightly as in an ordinary vice. The mechanism of the vice comprises a rack with ratchet teeth, and a nut with teeth on its under side to fit into those of the rack. This nut rises when the vice is to be opened or closed, but drops into its place when the piece of work is inserted, and then one turn of a screw suffices to tighten up. This is an invention which locksmiths and instrument-makers will doubtless take advantage of.

TENDERS

For the erection of houses and stables, 10, Grosvenor-street, for Dr. Weber. Mr. E. A. Gruning, architect. Quantities by Messrs. Parker & Elger:—

Patrick & Sons	£5,090 0 0
J. & C. Yanson	4,296 0 0
Rider & Son	5,204 0 0
Cowland	5,550 0 0
Ashby & Sons	5,400 0 0
Piper & Wheeler	5,400 0 0
Smith & Taylor	5,340 0 0
Higgs (accepted)	4,948 0 0

For new stables, lodge, laundry, and new roof and alterations to house, for Mr. J. P. Flemish, Allen House, Roshampton Park. Mr. E. A. Gruning, architect. Quantities by Mr. H. Gritten:—

Tracy, Southall, & Watson	£4,784 0 0
J. & C. Yanson	4,484 0 0
Trollope	4,475 0 0
Myers & Son	4,432 0 0
Manfield, Price, & Co.	4,400 0 0
Brass	3,880 0 0
Nicholson	3,290 0 0
Higgs (accepted)	3,698 0 0

For additions and alterations to two houses, at Bexley Heath. Mr. W. B. Pinhey, architect:—

Payne & Balding	£1,019 0 0
Osborne	1,007 0 0
Nightingale	1,013 0 0
Butler	1,423 0 0
Soper	1,450 0 0
Elms	1,288 0 0
Manwaring	1,341 0 0
Walker	1,300 0 0
Wise	1,229 0 0

For additional wards, Essex and Colchester Hospital. Mr. Horace Darken, architect:—

Taylor	£2315 0 0
Shepherd, Brothers	310 0 0
Carlo	284 0 0
Lee	280 0 0
Everitt	275 0 0
Dobson	250 0 0
Eade (accepted)	258 0 0

For shop and machine-rooms, for Mr. Alfred Hogg, Colchester. Mr. Horace Darken, architect:—

Croze	£276 15 0
Shepherd, Brothers	620 0 0
Taylor	615 0 0
Eade	615 0 0
Everitt	614 0 0

For vicarage house, at Bingham, Norfolk. Mr. J. S. Benest, architect:—

Papes	£720 0 0
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For house and shop, exclusive of glass and shop-front, opposite the Guildhall, Norwich. Mr. J. S. Benest, architect:—

Downing	£684 0 0
Lacey	670 0 0
Hood	650 0 0

For building & rectory-house, at Bodham, near Holt, Norfolk. Mr. J. S. Benest, architect:—

Harrold	£1,163 1 0
Youngs	1,080 0 0
Cornett	1,070 2 9
Chapman	1,037 0 0
Nelson	815 0 0

For new national schools, at Rhayader, Radnorshire. Mr. R. H. Lingen Barker, architect:—

Mason	£598 0 0
Woolley	499 0 0
Edwards	469 0 0
Evans	357 0 0

For new church of St. Andrew, Plaistow. Mr. J. Brooks, architect:—

Henshaw	£4,785 0 0
Forster	4,620 0 0
Colls & Son	3,980 0 0
Hill & Son	3,630 0 0
Hill, Keddell, & Co.	3,567 0 0
Higgs	3,314 0 0
Perry	3,267 0 0

For warehouse, for Mr. Jacques, in Cow-cross-street. Mr. S. C. Capes, architect. Quantities supplied:—

Ashby & Son	£3,431 0 0
Smith & Fotheringham	3,298 0 0
Vagstad	3,250 0 0
Newman & Mann	3,255 0 0
Piper & Wheeler	3,230 0 0
Webb & Son	3,177 0 0
Foster	2,986 0 0
Scrivener & White	2,913 0 0

For new bedroom and new fossil-room to the Norfolk and Norwich Museum. Mr. J. S. Benest, architect:—

Lacey	£633 0 0
Downing	499 0 0
Balls	496 0 0
Wiseman	472 0 0
Hood	465 15 0
Rice	440 0 0

For addition to the Adelphi Theatre, for Mr. Benjamin Webster. Mr. Joseph Lavender, architect:—

Forster	£1,837 0 0
Axford	1,715 0 0
Green	1,620 0 0
Palman & Co.	1,658 0 0
Webb & Sons	1,649 0 0

For rebuilding No. 23, Lime-street, for Mr. J. Thornton. Mr. Reilly, architect:—

Carter & Sons	£1,335 0 0
Park	1,177 0 0
Webb & Sons	1,174 0 0

For St. Luke's Infant Schools, Globe-road, Mile-end. Messrs. Hammett & Lambert, architects:—

Williams & Sons	£2,790 0 0
Webb & Sons	2,457 0 0
Ennor	2,412 0 0
Gibson, Brothers	2,387 0 0
Hedges	2,339 0 0
Newman & Mann	2,336 0 0

For sundry alterations, at No. 4, Mincing-lane, for Messrs. T. Daniel & Co. Messrs. M'Murdo & Rust, architects. Quantities supplied:—

Hart	£3,400 0 0
Adamson & Sons	3,335 0 0
Hughes	3,107 0 0
Nixon	3,098 0 0
Newman & Mann (accepted)	2,856 0 0

For sewerage works, Cranford, Middlesex. Mr. Charles Innes, architect:—

Lodge	£1,100 0 0
Adamson & Sons	829 0 0
Thurst & Co.	822 0 0
Crockett	800 0 0

For the restoration of Stotessdon Church, Salop. Mr. Blashill, architect:—

Owens	£2,260 0 0
Smith	1,720 5 1
Nevelt (accepted)	1,677 0 0

* Without allowing for old materials.

Accepted for Leicester Lunatic Asylum. Mr. E. L. Stephens, architect:—

Brickwork, Slating, Plastering, &c.	
Osborne, Brothers	£3,100 0 0

Osborne, Brothers. Stone Work.

Osborne, Brothers	2,819 0 0
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Eagle Carpenter and Joiner's Work.

Eagle	3,890 0 0
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Plumber and Glazier's Work.

Norman & Underwood	1,130 0 0
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Painter's Work.

Whitmore	376 13 0
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Troyfounder's Work.

Pegg	1,430 0 0
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Gasfitter's Work.

Webbs	328 0 0
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Steam-engine, Boiler, Washing Machine, Cooking, Ventilating, &c.

Haden & Son	944 13 0
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For the erection of a block of model dwellings for the working classes, on the Blagrove Estate, Dwellings. Messrs. W. & J. T. Brown, architects:—

Lovett	£3,329 0 0
Sheppard	3,138 0 0
Kendall	3,087 0 0
Carter	2,900 0 0
Simonds	2,879 0 0
Barnicoat (accepted)	2,700 0 0

For a fire-brigade station, at South Parade, Chelsea, for the Metropolitan Board of Works:—

Day	£261 0 0
Sims & Marten	648 0 0
Fish	630 0 0
Wilcox	623 0 0
Wignmore	604 0 0
Cooper	609 10 0
Nutt & Co.	608 0 0
Mann	625 0 0
Higley	624 0 0
Langford	498 0 0
Whitlock (accepted)	498 0 0

TO CORRESPONDENTS.

"*Italian Master.*"—So many correspondents have inquired where this material can be obtained, and for evidence of its value in painting, that we direct from our custom to ask these questions.

"*Correspondent.*"—In reply to five or six correspondents, who request that we should indicate to the authors, painters, and historians of the subject, we refer them to the subject in the contents of this journal, published in the first volume of the Transactions of the Institute of British Architects.

"*Letter.*"—We have reason to believe that acts of Courts have been well considered.—P. R. M. (plan is an engraver's hands).—W. M. (know of no suitable person any reward that would follow the mortification of the problem named).—M. & R. (lost).—H. T. (we are by no means prepared to accept the deductions made).

The Builder.

VOL. XXVI.—No. 1265.

Alnwick and Old Times.

MODERN birds of passage are nearly always disappointed with Alnwick. Most of the old topographers found it "gudlye" enough; but modern travellers, attracted by its reputation, seem to smart under the burden of their unrealized expectations. Thinking most of Alnwick as the home of the ancient Percies and the centre of military and knightly life on the borders, they seem to expect that both town and castle should have the appearance of a field on which a battle has been recently fought, or show striking evidence of having been the seat of continuous chivalrous operations. The brilliant associations of ideas with which Alnwick is framed in the mind's eye, keep fluttering pennons, glittering arms, heraldic

devices, men clad in armour, horses richly caparisoned, and all the pomp and circumstance of Mediæval warfare constantly in view; and, as all these fade away as the small sturdy grey town lying in its green basin of hills is entered, disappointment finds utterance. Pennant loudly deplores the absence of any marks of the feudal age; Wordsworth wrote, that those who went to Alnwick with their heads full of the ancient Percies, would be woefully disappointed; the American poet, Fitz-Greene Halleck, expresses himself as oppressed with the incongruity of the appearance of the liveried menial who led him through the castle filled with memories of Hotspur and his noble wife "for ten and sixpence sterling;" and so on through a long list. But this is not the case with those who know Alnwick better. To them it is full of beauty and fraught with interest. The people of Alnwick are nearly all antiquaries to a man, from force of association with the various old customs and objects in their town. There is scarcely a tradesman in the place who has not a collection either of coins, stones, pictures, curiosities, or antiquities, of some kind; nor a working man who cannot point out the spot where King William of Scotland was taken prisoner, or King Malcolm was slain; or explain the meaning of the sculptured figures on the town's fountains; or of the curfew still rung every night; or of the watch still set at the town-gates on the eve of the great fairs; or decipher the worn legends on some of the door-lintels; or point out the oldest burgages, the bull-ring, or the site of the ancient stocks. And built up in many of the comparatively modern houses are fragments of Mediæval ornament, showing that this feeling for old times is no new growth. Especially is this contemplative and retrospective phase of mind apparent in a volume before us, treating of the history of Alnwick, by Mr. Tate, F.G.S., known as a practical geologist and in connexion with the inscribed rocks of Northumberland.*

From his point of view, there are no blank spaces, and but few blots in the presentment of Alnwick. He misses not the helmets, hauberks, and halbs hung with the spoils of the chase, that Pennant could not see, for they are as ever present to his mind as though actually visible. It is nothing to him that the strong stone wall that once encircled the town has been overthrown; for he can yet trace its route and detect, here and there in the old garden walls, fragments of it. Nor are the ancient Percies less realities to him because the neighbouring abbeys they enriched are either razed to the ground or ruined, and their monuments in them, and their sites grown with grass; for he can show you a sunny spot by the river's side embosomed in trees, and say, "Tis here about they lay." Neither are his meditations disturbed with the modern liveries of a nobleman's household, because he can contrast them with the "livery of velvety" and "jackets of orfavery" worn by former retainers; and with the "cransyn gowne," bordered with precious stones at the openings of the sleeves and collar, worn by the Earl of Northumberland, who conducted the daughter of Henry VII. into Scotland, on her marriage with James IV. In a word, he habitually reinvests Alnwick with its ancient glories, trophies, and characteristics. And so, in a scarcely less graphic degree, do his fellow-townsmen. He writes:—

"When several of our great towns were mere villages, or clusters of huts or shealings, Alnwick was a walled town, and enjoyed a corporate existence. Battles were fought before its gates, it was repeatedly besieged and burnt; kings were slain and captured within sight of its walls; monarchs and generals made it a place of rendezvous for armies and negotiations; warlike barons, wielding power little less than regal, resided within its great castle, ruled their vassals and hatched their plots against their sovereign, or devised schemes for public liberty; malefactors were executed there, and gross and gory heads were exhibited over its gates; mixed abbots and cowled monks lived hard by, and dispensed a magnificent hospitality within their splendid abbeys; and, in later times, the commonality rising out of feudal bondage, may be seen culled with a limited amount of wealth and power now debating and quarrelling over the town's affairs, and now enjoying themselves with their canary, mulled claret, and music. Old customs lingered long here; and there yet remains somewhat of the racy savour of olden times in the tastes, the habits, and associations of the inhabitants."

History, as furnished by archæology, may be said to have commenced earlier in Alnwick than in most places, for the Celtic memorials in the immediate neighbourhood are numerous. Within a limited circumference nine or ten ancient British camps may be explored, and several sepulchres have been found. The foundations of circular hut dwellings, with rudely-flagged floors, have been uncovered near the town, denoting continued residence, rather than short predatory occupation, on the part of the primitive warriors, who at this distant date "belonged Alnwick," as the phrase goes there. Stone celts, bronze relics, gold ornaments found within the parish, a rude unheaven monolithic pillar, on a height about two miles westward of Hulne Abbey; and several Celtic names attached to geographical features, are further proofs of this occupation; but as the prosperity and consequence of Alnwick culminated in the Mediæval period, we pass rapidly on to that time, pausing only to remark, that Roman, Saxon, and Danish dominion are not represented with anything like the fulness with which Celtic times are illustrated. Mr. Tate goes carefully over this ground, and gives figures of the curious symbolic sculptures on the sandstone rocks on the moorlands in the country around Alnwick, which he ascribes to the races who built the camps and huts, and dropped, or otherwise left behind them, the weapons and ornaments to which we have alluded. Perhaps we should not expect to find many traces of the Romans so far north of their great murus or barrier; but be that as it may, the only remains of this race of warriors of any consequence is the road, or branch of Watling-street, called the Devil's Causeway, which passes Alnwick about seven miles to the westward of the town. There are, too, within a few miles,

appearances that have been taken for the indications of sites of camps, in two directions, Crawley and Outchester, and corroborative evidence has been yielded with respect to the latter by a find of a number of Roman brass coins contained in a small oak box, in a bog close by; but our author does not insist upon either of these; neither does he tarry long with Saxon memories, probably for the reason that the mighty war-smiths and "bracelet-givers to heroes" have left but the rarest foot-prints behind them. Their institutions have entailed, however, one benefit which their successors still enjoy, namely, the falc-land or moorland, used in common by the freemen of the town; although the plot of land, which was the private property of every free man, called boc-land, because he was free to transfer it by charter, has been long since absorbed. Mr. Tate has started a new view with regard to this period. He thinks that a neighbouring village, called Lesbury, on the Alne, near its mouth, enjoyed in those days pre-eminence over Alnwick, and was the seat of the principal Thane. The only evidence left that the Danes ever set foot in the neighbourhood of Alnwick is in the number of words of Danish origin in the common local dialect. Mr. Tate strings together a short narrative in the Alnwick language, which shows that nearly every word in it that is foreign to the southerner's ear has fallen from the speech of the hardy Scandinavians.

In the days when Norman ornament was supposed to be Saxon there appeared to be very considerable remains of a Saxon structure incorporated with the castle; and, consequently, there was a necessity for a Saxon owner to be found. Tradition was equal to the occasion, and conveniently furnished a thane, Gilbert Tyson, whose daughter, acres, and castle were bestowed upon one of the Norman knights who accompanied William the Conqueror in his venture across the English Channel. But, as the peculiar ornamentation in question is now found to be Norman, there is no evidence whatever of a Saxon building on the site of the castle, and hence there is no occasion for a Saxon proprietor, which is so far satisfactory that we are free to take up the subject with the aid of authentic documentary information. The first knight whose name is associated with Alnwick Castle is Ivo de Vesey, to whose grandson, William de Vesey, Henry II. confirmed in fee and heirship all the lands and tenures of Eustace Fitz-John, his father, as well as the castle of Alnewyk and the whole honour which belonged to Ivo de Vesey, his grandfather. From this period the successive owners of Alnwick walk across the little disc that was their day with their individuality clearly discernible. Now the friend, and now the foe, of the reigning sovereigns, the De Vescies occupied prominent places in the chronicles of early writers; and it is noticeable, that varied as were their political feelings, they were not oppressive to the inhabitants of Alnwick, uniformly benefactors of the Church, and especially liberal givers to the monks of Alnwick Abbey. During the time that they were lords of Alnwick the town had developed into a place of some importance, having a trading and mechanical community, with a common seal and common property, and one of their charters informs us that the two leading streets, by name Bondgate and Narrowgate, were then formed. It is, however, with the Percies that Alnwick is most vividly and indissolubly associated.

Two years after Edward I. fell sick and died at Burgh-on-the-Sands, bidding his son boil his bones and carry them at the head of his army into Scotland, Henry de Percy purchased Alnwick of Anthony Beke, the fighting Bishop of Durham. Dugdale informs us that the last of the De Vescies left a natural son, known as William De Vesey of Kildare, from the circum-

* The History of the Borough, Castle, and Barony of Alnwick. By George Tate, F.G.S., &c. Vol. I. Alnwick: Henry Hunter Blair, 1866.

stance of his birth in Ireland, for whose benefit "he did by the king's licence inoffit that great prelate, Anthony Beke, Bishop of Durham and Patriarch of Jerusalem, in the Castle of Alnwick and divers other lands, with trust and special confidence that he should retain them for the above William de Vesey, born in Ireland, at that time young, until he came of full age, and then pass them to him; which William derived no benefit from that trust; for the bishop, being irritated by some slanderous words which he had heard the bastard had spoken of him, by his deed bearing date November 19, 1309, 3 Edward II., sold the Castle and honour of Alnwick to Henry de Percy, a great man of the north, from whom the earls of Northumberland, still possessors thereof, are descended." They were threatening and unsettled times; and it is quite possible this wrong might have passed unheeded among more pressing and public calamities. That the Percies were not quite satisfied as to the legality or equity of the transaction we may assume from the fact stated by Mr. Tate that in 1324 the natural son of William de Vesey having been slain in the battle of Bannockburn, the son of Henry de Percy obtained a release of his rights to the barony of Alnwick from Sir William Aton, the heir-at-law, by payment to him of seven hundred marks sterling. The purchaser of Alnwick, however, did not wait for this settlement of the question before he began to build. He lived but five years after acquiring the stronghold of the De Vescies; but in that time he materially enlarged and strengthened it. Much of his work is still standing, a marvel of stateliness, strength, and perfection of masonry, as we have elsewhere related in our notices of the recent excavations. The history, pedigree, and rudiments of the Percies naturally take up a large portion of Mr. Tate's volume; but there are not vain repetitions, for, though obliged in matters of history to follow in the beaten track of facts, he takes original views as to the relative worth of the successive lords of Alnwick. Hotspur, from his daring valour, has hitherto borne away the palm from a race in which every individual was eminent. Mr. Tate says he likes better the second baron and the second and tenth earls, for the former was gentle and kind-hearted in days when men sorely needed such an example; the second was faithful, brave, and wise; and the third a religious and conscientious man, who did his best to promote the good of his fellow-men by securing for them a constitutional government.

The Percies, however, are not all in all to our author. His sympathies seem to be more absorbed in the town than in the castle; and he shows that the earls of Northumberland have not been the great benefactors to the former that they are supposed to have been. The Percies were in possession of Alnwick Castle for more than 120 years before the town was protected by a wall; notwithstanding that it was frequently entered, ravaged, and burnt. It is true that the licence granted by Henry VI. to enclose, wall, and embattle it mentions the name of Henry Earl of Northumberland as well as the burgesses, their heirs and successors; but it is also clear that half a century elapsed before this work was completed; proving that he could have rendered but very little assistance towards its prosecution. When finished the wall was 20½ ft. high and 6 ft. thick; and it was, moreover, furnished with four strong fortified gateways, — Bondgate Tower, Clayport Tower, Narrowgate Tower, and Pottergate Tower. It enclosed a space not much exceeded in size by the present dimension of the town. As we have seen, in the De Vescies' time the leading streets were formed, although left open to the depredations of the lawless borderers and Scots. The wall enclosed these, as well as the market-place, Pottergate, which then was called Barredale, Fenkle, the Corner street, and Parkes-street, or Halo. Beyond the mural boundary, by the river's edge ran, as now, Walkergate, where the walkers or fellers dwelt; and before the castle barican lay Baileygate, which gave access to Canongate, the road that led from the town to the principal entrance to Alnwick Abbey. There are a few of the houses that were within the wall still standing; they are small and low, not exceeding two stories in height, and often consisting of only one, with mullioned windows, and thatched roofs. One, pulled down within the last ten years, was vaulted with stones like the pele towers of the county. Most of them had gardens or crofts. Mr. Tate extracts from the records of the Augmentation Office, a statement that in

1545, there were "of housing people in Alnwick, 1500, within the same parishes," and explains that *housing* or *housingynge* people were persons who were of age to communicate at the Eucharist, the term being derived from the Anglo-Saxon, *husian*, to give or receive the sacrament. This gives, on the assumption that the people over sixteen years of age, would be about two-thirds of the inhabitants, a population of 2,250, and, compared with Gateshead and Sunderland, which only possessed 1,000 *housing* people, shows the relative importance of the "canny" town. In the three hundred and twenty years that have elapsed very little ground has been gained, Gateshead and Sunderland, have prospered and multiplied exceedingly, while Alnwick has contented itself with an average annual increase of sixteen persons. The records of the baronial courts furnish the names of the burgesses. Of 200 mentioned as paying quit-rents in the reign of Elizabeth, Mr. Tate remarks it is doubtful whether either of them, except Thew and Foster, have a single descendant in the male line now living in the parish. He reckons that there were in those days about 300 persons possessed of real property in Alnwick. Besides these there were in the barony 300 copyholders—small landed proprietors who cultivated their own land, subject to a few feudal impositions. Not one copyhold now exists, all having been absorbed. Our author, regretting the independent yeomanry who owned them, says, "The history of their extinction has not been written; perhaps it is now irrecoverable, though there were traditions of the unfair means—chicanery, misrepresentation, threats—used to sweep them away." Every man in this little community was often called upon to do his part towards maintaining peace and defending aggressions; for when the sixth earl of Northumberland died, twenty years elapsed before his nephew, the seventh earl, was enabled to take possession of his estates, owing to the attainder of his father, which was not pardoned till the lapse of that period. During this time, and for many years besides, the borders were in a state of almost incessant warfare. Mr. Tate computes that not less than 2,000 men must have been employed in a complicated system of day and night watching that the constant surprises from over the border rendered necessary. He says, "The night watches were set at the day-going, and continued at their stations until the day was light. The day-watches began their duty at day-light, and continued until the day was gone. It was the duty of every watch, on observing the approach of an enemy or suspected person, to give the alarm by blowing of horn, by shout, or outcry, and all men were bound, on pain of death, to arise and follow the fray with hue and cry, on horse or on foot. Whoever captured offenders was rewarded; and goods rescued from thieves were restored to the owners on paying for their rescue. No man could harbour or help any rebel, fugitive, felon, murderer, whether Englishman or Scotsman, upon pain of death; and no subject could even speak with a Scotsman without licence from the warden." The castles and peles were important places in those days, and walled towns of the greatest value; if they had not furnished numerous retreats for the inhabitants upon signal of danger, it is probable that the border would have been despoiled; as it was, the northern portions of the county enjoyed no more serenity than a vast camp, for there were the Scots before it and the lawless Moss troopers of Tyndale in the rear. Musters were occasionally made of the able-bodied men, such as are now made of the volunteers, though with very different equipments. Holders of small plots of land were bound to appear, with horse and armour. Men on foot were armed with helmet, coat and plate, and bow or bill. Upwards of 1,500 men thus accounted have mustered on Alnwick Moor. "Alnwick was the head-quarters of all this complicated organisation for the defence of the borders; and there a warden court was held with all the solemn formalities observed in the superior courts of the realm, for the trial of offenders against March law; and often, indeed, criminals condemned in this court were executed at Alnwick." A Scottish minister, James Melville, passing through the country, thus writes of the 2nd of August, 1584: "We came that night to Alnwick and lodged in the house of a widow, whose son-in-law, guidman of the house, was lynch seed of many deadlie wounds, giffen him be the Scottes thieves on the Borden."

After the union of the English and Scottish crowns, Alnwick seems to have prospered. For

150 years the Percies rarely visited the castle, and never resided in it; and, thus left to itself, the town developed its resources, till there were ten incorporated companies in it. It was governed by four chamberlains and a council of twenty-four burgesses—a body Mr. Tate considers as equivalent to one-tenth of the leading inhabitants. The property over which they presided was considerable—a great moor stretching away for miles towards the purple heathery hills west of the town; a river frontage, or stretch of land bordering the river, for a mile past the castle walls; the market-place, with the shambles, cross, stocks, pillory; the town-hall, or tolbooth; the clocks; the pumps, with large stone tanks of running water in front of them, fit for horses and cattle to drink from; coal mines; limestone and sandstone quarries; and, moreover, the ancient grammar-school and the patronage of the church. Being, as a petition to Lord Burghley sets forth, "in the midst of the country, and therefore of greatest repaire and concourse of people," the market days and fair days were great gatherings on which a large amount of business was transacted. In these latter days, as many as sixty carriers' carts are to be counted, drawn up in lines, on these occasions, like so many bathing-machines gone astray, gradually unrolling and refilling as their imports and exports change places; but in those there were doubtless more. Whatever was going on in the country the Alnwick people took part. In the rebellion of 1745 they seem to have been particularly active in the Hanoverian cause, the corporation hiring volunteers, sending out scouts and special messengers to watch and report progress of the enemy; and the streets resounded with trumpet-calls, the beating of drums, and playing of fifes, as troops mustered in the market-place or passed through the town. But a great law-suit in comparatively recent times seems to have paralysed the body that presided over the prosperity that reigned so long, and they parted with possession after possession, and permitted the blocking up of several ancient roads and footpaths. Our author notices that people used to take advantage of every public occasion to enjoy themselves; and that amusement formerly formed a larger item of existence than it now does. The Alnwick folks had their lord of misrule, a fool, waits, to say nothing of the more reprehensible sights, bull-baiting, cock-fighting, and horse-racing, all of which are swept away. The lord of misrule, who reigned at Easter, was deposed in 1677; the "fools" is last mentioned in the corporation accounts in 1612, when three yards of "whit" for him cost 5s., and the "dyinge and making of it 2s. 6d." The last of the waits survived till 1845, as a monument in the churchyard records; while the caller, or crier, who accompanied them on their tour through the town, still survives, at a very advanced age, having seen five Percies in possession of the dukedom, if we may call the handsome, clever, dashing Sir Hugh Smithson a Percy. It was the business of the waits, accompanied by this caller, or his predecessors, to perambulate the streets of the town early in the winter mornings, beginning at Martinmas and ending with January. They wore a showy blue livery, trimmed with silver lace and silver badges bearing the town's arms. Our author can remember what he calls these wonderful voices of the night calling "Good morrow, masters all! half-past three o'clock in a frosty morning." Once or twice a week, he says, the householders were called upon by name. "Good morrow, Mister Turner! Good morrow, Mistress Turner! half-past two o'clock in a cloudy morning," and on Christmas morning a further variety of call was made upon the mistresses of families:—

"Dame! dame! get up and bake your pie,
And let your very maidens lie in it."
On Christmas day in the morning!"

The corporation suppressed the waits in 1681. But Alnwick has yet one instrument left with which it is annually enlivened. This is a peculiar and elegant modification of the bagpipe, called the Northumbrian pipes, on which the tune of Chevy Chase is played by the Duke's piper, as, clad in dark blue broadcloth, with a shepherd's plaid draped across his shoulder, and a silver crescent on his arm, he heads the procession from the castle to the market-place, to proclaim the principal fair of the year. The same dirge-like strain, with its wild bursts of triumph, we may note, is also played on these delicate pipes by the same musician, at the periodical court-leet dinners of the lord of the manor.

Our author has subdivided his work into

progers, "Hamlet," "Wellington and Blücher," and, ere the cost of each impression, in ordinary course, had been paid, to the guinea. In truth, however, the statement in question is not only untrue, but also untrue in its purport of last year, or the year before, it will be found that there was one prize to every 11 subscribers,—10 of the value of 50 s. 6 d.

My friends in this corporation have every reason, nevertheless, to be satisfied with the result of the inquiry; they were given in evidence by one of your hon. secretaries (Mr. Godwin), and a member of the Council (Mr. Forster) that the value of the prizes was beyond estimation, and of great value and importance. It was shown that the names of those whose works have been bought or engraved by the association includes the names of Creswick, Copley and many others of the highest repute, as Mr. Colver, Col. Calow, Lie. Burn, Mr. Baird, Mr. Taylor, Mr. Colver, Landseer, Frier, Hilton, F. O'Neil, Hubert,

The amount available for the purchase of works of art in the public galleries by the prizeholders themselves will be divided in the following manner,—

20	works at	£10	each.
20	??	16	??
16	??	20	??
16	??	25	??
12	??	30	??
12	??	35	??
10	??	40	??
6	??	45	??
10	??	60	??
8	??	67	??
5	??	76	??
3	??	100	??
3	??	156	??
1	work	200	??

THE DRINKING FOUNTAIN MOVEMENT. — At Darlington, during the past winter, Mr. Joseph Pease has caused to be constructed, entirely at his own expense, drinking-fountains for Houghton-lane, Cockerton-lane, Coniscliffe-lane, Durham-road, and one near the Cemetery. Several others will shortly be erected. These additional fountains are of cast iron, and are placed in the main entrances to the town, and in places most frequented by strollers.

Dearne, Haines, W., Maidstone; Hasler, J., The Plough, Lewisham; Haynes, J., Geelong; Hayward, R., Ongar, Essex; Haywood, H., Dover; Husey, C., Stalybridge; Hutton, J., Moutreil; Kinnell, J., Croydon; Lefroy, R. L., Grosvenor, W.; Loftus, W. M. D., Victoria; Long, T. W., Tottenham-street; Lowe, A., Mount Brian, South Australia; Lowther, W., Royal Exchange-buildings; Lutnow, J. S., Springton, South Australia; Mackie, J., Kadina, South Australia; Martin, W., Folkestone; Martin, J., 14, Berkeley-square; Matthews, E., Berwick-street; Meredith, W., Carlisle-villas; Miles, E. E., Halifax; Miller, E., Bishops Cleeve; Monks, James, Aden-cottages, Durban; Morris, J., Mains, Dundee; Nath, W., Greenwich; Owen, G., For mado; Parton, T., Willenhall; Peckover, W., Wisbech; Phelps, W., Northampton; Piercy, Mrs. B., Bank of England; Powell, H., 170, Easton-road; Ranken, E., Blackheath Park; Reddingham, J. H., Cape Town; Riley, S., Plaiton, Essex; Roberts, D., 288, Old Kent-road; Roope, L., Hobart Town; Rowley, J. B., Batavia; Rushton, T., Denmark-hill; Saunders, W., Derby; Sharp, J., Nelson, New Zealand; Sherring, W., Fairfield-road, Bristol; Spencer, J. J., Barbadoes; Stanwell, F., Boston, Lincolnshire; Stapleton, W. D., Australia; Struve, W. P., Carnarvon; Tomlinson, W. D., Newark; Tomson, B. R., St. Neot's; Vacher, A. B., Nottingham-hill; Ward, J. B., Clepham-road; Warren, F., Croydon; Waters, H., 28, Regent-street; Waymouth, G. J., 12, Moorgate-street; Wetmore, F. E., Halifax, Nova Scotia; Whillier, E., 64, Coleman-street; Whiteway, R. C., Runcton; W. A. Kinnison, F., North Ferry; Williams, F. N., Truro; Wilson, C., Elmham, Flabury; Wilson, H., Bury St. Edmund's; Worthington, W., Burton-on-Trent; Young, H., Moorgate-street-buildings.

Entitled each to a Silver Medal, commemorative of W. Dyer, Esq., Esq., Blackheath-road; Bassam, G., Battersea; Brat, J. T., Alma-villa, Maidstone; Brughman, T., Newcastle-under-Lyne; Colborne, W., Chippington; Cook, E., Henrietta Villas, Bath; Cresswell, O. E., 51, Edwards, A., Dresden; Edwards, D. J., Melbourne; Hall, N., London; Fane, W. D., South; well, Notts; Fisher, Mrs. S., Colehill-street; Griffith, W., Melbourne; Guy, Miss, 49, High-street, Portsmouth; Hall, T., Geelong; Hewison, H., Singapore; Hooper, A., New Broad-street; Huxley, H. B., York; Huxley, H. B., Mecklenburg-square; Mullany, J. R., New York; Newton, E. H., Scarborough; Nicholson, W., Sunderland; Norton, H., Great Marlborough-street, W.; Pfeiffer, E., Walbrook-buildings, E.C.C. Smith, H. E., Havestock-hill; Stewart, Capt., Newcastle-under-Lyne; St. John, R. M., Derby; Taylor, J., Gas Office, Oldham; Thorpe, Miss E., Bronte, Sicily; Webb, W., Burton Lodge, Lewisham.

Entitled each to a Set of Photographs from the Society's Prints—Adams, Mrs., Falcon House, Croydon; Alexander, E., Bristol; Allen, C., 64, Basinghall-street; Allford, S. G., Blackfriars; Appleford, R. B., Coggeshall; Ashford, H., 11, Hampstead-road; Barr, General; Langley, B., Birwalle, J., 6, York-road, Leeds; Browne, G. D., Charing-cross; Cason, G., Blandford; Bradshaw, W. T., Milton, York; Cope, R., Ross, Herefordshire; Crofton, Mrs. S., 21, Gloucester-place; Dalg, McKeehan, nie, & Davis, Edinburgh; Drake, A. J., Sierra Leone; Dunlop, Miss, 63, Torrington-square; Eastley, J. R., Baiton; Field, E. E., Clevedon-villa, Horsey; Eynaud, W. S., Vallette, Malta; Fell, Alfred, Hotel St. James, Paris; Field, J., Mauritsius; Garrick, F. J., Canterbury, New Zealand; Giblin, J. J., Geelong; Giblin, Chas., Judd-street; Gourlay, Robert, Glasgow; Gray, Park; Herman, Dr. J. Z., Cape Town; Hill, Mrs. E., Croft Hall, Weymouth; Hodges, G. H., Leicester; Horrymouth; Humphries, J., Broomfield, South Australia; Hurst, E., Wakefield; Irons, C., Blackfriars; Jones, J. S., Golden House, Taunton; Lamb, H. W., Great Malvern; Land, R. W., Edwinstreet, Bristol; Latensche, F. B., Lloyd's, E.C.C. Lawrence, Mrs., Camberwell; Lawrence, W., East Keswick; Long, F., Crinshill; Mann, R., Melbourne; Mann, T., Winchmore-hill; Manning, T., 10, St. John's-street; Mayo, W., Friar Whad-street; Money, J., Donnington; Morris, J., 77, Lombard-street; Morris, J. W., Buckhurst-hill, Mortimer, Rev. Dr. E. D., Great Northern Road; Mould, J., Leeds; Nicholson, Miss E., Sunderland; P. D., Great Northern Road; Parnetti, Park; Reece, R., Barbadoes; Rosenbach, T., Sierra Holborn-hill; Smith, J., Cawood, near Selby; Spindler, W. Powis-street, Woolwich; Stewart, C. D. D., Alton, Hants; Sweet, F., 5, Gray's-inn-passage; Taylor, Brighton; Taylor, W. W., Norwich; Tharaxa, E., 24, Mark-lane; Thompson, S., 33, Leadenhall-street; Timperley, R., Post-office, Darwin; Todd, J., Helton-le-Hole; Wallace, C., Wote-street, Basingstoke; Ward, Dr. M., Markham-square; Wood, E. J., Fenge-road, Newbold, White, E., New Bond-street; Bath; Wright, E., Melbourne; Yardley, Miss L., Blandford-square; Yates, E., Godalming.

TOWN DEATH-RATES IN THE FIRST THREE MONTHS OF 1867.

With very few exceptions the rate of mortality in the first quarter of the year, but especially in town districts, may be taken as a reliable index of the mortality for the whole year. During the ten years 1857-66, the annual rate of mortality for each year invariably followed an increase or decrease of the death-rate in the first quarter. The information, therefore, to be derived from the quarterly return of the Registrar-General, just published, relating to the health of the large towns of the United Kingdom, during last quarter, is of special interest; and it is satisfactory to find that, unless the present year form an exception to the rule above laid down, it will produce a lower death-rate than has prevailed in our town districts for several years.

Popular convictions are too often only popular delusions, but the influence of the various vicissitudes of temperature and weather upon health, can scarcely be over-estimated; although our information as to their various conditions, which tend to raise or lower the general mortality, is still very incomplete. The social problem to be solved is so to frame our manner of living as to counteract the effects of the elements over which we have no control. The weather during last quarter, if we may judge from the result, was not, in spite of its severity, particularly unfavourable to the public health. Almost unprecedentedly severe during the greater part of January, with two of the most rapid thaws ever known following two short but intense frosts, the death-rates throughout the country rose rapidly, but the thirty-five days following the second thaw, which occurred on the 23rd of January, were the warmest series experienced at that time of the year since 1778, and the temperature averaged a daily excess of 7° Fahr. Under the influence of this weather the death-rates decreased, and although they were somewhat raised again by the cold weather in March, the mortality for the last two months of the quarter was considerably below the average.

The first, or, as it is styled in the Registrar-General's returns, the winter quarters of the three years 1864-6, were all excessively unhealthy, the annual rate of mortality per 1,000 in England and Wales being respectively 27.7, 27.2, and 26.5. In the first quarter of this year it was 25.5, agreeing exactly with the average rate in the corresponding quarter of the ten years 1857-66, but still in excess of the rates prevailing between 1857-63. The difference between the town and country death-rates during last quarter was much as usual. The town districts include all the chief towns and an enumerated town population in 1861 of nearly 11,000,000; but the death-rate last quarter was 27.4, against 29.8, 28.8, and 29.7 in the years 1864-6. In the remaining districts of England, comprising all the small towns and rural parishes, and a population in 1861 of rather more than 9,000,000, the death-rate was 23.2, against 25.1, 25.2, and 22.5 in the same period of 1864-6. In comparing a long series of years, it is in the death-rates of town districts that the greatest fluctuations are to be observed; and it is beyond doubt that the death-rates of towns can be more easily controlled from the possibility of carrying into effect such sanitary necessities as main drainage and a wholesome water-supply. In the series of ten years, 1857-66, above alluded to, 1866 was by far the most unhealthy year, but the entire excess was confined to large towns; for, whereas there the mortality was 2 per 1,000 above the average, no excess appeared in the rural and small town districts. Bearing this in view, we shall now principally confine our notice to the table in the Registrar-General's Quarterly, which furnishes the vital statistics for the quarter, relating to thirteen of the largest towns in the United Kingdom, estimated to contain in the middle of this year a population of something more than 6,000,000 of persons. Once succeeded in permanently reducing the death-rates in these large towns, and not only will the general average rate in the whole country be thereby reduced, but the sanitary energy and intelligence which will be brought into play before that effect can be produced will stimulate the rural and country districts to similar efforts, which cannot fail to bear fruit in a higher standard of health.

In the first thirteen weeks of the year in this population of six millions, comprising thirteen large towns, including London, 59,951 births and 44,528 deaths were registered, showing a natural increase of population by excess of births over deaths of 15,423. In the same period of 1866 the births were 1,400 less, while the deaths were more numerous by 1,924, showing a balance of births over deaths less by 3,324 than in the quarter recently ended. The annual birth-rate per 1,000 in the whole of England and Wales last quarter was 37.1, but in these thirteen towns it was 38.9. In the different towns it varied from 36.5 and 37.2, the lowest in Edinburgh and Manchester, to 42.6 and 43.5 in Glasgow and Leeds. The birth-rate in Dublin is returned as only 28.1; but there is too much reason for believing that in that city the registration of births is still far from complete; no reliance can, therefore, well be placed upon it. The death-rate for 1,000 in the thirteen towns was 28.9 per 1,000, against 25.5, the general rate in the whole of England and Wales, and 27.3 in the entire urban population of the

country. In the same thirteen towns, the rate during the first quarter of last year was 30.5. In London, which includes just half this population of six millions, the death-rate last quarter was almost the same as in the first thirteen weeks of 1866; and Glasgow, Newcastle-upon-Tyne, and Dublin were more unhealthy last quarter than in the same period of 1866; but in the nine other towns the improvement was very marked, and was greatest in Liverpool and Leeds, which were the two towns that had suffered most severely from their neglected sanitary condition.

The thirteen towns are arranged below in the order of their rates of mortality during last quarter, from the lowest, showing also the rate in the corresponding quarter of last year:—

	Annual Rate to 1,000 living in 1st Quar. 1867.	Annual Rate to 1,000 living in 1st Quar. 1866.
Hull	25.3	27.8
Birmingham	25.2	30.2
Bristol	25.5	32.3
London	26.8	26.7
Sheffield	27.4	33.4
Leeds	29.4	36.9
Edinburgh	29.5	30.1
Salford	31.4	33.3
Liverpool	33.4	43.9
Glasgow	34.6	31.4
Manchester	33.8	37.4
Dublin	34.6	30.5
Newcastle-upon-Tyne	37.1	31.6

The cholera epidemic of last year, although far less generally fatal than previous visitations, assumed grave proportions in many of our large towns, besides the east end of London, and made its presence felt in many parts of the country far into the late autumn, and even into the confines of winter. Observers of the course of previous epidemics augured from this that we should in all probability have to combat a renewed appearance of the disease in the ensuing summer. An outbreak of cholera during last quarter in the St. Nicholas sub-district of Durham, which was fatal in thirty-five cases, appears unfortunately to give great additional weight to this prognostication. Our large towns, therefore, both those which suffered last year, as well as those which, through having then escaped, may thus be inclined to presume on a fancied security, should take warning in time, before we have the hot weather upon us, both fully to carry out the sanitary improvements to which they were last year stimulated, and by an effectual system of visitation to discover and remedy any of the causes which are at work to produce the low standard of health in their most crowded neighbourhoods; these are the hotbeds which force zymotic diseases into epidemics.

No one having a knowledge of the sanitary movements in our large towns during the past year can fail to feel a satisfactory conviction, if such a conviction had before been wanting, that in no cases have the expenditure of energy and money upon the sanitary improvement of our large towns, taken place without a reduction in the death-rate. Liverpool, from its previous deplorable condition, shows the greatest improvement; there the measures adopted during last year were not only successful in preventing a greater loss from cholera, but in the first quarter of this year the death-rate was 33.3, against 45.9 last year. This important decrease is due in a great measure to the subsidence of an epidemic of typhus which had prevailed in Liverpool for several years; this disease, which carried off 729, and 530 deaths respectively in the first three months of 1865 and 1866, was only fatal last quarter in 175 cases; this was, however, still in proportion to population double the mortality from the same cause in London. We recently, in noticing the medical officer's (Dr. W. Trench's) annual report on the health of Liverpool, had occasion to dwell upon this typhus epidemic; there is every reason to believe that, under the same sanitary activity, it will continue rapidly to decline. Leeds, which for the first time last year appointed a health officer to superintend its sanitary condition, and during the year had nearly twenty miles of new main-drainage laid down in the town, can only have to regret that these measures were not taken sooner, for the death-rate which in the first quarter of 1866 was 36.9, fell to 29.4 in the past three months. Bristol and Hull in their low death-rates testify to the success of their sanitary arrangements, which are well organized and efficiently carried out, although it does not appear that the latter possesses an actual officer of health. Birmingham is naturally one of the healthiest towns in England, and there is little doubt but that with the same sanitary activity to which less favoured towns have been stimu-

lated, the death-rate might be reduced nearly to the healthy district standard. Of the English towns, Manchester and Newcastle have yet much to do. The latter town has for more than six months suffered from an unusually fatal epidemic of scarlatina, which carried off in that time more than 600 children, in addition to a considerable mortality from typhus and typhoid fevers, and whooping-cough. The registrars, in their remarks appended to their returns, draw a picture of the condition of certain parts of the town which completely destroys any astonishment at such a fatality. One of the registrars states that "in the parish of Christchurch alone there are seventeen unpaved streets, together with a large number of back lanes, &c., although some of the streets have been built for upwards of twenty years;" and further on, that in some of the streets which had suffered most severely from scarlatina, "there were no less than 7 or 8 in. of standing water and liquid filth in the cellars or underground-kitchens; the upstairs-rooms being occupied by four or five families in each house." The local press has proved itself thoroughly alive to the importance of the terrible waste of life which has of late taken place in the town, and as a proof of their acknowledgment of the only remedy likely in such neighbourhoods to prove satisfactory, one of the most influential newspapers in the north of England has offered premiums for the best essay upon the method of improving the dwelling-houses of the working classes. A public-health committee exists in Newcastle, and they appear to have been unremitting in their exertions to improve the condition of the town; but we fear that with the limited power which they possess, the state of things is too serious to be altered materially by ever so active a removal of nuisances, in the ordinary acceptance of the word.

In glancing through the registrar's notes for the quarter, two things attract attention which are worthy of notice: the first is an increasing prevalence and fatality of smallpox in almost all parts of the country, and a consequent conviction of the unsatisfactory working of the present Vaccination Act. The second is of a far more encouraging nature; it is, the general activity which is at last beginning to be shown, by parishes, townships, and even villages, through their local health committees, in examining their sanitary condition, and insisting upon its improvement. These efforts are now, in most instances, well supported by the ratepayers and residents, instead of being met by that active opposition, or stolid indifference, which has so long rendered them ineffectual.

On the whole, the quarterly report upon the present sanitary condition of our large towns, besides showing a lower rate of mortality to have therein prevailed than from the severity of the weather might have been expected, presents many encouraging features; and by conclusively showing the benefit that many towns have already reaped from more active sanitary supervision, will, it is hoped, stimulate those towns who now find themselves at the bottom of the list with excessive death-rates to imitate their example. There is therefore little reason to fear that the year 1867 will form an exception to the rule mentioned above; and we may trust that, following the reduced mortality of its first quarter, the whole year will prove, more particularly in town districts, the healthiest we have had for some time.

THE ARCHITECTURAL EXHIBITION.

At the opening conversations of the Architectural Exhibition, Conduit-street, on Tuesday evening last, Mr. Beresford Hope made an address, in which, after some prefatory words, he said: To-night we represent two societies rolled into one. The Architectural Exhibition Society, which, as you know, has thriven and increased, and widened and deepened its roots, has every year given a course of lectures. Another body, which is now vagrant and wandering over the world—the Architectural Museum—has also given its course of lectures. On account of the Architectural Museum being unhoused, and offering no prizes this year, it has agreed to combine with the Architectural Exhibition to give a joint course of lectures. That joint course will be given in connection with this Exhibition, and this evening starts the season—a season which we all hope will be full of pleasurable recollections and of much utility to the development of architectural art. The com-

mittee must allow me to congratulate them on the goodly show we have in these two rooms; on this collection of drawings that we see on our walls; on the crowded collection in the next room, embodying the great competitions of the past year; and on the many very interesting sketches from the School of Design in connection with the Architectural Association. I believe I may add that if our wall-space had been greater than it is, the number of drawings produced would have been more numerous. I do not want to-night to dwell on the old common-places which we all know so well—on old worn-out—I do not mean to say worn-out in practice, but in preaching—principles of art. I would rather to-night invite all those who are present to do what in commercial language is called "taking stock" of what they know and what they do not know of architecture. I am now addressing those who are not architects nor artists—the visitors here to-night. We come every year to exhibitions like this: we see some drawings that are very pretty and others that we do not like, and we are apt to pass a very hasty and ill-considered judgment upon them. I wish to call upon you with one heart and one mind to recognise and appreciate this fact, that an architect is not a landscape painter; that the pictures you see upon these walls, though they may give you very telling, very pretty, and very dashing impressions of buildings, are in no sense, of course, the buildings themselves, and in still less a sense are they those types and models of buildings of which they stand in lieu to those who wish to ascertain what they are. The mere sky-line, the outline, the decorative form, is very important; but unless these are obtained with a due regard to the utility and all the conveniences required in the internal structure, they are but as the sounding brass or the tinkling cymbal; and therefore I call on every one here present who is not an architect nor an artist, but who is a friend and a visitor, to deal with all architectural designs that may come across you in a more forbearing and a broader spirit than is often the case. I do not tax you with the absence of either of these qualities, but I do call on those of you who are not architects to realize how much there is in the architectural profession which never meets the eye—how much boring under ground, how much dexterous arrangement of the walls, how much dexterous arrangement of materials, and how much dexterous arrangement of the chimney-stacks. You may perhaps say, "Why on earth was such and such a building carried out in that way, when such and such another form would have been much better, more graceful, more convenient, and more picturesque." This is all well and good: it might have been all that you say, but then the price at which you would have purchased all the picturesque which you require would probably have been that there might have been a chimney-stack which would either have brought the house down with a run, or else have set it on fire. So, again, with many other arrangements—arrangements of rooms, the distribution of floors one above another, the arrangement of attics and the arrangements for intercommunication from one room to another. I point these things out to you because, looking round this room, I cannot help imagining that there are many people present who, with a sincere love of architecture as a pictorial art, have not yet learnt fully to appreciate or to realize the troubles and difficulties of the architect as a practical man. Upon this point many persons are in a somewhat similar position to that of a young lady who is about to be married, and who cannot understand why those stupid lawyers are bothering so long over the settlements, and keeping her waiting meanwhile; or they are like a patient who, expecting to get well, abuses the doctor if every successive dose does not produce a perceptible advance towards health which he wants to attain. The architect is no more master of time or space or material substance than is the lawyer or the doctor, or any other professional man. And now I will turn to our architectural friends, and as I have invited the public to-night to appreciate with a broader and more forbearing consideration what the difficulties of architects are, I must call on the architectural world to realize also on its part the great breadth and extension of the intelligent and critical outside public. A hundred years ago or more there were no exhibitions. We have ourselves started these exhibitions. There was then no art journalism: we have ourselves started

art journalism; but having ourselves started both exhibitions and art journalism, we are bound to acknowledge that that which we have started is an exacting, and I trust not an unjust—I trust taken generally, taken all round, not an ungenerous taskmaster. However, it is a taskmaster, as I have said, that we have created for ourselves, and therefore it is a taskmaster we are bound to recognise, to respect, and to obey. I repeat, it is well for us that things should be so—it is well for us that there should be that criticism. Formerly, in the days of the Athenian School and downwards, there was a small narrow self-laudatory few who laid down the rules of all art and all proportion, and who confined, so to speak, the science of architecture to the shuffling of a small pack of cards, within a very limited number of figures. That, however, has been disputed. We have seen that form, beauty, proportion, consistency with local requirements, exist in other styles, and are indigenous more or less in every civilized land. Carrying out this idea, we have created this school of criticism and of outside judges for ourselves. If we had not done so, if we had developed our own free ideas, and yet had used those free ideas as a sort of advanced shibboleth of our small clique, as a sort of higher order of Freemasonry within the existing masons,—what would have been the result? We probably should have run into fantastic developments and uncured novelty. I am speaking as from the stand-point of our generation, as one who has sympathized, and who will continue to sympathize most deeply, with that movement, which is known as the Gothic movement of our day, yet who does not fail to recognise all that is good and beautiful, and old and true, in that classical school with which it is contending now for the mastery. If we had not that outside public, we should have run wild in fantastic novelty. As it is, we are bound to be original and to combine, we are bound to develop and not simply to throw up new and strange forms because they are strange, and to fancy that their novelty and strangeness should be merits in the eyes of the present generation. This I say, to us who are mixed up in architecture, is the benefit of an Exhibition like the present. Novelty in an Exhibition like this should be duly placed. Newfangledness should be placed on its own level. There may be some forms which none of us ever dreamt of, but which when we see them may cause us to say, "How can it be that we should never have thought of them before?" It is possible we may say, when we see them, "We never saw them before and we hope we may never see them again." It is in these Exhibitions that things are brought to bear the test of one or other of these two criticisms, and so we shall go on. The contest between the two schools—the Gothic and the Classical—is fairly set on its legs, and cannot be settled on either side. The only method of obtaining a triumph on one side or the other is that each style shall work out all its own merits to the utmost, and where it finds a point in which it is deficient it shall not be ashamed to borrow the developments of the other. The old school of architects, whatever may have been their defects, travelled and studied, read and thought. The new school of architects, no doubt, do the same; but let neither school believe that it has read and studied and thought so much that it may sit down content to eat the lotus of its own garden of self-indulgence. It must think and study, and travel, and work more and more. Convinced as it may be of its own merits, it must show its conviction by an ample realization of the merits it finds elsewhere. To take the question of this Gothic development. No doubt, some of the earliest and most eloquent writers on that side spoke with vigorous one-sidedness. They were right in doing so. No leaders of movements ever produce an impression without being vigorously one-sided; but the time comes when you must be equally vigorous and yet two-sided. That time has come now, and in this Exhibition we see the contest of the two schools. One side may have to learn more than it has learned before of the advantage, the dignity, and the beauty of well-ordered regularity; the other side may have to learn the infinite grace and variety of a broken and aspiring sky-line—the advantage of the style in which outside follows suit to inside, and inside is taught to carry out the regularity of outside. None of us, I hope, are so faint-hearted that we do not from time to time form some idea of a perfection that may ultimately be realized, when all differences may be at an end, and when there

will be some grand and beautiful, some wide and broad development of art, such as the world has never yet known, which will unite in itself all the beauties of every antecedent style, but this great idea will be attained. Perfection may never be reached in this world; but that man's heart beats slow, and that man's blood runs thick and heavy, who does not at least sometimes set up this great ideal before him. Then I say to you, Work up to that ideal. One of you may think he is working up to that ideal in adopting the Gothic; another may think he does it in adopting the Italian, or the Grecian, or the Renaissance. I say, Let all of you work up to that ideal; and if you do work up to it with a true heart, an honest conscience, and an earnest endeavour, you will more and more develop all that is good in your own style, and throw out all that is weak and defective; and as you do so, although you do not know it, you will work nearer and nearer to each other. If you attempt to make a sort of fictitious picture, with a piece stuck in here for one thing and pieces stuck in there for something else, merely to produce a pattern design, so that you may say, "See how independent I am, because I am so eclectic," you may be eclectic enough; but you are not independent. You will be merely walking about in a parti-coloured coat of shreds and patches. But if every one works up to his own ideal, and in the belief that he is carrying out that ideal, anything he takes from any other style is not a surrender to an opponent, but is a usurpation unto himself of what he saw good elsewhere, an enlargement of his own boundaries, a deepening of his own foundation. I say that whether the style you work in be the right or the wrong style, you will be right and you will more and more approach to the consummation of all art—the prospective unravelling of that ideal which may never be unveiled to us in this world, but towards which we should never cease to strive. I ought perhaps to apologize for having run on so long in this strain; but I felt that on an occasion like this I ought not to enter into anything like a criticism of drawings upon the walls, because it would have been a one-sided, unfair, and hasty criticism. If I had done so I might have praised this—and there is a good deal to praise—or I might have found fault with the other, because of course the designs are unequal, and in doing so I should either have given pain, which I do not want to do, or I should have given praise, which would have been hasty. I will therefore run on with a few ideas which refer no more to this Exhibition than to the Royal Academy or the Exhibition at Paris, or to any other place where the drawings of living architects are hung on the walls. We live in an age of great study, of real learning, and of more deep archaeological investigation than any other age, on the one side, and of more free and unfettered fancy on the other side. We live in an age of great hopes and expectations, on the one hand, while on the other hand we live in an age when we are beset with great dangers. We are either to be the most sublime inventors or to make a terrible fiasco. I hope and trust it will be the first, but I do not set myself up as a simple praiser of this generation. I see our merits, but I see that they are akin to certain faults and dangers, and I have therefore endeavoured to speak without having any single individual in my eye. I might have talked more intelligibly, and more to the purpose if I had tried to be personal, but I have not tried to be personal; I have shot over all your heads, and have referred to certain great ideas and great dangers, endeavouring to encourage you on to the attaining of certain great advantages to this generation. I believe that Exhibitions like this one must help on the good cause. We see what is well done, and we praise it. We see what is not well done, and I trust that we deal kindly and indulgently with those whose intentions may be better than their performances. We meet together and exchange ideas; we criticize, we plan, and we praise. Praise is, after all, criticism and friendly advice; but all this tends to the development of art—of that art and that science which we have made our own. All this tends to the belief that those of us who may live a few years longer may see many wonderful developments: and here, perhaps, you will allow me to quote an anecdote which I heard last night within these walls. The narrator of this anecdote was my friend Professor Lewis. He was presenting some relic in connection with Rickman, and he said that forty years ago Rickman had designed a Gothic window for a church at

Birmingham. That window had to be modelled the full size, and sent down to Birmingham and there executed in cast iron, because, in the first place, there was no one in Birmingham who could understand a working drawing forty years ago, and, in the next place, there was no stone carver who could have carried it out. When we see what has been done in London in the Houses of Parliament and elsewhere, and remember what cause have we not for hope and exultation for the future of architecture in England,—if only we reserve our power in proportion as we feel ourselves strong,—if, resolving to be strong, we determine to be moderate,—if also we determine to be original but not fantastic, earnest but not breathless, truthful but not ecstatic,—above all things seeing that beauty is utility, and that everything that is useful ought to be beautiful. Ladies and gentlemen, I welcome you to the opening of the Architectural Exhibition for this season.

On the motion of Mr. Lamb, seconded by Mr. Edis, a vote of thanks was given to Mr. Beresford Hope for presiding.

SIR GEORGE HOWLAND BEAUMONT, BART., PAINTER, POET, PATRON.

At a time when the nation is busy about a National Gallery for its rich and increasing stores of pictures, a page or two about the greatest benefactor our gallery has had will not be out of place. Prime Minister Lord Liverpool was induced by a bribe to buy for the nation the Angerstein Collection of pictures. "Buy Mr. Angerstein's collection, and I will give you mine," said Sir George Howland Beaumont, Bart., painter, poet, patron.

In the transaction of obtaining the Beaumont Gallery for the nation, the late Lord Dover (then Mr. George Agar Ellis) was the moving spirit. What part Mr. Agar Ellis played in it we shall allow him to tell in his own words. His autograph communication to Allan Cunningham on the subject is as follows:—

"One of the objects Sir George Beaumont had the most at heart was the establishment of a national gallery for pictures. He was constantly, during the years 1821, 1822, and 1823, talking to me on the subject, and urging the various reasons which rendered such an institution desirable in this country, in all of which I concurred. He frequently begged me to speak to Lord Liverpool, then Prime Minister, about it, and always assured me that he would give his own pictures to the nation as soon as he saw a place allotted for their reception. I, in consequence, took several opportunities of mentioning the subject of a national collection of pictures to Lord Liverpool, who always received the suggestion favourably, but generally ended by either throwing cold water upon the project, on the score of expense. I also frequently urged the same point to Lord Aberdeen and Lord Farnborough, and Sir George did the same; but still, nothing was done. At length Mr. Angerstein died, and it was understood that his pictures were on sale. This was in the year 1823, and great fears were entertained that either the King of Bavaria or the Emperor of Russia would buy them, and that they would be lost to this country. Upon this Sir George again spoke to me, and we agreed together that now was the moment to press for the gallery. I again urged Lord Liverpool, but nothing was done.

At length, towards the end of the session of 1823, I determined, with the concurrence and advice of Sir George, to take some opportunity, as all other means had failed of bringing Ministers to a favourable decision, to mention the subject of the National Gallery, and of the purchase of money; as I thought that if the temper of the House declared itself in favour of the acquisition, Ministers could not, for very shame, avoid it. I do not mean to say that they were not favourable themselves to the plan, but they were so timid and frightened at Hume, that they could not bring themselves to a decision. Accordingly, on the 1st of July, 1823, I took occasion to vote for money for the new library at the British Museum, to state how anxious I was to see a national gallery of pictures established. I then alluded to Sir George Beaumont's promise of giving his collection to the public, and eulogized his conduct, and afterwards gave some account of the Angerstein collection, and of the danger there was of its being taken out of the country;

and finally gave notice that if Ministers did not in the meanwhile purchase it, I would myself make a motion to that effect at the commencement of the next session of Parliament. Mr. Stuart Wortley (now Lord Wharfedale), Mr. Alexander Baring, Mr. Hudson Gurney, Mr. William Smith, and, I think, one or two others, spoke in favour of my proposition. The feeling of the House was so evidently with me that the point was gained."

Lord Dover thus continues:—

"During the recess the Government bought Mr. Angerstein's pictures, and the National Gallery was established. I have gone into this detail in order to explain Sir George's letters, which are written subsequently to the discussion in the House of Commons, and which show his great anxiety upon the subject. I am indeed quite certain that without his persuasions and encouragement, and the permission he gave me to announce formally the donation of his collection to the nation, I should never have had the heart to do what I did,—so discouraged was I by the delays and vacillations of the Government. I have been anxious that you should know the part Sir George had in this transaction respecting the National Gallery, first, because it is highly honourable to him; and, secondly, because it is something of an event in a life of such amiable and retiring tranquillity as his was."

His lordship concludes with "something about Garrick:—"

"His allusions to the prints of Garrick relate to two engravings of Garrick which were executed by Reynolds* under his inspection and correction, and which he was anxious to have engraved because he considered them the two best likenesses of that great actor extant. They are after Dance and Zoffany, in the characters of Richard III. and Abel Dragger. You probably know them.—D."

I may here observe that we have no other such inimitable painters of theatrical scenes as Johan Zoffany and George Clint were and are. Zoffany is on his throne at Lord Carlisle's Castle Howard, in Yorkshire; and Clint on his throne in the Charles Mathews Gallery, at the Garrick Club. Zoffany lies at Kew; Clint, at Kensal Green; both with monuments.

Sir George Beaumont was the intimate friend of Wordsworth, of Southey, and of Coleridge, of Wilkie and of Chantrey. He was the first to foresee and encourage Wilkie's talent. He had the taste and luck to secure the inimitable "Blind Fiddler" of the boy in London raw from Scotland. He encouraged Haydon; and had that wilful, headstrong man allowed him, would have shaped a different destiny to the star (seen but by himself) which led him astray. Beaumont was the first to foresee and to patronise the rising genius of Gibson, the sculptor.

What Southey thought of him he has told in a letter to his schoolfellow Wynn:—

"Sir George Beaumont's death deprives me of one who had been for many years more than a mere acquaintance. Indeed, ever since I came into this country [Keswick] I have kept up an intercourse with him from time to time; and if my habits had led me much from home, or my occupations and circumstances allowed of absence from it, there are few houses at which I should so often have been a guest as at his. When we parted last year [1826] at Lowther, his life might have been deemed a better one than mine, notwithstanding the disparity of years; for he had no one infirmity of age, and seemed likely to have been as long lived as his mother, who was much beyond ninety when she died. Few men have been so happy in all respects; he had never known any serious affliction, and was in full possession of all his faculties and capacities of enjoyment at the moment when the stroke came, which produced stupor, insensibility, and in a few days death, without any consciousness of struggle."

Chantrey's very fine bust of Wordsworth was a commission from Sir George Beaumont. The poet, whose vanity is well known, was proud of the bust, and gave or applied for so many for his friends, that the Chantrey price of casts of it was reduced, through the intercession of Allan Cunningham, from five guineas to three guineas. My father's sharp and well-selected cast of the bust is in the room in which I write.

Portions (only) of the following letters have

* S. W. Reynolds, the master of Samuel Cousins, and the engraver (in small—but in a great way) of Sir Joshua's works.

appeared in print. They are here in their integrity:—

Sir George Beaumont to the Hon. Geo. Agar Ellis, afterwards Lord Dover.

"Cole-Orton Hall [Leicestershire],
Nov. 1, 1823.

My dear sir,—I thank you most sincerely for your very kind letter, which was, in the first place, most acceptable as a mark of your remembrance of me, and also because it gave me the first intelligence of the progress of our little tribute to the memory of Garrick. For Reynolds, although he faithfully promised not only to write but send me a proof, has never sent me a line. However, I have known him long enough to be aware keeping promises is not in the list of his favourite virtues. But he is a clever fellow, and, if we can keep him up to the collar, I have no doubt we shall be satisfied. You have proved yourself so sincere a friend to the arts that I dare say you have heard a report that has reached me that Lord Hertford is in treaty, and likely to purchase Angerstein's pictures; but that, if he finds the nation will buy them, he will give up his claim. I hope the latter part of this report is true, and that the country will purchase. You manifested such sincere and laudable zeal to bring this about that I have great hopes you will carry your point; certainly, I had rather see them in the hands of his lordship than have them lost to the country, but I had rather see them in the Museum than in the possession of any individual, however respectable in rank or taste. Because Taste is not inherited, and there are few families in which it succeeds for three generations. My idea, therefore, is, that the few examples which remain perfect can never be so safe as under the guardianship of a body which never dies; and I see every year such proofs of the carelessness with which people suffer these inestimable relics to be rubbed, scraped, and polished, as if they were their family plate, that I verily believe that if they do not find some safe asylum, in another half century little more will be left than the bare canvases.—I am, my dear sir, your obliged and faithful

G. H. BEAUMONT."

From the same to the same.

"Cole Orton Hall, Jan. 27, 1824.

My dear Sir,—Our friend Knight has informed me Parliament has resolved upon the purchase of the Angerstein collection. This, I am sure, gives you pleasure; and, as I shall always consider the public greatly indebted to your exertions on this occasion, I hope you will pardon my troubling you with my congratulations. By easy access to such works of art the public taste must improve, which I think the grand desideratum; for, when the time shall come when bad pictures, or even works of mediocrity, shall be neglected, and excellence never passed over, my opinion is we shall have fewer painters and better pictures.

I think the public already begin to feel works of art are not merely toys for connoisseurs, but solid objects of concern to the nation; and those who consider it in the narrowest point of view will perceive that works of high excellence pay ample interest for the money they cost. My belief is that the 'Apollo,' the 'Venus,' the 'Laocoon,' &c., are worth thousands a year to the country which possesses them.

I have heard nothing of our Garrick plan from that not ray, but ad deceiver, Reynolds, except what you were kind enough to communicate, although he promised to send me proofs in every state; but as you have seen the proofs, and are satisfied, I am not much concerned.—Excuse this trouble of zeal, and believe me to be, my dear Sir, much obliged and sincerely yours,

G. H. BEAUMONT."

From the same to the same.

"Cole Orton, Feb. 9, 1824.

My dear Sir,—If I have been fortunate enough to hit upon anything which has lighted up a train of thoughts in your mind, I need hardly say the slight hint is completely at your service. I am only afraid your adoption of it will be more likely to make me vain than to displease me, and I should have written to tell you so by the return of the post, but I waited, rather, I confess, from the hope than the expectation of receiving the prints from Reynolds,—the faithful Reynolds, whose saints, I am charitably bound to believe, are all sad sinners, so that I suppose he absolved himself from the crime of perjury as the man did who slyly kissed the *Monthly Review* instead of the Testa-

ment. Be that as it may, although it would have been a gratification to me to have seen the prints, yet, as they have been executed under your eye, and I know he can do them justice if he pleases, I am quite easy on that ground. Your remark on the wonderful power of change in the countenance of that Proteus, Garrick, is excellent. I believe Shakespeare and Garrick are the only persons who have had it in their power to make it impossible for their admirers to decide whether their tragedy or comedy was most excellent. Garrick is before me at this instant. I see his quick eye, and hear the electric tones of his piercing and rapid utterance. Other actors are men of slow proceedings, but he was like the lightning. It is quite impossible to form an idea of the sensations he conveyed, whether he chilled you with horror or convulsed you with laughter. Other actors may be compared, perhaps, to Orway or Rowe; but Garrick alone was Shakespeare.

I am indeed rejoiced to hear of the complete recovery of our friend Jackson,* whose life is as good as his works. I have known him from his outset; and I verily believe no human being ever was more free from envy, hatred, malice, and every bad and unkind passion than he is.

There is something mysterious in the delay of Lawrence's Exhibition: it is certainly impolitic; there must be some impediment we are not aware of.—I am, my dear sir, with much regard, yours truly,

G. H. BEAUMONT.

Have you seen [Payne] Knight's late acquisition of *Claude's* drawings; it is the most numerous of any collection, except that of the Duke of Devonshire, and he writes me word they are of the first quality."

From the same to the same.

"Cole Orton, March 13th, 1824.

My dear Sir,—I cannot say how much I feel obliged by your very, very kind attention, and I hope soon to tell you so in person, to which I look forward with great pleasure, when I come to London.

I always quit the country with regret: it suits my time of life better than 'the busy haunts of men;' and were it not for a few but very kind friends I could be content to pass the time that remains to me almost entirely in retirement. As you have interested yourself so kindly in Coleridge's behalf, I cannot refuse myself the pleasure of inclosing a sonnet of his, made almost extempore many years ago at the house of Bowles, his brother poet, after hearing one of the Linleys play on the violoncello. Perhaps you have never heard it, for I rather think it has not been printed, and I hope this 'taste of his quality' will not diminish the pleasure I am sure you feel for having been his friend on this occasion. It will be his own fault if this timely aid does not enable him to pass the remainder of his life in peace and comfort.

Again a thousand thanks.—Ever yours,

G. H. BEAUMONT."

I have said that Sir George was a poet. The fact was unknown to Allan Cunningham, or he would not have let such lines as these escape his commendation:—

"EPITAPH ON MY MOTHER.

The dreadful hour is come,—'tis come, 'tis past;
That gentle sigh, dear mother, was thy last;
And now, diffused among the blest above,
Glow the pure spirit of maternal love;
Tinged by whose beam my very feelings shone,
Graced in thy eyes with something not their own.
No more affection shall thy fancy cheat,
Or warp thy judgment when again we meet;
But every action in its native bias,
Rise undisturbed and open to thy view.
May every action then be duly weigh'd,
Each virtue cherish'd, and each duty paid;
That when my trembling soul shall wing her flight
Through Death's dark valley to the Realm of
Light,

I may expect where no false views beguile
The approving look of that accustom'd smile,
Blest smile, becoming her sublime abode,
And harbingers of pardon from my God."

These lines are to be seen in the church of Great Dunmow, in Essex. He who wrote them did not associate idly with Coleridge and with Wordsworth.

P. C.

LIGHTHOUSES.—We understand that the Government are about to undertake the construction of eleven lighthouses on various points of the Japanese coast, at the request of the Tycoon.

* John Jackson, R.A. See his Life by Allan Cunningham.

THE IRON PAVEMENT OF THE DOCKYARDS.

SOME time ago, being at Portsmouth, and noticing the fact that the dockyard was paved with iron pigs, we commented in various quarters on the costliness of such a pavement. If not *propter hoc*, at any rate *post hoc*, the matter speedily got attention, and a return was ordered by the House of Commons of the quantity so used, with the price originally paid for the iron, the quantity sold at various times, together with some other particulars. From this return it appeared that 31,011 tons were used as pavement, and the statement gave rise to considerable discussion, both in the House of Commons and out of it. On the one hand, it was stated that the iron was of the very best quality; whilst others maintained that it was almost valueless. We have insisted in a previous article* that any argument as to the value of a material based on its cost, without reference to the state of the market at the time of purchase, must lead to erroneous conclusions. The first contract on record is dated March 29th, 1771; the next is dated July 15th, 1801; and the third and last, December 20th, 1815. The price under the last contract was 5l. 8s. per ton for the eastern, and 5l. 9s. per ton for the western, yards. No purchase has been made since 1826, from which we infer that a purchase was made in that year; but the Hon. Mr. Dundas states that it cannot be ascertained whether any ballast was supplied under the contract of December, 1815. It is certain that a large quantity was supplied some time in 1815, since the firm from whom it was obtained "repurchased from the Crown 1,000 tons of that which they then (1815) supplied." To make confusion worse confounded, Mr. Childers stated in the House of Commons, on the 3rd of August last, that some of this iron was bought during the Crimean war.

In spite of the show of candour with which these returns are made out, the Admiralty cannot, or will not, furnish definite particulars of any purchases of ballast. The return of May, 1866, implied, although it did not absolutely say so, that a certain quantity of this iron cost 5l. 8s. to 5l. 9s. per ton; and, as we showed in our former article, this was far below the market price of iron during the first quarter of the present century. But it is by no means *certain* how much, if indeed, any at all, was purchased at this rate. We believe that the true explanation of the supposed inability of the Admiralty to furnish detailed returns is, that about 50 or 60 tons of Admiralty papers have been removed to the Public Record-office, where we have no doubt the required information might have been obtained.

The dockyard authorities are of course very anxious to make out a good case, and to do this the director of works has drawn up an estimate of the cost of several descriptions of roads and tramways used in the dockyards. The one that finds most favour in his eyes is an "old pig-iron ballast-tramway, 3 ft. wide each rail (without concrete foundation), with granite pitching between rails," at a cost of 2l. 11s. 8d. per yard run. On the other hand a way of "cast-iron tram-plates, 1 ft. 9 in. wide each, with granite pitching between, including concrete foundation," is estimated at 3l. 15s. 8d. per yard run. This looks well, but on investigation it turns out that in the estimate for a tramway of old ballast, the iron is only charged at 1l. 12s. per ton, whereas its average selling price, from 1860 to 1866, was 2l. 7s. per ton. It is true that the director shelters himself behind an order of the Board, directing that old ballast issued from the Store Department to the Works Department, should be charged at this rate, but he has no such excuse for a subsequent statement in his report. He refers to his previous reports on this subject, dated July and September, 1865, in which he recommended the use of old ballast, "at its fair selling value, then averaging 1l. 10s. per ton (net), provided it was transferred from the storekeepers to this department." Unfortunately for the director's figures, we find from the return of May, 1866, that 309 tons of ballast were sold in 1865, and that 735l. were obtained for it, being at the rate of 2l. 7s. 6d. per ton.

In a previous memorandum, dated July 26, 1866, the director had given 4l. 4s. as the cost per yard run of a tramway laid down with old ballast, or 19s. per yard more than the cost of granite. He urges in justification of the extra expense of ballast tramway, that the granite has

* *Builder*, vol. xxiv, p. 610.

hitherto required removing and redressing once in about seven years; and since the adoption of heavy armour-plating for ships, it needs renewal more frequently. On the other hand, the iron ballast does not shift, is not so easily displaced from its foundation, and the effect of wear and tear upon it is so slight as to be nearly inappreciable. To this it must be added, that the friction is much less over an iron than over a granite tram. There is no doubt truth in these arguments, but they are not strengthened by the director's delusive estimates. It was no doubt a clever piece of official cookery to order this iron to be charged at 11. per ton to the Works Department, when it was being sold at 21. 7s. 6d. to the marine-store dealers. But why 11, why not 10s., or 5s. per ton? It is obvious that in this manner an estimate might be made to prove anything, according to circumstances.

An important part of a report recently issued is an account of trials made by Messrs. Ryland, of Birmingham, on samples of the ballast. These gentlemen state that the iron is of very varying quality, a fact which nobody doubted. In the case of the pigs sent from Devonport, there were no less than seven different sorts. They entertain no doubt of the superior quality of the iron, but at the same time they are of opinion that a very small proportion only is adapted for foundry purposes. It must be borne in mind that before any use can be made of this iron, it must be assorted, the quality of each pig being ascertained separately. This can only be done by breaking, which reduces its value at once to that of broken ballast. Messrs. Ryland do not furnish any estimate of the cost of this operation, nor are they prepared to make any definite offer, but simply propose to act as agents for the Admiralty, charging a commission of 5 per cent. on the sales, and to select the iron for re-manufacture, under the direction of the dockyard officers. The last proposition has evidently hurt the dignity of the Hon. Mr. Dundas, store-keeper-general. He views the intrusion of outsiders "for the instruction of the professional officers of the dockyards" with a proper amount of official coldness. Messrs. Ryland have had samples of the ballast converted, and the wrought-iron thus obtained is stated by them to be of very good quality; but they have not thought it worth while to back their opinion by any experiments on the metal. Portions of the iron were offered for sale at the Birmingham ironmasters' quarterly meeting, a week or two ago; but the prices asked, 41. and 41. 10s., were considered too high, and we believe that few if any sales were effected. It is unfortunate that Sir John Pakington did not accept the offer of Mr. Platt, the member for Oldham, who was willing to pave the yards with anything the then First Lord liked to name, and give 100,000l. for the ballast.

On the whole, the evidence is hardly enough to convict the Admiralty of very gross extravagance, for it must always be recollected that the iron is still in their possession. Mr. Seely has, however, done good service in repeatedly calling attention to the general management of the dockyards. The articles which figure annually in the accounts as "miscellaneous old stores" will bear a good deal of investigation. As an instance, we may mention a recent bargain, by which a fleet of six screw frigates and three screw line-of-battle ships, with their machinery and stores, were sold for 68,000l. This may be economical in the long run, but at first sight it looks very much like a case of "positively given away."

ON A COUNTRY HOUSE.

THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of members was held on Friday evening (the 26th ultimo) at the house in Conduit-street, Mr. R. W. Edis, the president, in the chair.

The following gentlemen were elected members of the Association: Professor T. Hayter Lewis, Mr. H. Jarvis, Mr. Sydney W. Lee, Mr. W. White, and Mr. Alexander Paynter.

A vote of thanks was passed to Mr. E. M. Berry for his kindness in allowing the members to inspect the new railway hotel in Cannon-street, and for his courtesy in accompanying them over the building.

The Chairman stated that among the subjects to be discussed at the next general business-meeting would be the Address of the "General Builders' Association" and the minutes of the last meeting of the Architectural Alliance.

Mr. Florence announced that the water-colour class had been filled up with one exception, and that the first out-of-door meeting of the season would be held on Saturday, the 11th of May.

Mr. Henry Curzon then proceeded to read some practical notes on the erection of a country-house. He observed, in commencing, that he would not presume to lay down what should be the style of a country-house, or even what should be the arrangement and plan of the rooms, and so forth. Such matters had already been made the subject of elaborate comment and instruction in the works published by Mr. London, Professor Kerr, and other persons more or less experienced on the subject. He would admit, therefore, that the design and arrangement were already agreed upon. This portion of the scheme for the country-house being disposed of, he would recommend the student of architecture to take care that his drawings were complete, and the sections ample. Personal experience showed him that many sets of drawings left the office of the architect and were given to the builder to carry out, with the sections in a very incomplete and unsatisfactory state. In making the sections, it would be desirable to show the position of all down pipes, soil-pipes, openings for doors, places for bells, air-bricks, the position for the bedsteads in the sleeping-chambers, the hearths, the footings, the drainage-pipes, &c. Presuming, then, that the drawings were complete, and the sections ample, the next thing to do in order to insure the satisfactory construction of the building would be the employment of a competent clerk of the works. Upon this subject he wished to make a few observations. The clerk who was always at war with the constructor, made a great mistake, as temper and forbearance were quite as much required as a knowledge of the practical details, and of the art of construction. It was, he thought, desirable to employ, whenever practicable, local materials; but this, of course, could not always be done: for instance, the chateau of the Emperor of the French at Biarritz was built of English bricks. It was desirable, if the work was of sufficient importance, to make the bricks on the spot; and he recommended a thinner brick than that in ordinary use, as they worked up better, and presented a more agreeable appearance. Having referred to the different characters of bricks used in the Midland and Home Counties, Mr. Curzon observed that the Kent and Sussex bricks, which were generally of a porous description, might be used to advantage in exposed situations by using hollow bricks for the inside of the walls. He also recommended as a general rule that country-houses which might be at a distance from towns and fire-engines should, whenever possible, be of fireproof construction, and that, when that was not possible, a large water-tank should be erected on the top of the building, with a hose constantly laid on, with some simple machinery for directing the water in case of accidents. With regard to shutters in country-houses, he did not think they were of much use as a means of defence, while they were often expensive to make, and occasionally occupied room which could ill be spared. Plate-glass was, he thought, quite as good a protection as box-shutters, and was very little, if any, more expensive. He also recommended in cases where the establishment was at all large that provision should be made for the manufacture of gas, which could now be done with very simple machinery, and which would prove a great desideratum in the basement of large houses, stables, passages, &c. Having again referred to the importance of careful drawings, with numbers well defined and the sections complete, Mr. Curzon concluded by reminding the student of architecture that it was as much his business to build as to design, and that a short experience in the capacity of clerk of the works would best enable him to obtain a practical knowledge of the science of construction.

Mr. Perry inquired what Mr. Curzon meant by fire-proof construction in country-houses. Mr. Curzon said he would use the Dennet arch, or Fox & Barrett's principle, with an iron support when necessary. Mr. Perry thought that as a rule wooden supports would be found to last longer in case of fire than those of iron. He had had considerable experience in surveying after fires, and he always found that wood had more endurance than iron. The Chairman observed that in the houses on the cliff at Bournemouth, which were 150 ft. above

the sea level, and in a very exposed situation, the hollow Jennings brick had been used with great advantage, so as to resist not only storms of rain from the south-west, but sea spray also. With regard to the bedding of tiles (for roofs) he considered it to be most injudicious to bed them in mortar, as the latter occasioned the pegs to rot and the tiles to come off. In Sussex he found the general practice was to bed the tiles in straw, and he considered it a very good plan. He quite agreed with Mr. Curzon in the necessity of enforcing the greatest care in the preparation of drawings, specifications, and sections; so as to insure good work in the first instance, and to prevent alterations and misunderstanding afterwards. Leaky roofs and smoky chimneys (the abomination of all clients) might be avoided if care were taken in this respect; and the same attention would also prevent the wretched question of "extras" (which so often made the architect unpopular with his client) from cropping up.

PROVINCIAL NEWS.

Matlock.—The foundation stone of a new market-hall has been laid at Matlock. Some time ago a company was formed, called "The Matlock Hotel and Market-hall Company," for the erection of the building. The cost of the hall and hotel will be 10,000l. Mr. Hall, of Northampton, is the architect; and Messrs. Stone & Wildgoose, of Matlock, are the builders.

Aberdare.—The works in connexion with the People's Park are all progressing favourably. The drainage is nearly completed, drives are being formed, and planting is begun.

LIVERPOOL PAROCHIAL INFANT SCHOOLS.

The Industrial Schools of the parish of Liverpool contain about 1,200 children. It has been determined by the vestry to erect separate schools for about 500 infants.

The building, of which we give a view and plan, is now in course of erection, from the designs of Messrs. J. A. Picton & Son. The material is brick, with white stone dressings. The collection together of so large a number of young children into one establishment requires special care to preserve a uniform warm temperature, combined with free ventilation. For this purpose the corridors running the length of the building are made to constitute warm air-chambers heated by hot water. The ventilation is to be carried out on the principles of Mr. C. Watson, of Halifax.

The site is elevated and salubrious, in the suburb of Kirkdale, open to the sea breezes, and adjoining the present Industrial Schools.

The contractor is Mr. John Westminster, of Liverpool; and the cost of the building will be about 20,000l.

REFERENCES.

A. Vestibule.	N. Roasting Kitchen.
B. Corridor.	O. Steam Cooking.
C. Play-room.	P. Coal.
D. Master's Room.	Q. Ashes.
E. Master's Parlour.	R. Wood.
F. Master's Kitchen.	S. Dining-hall.
G. Day-room.	T. Office.
H. Officers' Day-room.	U. Store-room.
I. Larder.	V. Teachers.
J. Milk, Butter, &c.	W. School Teachers.
K. Pantry.	X. Infants' Day-room.
L. Bread, Rice, &c.	Y. Class-rooms.
M. Sewlery.	Z. School-room.

THE NEW LAW COURTS.

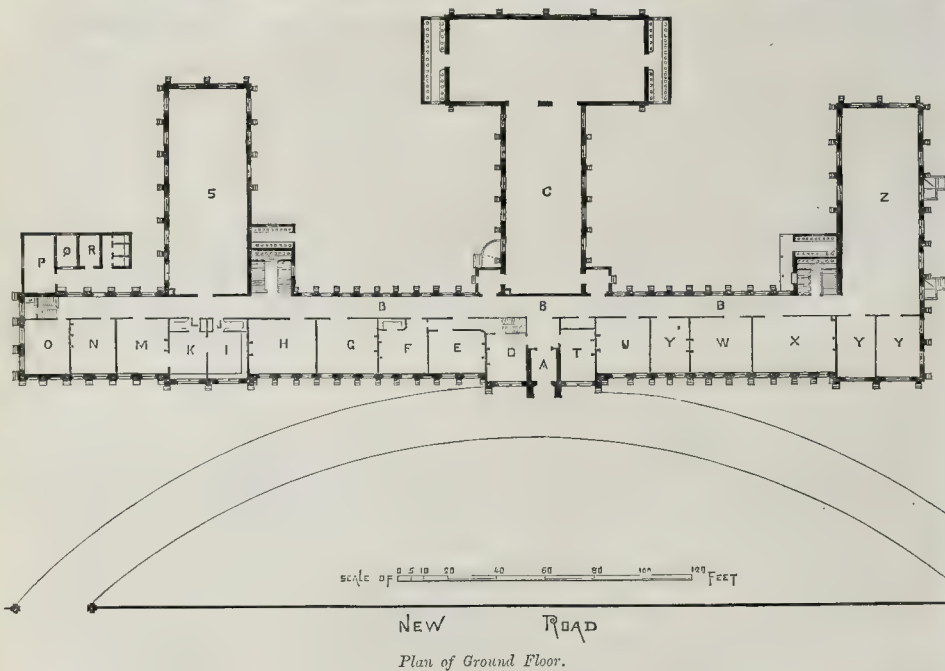
The design we illustrate in the present number is that of Mr. William Burges, known as the successful competitor for Cork Cathedral and several other buildings.

The desire of the architect has been to produce a simple plan, with ample light, quiet and distinct entrances for every person engaged or likely to have business in the building. He has ignored the central hall system, which was left an open question by the instructions provided for the guidance of the architects. We have already given particulars of the design and a key-plan,* and on the present occasion set forth the architect's intentions. The whole of the courts in this design are on one floor, the judges' rooms

* See p. 90, &c.

NEW INFANT SCHOOLS, KIRKDALE; FOR THE PARISH OF LIVERPOOL.

MESSRS. J. A. PICTON & SON, ARCHITECTS.



being situated on the level of the bench of the courts, and separated from them by a judges' private corridor, by which arrangement the architect considers the air of the rooms would be kept purer than in the case where the rooms open out of the court. The judges approach their rooms and courts by means of private staircases which are provided in the centre of the building, and they are also supplied with small private staircases at the four internal corners of the zone. By referring to the block plan of this design already given, the reader will better comprehend the arrange-

ment. On the other side of the courts, that is, nearer the roadways, and parallel with the judges' corridors, is a corridor devoted to the barristers, attorneys, and suitors, approached by a hall at each corner of the building. The jury have a distinct staircase to their rooms and court, as well as the witnesses, while the public are also accommodated with a staircase to the gallery of each court, thereby preventing any chance of a collision between a juryman, witness, or a mere lounge.

The large portion devoted to the records is situated on the western side of the building

facing Clement's Inn, in immediate communication with the Probate and Divorce Court, and by this means it is kept entirely distinct. The massive tower at the south-west corner is intended to receive the original wills, while another fireproof building is provided at a safe distance in case of fire for the registered copies.

The site in this plan has been adhered to, and the curved piece of Pickett-street, in the Strand front, has been made of use in breaking up the long elevation of 700 ft., as well as to secure a carriage-drive for the use of the building.



DESIGN FOR THE PROPOSED LAW COURTS.—By Mr. W. H. B. 1867, ARCHITECT.

MONUMENTAL.

Statue of Mr. Peabody.—A first list of subscriptions has been published towards erecting in some public place a statue of this American benefactor to the London poor. The list is headed by the Prince of Wales for 25 guineas, and the total reaches considerably over 1,000l.

The late Earl of Carlisle.—A movement is at present on foot in Cumberland to raise a memorial to perpetuate the memory of this distinguished nobleman. A meeting of the committee, comprising a large number of influential gentlemen, was recently held, and it was decided to issue a circular to the public, embodying the resolutions passed at the meeting, together with other information relative to the proposed memorial.

The Cobden Statue at Manchester.—This statue has been inaugurated. The site is in St. Ann's-square. There was a grand procession, with music, banners, &c. The figure is 10 ft. high, and stands upon a lofty, square pedestal, in each face of which are large slabs of polished granite. The face of the figure looks towards the front of the Royal Exchange. Mr. Marshall Wood was the sculptor, and the cost was 2,500l.

Memorial of the late Dean of Hereford.—Preliminary steps towards erecting a memorial of the late Dean of Hereford have been taken at Hereford. A committee has been appointed and a subscription list opened, and 400l. were subscribed at the meeting. The Dean and Chapter have given 100l. The nature of the memorial will depend upon the amount of the subscriptions.

FIRE PROTECTION.

As doctors differ and lawyers disagree, so do also experts in other professions. In the *Builder*, recently, p. 274, reference was made to the evidence given before Mr. McLagan's Committee of the House of Commons, appointed to take evidence as to the number and causes of fires, and the means of fire prevention, and to report thereon to the House. Mr. Smith, secretary to the Scottish Union Insurance Office, stated pointedly, that for many years fires of more than suspicious origin had been largely on the increase, and he strongly recommended as a check that there should be a judicial investigation authorized as to the causes of all fires, such investigation to be conducted by coroners in England, and by the public prosecutors in Scotland, and by such other authorities as might be thought would be most competent and convenient. At a subsequent meeting of the committee, Mr. Charles John Bunyan, general manager of the Norwich Union Insurance Office, was examined, and the leading questions were repeatedly pressed upon him touching increase in the number of fires, and the expediency of instituting a judicial investigation as to their causes. He declared that he had no reason to believe that incendiary fires are increasing; in the country the number of fires had been less numerous for several years past than they were formerly. He decidedly objected to giving the coroner a new jurisdiction, by empowering him to inquire into the causes of fires; such an inquiry conducted by the Board of Trade would involve costly and cumbersome machinery. It would be an unwise measure, in his opinion, to empower the Metropolitan Board to appoint a special officer to investigate the causes of fires. He did not think it at all desirable that there should be a judicial inquiry into the causes of all fires. The knowledge of such inquiry, he believed, would be more likely to lead to the escape than the detection of criminals; if any inquiry was to be made at all, it should be conducted by the fire-brigade and the police, under the direction of the chief constable of the district. The witness considered the arrangements in this country, for the prosecution of crime generally, to be very defective, including cases of willful fire-raising. Mr. Bunyan gave some interesting evidence on the law as affecting fires: common law held a man responsible for a fire, but statute law protected him, if the fire was accidental. Railway companies were responsible for fires caused to growing crops by sparks from locomotive engines; if the crop was insured, the owner could either apply to the company, or to the insurance office, who, in the last case, would take the place of the owner, and apply to the railway company, which might defend successfully if it could be shown that all proper care had been taken as regards construction of the engine, mode of firing, &c. He considered the Metropolitan Building Act, and

certain other local Acts,—that of Liverpool, for instance,—which contained stipulations respecting the construction of warehouses and other buildings, and the storage of dangerous substances, with a view to prevention and limitation of the extent of fires, to be very salutary in their operation. Mr. George Perse Ivy, who had had twenty years' experience as a district manager for fire insurance companies in England and in the Australian colonies, was of opinion that the increase in the number of fires in this country was greatly in excess of the amount of property insured. A number of cases of the most suspicious character, both of applications for policies, and of actual fires, had come within his own knowledge; of these he gave the particulars of one case at Swansea, and of another at Cardiff. He strongly recommended a legal tribunal to investigate the causes of fires in this country, as was done at Victoria, where the coroner had all fires reported to him, and gave judgment before the insurance offices were required to pay the claims. He was certain that the coroner's inquiry kept down the number of fires, and prevented wilful fires for fraudulent objects. In Melbourne they had the best water supply in the world, and very ready means of subduing fires. They had a number of watch towers in various parts of the city, upon which men were stationed day and night, and by a wire communication signalled to the detachment of the fire brigade on duty below the direction of the fire. The water could be thrown to a height of 150 ft. by pressure; there were numerous volunteer fire brigades in the suburbs. There was now a law in force in Melbourne against the erection of wooden houses. They had occasionally very large fires: at one, with which he was connected, at Sydney, a general warehouse, the loss was 40,000l.; the extent of the damage having been attributable to the defective water supply. He repeated his decided approval of a judicial inquiry.

FOUL WATER SUPPLY AT LIVERPOOL.

At a recent meeting of the local water committee of the corporation, Alderman Bennett explained a model, showing the principle on which water-closets were supplied with water, and that when the service-pipe in a street was partly or wholly empty, and the cock of the water-closet left open, the foul smells of the closet in all cases went into the service-pipes, and where the pipe of the closet was too long (and he had seen many such), the faeces, too, were drawn into the services, and frequently contaminated the mains as well. Coffee-grounds represented faeces, and the smoke from brown paper represented gas, and the model in operation presented a very disgusting state of things.

Mr. Newlands said there was no doubt the model represented a state of things that must occur in accordance with all physical laws, but it could not occur if the cock were closed. Mr. Duncan said, if the pipe in the closet were not made too long, it would not draw the faeces into the services. The remedy was to put up a cistern, and so cut off the direct supply from the street service to the closet.

Alderman Bennett, after the discussion had lasted an hour and a half, moved a resolution, affirming that the committee felt the importance of giving a supply of pure water to the inhabitants; that the present arrangement of the service pipes between the street water-mains and the trough and other water-closets was highly objectionable; and that the water engineer, after conferring with the borough engineer, should report as to what he considered the best remedy for the evil.

The motion was agreed to unanimously.

LOWER SLAUGHTER CHURCH, NEAR MORETON-IN-MARSH, GLOUCESTERSHIRE.

This new church, built principally at the expense of Mr. Charles S. Whitmore, Q.C., the Recorder of Gloucester, of Lower Slaughter, has just been completed. The old church which it represented was in so dilapidated and ruinous a condition, that it became utterly unfitted for divine worship, and the present edifice was then commenced. The only parts of the old building which had any archaeological or architectural interest was a Transition Norman open arcade and a piscina, which have been preserved in

their integrity in the new church, where the former separates the nave and north aisle. The plan of the church comprises a nave, 40 ft. 3 in. by 15 ft. 3 in.; north aisle, 11 ft. 6 in. wide; chancel, 21 ft. by 13 ft. 6 in.; and a tower surmounted by a lofty spire. The general character of the building is Early Decorated, although the chancel belongs rather to the preceding style. The walls are built of local stone, lined with white ashlar internally, the groins, window, and door dressings, &c., being of Farmington and Bath Corsham Down stone. The nave and aisle have open stained fir roofs, and the chancel a polygonal panelled ceiling, having enriched bosses at the intersection of the ribs. Externally the roofs are covered with the stone slating of the neighbourhood. The eastern triplet-window has serpentine shafts, and is filled with painted glass by Clayton & Bell, the gift of Lady Browning. The chancel-arch also has serpentine shafts supporting it. There is a peal of six bells, three of which are old, the new ones being cast by Messrs. Warner & Son. The chancel has a handsome encaustic tile pavement, and the passages of the nave and aisle are paved with black and red tiles.

The architect is Mr. Forrey, and the contractor Mr. Oliver Estcourt, of Gloucester.

At the entrance to the church-yard is an oak lych-gate covered with ornamental tiles.

BRIGHTON.

At the suggestion of Mr. Lockwood, the borough surveyor, the corporation determined, some time ago, to erect on the east side of the Fish-market groyne, a new groyne of concrete, the object being to form a permanent barricade for the retention of the beach along the whole west front of the town. The new groyne is now about to be laid. It will run parallel with Anscombe's groyne, or the Fish-market groyne, and will extend from the coping of the Junction Esplanade for a distance of some 240 ft. southward. The top of the groyne will be some 9 ft. in width throughout its whole extent; and for a distance of 200 ft. will be slightly rounded, with an inclination to the southward of 1 in 8; the remaining 40 ft. at the south end being formed of a series of steps, the top one of which will be about 2 ft. 9 in. above the mean tidal level, and the bottom one reaching down to the low-water level, at spring tides. A considerable portion of the top of the groyne at its upper end will be always above water, as the high-water level, at spring tides, does not reach up to above one-half of its extent; and at this upper end of the groyne, leading from the Esplanade, there will be a post and rail fencing, extending down, on both west and east sides, some 40 ft. or 50 ft. The base of the groyne will be chiefly on the chalk rock, about 25 ft. below the surface of the beach; the width at the base will be about 20 ft.; and the "batter" of the eastern face from the base to the top will be 1 in 3. The blocks, which will form the eastern face of the groyne as well as the steps, are manufactured of different material from that of the "heating" (ordinary concrete), viz., of flints imbedded in the best Portland cement. The blocks are of immense weight: some of the "heating" blocks weigh within a fraction of four tons. Holes are made in each block for the purpose of lifting them and of placing them in position; and this is effected by means of Lewis rods, of iron, attached to the traveller.

Though costing but little more in construction, the concrete groyne is expected to be of much more durable character than the ordinary wooden groynes. The test blocks, which have been exposed for a lengthened period to the action of the beach and sea, do not show, as yet, it is said, any signs of wear and tear.

The new baths of Brill's Brighton Bath Company, recently opened, are second-class swimming and single baths, and will form only a part of the whole scheme of the company, by whom the whole block of buildings at the bottom of East-street, Pool-valley, and Junction-parade, has been purchased, with the view of erecting and establishing baths of various kinds adapted to the different classes of residents and visitors. The portion now opened stands in that part of the property immediately adjoining the Ladies' Swimming Bath, at the bottom of Pool-valley, and below the White Horse Hotel. The temporary entrance is at the upper extremity of the building in Pool-valley. The building is of a nearly elliptical form; and the interior dimen-

competent advice as to cost, accuracy of principle and detail, or general excellence, summarily rejected seven of the designs because they propose to avoid the cost of pumping, and irrigate by gravitation several hundred acres of meadow land adjoining the river Itchen; while the Board retained four designs, to be submitted to an engineer, which propose to pump the sewage a considerable height on to some most expensive arable land, from which, also, a considerable portion of the sewage-water must find its way back into the river. Now no instruction or intimation was publicly given as to the particular portion of land which the Local Board desired to have irrigated; it is therefore manifestly unjust that those who sought to save the expense of pumping should, from the want of local knowledge, be excluded from any participation in the premiums, by an arbitrary rule which precludes any consideration of the general excellence of the designs. Any officer minus the most elementary knowledge of the first principles of drainage, who has by information or chance hit upon the Local Board idea, may, for a plan, however roughly scrawled, obtain a premium. Out of the four designs selected for the award of three premiums it is believed that one is by a brother of a town-councillor; and a second by a local auctioneer; but, as they are under motives, the Board is, of course, not aware of this fact, although one is rather curious as to the result.

Of the site proposed in the selected designs for irrigation the local surveyor reports it is "a very close subsoil not of a nature to absorb much moisture." This, he states, will be a fatal objection to three out of four of the plans selected. I also have had the opportunity of inspecting the whole of the plans, and I found that those which show a knowledge of the subject, care in detail, and exhibit a considerable amount of labour, are just those which have been rejected, while some of the accepted designs are of the most miserable description. One, for example, provides 6-inch pipes for street sewers, and a principal drain in which building is progressing, shows a main sewer one-quarter of a mile long of 9-inch pipes only, to a flat gradient. The well-audited and honest designs average about 21,000 l. without pumping works; while the selected designs, including pumping station and system of high-level irrigation, range so low as from 15,000 l. to 16,700 l. The nature of the locality is such that the outfall sewer of all the designs runs in the same direction; the addition of a pumping-station near St. Cross to divert the sewage, east, west, or south, is simply a question of modification applicable to any design; and I positively assert that among the rejected designs are some which, with a little alteration, would meet the requirements of Winchester, as well as the views of the Board, better than any of the selected designs; therefore the whole should, as contended for by the more intelligent members of the Board, have been referred to some qualified engineer. No competition scheme is ever carried out without modification; even the local surveyor informs the Board that the schemes admit of modification, and that none can be adopted in their entirety; therefore the rejection of seven designs out of eleven, without advice and without recommendation, for a mere arbitrary and illogical reason, is simply an insult to the profession invited to compete. For once, I fear, Winchester has been found "without benefit of clergy."

ONE OF THE REJECTED.

RAIN THROUGH PORTLAND CEMENT.

In answer to "Club," p. 293, I beg to state that the chief cause of the rain and water showing through the cement is, in general, the inferior character of the work done by inexperienced workmen, and who use inferior cement and overpower it with sand, and, what is worse, sand full of loam, instead of clean, sharp sand. One of the best remedies the inquirer can have is to let the cement get thoroughly dry and well clean off the colour; then give it three coats of boiled oil (applied hot), or as much of it as the cement will suck in. The oil must be left on the surface. The oil penetrates into the cement, forms a good foundation for the paint, and prevents it peeling off. The cement will require three coats of best white-lead paint, stained to taste.

JOSEPH HAYES, SEN.

THE NEW LAW COURTS AND THE PUBLIC.

The reception which the designs for the new Law Courts have met with at the hands of a large class, who, as a rule, take but little interest in the subject, is worthy of special attention, as indicating the popular estimate of modern secular architecture.

It may be safely asserted that the condition of no art can be satisfactory which does not possess a powerful hold upon the public mind: this architecture has undoubtedly possessed whenever the art really flourished; but the deserted state of its exhibitions, and the ridicule or indifference so often manifested, when the subject is broached in general society, are strong evidences to the contrary, at the present time. Indeed, architects are accustomed, in their self-complacency, to console themselves for many slights of this kind, with the reflection that "the public know nothing about architecture."

It remains to be shown where the fault lies.

When the present revival commenced, it was argued wisely, that in order to found a modern school of architecture, it would be necessary at first to look back, and study the principles of obsolete styles; this, however, was only the means to an end, but we are apparently as far from that end as ever: the result hitherto has been the production of numerous specimens,

more or less successful, of extinct periods of art, entirely devoid of vitality.

The great mistake into which the Revivalists have fallen is this—instead of confining themselves to the study of the principles of preceding styles, and principles only, they have selected one style in particular, according to their predilections, and endeavoured to resuscitate it *en masse*; and from the rival claims of two of these has arisen the so-called "Battle of the Styles."

This conflict, by serving to ventilate the whole question, has been productive of great good; but a decisive victory cannot be claimed by the partisans of either, from the simple fact, that no one style is of itself capable of fulfilling the multifarious requirements of the present age.

For, however slow the profession may have been to discover the truth, many on the outside have, at all events, done so. A real, vital school of architecture, such as we all desire, can spring only out of the requirements of the age; and, as our requirements are totally different from those of any former age, such a school can have little in common with any preceding period of art, except in general forms; and if this be true, it follows, that in attempting to "evolve" a style of our own by resuscitating some previous style or combination of styles, we are simply encumbering ourselves with a mass of useless material, which, however beautiful and appropriate in its own day, speaks to the present generation in a dead language.

The most important modern building which England has produced, the New Palace at Westminster, is an illustration of this. All that lavish expenditure and the resources of a highly-gifted mind could do has been done here to resuscitate an obsolete style; but, though possessed of many admirable qualities, it is in its purely ornamental character little better than a monument of perverted ingenuity, and satisfies only the enthusiastic admirer of Tudor work.

Let the architect of the new Law Courts proceed on the same principle, and he may produce another "gorgeous revival" highly satisfactory to himself and his own immediate admirers, but not to the public generally, and certainly not to posterity.

In a "utilitarian" point of view only, a building capable of satisfying the commissioners, possessed of every convenience, and fully adapted to modern requirements, can be provided without the assistance of architects at all, by engineers and others, but such a work would justly hold us up to the scorn of contemporaries and of posterity; the architect is, therefore, called in. Is it too much to hope that such an opportunity will not be thrown away, and that the time has at length arrived for the production of a building worthy to represent the present generation?

The system of decoration which the architect may adopt should have some stronger argument in its favour than that it was the *correct thing* five centuries or more ago. If cloister-like courts, cathedral-like central halls, and long rows of knights, &c., in armour, are necessary, or if they produce a feeling of gratification at all commensurate with the cost, by all means let us have them; but the lawyers will certainly object to the first, and there is as much common sense in a row of knights in armour ornamenting a nineteenth-century Palace of Justice, as in a row of Egyptian sphinxes ornamenting a Gothic cathedral.

It is for the selected architect to consider whether he possesses the power to grapple with his task in the same spirit as the great masters of the art would do if we could call them from their graves to execute this work. We may be certain that they would not be slow to make use of the vast increase in our knowledge of almost everything bearing upon architecture, of the hundred subsidiary arts and appliances which were entirely unknown when they flourished; and that their productions of to-day would have little in common with their former works.

It is by working in this spirit only that he can hope to succeed, and help to recover for architecture her long-lost ascendancy over men's minds. He will probably have much to unlearn, many prejudices to disabuse his mind of; much also to contend with from the hostile criticism of many who require precedent for everything, and who judge of a feature not on its own intrinsic merits, but by the number of times it has been executed before; but such puerile criticism would be short-lived, the tide of public opinion would soon set in his favour, and he might safely leave the final judgment to posterity.

If art has no higher object than to pander to the caprices of mankind, or to afford one genera-

tion an opportunity for exercising their ingenuity in counterfeiting the works of another, it is of little import what style we select for our public buildings; but if the chief end and aim of art is the elevation of the human race, then it is important that the new Palace of Justice shall be "clothed with living, not ancient, graces"—graces in harmony with the feelings of the age, and capable of being read and understood of all men.

FRED. STONE.

PERIODICAL CHIMES.

DR. BURNBY, in his "Tour through Germany and the Netherlands," has made certain statements, which I do not hesitate to say grossly misrepresent the effect produced by the *carillons*, or chimes worked by a cylinder; while his remarks as to the capability of *le carillon d'clavier*, and the exhausted condition of a *carillon* after his performance, are truly absurd. Unfortunately, however, numerous writers in succession, down to the present day, have copied the doctor's erroneous statements in some form or other. The result is, that many people are prejudiced against the species of music in question.

I venture, then, to assert confidently, that the best *carillons*, or periodical chimes, now existing on the Continent, give out a stream of pleasing melody, enriched now and then with touches of delightful harmony, of which those who have heard nothing better than the uncouth music of certain old barrel chimes in England can have no adequate conception.

These Continental instruments, on the largest scale, as I have before intimated, are composed of a very extensive series of costly bells, and machinery of enormous magnitude; so that they are not likely to be sanctioned in Great Britain, except for lofty structures of great national importance.

I would again suggest, however, that it is very desirable to introduce *improved chime mechanism*, equal to that of the *carillons* alluded to, which British workmen are competent to execute, in many of our large church towers, to play appropriate melodies at certain intervals upon the ordinary peals of eight, ten, or twelve bells; which would then speak to the ear by night as well as by day, giving, as it were, a musical "Tongue to Time."

If in any case the number of bells can be augmented to fifteen, or more, so much the better. I would observe, too, that the noble campaniles of some of our large Town-halls are well adapted for the reception of excellent chimes.

And now, by way of showing what may be done, permit me to add, that arrangements have lately been made for placing a considerable number of additional bells, and a set of chimes on an extensive scale, in the famous tower of Boston church. The expense of this undertaking will be upwards of 1,000 l., the greater part of which amount has already been raised by subscriptions. One lady gives a hundred guineas.

THOMAS WALESLEY.

FROM BRISBANE, AUSTRALIA.

THE only public building of importance still in progress is the new House of Parliament for Queensland; and in this the work is confined to roofing and glazing. When this is finished, the work is to be suspended until the Government are better prepared with funds to complete it. From twenty to thirty men are now busily engaged completing the roofing and preparing the window frames. The main building is nearly covered in, and all that remains to be done is to cover the central dome, and put up the ornamental iron work on the ridges and round the domes. The material used for covering is zinc. By the *Monkchester* have been received from the workshops of Messrs. Chance, of Birmingham, and imported by Messrs. W. & B. Brookes, a stained-glass window, intended to be placed in the great hall, near the entrance to the principal staircase. The central portion of the window consists of a full-length portrait of her Majesty on the throne; underneath is a sort of pedestal representing foliage in geometrical designs, and the upper section contains the royal arms. There are also some smaller windows of the same kind, one of which consists of a portrait of the Prince of Wales, and the other of the Princess, with borders of foliage. Two other windows, intended

for the entrance to the principal staircase, are filled with an illuminated scroll; one contains the words, "Except the Lord build the house, they labour but in vain who build it;" and the other by a similar scroll, containing the words, "Except the Lord keep the city, the watchman waketh but in vain." These texts were selected by Mrs. O'Connell, the wife of the President of the Council. By the same vessel were also received a number of sunlights, of a new design, from Messrs. Stodge, London, for lighting up the Assembly and Council Chambers; also a number of large globe lamps, for the same portion of the building: the latter are constructed so as to act as ventilators.

The other public buildings calling for mention are, the new Lying-in-Hospital, Adelaide-street, now completed and occupied, built from designs by the colonial architect, and capable of accommodating twenty patients; the Dalby Post-office, and Telegraph-office, which are progressing towards completion; the new Court-house and lock-up at Roma, which is nearly finished, and the prison depot, at St. Helena Island, Moreton Bay, which is still in progress, the labour being supplied by the prisoners. When this building is completed, it will be capable of accommodating 100 convicts, and the necessary military guard, &c. A design has been prepared by the colonial architect for a new drinking-fountain, which is to be erected in the Brisbane Botanical Gardens, at the intersection of the roads on the south-east side of the bamboo grove. The fountain will be over 12 ft. in height, and built of freestone, with polished Gladstone marble panels.

The Brisbane corporation works have all been suspended, with the exception of the bridge, and the contract for the construction of Edward-street and Turbot-street, across the reserve to Wickham-terrace. This latter work has been long necessary as a direct means of communication between North Brisbane and Wickham-terrace and Spring-hill. Vehicles now pass along from Queen-street over the Edward-street portion.

With reference to the bridge work, the Government have consented to allow 1,000*l.* per month to the Brisbane corporation out of the endowment for this year. The material has nearly all arrived.

COMPETITIONS.

Ellesmere Memorial.—I travelled one hundred miles to see the designs for the above memorial, and without in any knowing "Architect," who wrote the letter in your paper last week, allow me to corroborate his statement with regard to the expense of at least two of the designs. With regard to the third, it certainly was not equal to several other designs hanging upon the walls. A competent architect is to decide which is the best design of three. Is this fair to the remaining competitors? Why not have allowed the competent architect to have given his opinion upon all the designs, and not upon three only, probably chosen by an incompetent committee?

The cost of the designs for the memorial was restricted to 800*l.* The committee are bound to remember this in their decision.

FAIR PLAY.

CHURCH-BUILDING NEWS.

Pylla.—The church of St. Thomas à Beckett, at Pylla, near Shepton Mallett, is about to be pulled down, except the tower, and rebuilt at the expense of Lord Portman.

Oakley.—The Duke of Buccleuch, one of the principal land-owners of the neighbourhood of Kettering, has undertaken to defray the cost of restoring Oakley Church, which has been for several years in a dilapidated condition.

Saxlingham.—The parish church of Saxlingham, Norfolk, is about to undergo restoration, and also to have a new porch, vestry, and north aisle. The works are under the direction of Mr. J. S. Benest, of Norwich, architect.

Haggerstone.—St. Andrew's Church has been consecrated. It is situated in a district in the north-west of London, formerly being a part of St. Leonard's, Shoreditch. The style of the church is Decorated, and it is constructed to contain 936 persons. The interior consists of a nave and side aisles of four wide bays with a clearstory and high-pitched roof; a chancel of

extensive dimensions with aisles, that on the south side forming an organ-loft, and a portion of that on the north a vestry. The chancel is at present in an unfinished state; but the work indicates that a reredos of unusual size will fill the space below the eastern window, which is not placed lower than the string-course of the clearstory, and is filled with tracery of the Middle Pointed period. Over the western door is a rose-window. Beyond the altar is a plain super-altar. On the south side are sedilia and a piscina, surmounted by carved pinnacle work. The windows in the side-aisles are deeply recessed, and those of the clearstory are double lights with Middle Pointed tracery. The organ is by Messrs. Willis & Co., and when complete will have cost 600*l.* The seats are all free. The building, which cost about 10,000*l.*, was erected from designs furnished by Mr. William Woodyer, of Grafton, by Mr. Robert Fletcher, of Salisbury, under the superintendence of Mr. P. Bentlif. The stonework of the reredos and the carving in the church were executed by Mr. Nicholl, of Lambeth.

Battle.—The parish church of St. Mary, Battle, is about to be restored by Mr. Butterfield, and contributions for the purpose are invited by the Dean of Battle. A series of paintings in distemper exists on the walls of the clearstory of the nave, and has been partially restored by Mr. E. Ward, R.A. It was built almost contemporaneously with the Minster, for the use of the parishioners of the Lega or Precinct, and is now a wilderness of pews internally, whilst the external fabric urgently requires renovation. It is calculated that 4,000*l.* will be required for the restoration, and a considerable sum is yet wanting, even after liberal contributions and promises.

Viney Hill (Forest of Dean).—The church of Viney Hill, a small, scattered village in the most picturesque part of the Forest of Dean, has been consecrated. It has been erected in accordance with the will of Mrs. Bathurst's late husband. The cost of the church has been about 2,200*l.* The architect was Mr. Ewan Christian, of London; the builder, Mr. Griffiths, of Eldersfield, near Tewkesbury. The building is in the Early English style, consisting of nave, south aisle, apsidal chancel, with organ-chamber, and porch, surmounted by a bell-turret, surrounded by a large wall-enclosed graveyard. The church is capable of accommodating 250 people. The material used is the red stone of the neighbouring quarries, with grey Forest stone bands. The walls are built of coursed rubble, faced on the outside with rock-faced ashlar in random courses. There are close-jointed relieving arches over the windows and doorways; and the apexes of the bell gable and turret are finished with ornamental stone crosses. The roof is covered with slates of two colours, worked in courses, and the ridge consists of red-crested tiles. There are many windows, including a large west window, with iron stanchion bars set anglewise and foliated at the points, and filled with glass of a greenish hue, bordered with clear white glass, the tracery lights glazed in ornamental patterns. The doors are of English oak, and the other woodwork materials are Russian deal and Baltic fir. Inside the church, the open timbers of the roof are varnished, and the ironwork connected with them is of a plain chocolate colour. The pewing is open, and also varnished in a light tint. There are six columns in the arcade, four in the nave, and two in the chancel: they have crowned capitals, the carving executed by Mr. Purday, of Gloucester. The chancel arch is of simple mould and plain, with carved corbels. Seats for the choir are placed in the chancel, on the northern side of which is a vestry, separated by a low, open screen. The nave is paved with 6-in. black and red Lugwardine tiles, laid on a bed of concrete; the chancel with 4½-in. tiles in two colours; and the altar space with enamelled encaustic tiles. The chancel is approached by steps of Painswick stone, with ornamental tile risers.

Cloughton.—St. Mark's Church, Grange Mount, Cloughton, is a permanent iron church, designed and erected by Messrs. F. Morton & Co., of Liverpool. Outside, the walls are composed of corrugated iron plates, whilst the roof is covered with Morton & Co.'s iron tiles. Inside, the walls are lined with boards to the height of the window sills, and above this they are lined with plaster. The roof is of open timber work braced together. The boarding which forms the internal lining is stained and varnished, whilst the principal cross braces and tracery are further encircled with ornaments. The roof over the

chancel is coloured azure blue and powdered with gold stars. Encaustic tiles are laid down in the chancel and the porch. The east and west windows are glazed with stained glass. The side windows and clearstory windows are also all of them partially so. The whole of the glass was supplied to the contractors by Messrs. Forrest & Co., of Liverpool. Mr. Wm. Bennett, jun., of Liverpool, a maker of warming apparatus, supplied the contractors with one for the church on his improved principle. The entire cost of the whole work is about 4*l.* per sitting.

Liverpool.—The chief stone of the new church of St. John the Baptist has been laid in the district of Tuebrook, in the parish of West Derby. The donor of the church is Mrs. J. C. Reade, of the Elms, West Derby. The situation selected is at the corner of Green-lane, West Derby-road, on a plot of land about an acre in extent, which was purchased from the corporation. The architectural features of the edifice will be Decorated Gothic, and it will be built of the local redstone, mixed with Thatchoath whiststone; while for the interior dressings Stourton stone will be used. The church will consist of a nave, two side aisles, and chancel aisles, and a tower and spire of 160 ft. high. Though there are to be no galleries, it is calculated that the church will afford sitting room for between 700 and 800 persons. The estimated cost, we understand, is 9,000*l.* The architect is Mr. G. F. Bodley, of London; and the contractor Mr. Philip Horsman, of Wolverhampton. The work has been in progress for two months.

Calver, Derbyshire.—The foundation-stone of a church which is about to be erected in the little village of Calver, near Baslow, has been laid. The church will stand on a piece of ground really in the hamlet of Curbar, but it will be at the entrance to the village of Calver, from which it is divided only by the River Derwent. The necessary ground has been given by the Duke of Rutland; and near the edifice there will be the school building and the master's house. To the east of the church, and on a gentle elevation, it is intended to erect the clergyman's house, the land both for the house and the school being also given by the Duke of Rutland. The entire cost, it is estimated, will be about 3,000*l.*, which it is intended to raise by subscriptions. The edifice, which will be in the Pointed Gothic style of architecture, with nave, chancel, and one side aisle, will be capable of accommodating 350 persons, and all the seats will be free and unappropriated. The architect is Mr. Anthony Salvin, jun., of London; and the builder Mr. Ashwell, also of London.

Bolton.—The corner stone of the new parish church of Bolton has been laid. The new structure, the cost of which (about 30,000*l.*) will be defrayed by Mr. Peter Ormrod, will occupy the site of the old church, which had stood there upwards of 400 years.

DISSENTING CHURCH-BUILDING NEWS.

Keighley.—The foundation-stone of a new chapel, for the United Methodists, has been laid here, in Cavendish-street, Skipton-road. The building is in the Decorated Gothic style, simply treated, and the general plan of the chapel consists of a parallelogram, 86 ft. long and 47 ft. wide, within the walls, exclusive of an apsidal projection, 20 ft. deep, at the rear, for the orchestra. The interior is divided into nave and aisles, by a series of ornamental iron columns, from which springs an arcade of seven arches on each side, which supports open hammer-beam trusses across the nave, and these and corresponding trusses over the aisles have curved ribs or braces on the under side. A gallery runs round the sides of the chapel, three seats deep below the aisles on the sides, and nine seats deep on the front end. All the seats are open and of uniform character, with reclined backs. A raised platform occupies the place of the usual pulpit, with buttresses and panelling, with tracery below the floor of same, an ornamental iron balustrade above the steps, and a similar balustrade is carried round the communion-table. The exterior shows the triple arrangement of nave and aisles, with coupled doorways in the centre of the end, leading into a corridor, 8 ft. wide, laid with Minton's tiles, and extending between the gallery staircases on each side, which are of stone. The staircase on the left of the entrance-corridor is carried up in a square tower, surmounted by a spire. The height of the tower and spire together is 125 ft. Over the coupled doorway is

a five-light window, filled with tracery in the head. The sashes are divided into seven bays each by deeply-projecting buttresses, each bay with two heights of two-light windows, with traceried heads, the upper lights running into the roof as dormers, with gables over the same, intersecting the aisle roofs, and terminated by iron finials. A combined stone and iron finial terminates the apex of the front gable. In the basement, under the chapel, the floor of which is 6 ft. above the street-level, and the same size as the chapel, is a school-room, lighted on the sides by a two-light window in each bay. The principal entrance to this school-room is at the rear of the chapel. On the level with the school-room there are class-rooms, store-room, and other conveniences. At the rear of the chapel, and on the ground-level, are two large class-rooms and vestry, &c. The whole of the woodwork will be stained and varnished, and it is proposed to warm the different divisions of the building by the warm-air system of Messrs. Haden & Son, Trowbridge. The excavator's bricklayer's, and stonemason's works have been let to Mr. John Smith; the plumber and glazier's work to Mr. James Harrison; the plasterer's work to Messrs. Wilson & Acroft; and the painter's work to Mr. G. Lonsdale, all of Keighley; and the carpenter and joiner's work to Mr. Thomas Smith, of Harden, near Keighley. Mr. William Sugden, of Leek, Staffordshire, is the architect.—The Wesleyan Chapel at Paper-mill Bridge is to be re-erected. The chapel was opened in 1864, and closed in 1865, in consequence of the foundations in front having given way when cutting for the tunnel for the North Valley Railway. The dispute between the trustees and the directors of the railway respecting the damages done to the chapel, boundary-wall, &c., was submitted to arbitration, the result being that about 1,980l. were awarded as damages. The chapel was afterwards taken down, and is now to be re-erected. The new chapel will stand a short distance further back from the road than its predecessor. All the old materials which are available will be used in the erection; the plastering and other ornamental work being of course new, and from new designs. The front will be in a simple Italian design, with projecting portico, arch-headed windows, and pediment. In the chapel will be a gallery and an organ recess. There will be accommodation for 700. The cost of the restoration will be about 2,000l. Messrs. Lockwood & Mawson, of Bradford, are the architects; and Messrs. Gibson & Mand, of Keighley, the contractors.

Darlington.—The foundation-stone of a new Wesleyan chapel has been laid at Bank Top. The site of the new building is a field in Yarnallane. The building is in a semi-Gothic style, with red pressed bricks, and stone arches to the circular-headed windows. In the interior it will be 60 ft. 6 in. long, 41 ft. wide, and will afford accommodation for about 430 persons. The pews will be of stained and varnished wood, and it is computed that the entire cost of the building when completed will be nearly 1,000l. Mr. R. B. Dixon is the architect.

STAINED GLASS.

Dodbrooke Church.—Messrs. E. & S. Beer have just erected a window in Dodbrooke Church. The window, a four-light one, has been placed at the east end of the edifice, and is intended as a memorial of Miss Prestwood Pearse and her sister. The subject represented is the Adoration of the Magi. In the central compartments appear the Virgin, with the Infant Jesus on her lap, an angel above pointing to the star which has guided the wise men to the birthplace, and two of the Eastern kings in the act of adoration. The third king, an Ethiopian, is seen in the division on the left, and Joseph is described in the division on the right. Canopies surmount the figures. The base is decorated with Eucharistic emblems.

St. James's, Nottingham.—An obituary window has lately been erected in this church in remembrance of Mr. W. Daft, by his widow and executors. The subject is the parable of the Ten Virgins. The window consists of five compartments, the central one containing the figure of the bridegroom. Those on the right contain five figures of the wise virgins, and the corresponding two on the left side contain five figures of the foolish. The upper portion of the window contains the ancient monograms of our Lord. The window was designed and executed by

Messrs. Heaton, Butler, & Bayne. The design of the stonework was supplied by Mr. S. D. Walker, of Nottingham, architect.

Christ Church, Whitley.—A stained-glass window, illustrating incidents in our Saviour's life, has just been placed in this church by Mr. W. S. Darter, of Sutherland, in memory of his late wife.

St. Mary's, Reepham.—The east (chancel) window of this church has recently been replaced by a painted glass window, the subject being the Crucifixion, at the expense of the Rev. Sir Edward Reppe Jodrell, bart., of Sall Park. The work, which costs upwards of 300l., has been executed by the Messrs. O'Connor, of London.

Rotherham Church.—A new stained-glass window has been erected in the south transept of this church by Miss Nightingale, of South-terrace, Rotherham, in memory of her late brother and sister, Mr. John and Miss Sarah Nightingale. The subject of the painting is taken from the life of our Lord, the main picture in the centre, which takes up the whole breadth of the window, and is divided into three compartments by two upright columns of masonry, representing Christ conversing with Martha and Mary. Above this is a canopy of foliage work, and the upper part of the window consists of tracery, the majority of the compartments containing angelic figures, bearing texts from the beatitudes. The lower portion of the window is divided into three small partitions, corresponding in breadth to the three divisions of the principal picture. The centre compartment contains a representation of Christ at the tomb of Lazarus, and in the side panels are figures bearing texts from Scripture. The window is from the establishment of Mr. W. Wailes, of Newcastle-upon-Tyne.

SCHOOL-BUILDING NEWS.

Witley (Surrey).—King Edward's Schools, Witley, have been opened. The architect was Mr. Sydney Smith, and the builders were Messrs. Mansell & Price. The structure has been raised at a cost of something like 26,000l. The architecture is a combination of the Elizabethan and Italian styles. The building is of red brick, with Bath stone dressings. The chief entrance to the block is through a gateway and porch, surmounted with a tower, containing bell and clock. In a niche of the tower in front there is sculptured statue of Edward VI., the founder of the school, executed by Mr. Ruddock, to whom was entrusted the whole of the sculpture. Below this, and on either side, there are two other statues, the one on the left being a representation of our Saviour rescuing a lamb from the brambles; and on the right, Britannia rewarding young sailors. Entering through the porch into a yard, we find in the rear the dining-hall, kitchen, and the appliances for cooking, the latter having been erected by the Messrs. Hayden, of Trowbridge, under the direction of Mr. Blake. The wings to right and left contain class-rooms, masters' apartments, and dormitories capable of containing 150 boys. The front of the building is devoted to the superintendent's residence, servants' apartments, offices, &c. Water was found about 60 ft. deep, and it was never brought down more than a foot during the whole process of the building. The architect was represented on the spot by Mr. W. Lever, and the builders by Mr. C. H. Walpole. The governors of Bethlehem Hospital, on inaugurating the schools, laid the foundation-stone of a convalescent hospital. It is proposed, when this hospital is completed, to bring down convalescent patients from Bedlam to enjoy, for a while, the salubrious air of this part of Surrey, before returning them to their friends. The building will be in the Tudor style, and erected at a cost of about 16,000l. It will be able to accommodate from 40 to 50 patients. Mr. Smirke, R.A., is the architect, and Messrs. Mansell & Price the builders.

Burslem.—The chief stone of the new National Schools has been laid at Sneed. The Earl of Macclesfield has given the site, containing 1 rod and 5 perches, for the new building in Nile-street, and subscriptions have been given towards defraying the cost of the erection. The new building will consist of boys' school, 60 ft. by 20 ft., with class-room, 20 ft. by 12 ft. The girls' school will be 50 ft. by 20 ft., with class-room or infants' school, 20 ft. by 15 ft. The rooms will be connected by large sliding doors, so as to be made available for lectures and meetings. There will also be a lavatory and

the usual outbuildings for each school. Accommodation will be provided for about 400 children. The cost of the building fixtures, &c., will be about 1,400l., nearly 1,000l. of which have been subscribed, leaving a deficiency of 400l. The building will be of red and blue bricks, and covered with ornamental tiling, surmounted by a bell-turret. The architect is Mr. Dain, and the builders are Messrs. Bennett & Brindley.

Tettenhall.—For some time a large building has been in course of erection at Tettenhall, under the auspices of the Midland Counties Proprietary School Company, Limited, for the purposes of the school which was established by them in 1863. The object in view has been to offer chiefly, we believe, to the sons of Nonconformists in the Midland counties a liberal education, both classical and commercial, on moderate terms. The buildings contain all the necessary accommodation for 120 boys. The plan is in the form of the letter T. The centre of the principal or south front is occupied on the ground-floor with the library, master's sitting-room, and principal staircase; and on the first and second floors with master's bed and sitting rooms. In the east wing, on the ground-floor, is the dining-hall, and over, on the first and second floors, are boys' dormitories. In the west wing, on the ground-floor, are class-rooms, opening out of a wide corridor continued the full length of the wing; and over, a similar arrangement of boys' dormitories to that of the east wing. At right angles to the east wing, and extending back to the master's house, are the studies arranged for the use of the elder scholars, and over these are their dormitories. By a passage-way of communication through this building the head-master has access from his residence over the whole of the premises. The house, originally existing at the time of the purchase, having been repaired, is appropriated for the head-master's use. At the end of the west wing, and at right angles thereto, is the large school-room and communication to the playgrounds, together with lavatories, court, closets, &c. On the first-floor, over the school-room, is the chapel, planned to seat 250. The central group of buildings, which extend back to the high road, are planned around an enclosed court, and on the ground-floor provide waiting-rooms, masters' rooms, kitchen, pantries, and other domestic offices. On the first and second floors are additional dormitories for the boys, entered from the principal central corridor, together with lavatories, bath-rooms, &c. An infirmary is arranged, shut off from the rest of the building. Near to the east wing is a covered play-ground, five-wall, and a gymnasium. The style of the buildings is Gothic of the fourteenth century, and they are erected in brick, with stone dressings. The contractors were Messrs. Barnsley & Sons, of Birmingham; and the architect Mr. Bidlake, of Wolverhampton. The cost of the new buildings has been from 15,000l. to 16,000l. The hall and grounds were purchased for 4,000l., making about 20,000l., which is exclusive of furniture.

Books Received.

Experiments on the Strength of Cement, chiefly in reference to the Portland Cement used in the Southern Main Drainage Works. By JOHN GRANT, C.E. Printed by W. Clowes & Son, London.

THIS Excerpt from the Minutes of Proceedings of the Institution of Civil Engineers, which includes an abstract of the discussion upon the paper, edited by Mr. James Forrest, is a very valuable pamphlet, and if it be buyable, should be obtained by such of our readers as have to do with buildings. Mr. Grant had remarkable opportunities for experiment; and, being well qualified for the inquiry, made the most of his opportunities. Many of the speakers added very useful information.

The Architect's Guide; or, Office and Pocket Companion for Engineers, Architects, Surveyors, &c. By MESSRS. HASKELL, BENNIE, F. ROGERS, and P. THOMPSON. London: Atchley & Co.

WE have taken up this little volume more than once, with the intention of giving some account of it, and have put it down again rather than say what the examination of it prompted. The idea is a good one: in fact, if we mistake not, it is founded on a suggestion made by us some time ago: but it has been insufficiently carried

out, and with so little taste, that it has the aspect of being merely an advertisement of books issued by its publishers. The title-page, to give an example, is made to contain three complete advertisements, and one work on specifications is quoted from, and fully described in five places. Nevertheless, we can go so far as to say that students will find in the book a considerable amount of information in a handy shape.

Light: its Influence on Life and Death. By FORBES WINSLOW, M.D., D.C.L., &c. London: Longmans & Co. 1867.

ALTHOUGH Dr. Winslow merely follows suite in all that regards the sanitary influence of light, in all that regards the sanitary influence of light, he has written a useful *resumé* on the influence of light on life, animal and vegetable, together with what has been thought and said on what may be viewed as his own more special sphere, of lunar influences. As other medical authorities and as sanitary pioneers, certainly not excluding the *Builder*, have long urged, the beneficial influence of light on the sick in hospitals is dwelt on, by contrast with the old ideas and practices of medical men, who used to exclude light from the sick chamber. Dr. Winslow, in his brief preface, says, "the object of this work is to demonstrate the inestimable value of light as a hygienic agent, and to analytically examine its physiological influence in the development of civil phenomena as manifested in the animal and vegetable kingdoms;" and although it is rather late in the day for any one to speak of demonstrating the value of light as a hygienic agent, the author deprecates all idea of appropriating such a demonstration to himself exclusively, by freely acknowledging that he lays no claim to originality, or even to original experimental research on this score. This volume must be regarded as little more than an intelligent professional compilation on the subject.

A Dictionary of Science, Literature, and Art. Reconstructed and extended by the late W. T. BRANDE, D.C.L., &c., and the Rev. G. W. COX, M.A. London: Longmans & Co.

THIS standard work is now complete, in twelve parts, or three volumes. The present is the fourth edition. The editors have been aided by contributors of eminent scientific and literary acquirements, among whom we observe the names of Owen, Ansted, Lindley, Frankland, Worrum, Burnell, and many others. The publication of the last volume has been delayed, in part by difficulties inseparable from the vast range of the dictionary, but chiefly by the death of Professor Brande. The work comprises the definitions and derivations of the scientific terms in general use, together with the history and descriptions of the scientific principles of nearly every branch of human knowledge; and throughout the editors and contributors appear to have created their respective subjects with fulness and accuracy, as well as with strict impartiality; thus forming an excellent and valuable book of reference.

Miscellaneous.

EASTBOURN DRAINAGE.—The completion of the main-drainage of this town was to be celebrated by a public dinner on (this) Friday, 3rd May; the Rev. Thomas Pitman, the chairman of the Local Board, chairman on the occasion.

HAYMARKET THEATRE.—Mr. Telbin and Mr. O'Connor have painted some very good scenery for the new comic drama "A Wild Goose." The piece itself is below the Haymarket standard, but it enables Mr. Sothorn to exhibit some excellent acting.

A UNION OF RAILWAY EMPLOYÉS.—A very crowded meeting of railway employés was held on Saturday night in London, to consider the best means to bring the whole of the 76,000 persons employed on railways into one huge "railway co-operative society" throughout the country. The chair was occupied by Mr. McKenzie, of the Great Western, who said he was glad to know that the delegates had come possessed of full powers. Several of the delegates addressed the meeting, and all agreed that the union would be the means of establishing a more friendly feeling amongst them, and would be highly conducive to their good. Rules were drawn up for the regulation of the society.

THE EXHIBITION OF NATIONAL PORTRAITS.—The second special Exhibition of National Portraits at South Kensington is now open to the public. The portraits, following chronologically the first exhibited, commence with the reign of William and Mary, and terminate with the last century.

THE POSTAL TELEGRAPH SYSTEM.—The *Engineer* understands that the contemplated postal telegraph will include every post town in the United Kingdom, and every town of 2,000 persons, and there is to be a deposit-office at every post-office which is not a telegraphic-office proper. In London there will be ten central telegraphic-offices corresponding with the postal districts, and payments for messages will be made in stamps, or the message will be written on stamped paper.

THE CHARITABLE THESSPIANS.—On Saturday, the 27th ult., an amateur dramatic society, adopting the above title, gave its first representation at the Gallery of Illustration, in aid of the St. Saviour's Schools Building Fund. The audience was numerous and elegant, and gave promise of substantial benefit. The pieces selected were, "No. 1 Round the Corner," amusingly rendered by Messrs. Masson & Walker; "The Porter's Knot," in which Mr. Thirst shone most prominently, Mrs. Leigh Murray playing her original character, Mrs. Burr; and the burlesque of "Fra Diavolo," in which the extravagance of Mr. W. J. Roberts was conspicuous. The conventional burlesque-singing and dancing were well executed, and the by-play such as to make us think the apology made for inexperience needless. Previous to the "Porter's Knot," a Rologue was spoken by the author, Mr. E. Roberts, F.S.A., which, alluding to the topics of the day as applicable to their *début*, caused much laughter, and was warmly received.

INTERNATIONAL SCIENTIFIC BANQUET IN PARIS. The French physicists and chemists gave, on the 22nd April, a banquet in Paris to the savans of all nations, collected by the International Exhibition as jurors or as commissioners of the various nations who take part in this great display. The dinner was given at Donix's restaurant, in the Palais Royal, and was of the most sumptuous description. Dumas, the celebrated chemist, and a Senator of France, occupied the chair; he had on his right the English chemist, Dr. Lyon Playfair, and on his left the venerable physicist De la Rive, of Geneva. Opposite to him sat Baron Liebig, supported by Ballard, the discoverer of bromine; Dové, the Berlin physicist; and Jacobi, the electrician, of St. Petersburg. There were 107 persons present. Among the English were Wheatstone, Tyndall, Sir Robert Kane, Frankland, Hoffman, De la Rue, and many others. Dumas proposed, as a toast, fraternity among the savans of all nations; and this toast was acknowledged by Dr. Lyon Playfair, who had been nominated for the purpose by the committee. This international banquet has raised such a warm feeling of friendship among the savans present in Paris, that arrangements have been made for evening receptions three times a week in the same hall for the next few weeks.

SERIOUS ACCIDENT IN A CHAPEL.—At a lecture in the United Methodist Free Church, Ridding-lane, Wednesbury, a temporary gallery gave way with about 300 persons on it, and fell on people below, breaking the backs of two persons and seriously injuring others. The gallery was constructed in the ordinary way, so far as cross-beams and uprights were concerned; but the ends of the latter, instead of being placed upon stout planks laid upon the floor, were allowed to rest upon the floor itself, which is composed of boards of not more than an inch in thickness. As a natural result, when the gallery became crowded, and the pressure upon the structure great, the end of one, if not more, of the centre uprights was driven through the floor. The cross-beam which it supported, yielding to the pressure, gradually turned over on its side, and while an attempt was being made to put in extra supports—but without removing the audience from the gallery—the cross-beam turned completely over on its side, snapped asunder, and dropped all those standing upon the centre of the gallery down upon a mass of people below. The two ends of the gallery immediately followed, and a frightful scene of confusion and excitement ensued. The lecture was a crowded one, the lecturer being Mr. Murphy, of anti-Catholic note, and the subject "The Confessional."

THE MAYER COLLECTION OF ART-TREASURES AT LIVERPOOL.—The magnificent collection of art-treasures recently presented to Liverpool by Mr. Joseph Mayer, F.S.A., has been on view during the Easter holidays at the Free Library and Museum, and has been inspected by thousands of persons. The part of the Museum assigned to the collection consists of two galleries at the western end, and considerable ground-floor space. The famous Fausset collection of Anglo-Saxon antiquities is deposited in the first gallery, and it is supplemented by that of Mr. Ralfe, and that obtained by Mr. Meyer himself from Hoxlake.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—At the last meeting—Mr. James Edmeston in the chair—an interesting lecture was delivered by Mr. W. Cave Thomas on "Fresco Painting." After a comparative estimate of oil and fresco painting, the lecturer urged the superior advantage of the latter for mural purposes, and therefore, as the appropriate decorative accessory to architecture. He described the process in considerable detail, and pointed out the conditions of wall-surface and atmosphere which were essential to the permanent effect of the performance. The lecture was illustrated by several examples from the old Italian masters.

A CO-OPERATIVE BUILDING COMPANY.—At a meeting of operative masons, bricklayers, and joiners held in Newcastle, Mr. Edward Waugh in the chair, it has been resolved to form a society to be called the "Newcastle and Gateshead Co-operative Building Company (Limited)"; the capital of the company to be 10,000*l.*, subscribed by 1*l.* shares, to be paid up in monthly calls of 5*s.*, each shareholder to have a share in the profits, and to be liable to any loss to the extent of his shares. The object of the company will be to build houses, accept contracts, &c. The profits arising from the business the first year are to be retained to meet any losses which may occur hereafter.

NEW BUILDINGS FOR THE WEST LONDON UNION. The foundation stone of the new vagrant wards and local offices of the West London Union has been laid. The old workhouse having been pulled down in order to make room for the street improvement in connexion with the new meat markets, the new workhouse was erected at Holloway, and now this new building is required for the reception of the houseless poor and the transaction of the business of the union. The site on which the proposed buildings are to be erected occupies the area of a double house in Thavies-inn, three houses in Robin Hood-court, and four in Plough-court. The old building in Thavies-inn is not to be removed, and the level of the existing floors is to be unaltered. The Thavies-inn House is for the use of the guardians and the officers. The architect engaged in designing and superintending the new building, is Mr. H. L. Leance. The contractor is Mr. John Phillips, whose estimate for the whole is a little under 5,000*l.*

PARIS EXHIBITION.—The following minute has been recently passed by the Lords of the Committee:—"1. In accordance with the practice of the Science and Art Department of the International Exhibitions at Paris in 1855, and in London in 1862, my Lords consider it desirable to offer encouragement to the masters teaching in schools of science and art to visit the present International Exhibition at Paris, with the view of studying those objects which may be likely to benefit the instruction given in such schools. 2. Their lordships, therefore, announce to the certificated masters now engaged in giving instruction in schools of science and art connected with the Department, that they will pay to each such master or mistress visiting the Paris Exhibition the sum of 5*l.* in aid of their expenses, and to each an additional sum of 2*l.* for any report or any useful suggestions which any such teacher may make (in relation to his or her duties or teaching), derived from the study of the Exhibition, such report having first been published in any journal, local or otherwise, and afterwards approved by their lordships. 3. And further, to each of the three best of such reports referring to instruction in science, and to each of the three best reports referring to art, my Lords will give respectively the following prizes, in addition to the sum above named, namely,—for science, for the best report, 20*l.*; for the second best report, 15*l.*; and for the third best report, 10*l.*; and the same sums respectively to the three best reports for art."

GAS.—At the annual meeting of the Rotherham Gas Company a dividend after the rate of 10 per cent. on A stock, and 8 per cent. on B stock and D shares, for the past half-year, and half a year's arrears of dividend at the rate of 2 per cent. unpaid in former years on A stock, free from income-tax, were declared.

A HINT TO GAS COMPANIES.—IF THEY WILL TAKE IT.—In his elaborate volume on the gas manufacture, the Reverend Mr. Bowditch relates how a gas engineer, who had to work with a plant beneath the demand occasionally made upon him, would, when the emergency came, pour naphtha into his mains, "and in a quarter of an hour complaints were at an end." This, continues Mr. Bowditch, "was no affair of naphthalizing a few feet of gas in an experiment; but in a work as large as some of the London works, and at a time of extreme pressure, the illuminating power of the gas was raised so much as to relieve a town's complaint of deficient light, and the whole was accomplished in a few minutes; in fact, before the messengers arrived at home from the gas-works."

IRELAND.—A contract has been entered into by Mr. Albert Kimberley, of Banbury, for the building of a mansion at Humwood, in the county of Wicklow, Ireland, for Mr. W. W. F. Dick, M.P. for that county. The designs have been prepared by Mr. William White, architect, London. The character of the building is to be somewhat after the manner of the Scotch baronial buildings, but with certain Irish peculiarities of battlement, &c., and suited to modern requirements. It is also to be capable of defence. A tower more than 100 ft. high surmounts the entrance-hall, which is a lofty vaulted apartment. The whole cost is not to exceed 15,000*l*.

IMPROVEMENTS IN FIXING GRATES.—Mr. Wm. Young, of Queen-street, Cheshire, has taken out a patent for "improvements in and applicable to grates, and in the mode of fixing the same." The chief objects in view are increased facility in the setting and fixing of grates, and in the application of air to the same. For these purposes a template of the size adapted for each grate, and constructed as stated, is securely fixed into the solid brickwork, and the grate is afterwards fixed by screws on to the template. The template is constructed in the form of an iron frame, with cross bars or otherwise, so as to leave spaces through which the new brickwork can be filled into the hollow at the back of the grate—corresponding with the form of the back-plate of the grate—after the template has been fixed. Both grate and template can be readily withdrawn from the brickwork without injuring or destroying it. An air chamber can also be arranged behind the grate, according to the construction of the template and grate, and so as to act upon the combustible gases evolved from the fuel by the heat of the fire.

NEW ROOF AT LONDON BRIDGE TERMINUS.—The accommodation for the London and Brighton line proving insufficient, a new roof has been erected, and the whole area of the station enlarged. The arched ribs are supported on two parallel rows of columns enclosing the central section of the station, and from either side of this space horizontal lattice girders extend from the columns to the side walls supporting the side roofs: the latter roofs having been previously designed and the walls built, the arched roof had to be designed in accordance with them. From the extremity of the roof towards the booking-office it curves to suit the sweep of the line of rails for some distance, and for the remaining portion it is continued in a straight line, forming a tangent to the curve. The columns are 22 ft. 9 in. high, and 1 ft. 6 in. in diameter. The rain-water is conducted from the roof through the columns to the drain pipes. The roof is boarded and covered with zinc. A simple mode has been adopted by Mr. Wallis, who designed and supervised the work, for making the joints of the zinc sheet water-tight and free from liability to derangement. The sheets of zinc are laid and the edges turned up, forming a flange. A roll of wood is formed flat on one side and grooved to receive the zinc flanges. This roll of wood is then covered with zinc, the metal being made to extend around the curve surface, and one edge of the zinc is turned into each groove. This roll is then laid over the flanges, and secured to the boarding with screws, thus preventing access of water to the joint, and it is not affected by expansion, nor is it liable to be deranged. The contractors were Messrs. Gazelee Brothers, City-road Ironworks.

PLANS FOR THE SEFTON PARK.—The Improvement Committee, Liverpool, after calling to its assistance a gentleman of experience, have unanimously awarded the first premium of 300 guineas to Messrs. Hornblower & Andre's plan; and the second, of 150 guineas, to Mr. Milner, of Sydenham.

ANOTHER FIRE AT THE THAMES EMBANKMENT. Last week, a fire, which at the outset excited the greatest alarm, broke out on the Thames Embankment, at the bottom of Norfolk-street and Arundel-street, Strand. That part of the Embankment on which it occurred is under the contract of Mr. Rison, and is covered with sheds, containing horses, the workmen's tools, and a variety of mechanical appliances, which are of great value. It was in one of these sheds that the fire was first seen. From what cause it arose is not known. There is something remarkable in these successive fires on the Thames Embankment, the causes of which ought to be closely inquired into.

HARVESTING OF CORN IN WET WEATHER.—We are glad to hear the council of the Society of Arts have resolved to offer the Gold Medal of the Society, and a prize of fifty guineas, for the best Essay on the Harvesting of Corn in Wet Seasons. The first part of such essay—after noticing the various systems at present adopted in damp climates for counteracting the effects of moisture upon cut corn in the field, and for avoiding such exposure in wet seasons by peculiar harvesting processes—should furnish a practical and analytic exposition of the best available means:—1. Whereby cut corn may be protected from rain in the field. 2. Whereby standing corn may, in wet seasons, be cut and carried, for drying by artificial process. 3. Whereby corn so harvested may be dried by means of ventilation, hot air, or other methods; with suggestions for the storage both in the ear and after thrashing. 4. Whereby corn, sprouted, or otherwise injured, by wet, may be best treated for grinding or feeding purposes.

STONE BORING MACHINE SET WITH DIAMONDS.—In following the process of M. Leschot, M. Pichet has constructed a boring machine composed of a steel ring set with black diamonds. In order to use this apparatus it is only necessary to make the ring rotate, and press against the rock to be perforated. The diamond grinds the stone, and, consequently, by means of its circular motion, a cylindrical ring of rock is reduced to powder. A current of water carries away the fragments of the boring as quickly as they are produced, so that the work can be proceeded with rapidly. The borer does not hollow out a hole in the stone, but a cylindrical ring; the adhering core of rock remaining in the tube can then be easily detached by the blow of a mallet. M. Pichet's apparatus is now being employed at the tunnel of Port Vendres: it is moved by hydraulic power, and by its use, it is said, that 12 metre of rock is pierced per hour. The diamond wears but little, and when no longer usable, it is powdered, for polishing precious stones.

TENDERS

For building New Metropolitan Police Station, Leabridge-road, Mr. T. O. Corby, architect. Quantities supplied by Mr. J. Scott:—

J. & E. Bird	£3,850 0 0
Foord & Son	3,798 0 0
Harvard	3,730 0 0
Macey	3,689 0 0
Lathey, Brothers	3,650 0 0
F. & F. J. Wood	3,438 0 0
Hill & Keddell	3,396 0 0
Higgs	3,378 0 0
Patman & Fortheringham	3,345 0 0

For building pair of semi-detached residences at South Norwood, for Mr. W. F. Stanley. Mr. T. O. Corby, architect. Quantities supplied by Mr. J. Scott:—

Wheeler	£2,397 0 0
Lathey, Brothers	2,633 0 0
Cubitt, Brothers	1,990 0 0
Smith	1,986 0 0
Sawyer	1,979 0 0
George	1,990 0 0

For alterations and additions to the Victoria Tavern, St. John's Wood, for Mr. E. Weatherly. Messrs. Finch Hill & Paraire, architects. Quantities supplied by Mr. Gate:—

Newman & Mann	£1,495 0 0
Langmead & Wray	1,493 0 0
Laurence & Bangh	1,489 0 0
Easton & Chapman	1,995 0 0

For alterations and additions to 64, Marine-parade, Brighton, for Mr. H. Hill. Mr. J. Johnson, architect:—

Cheersman & Co.	£1,228 0 0
Winder	1,079 0 0
Farr	970 11 2

For sewers and other works in connexion therewith for the parish of Fenchley. Mr. William Farmer, civil engineer:—

Bell & Robertson	£2,008 11 2
Walton	1,840 0 0
Cheddis	1,780 0 0
Keeble	1,644 0 0
Young & Fussell	1,636 0 0
Sharnan	1,620 0 0
Parker	1,489 0 0
Crockett	1,491 0 0
Mann	1,486 0 0
Purson	1,483 0 0
Rebitt	1,430 0 0
Wood	1,383 0 0
Coulson	1,347 0 0
Coker	1,347 0 0
Thacker	1,341 0 0
Davenhill & Co.	1,331 0 0
Baker & Co.	1,323 0 0
Dickson & Oliver	1,219 0 0
Falconer & Cowley	1,173 0 0
M. Plozman	1,155 0 0
Harvey	1,142 0 0
Moxon & Mutton	1,137 0 0
C. Plozman	1,113 0 0
Heal & Weston	1,062 0 0
Bloomfield	1,050 0 0
Burgess	1,045 0 0
Davison & Prime	982 0 0

The last nine are reserved for further consideration and inquiry.

For new vestry offices, Church-row, Bethnal-green:—

Lark	£1,743 0 0
Henshaw	1,448 0 0
Hodges	1,437 0 0
Wood	1,250 0 0
Page	1,189 0 0
Forrest (accepted)	1,167 0 0

For the purchase of the newly-erected canal wharves &c., St. Pancras Workhouse, to be pulled down and cleared away at the expense of the purchaser:—

Erwin (accepted)	£71 10 0
Smeyk	165 0 0
Mann	165 0 0
Blount	160 0 0
Collins	157 0 0
Binn	150 0 0
Crocker	128 0 0
Sceller	121 0 0
Irons	108 10 0
Tatum	108 10 0
Reddin	74 0 0

For new warehouses in Houndsditch. Mr. T. C. Clarke, architect:—

Lawrence & Sons	£5,967 0 0
Collins	5,759 0 0
Scrivenner & White	5,677 0 0
Henshaw	5,470 0 0
Browne & Robinson	5,414 0 0
King & Sons	5,420 0 0
Brass	5,398 0 0

For maltings at North Woolwich. Messrs. Hunt, Stephenson, & Jones, architects:—

Cubitt & Co.	£31,434 0 0
Newman & Mann	30,430 0 0
Holland & Hannan	28,640 0 0
Piper & Wheeler	27,250 0 0
Jackson & Shaw	27,160 0 0
Myers & Sons	26,869 0 0
Henshaw	26,566 0 0

For a five-story warehouse (30 ft. by 61 ft.), with additions, and four shops, at St. John's-road, Hoxton. Mr. Herbert Ford, architect. Quantities supplied by Mr. J. W. Dennison:—

Ravilous	£7,396 0 0
Piper & Wheeler	7,090 0 0
Richard	6,799 0 0
Turner & Sons	6,713 0 0
Brass	6,678 0 0
Asby & Sons	6,531 0 0
Browne & Robinson	6,439 0 0
Asby & Horner	6,321 0 0
Henshaw	6,004 0 0
Webb & Sons	5,984 0 0
Mann (accepted)	5,887 0 0

For additions to Myddleton House, Waltham-cross, for Mr. H. C. B. Bowles. Mr. F. G. Widdows, architect:—

Webb & Sons	£1,547 0 0
Carter & Sons	1,770 0 0
Patman	1,769 0 0
Richards	1,765 0 0
Rivett	1,720 0 0

For building a residence in Baker-street, Enfield, for Mr. G. Riches. Mr. F. G. Widdows, architect:—

Webb & Sons	£2,477 0 0
Carter & Sons	2,330 0 0
Rivett	2,273 0 0
Hill & Keddell	2,265 0 0
Patman	2,178 0 0

Mr. Higgs writes,—"My tender for works at Alton House, Roehampton Park, was 3,968*l*.—not 3,968*l*."

TO CORRESPONDENTS.

The late Sir Robert Smirke. Sir R. Smirke built many churches besides the one mentioned by P. C. in our last. In due course an account of the life and works of Smirke will appear. *London Bridge.* Several correspondents send notes as to the widening, but nothing new.

F. R.—Mr. G. G. C. Y. Z. W. S. E. E. F. J. W. F. R. J. M. J. G. T. D. A. J. R. J. W. R. J. A. B. J. P. C. W. F. C. R. H. A. J. R. G. & Son.—A Poor Carpenter.—A Subscriber. Burford. We do not recommend.—D. B. (98)—T. J. C. (he was an architectural sculptor).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication. Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

The Builder.

VOL. XXVI.—No. 1266.

The Buildings for Great Exhibitions.



It is certainly full time that Architecture in the proper sense asserted the prerogative of its place among the arts,—and, it may be added, justified the concession of such prerogative, by assuming the direction of the structures destined for those great exhibitions of which the world is assuredly not now preparing to occupy itself with the last. This world of ours is more populous than it ever was, and becomes more so day by day; and notably in the classes that are susceptible of attraction to such displays, and capable of availing themselves of the means of concentration that continually develop in spread and despatch. Our epoch has some of the characters—some of the better characters—of the pacified days of im-

perial and populous Rome, which produced not alone the amphitheatre of Vespasian and Titus, but the so-called baths that covered several areas equal to that of the ancient republican city, with single regular structures, replete with all refreshment, and easily available to all, for body and mind and imagination. In fact, it is excusable to be sometimes a little uneasy at the closeness of the parallelism; and we may well bethink ourselves whether the rapid—the almost instantaneous—decadence that followed the concentration of monuments by Hadrian, and his epitomized representation of all centres of artistic celebrity at Tivoli, is not to be repeated as a catastrophe sequent to our Crystal Palace courts, or to the nest of cosmographic ellipses in the Champ de Mars.

The apprehension may not be chimerical, unless such displays prove to disclose the germ of a new development—truly healthy because truly artistic—as well as to display what former developments have done, that have already done their best. Of this germ there is no cynicism in declaring we find at present but little appearance. The advances that are registered in the successive shows, are found in detail, not in the whole, in the contained not in the containing, in discoveries and recoveries of processes, in new technical facilities, in surprising concentrations of capital and mechanical force, but little indeed in that general effect of impressiveness and beauty that raises men above themselves, and reveals to them susceptibilities of enthusiasm in their own nature that is all the more noble because it can neither be mistrusted by them nor obviously accounted for.

Museums and collections attract visitors for special or for general purposes. A mechanician

on the look out for a tool or an adjustment will seek for it and find it with undiverted pertinacity through a wilderness of art barren for him, but the very gardens of Hesperian fruit for the amateur, who flies instinctively to his object, and would do so were it deposited in a chaotic assemblage of whatever could be repugnant to him. But the eager and the earnest are not those who most require the stimulus of a world's show; it is difficult to enhance the instinct of the Stock Exchange, the counting-house, or even the studio. From these haunts come the actors who are pretty sure to have interest enough in their work: the audience comes from elsewhere; and the main end of the whole spectacle is to interest and enliven, and, if it may be, instruct and elevate these.

The immense majority of visitors to artistic and mixed industrial exhibitions will always be holiday-makers; and in great national and international displays, which affect to be more than markets on a great scale, it is for the avowed special behoof of this great majority that the whole arrangement is set on foot and set in operation. Mere holiday-makers may seem to be people worth little consideration, and as such they may not be; but it is in the spirit of the time to recognise the fact that from the existing accessibility of culture, there are few of them who may not be made something much better. The Greek philosopher said life was like the Olympic games, where some came to get honour by joining in the contests, and many more to make money out of the requirements of the unusual assemblage; but the happiest of all were those who had no other interest than as lookers on. This happier majority have their rights in either case; and it is for the advantage of all that they should see to advantage: it is to their own great advantage if they are induced to see with attention, and they will do neither unless there is a possibility of their seeing with delight.

"Great is the value in dramatic poetry," says Horace, "of sequence and connexion"—that is, of happy sequence of appropriate combination; and the law holds good in the pursuit of all artistic effects, and the penalties are the same for disregarding it.

Exhibitions and museums alike forfeit half their value, if their contents are crowded, or are jumbled whether crowded or not. Part of the responsibility, in any case, must rest with the arrangers; and who has not been shocked by the intrusion of a colossal monument of decadence among the insulted relics of most perfect art,—who has not had occasion to remark how a collection of works that by its elements has been above an average exhibition, has on a time fallen far below in effect, through the errors, or vices, or caprices of collocation. Of such mistakes let the authors take the opprobrium; and amendment is always within reach. But far more serious, as irparable, are the mishaps due to the neglect of appropriate architectural conditions,—of those larger artistic framings-in and surroundings that exercise a predominant influence and give a tone to the feelings of the by no means unsusceptible, if, it may be, not specially cultivated crowd.

The most valuable result, indeed, that the majority we are now interested in can usually bring away from a world's show, may be this very tone of feeling, for which, in most important degree, the architect will be answerable. The crowd pours in and pours along; *spectatum veniunt spectantur et ipsæ*, and, of course, little less *et ipsi*. They see their friends, and are seen. They see the human face divine, at least, and, not without interest, the disguises of the human form; they crowd round the pretty and the striking; they are detained, it must in all candour be confessed, above all by whatever moves and whatever makes a noise. Doubtless, from time to time, they catch sight and take fair note

of some objects of beauty or contrivance that they peculiarly affect or understand: but when all is done, after all their gazing and idling, and occasional even involuntary study, when they come away they have seen more of the building itself than of anything else; and the character of this, as it has been enlivening or oppressive, exercises a deciding influence on the strength of the desire to go again or to go frequently again, and in what frame of mind, whether with respect for all, or with contempt of it.

The Exhibition building in Hyde Park of 1851 may be regarded as the first in effect, as well as in time, of these novel structures; but, greatly as the world delighted in it during that festive year, it could bear to see it doomed to destruction while revival was still uncertain; yet assuredly, had it possessed architectural beauty to the extent of which such structures are quite susceptible, a cry would have gone up like the greeting of a proposal to pull down St. Paul's to accommodate a railway station. Its charm was largely due to the predominance of the transept and to the vista of the long central avenue; but the conditions of the mechanical ease and rapidity with which it was constructed put art in the best sense out of the question. Grace and dignity in the highest refuse to be wooed in terms essentially prosaic; and endless and unvaried accumulation of identical elements is not the process by which nature develops its organisms or art its effects. The petals of the flower may be, as the botanists tell us, developments of leaves; but they are not mere repetitions of them enlarged or diminished, and still less agglutinations of a number of them otherwise unaltered. Thus the tame subservience to cheap expediency was far too salient; commensurability, after all, failed to supply the lacking play of proportion; and colour could not permanently satisfy the eye that recoiled from screws and nuts and wire ties, and longed for some merciful, at least, if not beautiful, qualification of the intrusiveness of hard construction.

After all that has been done since, the iron order is yet to come; and still it need not be, should not be, far off; but the matter is now ripe to be treated by the architectural sense,—recognizing, indeed, but holding well in subjection, the strictly constructional. Both in Continental and in English railway stations, in various other structures, and in the last great novelty at Paris, adjustments constantly meet the eye that are as compatible with artistic, with proper architectural treatment, as they are consistent with truth of construction. But construction must be made to know its place; and that place is servile with opportunity for enfranchisement in virtue of willing, unwearied, and above all versatile exertion. The desire of the mechanical is ever to achieve its ends by mere repetition or at best reversal, to meet every emergency, by stamping from the same die, running a series of casts from a single mould. But the free hand of art knows the limitations as well as the use of its drudge Repetition; and modulates on occasion without remorse, and expects all that work not merely for love but for reward, to follow.

The art of displaying public collections, then, in a way to interest and delight the more numerous public, and to promote the most refined of all education, is distributed between the custodians and the architect. What the first may do is seen in the beautifully-arranged Temple Collection in the British Museum, as compared with the huddled vases or stuffed animals in adjacent rooms; and what the latter, was seen in the original Townley Gallery in the older building as compared with the veritable caves of Trophonius that succeeded each other from entrance corridor to Elgin saloons in the new. The real solution of the great difficulties of enormous covered space, every variety of light,

for pictures, for sculpture, for manufactured products more or less artistic,—and characteristic beautiful effect, variety and vista,—on the architect in this charge laid; but whatever the competence of his genius he has still to pray that in the regions from which commissions descend he may not find himself at last,—

"Compell'd in business and in art to drudge,
Without a second and without a judge."

HISTORICAL PAINTINGS IN THE PARIS INTERNATIONAL EXHIBITION, BY FRENCH AND ENGLISH ARTISTS.

In comparing the works of French and English painters, as seen in the Paris Exhibition, we are compelled by a sense of justice to consider the different circumstances under which the artists of each country exhibit; for to judge of the artistic power possessed by our English artists from an examination of their productions here displayed, would be to commit a grievous injustice, and form an opinion of no value. And this, we fear, is being done generally by the French critics, who do not conceal their absolute disappointment at the English exhibition of works of fine art. It is not difficult to find ample explanation of the fact, that in the capital of France, or even on the Continent of Europe, in any important international exhibition in a metropolis, French art should be better represented than English art. To prevent a full representation of the latter there are, firstly, the possession by private persons who do not choose to part with them, of the *chef-d'œuvre* of English artists; and secondly, the difficulties and dangers in transit through the necessity of a sea voyage, however short, and its accompanying packings in railway carriages and steamers, which foreign works of art of whatever country do not incur (at any rate, so far as the sea-voyage is concerned) to such an extent as English works inevitably risk. Then it is, perhaps, part of the explanation that there has been undoubtedly amongst our artists either an absence of *esprit du corps* to be efficiently represented as a school in the Exhibition, or that sufficient facilities have not been given them or inducements offered, to make them take the inevitable trouble of being well represented, for the only probable or possible reward which might be their portion. Against this we have to set the facilities given for a full and complete representation of the French school. For the most part French artists live in Paris, and those who do not always reside there have their studios in the capital, where they produce during the autumn and winter months the great and numerous works exhibited every year. Thus, in the matter of carriage for their works, the only transit has been from the *ateliers* in Paris to the Champ de Mars, and the risk of injury has been reduced to a minimum by the excellent arrangements made in Paris for the transmission of the French works of art. Then Frenchmen generally, and French artists especially, are keenly alive to the glory to be won for their country and themselves by an efficient national representation in an international competition; and even if this were not a sufficient inducement, it would be found that the honour of being an artist selected to represent French art in the limited space given to France in the world's concourse, would be an irresistible inducement to the French artistic mind.

Making allowances for these adverse circumstances in the one case, and favourable opportunities in the other, we were not prepared for the very moderate, if not even the insignificant position, of our own school of historical painting as compared with the French. Judging not only from the English paintings in the Exhibition, but with a knowledge also of the important works by our greatest living artists which are not exhibited, and regarding the works which are displayed only as being moderate types of what English artists are capable of, we yet discover in the works of our English school an absolute inferiority in some of the most important characteristics of a true historical school, when examined side by side with the French works. This inferiority is not compensated for by the technical excellencies of skilful manipulation and sweetness of local colour, in both of which it appears to us that our best painters excel the best painters of the French school, because the features in which our inferiority exists are es-

sential elements, whilst the points of superiority are but accessories. We will endeavour briefly to explain the grounds of this opinion.

Historical painting is an effort to represent to the eye, and thence to the mind, incidents which have actually occurred in the history of a nation, or in the lives of individuals, which is much the same thing, if the persons represented be of sufficient public importance to be engaged in deeds of general interest. The occasion or subject selected in history, or the actual episode in the individual life, will determine the poetic or prosaic character of the artist's mind, or suggest to us his sympathies and convictions; whilst the manner in which the fact represented is placed before us will indicate the true value of the work historically and artistically. It is evident, therefore, that the most important characteristic of a true historical painting is the absolute truth of the historical incident represented; and next to it the nobility or beauty in the manner of representation. But as artists, who live in the nineteenth century, cannot be responsible for the actual truth, in detail, of historical incidents which have happened centuries or thousands of years ago, we may roughly divide historical painting into the true and the imaginative, the first being the embodiment of incidents happening in the period in which the artists live, possibly have taken part in, or been present at their occurrence, and have had the means of ascertaining the veracity of the incidents and their accessories in detail, from their own experience and the testimony of eye witnesses, drawing from the actual objects for material truth; the second being subjects from remote or comparatively remote history, where the truth of the historical element is a matter of speculation only, and the principal value of the effort is its approximation to the truth according to our utmost knowledge, or the artistic excellence of the manner in which it is presented to us.

Works of the first description most nearly comply in principle with the definition of historical painting; and the truth of this statement can be easily attested by reference to the comparative estimation of the works of any two English artists who have variously interpreted the two kinds of true history and imaginative history. Take, for instance, the works of Hogarth as a painter of true history, and it is not too much to say that we place them upon an infinitely higher level as historical paintings than the works of West, whose subjects were more noble in incident and of a higher class in technical accessories; because our reliance upon Hogarth is reasonable, and we feel that he actually embodied for us the history of certain features of his own period; whilst our only feeling towards West is one of criticism purely, regarding the historical elements in his imaginative paintings as of no more value than the imperfect fruits of our own speculations.

Next to the absolute historical truth of the incident represented in an historical painting, comes in importance the material truth of the imitative faculty exhibited in execution and composition; and by far the greatest element of success in this feature is power in drawing; for, without this power, the motive of the work may be marred, and no accessorial excellence of colour or manipulation will atone for its absence.

It is in these prime characteristics of true and great historical work that we recognise the towering superiority of French art. In the selection of subject we give French artists the same sort of credit that we give to Hogarth, and in more recent times to Frith, and O'Neill, and Wilkie in his best days,—not making them responsible for the sorrowful feature, humanly speaking, that a vast majority of their works are of warlike subjects, battles, military triumphs, and discomfures of the enemy. We must excuse something in the art of an essentially warlike people with a military history like that of the French, possessing, to artists, the inspiring example of Versailles and its miles of painted history, principally of military triumphs. But having made this sacrifice to our island prejudices, we cannot refrain from observing that the same power which is manifested in their military pictures, the subjects of which we have no sympathy with, is evident also in the rest of their exhibited works; and that this power is probably the result of the method of study necessitated by the importance to them of comprehensive knowledge of the human figure. Much of this knowledge comes from the method of instruction adopted in the French private *ateliers*

and public *écoles de dessin*,* but more from the almost national habit of drawing upon a life-size or heroic scale. Faults which may be hidden, because they are not obtrusive, in pictures upon a small scale, become hideous distortions when magnified to the size of life or enlarged beyond it. On the other hand, experience which has been derived from working upon the natural scale, in which from ease of comparison faults may be readily detected, will not be likely to be misapplied in works which are on a smaller scale than nature. The extent to which this practice of drawing in the large is carried by French artists, may be estimated by the illustration that an actual majority of the historical paintings of the French school in the Exposition are either life-size, or larger than that; and that if we take eight of the largest pictures in the French department of the Exhibition, they will give us about the same superficial area of canvas as the 163 exhibited works in oil comprising the English department of the display.

Another element of superiority in French practice is the study of the nude figure, and its consequent facility of execution. We prefer to say nothing about the demand that seems to exist for life-size paintings of the nude female figure, but only to remark that there are twelve works of this character in the Exhibition, many of which are most remarkable for beauty, both of drawing and colour. It is a common axiom amongst painters that he who can paint flesh can paint anything; and if this be so, French painters must be general in their accomplishments, for no other living artists can paint flesh so well. It is a positive pleasure to see flesh painted as it is in the "Secrets of Love," No. 382 in the French gallery, by Jourdan, and to see also this loveliness of colouring allied to so masterly a power of drawing; and the same may be said of 381, "Leda," by the same artist. "Le Reveil," by Landelle, No. 397, though characterised by drawing as correct, does not appear to us to be equally charming in colour. But for the three attributes of fine composition, good drawing, and a natural key of colouring, we see no works in the English exhibition to be compared to these, as exercises in painting, and would also draw the attention of students to the following works in the French department. No. 91, by Jules Breton, a seashore scene, and 63, by the same artist, "Blessing the Cornfields," as possessing very high qualification; and No. 64, "The Calling of the Gleaners," by Breton, completes a trio of excellent historical paintings of the very highest class. We refer to these works more especially as illustrating remarks already made concerning true historical art, and from a sense of comfort that there are French artists to be found, whose talents can be used to illustrate the peaceful scenes amongst which they live, as well as others who only seem at home on the battle-field. Of the same character as to subject are O'Neill's "Eastward Ho!" and Lewis's "Courtyard of the House of the Coptic Patriarch, Cairo," in the English gallery, both familiar to us from previous exhibition in England. Concerning the latter it would be impossible to say too much in praise, for a more marvellous specimen of art-workmanship, perhaps, does not exist. It has the merit also of being the valuable and truth-bearing testimony of one to whom God has given the seeing eye, and on whom education has bestowed the cunning hand of a true craftsman in art.

Of the huge battle-pieces which are the distinguishing mark of the French school of painting, perhaps the most successful as a picture is "An Episode in the Battle of Solferino" (No. 6), by Armand Damaresque. In the foreground of this picture is an ambush of French marksmen engaging the retreating artillery of the Austrians, and the drawing of the reclining figures in front is both powerful and picturesque. More agreeable, however, in subject of the pictures which are on a larger scale than life, is No. 608, by J. A. Pils, of a *scène* given to the Emperor and Empress of the French at Algiers, during the autumn of 1860. This work has many excellent points, and exhibits great experience in the handling of masses, both as to colour and form. The figure of the empress, which is not finished, bids well to become a very beautiful creation. No. 507, also by M. Pils, of "The Battle of the Alma," is as good and no better than such enormous battle-pieces are generally. The virtue of and the apology for such works is that they are true history legiti-

* About which we should have somewhat to say at a future time.

mately written by their authors, who have the best opportunities of being accurate in their embodiments; and if the French must have scenes of bloodshed always before them, to whet their youthful military appetites, it is better that these hero-creating works should approximate in some degree to the actual truth, than that their painters should wander back to the fictions of Medieval history, and produce romances in colour.

Though indisposed to accord to works of the imagination the same degree of importance in subject as to those of true history, we yet regard the noble expression of a purely human conception, based on the generalising power of the mind solely, as among the very highest efforts of the human intellect. A parable or an allegory, without exactly relating the true circumstances of any one particular instance, may contain in its conception a greater amount of truth as to the principle illustrated, than any one of any given number of instances. For this reason parables have from all time been a favourite method or vehicle for the conveyance of great truths or the illustration of vital doctrines. The parables of Christ have, in a like manner, been also among the most frequently chosen subjects of the best artists. Fortunately, for the sake of a comparison, a French artist, Edward Dubufe, has, in No. 225, "The Return of the Prodigal Son," illustrated one of these parables, and an English artist, J. E. Millais, has, in No. 104, "Satan sowing Tares," illustrated another. In the French work we have a painting equal in size to the largest of the enormous battle-pieces before referred to, divided into three compartments, the centre one being in colour, and occupying about three-fourths of the whole picture-space, and the remaining quarter, one-eighth on each side of the central illustration, made thus into a margin of two pictures, are monochrome studies of parts of the story. The picture tells us the story of the Prodigal's Return, the moment selected being the rejoicing, when the penitent son is being robed with the best garment, amidst the acclamations of an assembled multitude. The joyousness of the spectators, the apparent consciousness of the undesired honour in the expression of the prodigal, and the feeling of triumph in the faces of that portion of the family who approve of the rejoicings, are among the most remarkable efforts of art at any period in any country. The drawing of the human figure in this work is, perhaps, its greatest glory, but the composition and colouring are brilliant also. A pupil of Paul Delaroché, Dubufe, seems to possess the breadth and solemnity of his master's style, whilst he greatly exceeds him in vivacity and *tond ensemble*. This picture appears to us to occupy the same position in French art as Milton's "Paradise Lost" does in English literature. It is an epic of the first order; and, without venturing to weigh its claims against the magnificent works of the German and Belgian schools, we cannot refrain from believing that, so far as France and England are concerned, it must occupy the first place in the competition of the two countries.

Turning from this French illustration of one parable, we look at the English illustration of another, the devil sowing tares, by Millais. In it we have almost as remarkable a work of its kind as that of Dubufe, but of a totally different order. The picture is probably familiar to most of our readers, from the criticism it evoked in a former Royal Academy Exhibition. But to those who do not remember it, and for the sake of instituting a comparison, we will describe it. The devil is represented as a stealthy and watchful old man, engaged in the night time in sowing tares upon the cultivated field of a sleeping husbandman. In scale of the picture is about one-third the size of life, the only figure in it being that of Satan himself. The dark atmosphere of night is given with absolute truth of imitation, and the stealthy—we had almost said sneaking—attitude of the sower is very suggestive of the evil nature of his occupation. But the style of painting adopted contrasts but poorly with that of Dubufe. Of other ideal works of the French school, No. 466, "Marguerite trying on the Jewels," by Hugh Merle, is worthy of notice. It is a life-size study of a very lovely German girl, taking, evidently unconsciously, the first step downwards; and 313, "Christ healing the Lepers," by Glaise, is a nobly painted picture.

Amongst the really valuable contributions to the illustrations of contemporary history are,

No. 85, "The Erection of a Calvary," ascribed in the catalogue to Cabanel, but really, we believe, the work of Breton. The principal figure in the Calvary, that of the crucified Saviour, has been brought from the church in which it has been consecrated, and is being borne on the shoulders of a number of monks, this group forming the principal part of a procession which has just emerged from the church porch on its way to the elevated central cross, seen in the churchyard beyond, which is prepared to receive the divine image. It is a fine, broadly painted work. Promising also are two pictures, by Charles Marchal, of (444) a group of figures singing Luther's hymn; and (445) a Statue Fair, as we should call it, both having unmistakable evidences of truth to nature, and powerful artistic treatment. One of the best of the incidents of war among the historical works is the "Ambulance, or Convoy of the Wounded," by Yvon, No. 620, painted from an episode in the Italian campaign of the French army. This, unlike the two gigantic works by the same artist, Nos. 618 and 619, is on a moderate scale, much less than life, but of keener human interest to us than the yards of sprawling figures, dead and dying, which are in the two Malakoff pictures. It was, we believe, Haydon who said that wherever English people go, they take with them horse-racing and portrait-painting. If this is so, the influence of the English residents in France must be infinitesimal, for there are not in the two magnificent galleries devoted to French art, as many portraits as may be seen in any one small room in the Royal Academy Exhibition every year. No. 124, portrait of the Emperor by Cabanel, and No. 255, same subject, by H. Flandrin, are perhaps the best in the French galleries, though No. 66, by Bonnat, is worthy of commendation, as is also No. 585, though this is more a collection of portraits, in the subject, which is "The Prince President giving Liberty to Abd-el-Kader."

The picture by Bonnat, No. 64, "St. Vincent de Paul taking the Place of a Convict," is excellent in composition and feeling, and, though not bearing upon the subject of these remarks, we cannot take leave of the French collection without noticing with words of special praise the studies of still life, Nos. 210 and 213, by Blaiz Desgoffis. To return to the English works. We have already suggested that in the English department there are no representatives of the two branches of subjects which occupy so important a place in the French display, viz., the life-size and heroic studies of the nude, and the battle and other pictures on the same scale. These seem to occupy the same position in France as the wholesome levee of apparently inevitable portraits do in England. Both are peculiarities of race, and each more or less held in contempt by the other. We believe there are more life-size painted portraits in the English department than in the rest of the European collections together, and this is certainly suggestive of a greater love for ourselves than for the higher branches of art. The president of our Royal Academy exhibits four portrait pictures, excellent as works of portraiture, but sufficiently indicative of the sort of art we prefer nationally.

Of the elaborate and scholastic style of painting, which is the best feature of our English School, the works of E. M. Ward are, perhaps, the finest examples. His "Night of Rizzio's Murder" and "Antechamber at Whitehall: the Last Hours of Charles II.," are quite national in their character. In many features of art, Mr. Ward has held a prominent place for many years among our best painters, and these two works cannot but increase his distinction. The variety of expression, the truth to nature, and the absence of extravagance in both of these paintings, are worthy of all praise.

Of the historical pictures by English artists, one of the best, and certainly by far the most popular among the French visitors, is Elmore's "Tuleries, June 20, 1792," Marie Antoinette reviled by the mob. There is generally a crowd of French round this picture, and the commendations are loud and frequent. Frith's "Claude Duval" is also a favourite, both as to subject and from a sense of fun amongst the visitors. A party of French people examining this work in our presence seemed greatly delighted that a French highwayman should have so kept up his national character as to demand a *piécette* with his captive Nicol. The two contributions of Erskine Nicol, "Paying the Rent" and "Both Puzzled," are admirable pictures, abounding in

quaint humour and wholesome fun. There is in these works the ring of the true metal, and they possess in a high degree the qualities we defined as necessary to the best art.

Millais is but poorly represented in the paintings we have already noticed, and by "The Romans quitting Britain," and "Eve of St. Agnes." The French may well wonder why we think so highly of him, regarding these as specimens of his powers. "The Death of Chatterton," by Wallis, and the "Home from Work" of Arthur Hughes, will enable our neighbours to estimate the value of the Young English style of painting. Both of these works, beautiful in sentiment as they undoubtedly are, and genuinely good workmanship, are in a manner which appears extravagant and peculiar, after the broad, bold colouring and masterly drawing of the French school. Leighton's "Fiancées of Syracuse," and G. F. Watts's "Orlando," are both pictures which exhibit peculiarities entirely their own, and distinguish them from all other English works. After an examination of the galleries of almost any other country than our own, the majority of the English subject-pictures look like highly-finished miniatures, both on account of the smallness of the scale on which they are executed, and the degree of elaborate workmanship introduced into them. The paintings of Leighton and Watts do nothing towards creating this impression; on the contrary, they relieve us from the imputation that we cannot paint in a large style.

The technical difference in manipulation or handling of the French and English schools is most marked, and though in effect it is in favour of English art, as a matter of honesty we cannot but prefer the French. With the exception, perhaps, of the picture before referred to by Watts, and parts of that by Leighton, the English works are generally painted with transparent shadows, the local colours being thinly glazed into them. This undoubtedly gives brilliancy of effect and capacity of the highest possible finish. But of its honesty we are not quite so satisfied. A large proportion of the colouring matter used by our artists actually disappears by the evaporation of the medium with which the colours are so lavishly mixed, and, as a consequence, no English picture having a few years of age can be guarded against a perfect network of cracks and disfigurements. Eventually, as is the case already with some of the best pictures of Turner, the separated fragments of the picture will fall away and scale off, even if they do not change in colour.

French artists sacrifice the beauty and transparency of their shadows, by painting them thickly with opaque colours, using but little medium. From the habit also of painting on a large scale, the finish or blending of the colours used by them is but slight. There is in almost all the pictures exhibited a scene-painting effect, caused by contempt which the artists appear to have for smoothness and finish, of the sort we are accustomed to in our own works. The effect obtained is, however, permanent, the solid shadows being as little likely to change as the light opaque portions in which white is used. Whatever change does occur by age will be in the direction of improvement, the colours mellowing by age, and blending more perfectly as they lose their original brilliancy.

Whilst upon this subject of historical painting we would urge upon the visitor to Paris the advisability of visiting the Annual Exhibition of Painting and Sculpture in the Palais de l'Industrie, even if it were only to see Gustave Doré's picture of the German gambling-table, occupying the place of honour in the principal *salon*; but more on account of the treat such a vast collection will give him, when the works themselves are possessed generally of so large an amount of merit. Some idea of the art-producing faculty of the French people may be also obtained, by comparing the number of important pictures in this exhibition with those in any one year at the Royal Academy and of original groups in marble there, with the sculpture produced in a year at Trafalgar-square. It may be, and apparently is the case, that in some branches of art, to which we shall in a future number refer, English will bear a favourable comparison with French art. Historical painting, we feel, is not one of them; and considering also the marvellous power, grace, and refinement of many of the German and Belgian works in addition, there can be little doubt of the salutary and valuable lesson which may be learnt by our artists and art-students from a careful course of study in the Paris Exhibition.

THE PORTRAITS AT KENSINGTON.

THE Science and Art Department of the Committee of Council on Education have offered, in the second special exhibition of national portraits at South Kensington, a noble contribution to the materials of English history. The value of portraiture, as an element of historic truth, is very great. History is the record of the actions of human beings, and the better we are acquainted with the actors, to a certain extent, the better shall we understand the actions themselves. We say, to a certain extent, because close familiarity has often the effect of inducing us to merge the character of an act in that of the actor. It is only so-and-so's way: he means no harm; or,—the matter looks amiss, but there must be a justification. And this, no doubt, is one of the causes why a certain lapse of time is held to be essential before history, properly so called, can commence. We must be free from the disturbance caused by the living human sympathies and antipathies of the actors themselves before we begin to estimate their actions. But apart from the question of that immediate proximity which may disturb the judgment, we lose much by ignorance of what manner of men and women they were of whom we speak. For how much does stature, mien, commanding or winning expression, melody or harshness of voice, enter into the directing causes of action. Let two men, equal, as far as may be, in station, in integrity, and in claims on public respect, attempt to persuade an assembly, the one with the mellowed flow of a native orator and the other with a hesitating and confused stammer,—which will succeed? Thus we hold that among the most precious records of the past are those portraits of the great actors in human events on which reliance can be placed from extrinsic or intrinsic testimony. Look at the wonderful head of Caius Julius Cæsar in the British Museum; does it not tell us more of the man than do his "Commentaries" themselves? Look at other heads of the same memorable series. Can we mistake the portraits? Is there any need, any possibility, to ask which is Augustus and which is Tiberius? Who does not read with a more vivid sense of the stern and unflinching struggle the account of the repeated interviews of the leader of the Hebrew exodus with the Pharaoh of his day, after gazing on the commanding and self-reliant features of the great monarchs of that mighty eighteenth dynasty, among whom the adopted son of Thermutis was invited to take a place—Amenophis—Thothmes—Horus himself, the very Pharaoh of the Exodus. Who, to come to later times, has not formed a more definite idea of Oliver Cromwell from the Sidney Sussex crayon portrait than he can do from the pages of Carlyle?

At a time when authentic materials of English history are daily being rescued from oblivion by the labours directed by the Master of the Rolls, it is of the utmost interest to be enabled to gaze on the lineaments of the chief actors, and even to find them familiar to our study by the help of the photographer. The hundred and twelve years of history which are illustrated by the present exhibition, come more fully and distinctly before our eyes than could be the case with the longer period of time covered by the collection of last year. Yet even in the short space of little more than a century, what a change has come over the costumes, the circumstances, the countenances of English men and women. The first portrait, one by Kneller, of the Earl of Athlone, is in "rich inland armour." The latest portraits are in costumes such as our fathers wore when young men. Most appropriately placed among the earliest pictures in the gallery, is the entrance of King William III. into London, by Vander Meulen. What a scene is presented to our eyes. The heavy lumbering coach, needing its six grey horses, not for show but for service; the suite in scarlet uniforms, surrounding the coach on foot as well as on horseback; the park-like scenery and fine timber of the spot, now densely covered with streets and houses, somewhere in the vicinity of the Bricklayers' Arms station; the few houses clustering round the steeple of St. Saviour's; the bridge covered with houses; the city, not undefined in its size, north of the Thames; the new pinnacles of the Cathedral of St. Paul, and the dome, apparently a later addition to the picture,—such was the scene presented by the Old Kent-road a hundred and eighty years ago.

King William, in Van der Meulen's picture, is considerably turning his face over his shoulder,

so as to show us at once his features and his star. Again we have him when young, from Hampton Court, in a three-quarter length; also from Hampton Court, on horse-back, small life-size; and as a boy, painted by Cornelius Jansen, the features under the stiff treatment of the artist foreshadowing the man. As much cannot be said of Earl Spencer's Rembrandt, in which it is so impossible to trace the likeness, that one can hardly doubt the picture to be mis-named. John Graham of Claverhouse, Viscount of Dundee, and Admiral Edward Russell, Earl of Orford, are the two most beautiful portraits of this reign. Of Sir Isaac Newton there are four representations very dissimilar, even to the colour of the eyes. The same difference exists between Vanloo's portrait of Marlborough, a well-painted, bad face, and a more ordinary grey-eyed representation of the great general by Kneller. Duchess Sarah appears four times under different aspects of gaiety and gloom. Prince Eugene, by Sir Godfrey Kneller, is a far more presentable person than he appears to be among the family portraits at Turin. Steele and Addison arrest the attention as we pass on; Kneller himself, in rich gold chain and medal; Swift, far better looking as a dean than as a student; Pope, very unfortunately limned,—each calls for more than a glance before we pass to the times of the Hanoverian dynasty.

Any unloving and undutiful remarks on the physiognomy of the earlier Georges, or even on the honest, resolute features of the farmer king, must be silenced by comparison with the portraits of the elder and legitimate line of the house of Stuart. Of the son of James II., known by the somewhat ludicrous name of the Old Pretender, there are seven portraits—one of himself and his sister, the Princess Louisa, as children, by Largillière, remarkable no less for vivacity of expression and brilliancy of eyes, than for having had their heads removed from the canvas and restored to their original position. The peculiar full under-lip of the boy subsides into something approaching imbecility in the man, in No. 200, from Hampton Court, and No. 198, evidently a copy of the former. Prince Charles Edward Stuart, the Young Chevalier, is represented five times; but the fine trustworthy features of Flora MacDonald, by Allan Ramsay, seem to demand a more kindly hero. There is a second Flora, by Hudson, in no way comparable to the first. But in the features of Prince Henry Benedict Stuart, Cardinal of York, the weakness of the expiring line seems to reach its utmost depression, and one cannot regard them without a feeling of satisfaction that our sceptre has eluded that hesitating grasp.

There is a very fine lesson in physiognomy to be drawn from the four portraits Nos. 196, 222, 223, and 225. The first, John Law, of Lanistion, is a face that would not have looked strange among ourselves a year or two back. In the lines of the mouth are to be detected no faint indications of that most dangerous of deceivers, the man who believes in himself, and who sympathises with his followers. Aislabie and Cragge, on the other hand, are just the men fitted to serve as subordinates to such a leader, while the straight-forward features of "Downright Shippen" present a contrast more marked to those of the other three than any that we can recall from the pages of Lavater.

Hogarth's portrait of Bishop Hooper arrests the attention by the life-like twinkle of the eyes. Lady Mary Wortley Montague, very theatrically painted by Della Rusca, is charmingly portrayed by Jonathan Richardson. Frederick Prince of Wales is represented as seated holding a volume of Pope's "Homer," while two Cupids are fluttering in the air beside him. The two portraits of the Duke of Cumberland show at once the meaning of his sobriquet of "butcher"—not as caused by any military truculence, but as characterising that unusually florid and well-nurtured aspect which either the constant smell of fresh meat or the frequent chances of a hearty meal usually impart to these useful members of the community. Bishop Butler's loving features and piercing glance of Bishop Berkeley. The portrait of Philip Dormer Stanhope, fourth earl of Chesterfield, by Gainsborough, in advanced age, leads one to regret that the fine portrait of the same peer in younger age, with the black eyebrows so strongly contrasting the powdered hair, has not been sent from Great George-street for comparison. Hogarth's fine portrait of James Thomson, the poet, is enhanced in value by the vicinity of one of the few bad pictures in this part of the Exhibi-

tion, Aikman's portrait of the same author. Mrs. Hogarth, by her husband, is an admirable picture.

The fair sex command more attention than the men as we advance towards the times of George III. A grand Lady Macbeth seems Penelope Pitt, Countess; her two sisters, Elizabeth and Maria Gunning, so famous for their beauty, "the Goddesses the Gunnings," are represented, one as a landress and the other as using an iron; and the portraits tell us that their charms must have been rather those of expression or of manner than of regular outline. The two sirens to whom we are indebted for the Royal Marriage Act, Anne Luttrell, Mrs. Horton, and Duchess of Cumberland, and Maria Walpole, Countess of Waldegrave, and Duchess of Gloucester, are each painted both by Reynolds and by Gainsborough, and between them, in her fresh young maternity, with the Princess Royal asleep on her knee, the often-caricatured Queen Charlotte, by Francis Cotes, is even a more pleasing picture than either of those four treasures of portraiture. But the face which most calls the attention,—you cannot tell why, but so it is,—is Nancy Parsons, Mrs. Horton, afterwards Lady Maynard, another of the magic productions of Gainsborough. Mrs. Sheridan is another gem by the same master, and Henry Frederick Duke of Cumberland, also from his brush, marches forcibly along with his cane in the air, overtopped and overshadowed by his duchess, whose eyelashes do not however attain the three-quarters of a yard estimated by Horace Walpole.

Fewer portraits arrest the attention in the upper gallery. But one lesson of great importance is very plainly taught by No. 634, the portrait of Richard Burke, by Reynolds, which, in the freshness of its colouring presents a marked contrast to the sadly faded condition of almost every work of this master. The reason is evident. The picture is glazed. So is 695, Lavinia, Countess Spencer; but this proper protection for all oil paintings appears to have been only recently,—or comparatively so,—adopted in this instance, and the whites are sadly injured. In another fine portrait by Sir Joshua, Lord Rokeby, archbishop of Armagh, the shadows have actually turned blue, and the effect is very curious. As we leave the features limned with the graceful but unenduring colour of Reynolds, and the nobler work of Gainsborough, artists and sitters seem to dwindle. There is a closer approach to the art of the sign-painter, and a series of faces that seem hardly to demand a more exalted style of art. One group of extreme interest, however, is composed of four portraits, lent by the Duke of Wellington, of his father, the Great Duke, the Marquess Wellesley, the Earl of Mornington, and Lord Cowley (No. 823). The noble mother of these noble sons should have been placed near enough to allow of the likeness which Arthur bears to her to be more distinctly traced.

Lady Milnes, a lovely portrait, by Romney (No. 819), as far as can be seen in an unfavourable position, is rapidly decaying. The Madame de Maitenon of Windsor, Mrs. Fitzherbert, lovely in features and in complexion, but with shoulders that look too small for the noble head and neck, is the gem of this part of the gallery; and, last of all, two Oxford portraits, William Eden, first Baron Auckland, and the Right Hon. Wm. Windham, by Sir Thomas Lawrence, reward the attention which has scrutinized without flagging the 866 portraits of this remarkable collection.

TESTIMONIAL TO MR. S. C. HALL.—This testimonial has been subscribed for by manufacturers and others in Birmingham. It consists of a dessert service in the Pompeian style of ornament, the whole being carefully chased, parcel gilt, with the figures in oxidised silver, the dishes being of crystal, flashed with ruby, elaborately engraved and cut. Three Flamingo-like cupids, with scarf held in air, are introduced in the centre piece, which stands on a circular plateau, on which is engraved the following inscription:—"Presented by a number of the principal manufacturers and other inhabitants of Birmingham, to Samuel Carter Hall, Esq., F.S.A., projector and editor of the *Art Journal*, in testimony of his unceasing labours for the advancement of art in connexion with manufactures, extending over a period of thirty years. May, 1867." The work has been executed by Messrs. Elkington.

ARCHITECTURAL EXHIBITION, CONDUIT STREET.

In the Conduit-street Galleries, under the auspices of the Architectural Exhibition Society, 391 designs, drawings, and photographs (including a carved panel by Miss Bloxam, two or three models, and some very good bits of Salvati's mosaic work), have been gathered together, and, as intimated in our last, are now open to the public. Four lectures are to be given during the continuance of the Exhibition, to which, as well as to the gallery at all times, a half-crown season ticket will admit. Such of our readers as did not see the competition designs for the National Gallery when they were exhibited in the Westminster Palace may be glad to know that they will find here illustrations of the designs of Messrs. Cockerell, Street, Owen Jones, M. D. Wyatt, James Murray, E. M. Barry, Cuthbert Brodrick, Banks & Barry, G. S. Clarke, and F. C. Penrose. Of the designs sent in for the new Law Courts there are photographs of those by Messrs. Seddon, Waterhouse, Garling, R. Brandon, Lockwood, Scott, and Burgess. Of the Manchester Royal Exchange competitions there are the designs submitted by Messrs. A. Baker, T. H. Watson (a clever set of drawings), Dunnage & P. Gordon Smith, T. Meyer, and W. M. Peck.

The sketches and drawings sent from abroad by various architects are an interesting feature of the collection. We would especially mention those by Professor Hayter Lewis, T. H. Watson, R. P. Spiers, E. l'Anson, E. S. Cole, A. B. Donaldson (whose industry and ability are equally noticeable), H. W. Brewer, C. Fowler, Moore, Tarver, and the Rev. J. L. Petit. Mr. Tite, M.P., makes a valuable contribution in the shape of four original architectural drawings, by Bramante, Canaletti (the Piazza S. Marco, 186 and 187), and Prout.

J. Moyr Smith, in (1) "Corridor Niche," and some other contributions, shows facility with the pencil. This is not the merit of (14) "Priory of St. Dominic," Gilbert R. Blount, where a good sensible building is damaged by the way in which it is set forth. 26, "Design submitted in competition for the new Town-hall, Grantham," R. W. Edis, to which the second premium was accorded, is noticeable for the union of an early round-arched style with vernacular Italian. 44, "Accepted Design for College Boarding Houses, Cheltenham," suggests a well-known wooden building in Coventry. Competitive designs for town halls in Wolverhampton (38) and Retford (47), E. Godwin and Crisp, show adherence to the same type cleverly followed by one of the firm at Conington. Mr. Horace Jones sends his design for the "Metropolitan Meat Market, Smithfield" (152) (of which we have given an engraving), as well as views of some of his earlier works, "Cardiff Town-hall" (156), and the "Magnetic Telegraph Station, Threanedeel-street" (140). A. & G. Thomson exhibit several large frames of old office drawings, some of them not without merit in design. We cannot say this, however, of their "Design for Natural History Museum, Kensington" (154), a Greek temple, wholly unfit for the purpose.

A number of large residences, either built or in progress, are illustrated, including "Aldermaston Park" (51) and "Addington Manor" (52), by P. C. Hardwick; "Elvetham Hall" (70), a handsome brick building, balconies gilt and illuminated, by S. S. Teulon; "Residence at Penzance" (99), Elizabethan in style, by D. Brandon, and "Stanciliffe, near Matlock, in Derbyshire," designed for Mr. Joseph Whitworth, by T. Roger Smith. The style of the latter building, which is set forth in a number of clever drawings, may be described as refined Jacobean. Amongst the good drawings, by the way, may be mentioned that by which Mr. Fred. Merriam shows the chancel of his church in Wickham-road, Deptford, "St. Peter's" (117), on which we have before now commented. The "Design for proposed Church at Sharrow, near Sheffield," by W. Furdue, is a very ugly tower, which should be reconsidered before it is put into stone. The "Chapel designed for Tottenham" (48), by Rowland Plambe, will need more than its share of down-pipes for the rain-water. Wise provision is shown in the treatment of the lower part of the "Church of St. Mary Magdalene" (42), designed for Paddington, by G. E. Street.

The "Isometrical View of the Home for Little Boys, at Horton Kirby, Kent," by T. C. Clarke (153), shows a little village, the intention being that the boys should be distributed in small

batches throughout the houses, each batch being under the care of a man and his wife. This would, of course, be the nearest possible approach to home-life, and we shall be glad to learn that funds are forthcoming to permit of the realization of the scheme. Elevations and plans of the various houses are shown in small around the general view. Messrs. Picton's buildings have not justice done to them by the views sent; and we can scarcely believe that the house built, under Mr. G. Aitchison, for Mr. F. Leighton, A.R.A., who knows what beauty is, can be so ugly as the drawing here exhibited would lead people to suppose.

A RUN THROUGH GLASGOW.

"A GREAT book," said an ancient Greek philosopher, "is a great evil." In like manner, a well-known modern author tells us that the same thing may be said of a great city. There can be no doubt that the aphorism contains much truth in it; but like many wise saws, ancient and modern, it contains only a portion of the truth. Nor is the analogy too precise. A great city necessarily contains a greater amount of evil than a small town. But it also contains a greater proportion of good, a larger extent of opportunity, and a wider field for the exercise of progress. Above all things, it possesses greater resources for the cultivation of those sciences, moral as well as physical, upon which the welfare of society must always depend.

Since these scientific principles constitute, after all, the subjects with which our readers are chiefly concerned, we are sure they will be glad to hear something about what is going on at this moment in Glasgow. For if we except the metropolis itself, we scarcely know of any city in the country which has done more towards the furtherance of sound principles in sanitary science and social reform. At the same time it must be confessed that the good work is by no means finished; much remains still to be done. It must always be remembered that Glasgow is a place of singular contraries and extremes. It is unquestionably a place of great wealth and of great poverty. It has a history nearly as old as that of London; and in many respects its appearance curiously resembles that of London. But it possesses, we cannot help supposing, a greater affinity, or relationship, with Manchester or Birmingham. It has a university older than, and nearly as famous as, that of Edinburgh; yet how few are its great contributions, at least in the present day, to literature or philosophy! It possesses a cathedral, which, if not the finest, is certainly one of the most perfectly preserved specimens of Pointed architecture. We must add that this old cathedral is almost the only work of high art in ecclesiastical architecture of which the city can boast. On the other hand, it must be stated that the manufactures of Glasgow vie with those of Manchester; its commerce is second only to that of Liverpool; the population is at this moment the third largest of any city in Great Britain or Ireland; and, finally, its progress within the last century and a half is one of the most remarkable phenomena in modern history! Undoubtedly much of this material prosperity is due to the extraordinary fertility of the natural resources with which Glasgow is surrounded—its immense coal basin and mineral fields, its rich soil, temperate climate, and its noble river. But making allowance for all this, there can be no question that much also depends on the character and energies of the people.

In order to get an accurate conception of the different phases of progress in Glasgow, or, indeed, of any large city, one should always adopt the plan laid down by Eugene Sue, in the "Mysteries of Paris"; that is to say, begin at the very lowest quarters, and rise by successive stages to the very highest. But to do this properly is no such easy matter. For, in the first place, Glasgow is a city which covers, we should think, such an area, one way or another, as fifteen or twenty square miles. Unless, therefore, one chooses to surrender up his liberty of action to a cabman—a practice we never pursue ourselves, and by no means recommend to others,—it would be quite impossible to get over the ground. As some counterbalance to this impediment, it should be remembered that, although Glasgow is a very ancient city, there are but few remnants of antiquity left for patient investigation or attentive study, and these lie close together; indeed, there are no ancient shrines,

if we except the cathedral, to which the stranger can owe a lengthened pilgrimage, or an extraordinary devotion.

Overlooking, therefore, such objects for the present, and confining our rambles to the principal thoroughfares, with a careful study of the map, some quick observations, and a few pointed inquiries, we may soon get to the conclusion that the city of Glasgow may be roughly classified into three or four well-marked typical groups, something in the following order:—

1. *A Town of the Earlier Part of the Seventeenth Century* (based on the original plan).—This division will comprehend all the poorer localities of the city, such as the High-street, the Gallowgate, the Salt-market, and the Bridgegate.

2. *A Town of Various Periods in the Eighteenth Century* (the first great modern extension to the west).—Of this division the best type is comprehended in that parallelogram which is bounded on the east by Candleriggs; on the south by Trongate and Argyle-street; on the north by George-square; and on the south by Millar-street or Virginia-street: it may be described now as the quarter of warehouses.

3. *A Town of the Earlier Half of the Nineteenth Century* (the second modern extension, chiefly westward).—This division comprehends (A) the Royal Exchange and surrounding streets devoted to business,—as Queen-street, celebrated for its banks, and Buchanan-street for its shops; (B) the range of parallel streets, St. Vincent-street, West Regent-street, and Bath-street, which run westward from Buchanan-street, and terminate at Blythswood-square.

4. *A Town of the Later Half of the Nineteenth Century* (still in progress, chiefly westward and northward). This division comprehends all the terraces which overlook the Kelvin-side Park, the principal streets of Sauchiehall Grounds, Garnet Hill, Sandy-road, and, lastly, the terraces of Hillside, on the north of the Botanic Gardens, &c.

Of course this division must needs be more or less empirical; and, moreover, we must explain there are many subordinate degrees. There are first, second, and third class property; there are differences of locality, good streets and inferior streets; numerous back streets and by-gone streets, and not a few disreputable ones. There are the regions of manufactures and of commerce.

Port Dundass, for example, is a colony of chemical works and manufactories, which has chiefly sprung up since the beginning of the present century.

Once more, there are lower, middle, and higher styles of street architecture. It will be impossible for us to discuss minutely these various subdivisions, although we will not overlook them; and, as we have stated, we shall put out of consideration the remains of the ancient ecclesiastical city. With these exceptions, our classification, rough as it is, will include the whole interest of the city. We have not included the southern districts, as being unnecessary to our study.

But we may add, for the sake of future inquirers, that it is quite possible to get a general glance at the principal portions of Glasgow, on both sides of the river, if the visitor will select some centre of observation,—say the cathedral: then proceed by Duke-street, through the High-street, to the Cross, where the Gallowgate and Salt-market both debouch; from the Cross to the Royal Exchange, by Trongate and Argyle-street; thence, by way of Buchanan-street, to Sauchiehall-street and Blythswood-square. Here at the west end lie the very handsome crescents and the beautiful Kelvin-grove Park; then proceeding by Charing-cross and North-street to the Broomielaw and the harbour, he may cross Glasgow Bridge, and pass through Hutchinson-town to the South-side Park; look in passing, at the Gorbals, and return by Stockwell Bridge to Argyle-street and George-square, and so to bed, as Mr. Peppys would say.

Of course we cannot pretend to overtake this extent of ground in our own cursory survey; nevertheless, beginning at the old cathedral as a starting-point, we may pass at once, by Duke-street and Wollgrove-street, into the regions of the Gallowgate.

The Gallowgate of Glasgow—to give it its ancient, and still by no means inappropriate signification—is a street about a mile and a half in length, which recalls a certain faint resemblance to the High-street of Edinburgh. The houses are not so lofty, nor the closes, we fancy, so dingy; for we must acknowledge that much has been done within the last five-and-twenty years to improve the thoroughfare and the ten-

ments which abut upon it. Indeed, at the northern extremity it is quite modernized. Still, there are plenty specimens left of the ancient architecture, which consists chiefly of four-story tenements, with picturesque crow-stepped gables to the front, pitched triangular roofs, narrow windows, deeply chamfered on the lintels and jambs, with here and there the remains of an old gargoyle, which has been superseded perhaps, under the new Police Act, by zinc roans and rain-water conductors. The doorways which are left entire are heavily moulded, and often contain quaint inscriptions or Scriptural legends. Our impression of the Gallowgate and its gaminis was by no means so bad as we had anticipated; and, in fact, the only conspicuous fault we could find was a general one respecting the infantry barracks, which are situated within its precincts, and which, we are sorry to say, are anything but creditable to the city of Glasgow. However, the subject has already attracted the attention of the authorities, who will doubtless see to their improvement,—if not to their total removal to a better locality. Towards the lower end of the long street, as it begins to approach the Cross, we see unmistakable symptoms that the value of property must be rising. There are several new tenements which we examined, with spacious shops, and wide, well-paved archways leading to their common stairs. These new houses also possessed a water-closet on every floor, and the rental, we found, was moderate. They were chiefly inhabited by the better sort of working classes. From the foot of the Gallowgate we cross over Tron-gate and enter the Salt-market,—the Glasgow Cheapside of former days, and the locality of the immortal Babbie Nicol Jarvie,—which, we must admit, is also greatly improved since we saw it some years ago. What with the closing up of the open spaces of the ancient shops, the erection of iron girders and plate-glass windows in most of the shop-fronts, and the gaudy style of painting, a great change is observable in the antique buildings as well as in the aspect of the old thoroughfare. Still it is easy to recognise some ancient tenement, with its Dutch gables and triangular dormers, that recall the old style of burgh architecture which the modern shops seek after in vain.

If the interiors of these old tenements were as healthy as their exteriors are picturesque, we should have no cause to regret them on the score of public health; and if the inhabitants of the houses above were as frugal and industrious as the tenants of the shops underneath, we should have as little to lament on the score of public morals. But that is a wide question, and it must not be raised in a merely incidental form.

We must now take a glance at the notorious regions of the Burgh. Opposite Candleriggs, and on the south or riverside of Tron-gate, we enter King-street, once the most fashionable, then the most respectable, business locality of the city. It is now one of the poorest and disreputable; for in that square of buildings embraced within King-street, Brig-gate, Stockwell, and Tron-gate, are situated some of the worst of those wynds and closes which have given such an unenviable notoriety to the lower districts of Glasgow; those dens of criminals and hotbeds of disease which, as we shall see, have evoked such strenuous efforts on the part of the Corporation to root out and destroy. And we must say that they had waited long enough. For it is scarcely possible to conceive a more disgusting quarter in any large town. Millar's place is worse than Clerkenwell. Prince's street is worse than the Cowgate of Edinburgh. In the Brig-gate (Bridge-gate) itself we could discern symptoms of improvement. The infamous goosecubs, for example, are almost obliterated. Still the condition was similar; only it was enlivened with a few more sheebens or low eating-houses. As to the condition of the alleys and closes branching off here, they are simply unspeakable, and we need not dwell on them; for, bad as the Brig-gate and its confluent wynds may be, we are of opinion that the High-street and its "vennels" are worse!—and that is saying a great deal.

The High-street of Glasgow and the population of its wynds and "vennels" have been described *ad nauseam*; but it must still, we suspect, constitute a training ground "of what to avoid" for many generations of sanitary economists,—that is to say, if the improvement bills do not actually improve it off the face of the earth! The architecture is of the same type as the rest of the ancient city; but in the old vennel we observed a most dilapidated tenement,

still covered with thatch, with curious apertures pierced at intervals to admit the light. But, after all, who can study antique buildings in the face of such inhabitants? We walked through the High-street on a quiet Sunday afternoon. Even then, on that day so peculiarly sacred in Glasgow, the low type of the population we saw clustering around the filthy orifices which lead to their filthier dwellings, was so well marked and easily distinguishable, that it made one shudder to think of the orgies of the preceding night. Low prostitutes, with their criminal confederates of the opposite sex, were thickly scattered about,—many of them still of premature age. If, as the modern sanitary maxim tells us, we are to judge of the people by the houses they inhabit, then we should say they possess fit habitations. Of course, we seldom ventured to look beyond the entry of the closes; and we could not but remark how unwilling any loiterer whom we asked a civil question was to give us information even as to the name of his miserable vennel! Such as we did look at,—Fingall's-close, Duncan's-close, Dewar's-close, and one, No. 55, which we were told had no name, like Wilkie Collins's heroine,—wretchedness. It was clear the lofty tenements were unprovided with sanitary appliances; for a large iron dust-bin, or "jaw-box," placed at the foot of the stairs, seemed the sole receptacle of all the ordinary refuse, the animal and vegetable garbage, and the solid and liquid excrements.

It is a pleasing duty to report that effectual steps have been taken by the Corporation, under the recent Glasgow City Improvement Act, for the amelioration of these districts; and this Act we shall by-and-by have to describe more fully as the first great sanitary improvement which has been recently made in Glasgow.

Before passing to another division of our subject, it may be desirable to devote a paragraph to the removal of the university. But in case the *veritas* does not appear sufficiently plain, we must state that the present University of Glasgow stands in the very centre of those vile rookeries we have just been describing, in the High-street! What a place for a seminary of youth! Immediately opposite the college gate, at the corner of High-street and College-street, stands the house in which Thomas Campbell, the poet, lived during the period of his student life in Glasgow. One ought to see the place, in order to appreciate thoroughly the "Pleasures of Hope!" What a curious locality this was, to be sure, in which to entertain her Majesty during her first visit to Glasgow! The college buildings themselves are certainly the least worthy of all the temples of learning in the kingdom; for, although the front elevation to the High-street has a quaint half-conventional aspect, with its low arched gateway, stone balcony, decorated narrow windows, and antique dormers,—the courts, halls, and lecture-rooms are little short of absolute meanness, when we consider the noble purposes to which they are applied. The principal quadrangle bears the date, we observed, of 1652, and the style of architecture is of course Tudor,—upon a very inconsiderable plan, however, of small dimensions and grotesque details. We must confess that we were rather disappointed at the poverty of those ancient buildings of which we had previously heard so much. Unquestionably they possess a very high historical interest; but they are, we think, far inferior to the most humble and unpretentious buildings of the German universities of the same age. The venerable principal, Dr. Caird, we observed, from a brass plate, has his residence in this unhealthy atmosphere. Perhaps it may be a purely official residence, like that of the Prime Minister in Downing-street; and it is possible that he neither sleeps nor eats his meals there. But if he does, we can only say that his theological constituents are by no means so careful as they ought to be of a valuable life. The parish school hard by is adorned with a bulging circular dome, springing from a square base, which is about the ugliest thing of the sort we ever recollect of seeing in Scotland. On the whole, we must congratulate the Glasgow professors and students, as well as the Glasgow public, on the prospect of a speedy removal of their ancient university to Gilmore-hill, for it has certainly fallen into evil society in its old age! The buildings were sold in 1864, under the authority of an Act of Parliament, to the Union Railway Company. This is the second, and without doubt one of the very best, measures we shall

have to report on what has recently been done in the shape of improvement in Glasgow.

In order to get a glance at our second division, we should make our starting-point at the Cross. Here we get for the first time a clear view along the Tron-gate, which, with its continuation, Argyle-street, constitutes the main artery of the city,—the Fleet-street and the Strand, as it were, of Glasgow. Here we may note the perceptible improvement on the ancient Cross,—one of those campanile towers surmounted by four terminal flying buttresses, springing from their base in the form of an imperial crown, which are common to Scottish Mediaeval Architecture. We confess that we were not so well pleased with the condition in which we found the statue of King William, its pedestal being at this moment converted into a post for a pair of cast-iron urinals! These are certainly excellent improvements in their place; but they are rather destructive of the amenities as well as the artistic effect of an equestrian statue. If the necessity of the thing must overpower all other considerations, why should poor King William not be shifted to the Valhalla at George-square? There are precedents for such a course. Flaxman's statue of Pitt was removed from the Tontine Buildings, where we stand, to the Corporation Galleries. Marochetti's equestrian statue of her Majesty was removed to its present site from St. Vincent-street. Let us, then, put in our humble plea for the removal of the statue of "Protestant Willie"—a king whose memory ought to be dear to the hearts of all good Scotsmen—to a nobler site and more congenial company.* The Tontine Buildings we have mentioned were the centre of business and politics before the erection of the new Royal Exchange in Queen-street, and may fitly represent the greatest architectural effort of the eighteenth-century period. If we have at present under consideration, and if the arcade of these buildings, level with the pavement, were covered in and properly converted by modern improvements, it might still answer very well for a modern hotel in the Italian style, for the design from the first floor upwards is very good; but as it stands it has a yawning, hungry look, as if it were neither a hotel nor a palace. Next to this is a very tasteful range of buildings in the Flemish vein of Scottish architecture, erected not long ago as a branch of the City of Glasgow Bank and other offices. But in order to get a specimen the finest in Glasgow of the application of Scottish Baronial to the architecture of a warehouse, we must pass through the Candleriggs to Ingram-street, to the magnificent buildings of Campbell & Co. Of course we cannot find fault with the taste nor the cost of it. There is no higher feature in burghal philosophy, ancient and modern, than the tendency of wealthy merchants to adorn their places of business. Yet it is a curious thing, after all, to see a Glasgow warehouse of the nineteenth century planned and executed to its minutest detail,—turrets, towers, bartizans, rope mouldings, and flat-arched doorways,—upon the model of a Border fortress of the Middle Ages. Is not this a sort of paradox? Upon what principle can we reconcile the two purposes of the two buildings? We will not stay to answer the question, for we are glad to admit that Messrs. Campbell's warehouses are a fine piece of composition, a splendid structure, and, on the whole, does infinite honour to the city. But how much better it would have looked in a Highland glen than it does in Ingram-street! Contrasted with these buildings, where the Mediaeval elements are idealized and, as far as possible, modernized; where, in point of fact, modern taste has set to work upon a style of antique basis; we may note that shop and warehouse at the corner of Maxwell-street and Argyle-street, called the "Granite Buildings," in which we think there has been a modern perversion of an ancient material. These buildings must have been enormously expensive, inasmuch as the whole elevation, from basement to blocking course, is constructed with dressed Aberdeen or Argyleshire granite. We have seen in our day the best

* It is the fashion among the guide-book writers, who follow each other, of course, like sheep, to disparage this fine old statue, and to repeat that it is "of no great merit as a work of art."—(Fife "Black's Guide to Glasgow," p. 23; Millar's "Illustrated Guide," p. 27.) We can only say that, in our opinion, with the exception of Marochetti's Duke of Wellington in front of the Exchange, it is the best equestrian statue we have seen in Glasgow. The horse is not much worse, and the pedestal, we admit, is abominable; but the historical portrait of the man is invaluable. This statue, we may add, was presented to his native city by Mr. James Macrae, then governor of Madras.

productions of granite buildings both in Aberdeen and Cornwall; but we never saw the obdurate material used after such a fashion as this,—a gaudy, unmeaning attempt at elaborate French shop architecture, carved, ornamented, and, in short, overdone.

Of course, our readers will easily understand that these specimens of modern warehouses are rebuilt on former sites; in fact, the buildings which they superseded were the old mansions of the merchant princes, or tobacco lords, the first, by their wealth and its judicious expenditure, gave rise to the most important extension of Glasgow. The Buck's Head Inn, in Argyle-street, was the last specimen left of their well-ordered, self-contained mansions; but the cotton lords and modern merchants now fix their residences further west, and nothing is left of eighteenth-century Glasgow but an endless range of shops and a labyrinth of warehouses.

We now come to the central regions of "the money power" in Glasgow—that is, the neighbourhood of the Royal Exchange. Notwithstanding its artistic faults, its incongruities of design—such, for example, as the duplicate aspect of the building on the side elevations, arising from the fact that the eastern half is designed with attached pilasters, and the western by a projecting colonnade of fluted Corinthian pillars, and, finally, notwithstanding its acknowledged obligations to the Royal Exchange of London—the Glasgow Royal Exchange is a fine building. The great room is particularly handsome, the lofty arched and panelled ceiling, with the double row of supporting columns, adding greatly to its rich effect, which, however, is still business like, and not over-gilded nor too grandly decorated. The Exchange is situated in the centre of a very stately square of buildings, of plain but massive design, rather too closely built, perhaps, to the central edifice, still forming as a whole, a remarkably rich and imposing cluster of buildings. All around, of course, we see banks, insurance-offices, rich warehouses, and splendid shops. Some of these public buildings—the National Bank, for instance—seem as if they had been transplanted by some Aladdin-like feat of enchantment from Lombard-street or Old Broad-street; and, indeed, the head of the London architect is easily distinguishable. The National Bank is a very good specimen of modern Italian, highly decorated, consisting of two stories, the lower enriched with a range of Ionic columns, the upper with a similar range in the Corinthian style, surmounted by a rich entablature and cornice, and capped by a flat and bevelled platform roof. Rising from the cornice is a group of sculpture consisting of the royal arms in the centre, and an allegorical statue on either side. Alongside of this, in point of artistic merit, we are inclined to place the Commercial Bank in Gordon-street,—unfortunately too narrow a street for the full display of its qualities. This building is of a very old Italian type, and is said to be modelled after the Farnese Palace. The semicircular arched windows and doorway of the basement are deeply rusticated on the quoins and vousoirs, and a very graceful effect is produced by the introduction of sculpture in the segmental pediments of the upper stories. The doorway contains a recessed porch. The roof is cut into a centre block and two lower wings, and the elevation as a whole is noble as well as chaste. Nearly opposite this bank, at the corner of Gordon-street, and West Nile-street, we come upon a very fine range of shop and warehouses belonging to Sir Andrew Orr, the late Lord Provost of Glasgow. In Buchanan-street there are also many similar specimens of tasteful shop architecture,—in particular that of Messrs. Stewart & Macdonald and Richmond & Co., which are spacious without being disproportionate, and ornate without being florid. Some rather pretentious Italian façades we observed, in which the designs had failed to catch the true angles or segments in the pediments; but that is neither here nor there. The whole of these buildings were supplied with plate-glass windows, many, as we could see, with revolving shutters, and not a few with ornamented brass sash-bars. Indeed, the stranger need only be a single hour in Glasgow to discover that he is placed amidst a community who well understand the arts of commerce and its architectural correlations. There are not better banks, warehouses, and shops to be seen anywhere. They have not succeeded so well as yet in building churches, we are sorry to say.

As to the Domestic architecture embraced under our fourth division, we shall just notice three typical varieties:—the four-story tena-

ments, with common stairs, which line both sides of Sauchiehall-street; the self-contained houses of Blythswood-square; and the modern self-contained houses in the crescents and terraces.

The first class of tenements are something similar to those which we recently described in the Domestic architecture of the New Town of Edinburgh, but with more ornament on their elevation, such as moulded lintels and jambs, and projecting cornices over windows.* The general plan of a tenement is, in a front street like Sauchiehall-street, ground-floor shops, with cellars beneath, and doorway to the passage or close of common stair; first floor two houses, second floor two houses, and third floor two houses. In a back street such as Renfrew-street, the shops on the ground-floor are transformed into two main doors, with the inevitable "close" between them, and kitchen, &c., on basement, in place of cellars. The dimensions are, usually, we guess, of a tenement in the block, 60 ft. frontage by 40 ft. depth, by 50 ft. height, or thereby. This will allow of very good-sized apartments; ceilings of 12 ft., 11½ ft., 11 ft., 10½ ft. respectively. The rents vary more according to the neighbourhood than to the property; but, in general, a "half flat," that is to say, a house of four or five apartments, is 25s. to 35s., more or less, per annum. All the houses we have comprehended in this division possess a water-closet, and the greater proportion a bath (shower and plunge). The "closet" of each house is usually planned to occupy the quarter of space which forms the landing of the staircase, and, accordingly, the only light or ventilation is by a little window into the staircase. This vile practice, indeed, is universal in Glasgow. The best and worst localities suffer alike in this respect. If the staircase itself were thoroughly ventilated, there might be less to regret; but such is not the case. There are other evils incidental to common stairs, such as the bell apparatus to the "stairfoot" door, the general dirt of the walls, and the dingy look of the windows; but we cannot stay to consider them. The worst fault we have heard alleged of these common stairs is that the policeman on duty goes to sleep in them during the night.

A similar resemblance pervades the self-contained houses in Blythswood-square to their congeners in Edinburgh, a sunk area in front, a back green behind, a dining-room, drawing-room, and bedroom floor, with attics. Compared with the best Edinburgh square of the same period, however,—Charlotte-square we mean,—this Blythswood-square must be assigned a subordinate place. The rooms are not so lofty, the whole buildings are not so large, and the architectural character is meaner. Nevertheless, these houses are very highly rented, and are inhabited chiefly by professional men, clergymen, doctors, and lawyers. Madeline Smith's tragedy rather destroyed its character for some time. But it recovered its tone immediately when Professor Gardiner went to reside there.

The crescents which overlook the beautiful Kelvin-grove Park afford by far the finest and most recent examples of high-class Domestic architecture in Glasgow. As far as the somewhat composite style may be described of these palatial mansions, we may pronounce them a mixture of Italian and modern French. The elevation consists of handsome bay-windows on all the floors, with square or rectangular domical roofs, covered with zinc, high engravled ridges, with spirelets, triangular or segmental dormers, and gablets with tasteful finials. The interior fittings, as we understand, of most of the houses, are of the most luxurious and costly description. The halls and staircases are decorated with scagliola or imitation marble columns and pilasters, stained-glass windows, and elaborate ceilings. The drawing-rooms are decorated and gilded in the highest style of art. The baths are of marble, washhand-basins of tinted porcelain, with hot and cold water laid on, and fittings of German silver. The furniture is costly and very extravagant, and the pictures in some houses are of a high class. But we cannot dwell on these things, however interesting. We can only sum up by stating that the houses in these splendid crescents are chiefly inhabited by the merchants and manufacturers whose places of business we have just reviewed, and we must own that whatever sins of omission these wealthy bourgeois may have laid to their charge, encouragement of architecture and the fine arts is certainly not among them. We

should add here that the magnificent range of terraces in the vicinity of the Botanic Gardens, Grosvenor-terrace, Kew-terrace, and Windsor-terrace, are quite equal to the crescents in point of architectural value and design.

Hitherto we have rapidly and imperfectly sketched the progress of a large city in so far as this has been determined by the wealth and individual effort of the citizens themselves in a private capacity. In another article we shall describe what has been done by them as a corporation.

PROGRESS AT PARIS EXHIBITION.

A CORRESPONDENT writes from Paris,—The weather here is all that could be desired. It is rather hot, but with a cool wind blowing that is very refreshing. The Exhibition is growing more and more in public estimation, and the radiating plan and the zones, as they are understood, have many advantages. There is one very remarkable feature which must be observed. When you have paid to enter the Park there are no regulations. You can go "in, and out, and round about," as you please. Excepting some of the unfinished buildings in the outer grounds, nothing is *défendu*. In fact, for the first time lately, the French can be free for a franc. This freedom to go which way you will is inexpressibly agreeable, and must produce a permanently useful impression on the French themselves. Nothing to an Englishman is so vexatious and intolerable as the way in which everything is "regulated" in France. Another feature is also deserving of observation. The absence of chairs in the courts is a positive advantage—there are plenty in the open courts and passages—and selfish people are thus prevented seating themselves in the way of those desiring to see and move on. Of the carpenters' work, which has been so much noticed, the mast that can be said of it is that it will lead to variety of form and application of wood-work; but, as to artistic work, there is very little approach to English carpentry. The jalousies of the Turkish and Oriental houses exhibit beautiful and various forms, producing the most agreeable effect, and almost creating a feeling of wonder how such elaborate work can be available for the purpose. On a careful examination, however, they are found to be produced in the simplest manner. The turner has the principal hand in it. In the ceramic department there is a remarkable repetition and variation of Chinese patterns in all countries. Why is this? They are very beautiful nevertheless. In the Prussian and many other courts the price is put on each article, and this has led to a considerable number being sold: already the little ticket "*vendu*" is vexatiously frequent. In the Prussian, and, indeed, in all the Northern European courts, the prices are very reasonable, and many of the articles exceedingly beautiful. In one of the Prussian courts there are shown works in "*Carrara céramique*," something between terra-cotta and biscuit-china,—sharp, and beautiful in colour, in very large objects, cornices, brackets, and vases. One of the latter, about 4 ft. high, has been sold 200 times. The price for house decoration is from 10 francs to 50 francs per metre.

On all hands it is admitted that the English glass is far superior to that of all other countries. Our Minton and Wedgwood wares also rebut all competitors. Two large claret bottles, or jugs, by Dobson, engraved in a most wonderful and beautiful manner, have been bought by South Kensington for 150*l.* each. They are well worth the money. C. H.

A NEW FUEL.—Some experiments are in progress with regard to a new kind of peat-fuel, known as Lee's patent, which is alleged to possess great advantages over coal, both as regards power and economy, for generating steam. According to an account in the *Shipping Gazette*, of a trial of this fuel,—“The results arrived at were considered to prove that peat, when properly dried and submitted to a certain process, and then saturated in oil, has greater heating power than the best Welsh coal. The advantages possessed by this peat fuel are the rapidity with which a fire can be lighted, and economy in working and space. Put a few blocks in the furnace, apply a match, and in an instant the whole is in a mass of flame. Very little stoking is required.”

* See *Builder*, vol. xxiv., p. 618.

upper part of the opening. The opening is partly closed by an iron hood; but in this is a large circular "hit-and-miss" grating. The object of the arrangement is, in short, that the opening may be closed when the fire is first lighted, and until the fuel has got warmed, and the draught is well in action; and that then the grating may be opened, and a stratum of air, up to about 5 ft. 6 in. in height, be drawn from the room up into the chimney. "Practically," writes the architect, "the flues draw so effectually that it is very rarely necessary to close these gratings." Nevertheless we found the greater number of those in the wards entered, closed, whether because the chimneys were apt to smoke, or only from forgetfulness, was not clear. When opened, in the lower wards, improvement in the air of the room, near the fire-place, was at once perceptible, albeit there had been nothing in the ventilation of the ward calling for notice, unless as favourably compared with wards of hospitals on the old plan. One of the top-wards however was full of smoke. The reason given was that the chimneys required sweeping. The sides and backs of the fire-places are formed of fire-brick, the sides being inclined at an angle of about 45°, so that the heat may be reflected at a corresponding angle across the ward. The fire, placed low down, is contained in a basket of plain wrought-iron bars; metal about the fire is avoided as much as possible. The angles at the back of the fire-brick are filled in solid with brickwork, though otherwise shown on our plan. There is a wide hearth, and a low stone fender. The temperature of the wards averaged 56°, on our visit at the end of February. In the three principal chimney-stacks in each of the five pavilions there is a special flue built, discharging above the roof, to which the drains are connected, for ventilating purposes. This flue is entirely independent of any other, but is placed between two smoke flues, which cause upward current. By this means the drainage is ventilated at fifteen points. On the top of these flues charcoal-boxes will be placed, to destroy any gases that may rise from the drains.

The drainage is entirely outside the buildings: in no case is a drain brought within the walls, excepting to receive the descending soil-pipes or waste-water pipes.

The wards are celled to the underside of the joists of the flooring above. The joists, which run in the direction of the length of the ward, are borne by cross-girders, the ends of which are carried on corbels that are built into the side-walls. The trimmer-arches below the hearth, in the upper stories, are in each case carried partly by a short iron girder. The mode of finishing the walls internally, whether by Parian cement or otherwise, is not decided on. Each wall is built with a cavity, to prevent any possible influx of damp. The floor-boarding is of deal filled-in in the joints with marine-glue.

The ground-floor ward, in each pavilion, is reached from the longitudinal connecting-corridor of the pavilions, by passing across a hall which measures on plan 22 ft. by 19 ft. In this hall, to the left of the entrance, are the stairs of ascent to the wards of the two upper floors. They are of very easy ascent, and without winders. Right of the entrance are two rooms, one the nurse's room, and the other the ward-scully or kitchen; and there is also a hoist, to the upper floors, for coals and food. The nurse's room has an inspection-window looking into the ward from the end. Considering that great, and doubtless well-deserved, praise, is given to the "unwearied efforts" and "gratuitous services" of two Sisters of Charity from the Protestant Religious Society at all Saints', Margaret-street, London, we were surprised to find the essential of the nurse's room, the window looking into the ward, closed. The scullery, or kitchen, is provided with a small cooking-range and oven and other requisite fittings. Under the stairs is a closet.

At the extreme northern end of each pavilion are small attached blocks, projecting laterally, containing in the case of the right-hand block, and looking northwards, the bath-room, and lavatory, and in the other case three closets and a sink. Between these blocks, or wings, is an open-air balcony, on each floor, for the patients who may be convalescent, and where an extensive view over green fields is obtained. The access to the balcony is through a large sash-door or window. The landings of the balconies of the upper stories are carried by iron columns. We should have mentioned that the terrace at the other end of the wards, forming the covering of the long corridor of communication, affords

space for a promenade on the first-floor level, exceeding 500 ft. in length.

It seems desirable that reconsideration of the arrangement of the lateral wing-projections should not be omitted in any future hospital. The balconies between these blocks, at the end of the pavilion, are provided perhaps better than such features could be in any other disposition; but the outlook from side-windows of the wards is interfered with, if not in some measure are light and air. However, all planning must be a compromise between advantages and disadvantages. In the bath-room, the bath is placed detached from the walls, so that a patient may be supported on both sides. The material of the bath is the Stourbridge fire-clay, lined with a coating of porcelain. The supply of water is constant; and hot water, though heated in the ward-kitchen, or scullery, at a distance of 140 ft., can be obtained at all times. Adjoining is the lavatory, where the basins are of earthenware in polished slate tables or slabs. Hot and cold water are obtainable at all times from taps, both for washing-purposes and for filling the portable baths. A 2-inch fire-plug and hose are fixed in this wing on each floor.

Here also are the dust-shoot and the foul-line shoot: the former is of cast-iron, with hopper and door on each floor, discharging into an ash-pit outside the building, and the latter of wood, discharging into a ventilated chamber in the basement. The two shafts adjoin, and are carried up about 8 ft. above the roof, with a revolving ventilator 2 ft. 6 in. diameter on the top, to prevent any foul or stagnant air accumulating in the shafts.

The water-closets, contained in the left wing, are simple in construction and inexpensive. The entire basin and seat are of earthenware without wooden seats or fittings. The cleansing is effected by means of a chain attached to the door, which raises the valve and flushes the basin each time it is used. A sink or trough for emptying the bed-pans adjoins, and has a similar earthenware basin with a lead receiver on the top, flushed by means of a hand-pull. The divisions between the closets, as also between the bath-room and lavatory of the other wing-block, are of sawn slate: they are carried up to the height of about 7 ft., with a framework of cast-iron. In each wing is a small fire-place in an angle.

The Manchester Corporation convey the water to the workhouse by a special 7-inch main, which entirely surrounds the hospital-buildings. Fire-plugs are placed between every pavilion, both at the northern and the southern ends, besides in other convenient positions, and the pressure from the mains is sufficient to reach to the roof in case of fire. Ten tanks, one on the top of each of the wings just described, each containing 2,500 gallons of water, are supplied by rising mains 3 in. in diameter: so that when filled, 25,000 gallons of water are stored for the use of the hospital.

The hot-water apparatus has been contrived with care, and is arranged on a plan suggested by Mr. Ward, the contractor for this part of the work. The boiler and hot-water reservoir are in the small ward-kitchen on the ground floor, and the hot-water piping is carried as before mentioned to the wing containing the baths and lavatories. The whole of these pipes are wrapped in thick coarse felt, to prevent frost having effect on the water; and the entire system of piping may be emptied in the basement in case of repairs or extreme frost.

The works last in hand have included a complete refitting of the kitchen, by Messrs. Shillito & Shorland, of Manchester, with the cooking-apparatus required for the large number of residents or sojourners in the workhouse and hospital. These fittings display some clever contrivance and good workmanship, as in the case of a large steamer, with meat stand; which last is enclosed, when the steaming is in progress, by a cover, working with balance-weights, and made to fit at the bottom-edges into grooves which the condensed steam fills, so as to make the whole air-tight.

The ground-floor of each pavilion is raised about 6 ft. above the ground outside. With a little additional cost, and some modification of the sleeper-walls, or other supports to the floors, and different arrangement of gas-mains, this space might, perhaps, have been utilized for storage in connexion with the workhouse.

The great merit of the plan, irrespective of the warming and ventilating arrangements which we have illustrated, is comprised in the ample space between the pavilions. The blocks, 100 ft. apart, are only 25 ft. less in distance than

those of St. Thomas's Hospital are to be. In the Herbert Hospital the dimension is 64 ft.—much too little. Each pavilion in the Chorlton Hospital provides 96 beds, that is, the thirty-two in each floor, or 480 beds in the entire hospital. The cost, including the gas and water-supply, and the various fittings of the wards—though whether those of the kitchen we are not aware—has somewhat exceeded 23,000*l.*; and the architect puts down the probable cost of such a hospital, with kitchens, stores, and the administrative department, and the land, at 30,000*l.*, or at the rate of about 60*l.* per bed.

Results already, on the health of inmates, seem to have been of the most satisfactory kind. A decided difference was seen on the removal of the patients from the old wards in the workhouse, to those of the new hospital,—part of which, it is thought may be to be credited to contemporaneous change in the system of nursing, but of which a great part was certainly due to the increased air-space and the better ventilation. Such at least seems to be the opinion of the governor, Mr. Brokenshire, whom the guardians must be fortunate in having as their officer, and the poor inmates of the house in having in the position which he holds. Our thanks are also due to a very energetic guardian, Mr. Wood, for pains in showing us everything that we went to see. The Chorlton Union Board has set a brilliant example to the metropolis and the country generally. There is, however, something that the Guardians have yet to do. Every portion of the workhouse that we saw was orderly and clean beyond expectation; but the wards in which the insane were, regarded in their structural features, were not abreast with the knowledge of the day, and with the received principles whether for wards of lunatic asylums or those of general hospitals.

FACTORIES AMENDMENT ACT AND THE ENGINEERING TRADES.

ON Thursday, the 2nd instant, a deputation, representing the engineering, millwrighting, and metal founding trades of Lancashire and Yorkshire, waited upon Mr. Walpole, at the Home Office, respecting the proposed Factories Amendment Act. The deputation consisted of Messrs. J. Robinson, C. Stewart, M. Curtis, R. Peacock, W. G. Madeley, W. Platt, E. T. Bellhouse, G. Peel, jun., and H. Wren, from Manchester; Messrs. Harrison and Dickinson, of Blackburn; Messrs. Musgrave and Wood, of Bolton; Mr. Beard, of Ashton; and Messrs. Clapham and Sellars, of Keighley; being members of engineering firms employing themselves 10,000 workpeople, and representing firms which in the aggregate employ upwards of 20,000 workpeople. Several members of Parliament introduced the deputation. Mr. J. Robinson (Sharp, Stewart, & Co.) stated the object of the deputation, and read the following memorial, which will sufficiently explain the objects sought:—

1. That there shall be no extension of the Factory Acts to the works of engineers, millwrights, boiler makers, machine-makers, and metal-founders.

(Memorandum.—That legislation, if necessary, is only applicable to the smaller works; those employing less than 100 hands at present exempt from the Bill.)

2. That should legislation be deemed necessary for these trades, it should not proceed until the result of the inquiry of the Royal Commissioners on Trades Unions is known, nor until a commission has been appointed to examine the engineering, machine-making, boiler-making, and metal-founding, works of the country, nor until a select committee of the House of Commons has been appointed to gather evidence.

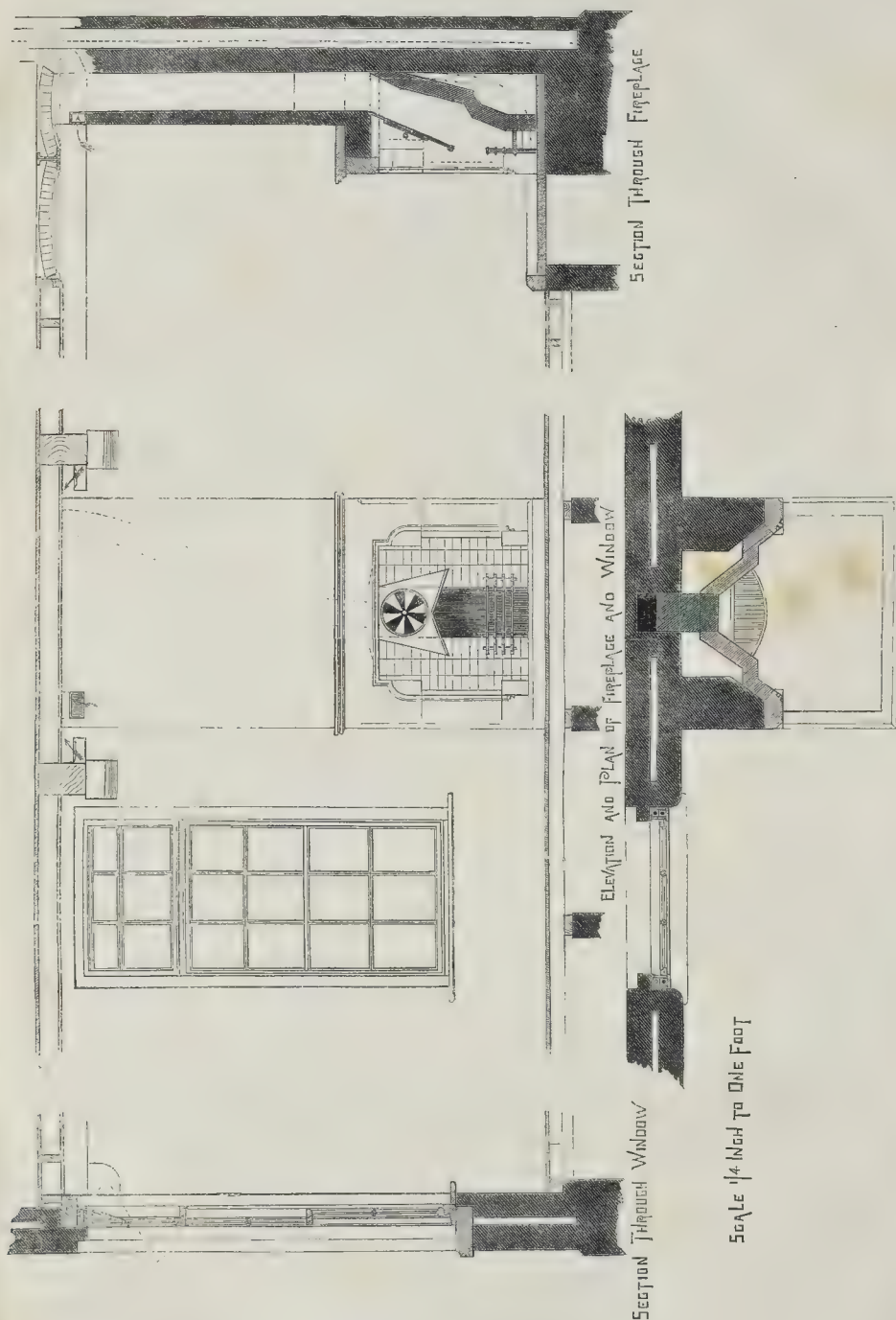
3. That, if legislation be decided upon for these trades, it should be by separate and distinctive enactment, and by well-defined clauses, so that the clashing of interests and terms used, which exist in the present Bill, may be avoided.

4. That, if legislation be found necessary, it shall not be applicable to any works in which neither boys under fourteen years of age, nor females, are employed.

5. That, in the case of the above-mentioned trades, it is undesirable to restrict them to any special days for holidays, inasmuch as an important part of their business is the repair of their own and the machinery of other factories; and as they have already, by custom, a greater number of holidays than is contemplated under the Factory Acts.

6. Should her Majesty's Government feel it is requisite to press legislation, it is requested that they afford an opportunity for the suggestion of various clauses and modifications of the Bill.

Mr. Harrison, Mr. Curtis, Mr. Peacock, and Mr. Wren made statements bearing upon the subject, and showing reasons why the proposed Act would be inapplicable to the engineering trades. Mr. Walpole stated that he had had a deputation from the iron masters on the same subject, and that he proposed to ask the House for a select committee of inquiry.



ARRANGEMENTS FOR VENTILATION, CHORLTON UNION HOSPITAL.

[See p. 328, ante.]

ANCIENT IRON AND BRONZE WORK.

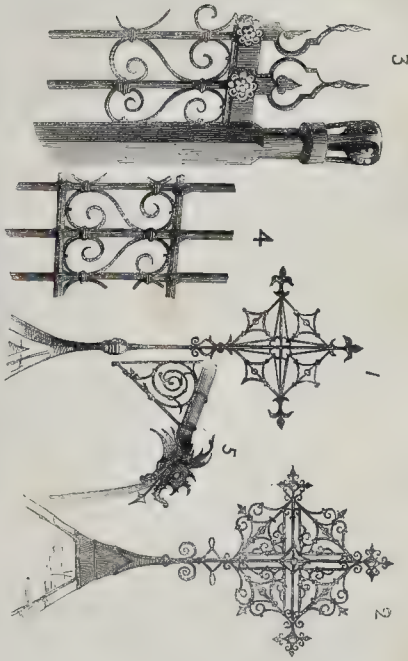


Fig. 1. Cross from the Apse of St. Burkard's Church, Würzburg, Sixteenth century.
 " 2. Cross, East End of St. Albinus Church, Würzburg, Sixteenth century.
 " 3. Cross, East End of St. Albinus Church, Würzburg, Sixteenth century.
 " 4. Lockcase of cross.
 " 5. Grange of a cross in a house in Würzburg, Sixteenth century.

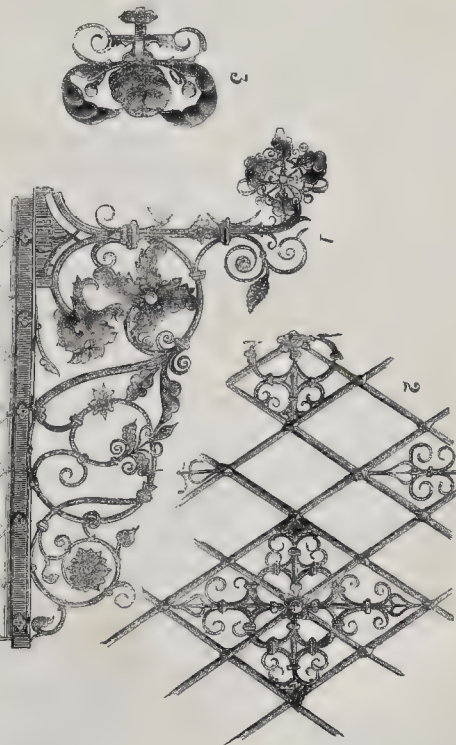


Fig. 1. Grille.
 Iron Grille from Window of Dürerhaus, Würzburg, Date, 1531.
 Fig. 2. Portion of Grille.
 Fig. 3. Side view of Grille to Grille.

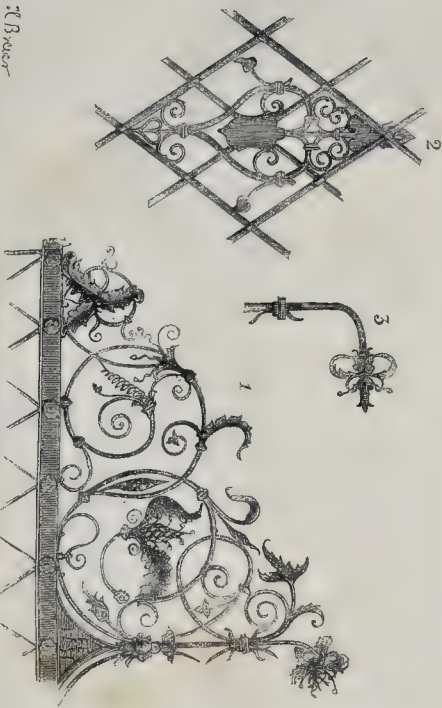


Fig. 1. Grille.
 Iron Grille from the Window of the Dürerhaus, Würzburg, Date, 1531.
 Fig. 2. Grille, with Shield.
 Fig. 3. Side view of Grille to Grille.

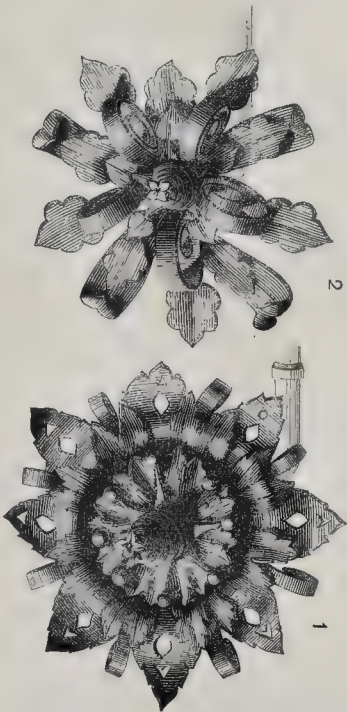


Fig. 1. Grille to Grille of Tomb in the Cemetery of Würzburg Cathedral.
 " 2. Do.
 do.
 do.
 Date, 1533.

ANCIENT IRON AND BRONZE WORK.

ANY one who has studied well the old German towns must be struck with the great beauty of the iron-work which is everywhere to be found about the houses, whether it is a railing, a hinge, a door-handle, or even the head of a nail. The German builders of the Middle Ages appear to have been anxious that it should become a work of art, and even long after every vestige of Gothic architecture had disappeared from their designs we still see this care and study continue to be given to the metal-work. The earliest examples of iron and bronze work existing in Germany are the great doors of the cathedral at Augsburg, evidently very early Romanesque, probably not later than the tenth century. They are divided into square panels, which are ornamented with very rude "bas-reliefs," representing subjects from the Holy Scriptures. A pair of doors of very similar design exist at Hildesheim, and in the same church is a remarkable truncated column of bronze with figures arranged round it upon a spiral curve similar to Trajan's column at Rome. The railings round the choir at Aix-la-Chapelle and the doors at Mayence cannot be much later than the eleventh century. The bronze candlesticks at Erfurth and Prague are fine examples of twelfth-century work. The font at Würzburg and the pascal candlestick at Bamberg are early thirteenth century. Of the fourteenth and fifteenth centuries the examples are every numerous indeed. A few of the finest are the choir screen at Erfurth, the side screens at Cologne, the fonts of St. Stephen's, Prague, St. Sebald's, Nuremberg, &c. The sixteenth century, however, was the great age of German metal-work. Peter Vischer and his pupils and assistants have left wonderful examples of their skill all over Germany. Their masterpiece is the Shrine of St. Sebald, at Nuremberg. Monuments, executed by Peter Vischer himself, still exist at Nuremberg, Erfurth, Würzburg, Bamberg, Aschaffenberg, and many other places. These monuments generally consist of an effigy cast in deep relief, with a canopy over the head, and an inscription running round the border, which is sometimes ornamented. They are placed upon the walls, and not on the floor of the church. The Cathedral of Bamberg contains over 300 of these monuments: some of them are extremely beautiful, and are executed with the greatest delicacy. The railings round tombs, chapels, altars, &c., of this date are exceedingly good. We give in our illustrations two finials from the railing of a tomb in the cloisters of Würzburg Cathedral. Würzburg is rich in examples of the sixteenth-century ironwork; the grilles over the window of the townhall, and the finials and crosses to many of the churches and houses, are well worth careful study: we show several examples in our illustration. Bronze fonts of the tenth century are frequently to be seen; a very fine one, by Peter Vischer, exists at Ochsenfurth.

The seventeenth-century ironwork is very similar to that of the sixteenth. We give an example from the gates of the "Seminary at Würzburg;" it gets less pure and elegant, however, as the century advances, and before the year 1700 nearly all that is good has disappeared from the designs.

MONUMENT TO THE LATE ENGLISH CHAPLAIN AT ROME.

A MONUMENT has just been erected, by subscription, in the Protestant cemetery at Rome, to the Rev. Francis Blake Woodward, M.A., for fifteen years chaplain of the English church in that city, deceased, aged 65, on the 4th February, 1866. The sculptor who received commission for this work, Mr. Shakspear Wood, has designed it in the form of a sarcophagus with pointed roof, on the apex of which rests a cross, horizontally laid, with *Neurons* at the extremities; this roof of dark-grey basalt, the sarcophagus itself of white Sicilian marble, resting on a basement of basalt, and the whole rising from a platform of white marble. At the extremities of each longer, and at both the narrow sides, is introduced a decoration of inlaid-work in rich-coloured marbles, imitation of the Italian Medieval mosaic so beautifully carried out in Roman examples. The design of this is in panels, bands, and circles; at the head the monogram of the Holy Name, within a diamond-shaped border; at the two sides and at the foot

a Greek cross within a circle, all in the same many-coloured intarsio. The epitaph is given at both sides; but in one instance Latin, in the other English, terminating with the words: "Blessed are the pure in heart, for they shall see God." Respect for the merits and services of the deceased had induced many to subscribe for this monument, both among the British community in Rome and in England. Skillfully executed as it is, it stands in a conspicuous situation on the higher ground of that beautiful cemetery, beneath the ancient fortifying walls near the Porta San Paolo.

THE GAS WORKS OF MANCHESTER.

WE recently gave some particulars of the gas-works of the Manchester corporation. The Manchester City News has lately published additional particulars, from which we glean. In the year 1844, a year after the gas-works were transferred to the corporation, the consumption was 248,000,000 cubic feet; last year it was 1,160,000,000; this year it is estimated that it will be at least 1,300,000,000. The prospective increase is expected to be in at least an equal ratio; in twenty-three years the consumption is five-fold, and in 1877 it is expected that the consumption will be tenfold what it was in 1844, or about 2,500,000,000 cubic feet. The works as at present in operation are equal, on the emergency of a succession of short dark days in winter, to making and sending out 6,500,000 cubic feet per day, and it is expected that when improvements in progress have been completed they will be equal to the manufacture of 10,250,000 cubic feet per day.

The illuminating power of the Manchester gas is equal, according to the tests which are being made daily during the current month, to 21.6 sperm candles, consuming at the rate of 120 grains per hour, the consumption of the gas being reduced to a constant standard of 5 cubic feet per hour. Photometric observations are made daily by Mr. Leigh, in the centre of the town, and at one of the gas stations. It is tested daily for sulphuretted hydrogen, and is reported daily for the ordinary tests, and fortnightly for the continuous test, from its being led through a test solution. We believe that the gas is found to contain very little tarry matter or naphthalene, and that the ammonia has been reduced to the smallest possible proportion. It may here be mentioned, that Mr. Leigh, in conjunction with Mr. Macfarlane, gas engineer, entertains the constant expectation that certain experiments which have been perfectly successful in the laboratory may and will be applied shortly, they hope with success, to all the gas passing from the works, and solve satisfactorily the important problem of separating the sulphuretted carbon from the gas,—that element, as our readers are aware, being the destructive agent that tarnishes gilding and other decorations of rooms. It may here be mentioned, that under the Act 23 & 24 Vic., c. 125, which regulates the supply and quality of the gas provided by the thirteen companies to the metropolis, the illuminating power is fixed as low as twelve candles. Sulphate of iron has recently been made with satisfactory results in the works.

Since 1828 a succession of reductions have taken place until now, when the price, according to the last official report, is 3s. 2d. per 1,000 ft. Here again, for the purpose of comparison, it may be mentioned, bearing in mind that the Manchester gas is all made from canal coal, that it is of 21.6 sperm candles illuminating power, occasionally considerably higher, and sold at 3s. 2d. per 1,000 ft.; that in the select committee of the House of Commons on the London Gas Bills, who sat last session, Sir John Trollope, the chairman, proposed that the London companies should be required to increase the minimum power to fourteen sperm candles, six to the pound; that the maximum price should be reduced to 4s. per 1,000 ft. for common gas, and 6s. for canal gas of twenty candles. He also proposed to report that since the passing of the Act before quoted the price of gas to London consumers had been increased, while the quality had become worse. As regards prices of gas, it may not be out of place to refer here to the charges of some of the London companies. The Chartered Gas Company charges 4s. 6d. and 6s. per 1,000 ft.; the City of London, 4s. common and 5s. 6d. canal; the Commercial, 4s.; the Crystal Palace District, 3s. 8d. to 4s. 8d.; the Equitable, 6s. and 5s. 6d.

canal, and 4s. 6d. and 4s. common; the Central, 4s. 6d.; the Imperial, 4s. 6d. maximum to 30th June, and 4s. from 30th June; the Independent, 3s. 4d. to 4s.; the London, 4s. 6d. to 5s. common, and 6s. canal; the Phoenix, 4s. town and 4s. 3d. country; the South Metropolitan, 3s. 4d. and 3s. 8d.; the Surrey, 4s. 6d.; the United General, 4s. 9d.; the Victoria Docks, 3s. 6d. to 5s.; the Wandsworth and Putney, 5s.; and the Woolwich (two companies), 4s. 6d.

The capital of the gasworks of Manchester amounts to 547,854l., made up of 347,472l., borrowed money owing, and 200,382l. excess of assets. Last year the gross profits amounted to 52,553l., which were thus appropriated:—Payment of interest, 13,252l. liquidation of mortgage debt, 19,784l. improvement purposes, 19,516l. In the same year 13,817l. were charged to revenue in respect of depreciation of works and mains. In the course of the last seven years 125,408l. have been paid out of the profits in liquidation of mortgage debt, and 129,220l. have been expended in public improvements. In the same seven years, revenue has been charged 80,776l. for depreciation of works and mains.

The committee has always acted upon the fair and reasonable principle of so adjusting the price of gas that the maximum profits should not exceed the ordinary 10 per cent. allowed to chartered gas companies. The gas consumers of Manchester may well be more than content that they have better and cheaper gas than ninety-nine of the hundred gas-consuming communities, and that the profits have been applied in public improvements.

THE TRADES' MOVEMENT.

Barnsley.—The masons, between 300 and 400, have struck work for an advance of wages to the extent of 2s. per week, and other concessions. At a meeting recently held the masters resolved to offer an advance of 1s. per week, but all other demands, as set forth in the notice, were refused. Building operations in the town, with the exception of a few apprentices and labourers and a few others, are entirely suspended.

Sheffield.—The builders and operative stone-masons have had a meeting at the request of the operatives, with a view to establish their new code of proposed rules. The employers refused to sign any new code of rules until the termination of the commission of inquiry on the working of trades' unions. The meeting terminated without coming to any arrangement as to their future guidance. A general meeting of the Sheffield and Rotherham Builders' Association has also been held, when all the principal builders of Rotherham were present, and became members of the association. A deputation was chosen to attend the annual meeting of the General Builders' Association, at Bristol. It was resolved that the present rate of wages and working hours of the stone-masons and brick-layers be adhered to.

Edinburgh.—A meeting of the house-painters has been held, Mr. Tarbet in the chair. A resolution was unanimously adopted to the effect that intimation should be given to the masters that, on and after the 6th of May, the wages be 6d. per hour for fifty-one hours per week—over-time to be calculated as agreed on at the meeting on the 25th of February, namely, time and a quarter. The meeting was unanimously of opinion that the intimations which had been made by several of the masters justified the men in taking immediate action to have this resolution carried into effect.

Rotherham.—An extraordinary strike has occurred at Rotherham. The manager of a colliery made a mistake in the amount he deducted from the wages of five boys who had broken their lamps. He offered to rectify the mistake, but the lads required that the whole fine should be refunded; and on this demand being rejected, all the boys employed at the pit—some 30 or 40 in number—struck. The result of this proceeding was that 400 men were thrown out of work, and the colliery closed.

Strikes Superseded.—It is a noticeable fact, that on a meeting of the coal-masters of Yorkshire was recently held at Leeds, and a counter meeting of coal-miners was held the same day at Normanton, the only colliers in the neighbourhood which did not cease work for the day were those of Henry Briggs, Sons, & Co. The understanding established between shareholders and workers induced both employers and employed to stay at home and attend to their joint interests, instead of going off to cabal

against each other.—*The Industrial Partnerships' Record for March.*

The Engine-drivers.—The central committee of the engine-drivers deem it "undisable, in the present stage of the contest," on the North-Eastern Railway, to "ask the men on other lines to withdraw from their employment." In fact, the contest alluded to is at an end.

The Paris Strike and the Berlin Workmen.—In reply to a letter addressed to them by the working men of Berlin, those of Paris have written as follows:—

"Workmen of Berlin.—We have received with joy your pacific greeting. Like you, we desire only peace and liberty. As citizens, indeed, we love our mother country; but when the spirit of the past is endeavouring to confirm national hate, we working men shall never forget that only in peace and liberty can labour, which unites us in reciprocal bonds, be developed. It is not a question of deciding by arms the nationality of a strip of territory, but of uniting our efforts to bring about a reign of equity. Have we not enough sources of misery and suffering to dig out, enough of unmerited wretchedness, without going to destroy and devastate with our own hands, leaving the fields untilled and the machines idle? Conquerors or conquered, we shall still be the victims. Labour is a duty and a right—it is the law of modern society; war is a crime. We desire peace and liberty: we desire to establish between each other more intimate and friendly relations. Brethren of Berlin! brethren of Germany! it is in the name of universal solidarity and sympathy that we exchange with you a pacific salutation, which will cement anew the indissoluble alliance of working men.—Signed on behalf of the Paris Commission,

TOLAIN, FERDINAND, VARLIN."

Chicago.—A formidable strike has taken place among the working men of Chicago, in favour of eight hours' labour.

THE TRADES UNION COMMISSION.

The Secretary of the Operative Bricklayers' Society at Sheffield, Mr. George Housley, stated that the society which he represents is both a trades' union and a friendly society; that he joined it because of the latter feature, and that the society never interfered with him before joining no such rule as making the most of his skill; that "chasing" obtains amongst the members of this society; well is unknown; that every member is at liberty to do the best he can for himself, and to obtain the highest wages which he can induce his master to give him; that the society has no minimum of wages under which members are not allowed to work, and that strikes, although supported by the branch funds of the society, are not encouraged, and are very uncommon. On the other hand, however, details were elicited, the character of which was very satisfactory. For example, after mentioning certain items of expenditure, which accounted for the greater part of the sum said to be paid out during the year, there was a deficiency of about £2,000. Pressed for an account of the manner in which this sum was disposed of, Mr. Housley accounted for 1,088*l.* by saying that it was expended at a "delegate meeting," explaining that the said 11*l.* 6*d.* a day, with, for refreshments, and that the cost of their lodgings and railway fares was defrayed by the society. Next came the statement that 308*l.* had been paid to the society for the support of transpassing workmen are required in different parts of the country, and that some of the difficulties thrown in the way of labourers are of bricklayers. According to Mr. Housley's statement, if an employer put a few intelligent labourers, who dealt with him for some years, to lay bricks, the emergency might be, and would be supported in the strike the society.

On the Commission resuming their sittings after the Easter holidays, reporters were again refused admission, and the Commissioners were engaged for some time in examination. It was understood this discussion was one of the newspapers, but the published evidence by Mr. Piper, master builder, of London, of the London Master Builders' Association, was the first witness. His evidence was given very fairly and impartially; and there was no doubt but that trades' unions had education in the law of labour. The state of trade in the building industry, and the measures that have been taken to get it much sooner by their trades' union, had advanced the wages of their men, except upon the result of combined effort. The whole of the tenor of the evidence was in favour of trades' unions, though dis-

g. Smith, of the firm of Smith & Taylor, the architects for the new Foreign Office, was next examined. His evidence chiefly went to explain away the evidence given by Mr. Coulson, secretary to the Bricklayers' Society, as to the loose and inefficient work in which the brickwork at the Foreign Office was done. He said that the work was sublet as a subcontractor under competent foreman, and it was the duty of the clerk of the works, appointed by the Government, to see that the work was properly done and good material, but maintained that the work done was performed in a proper manner.

Mr. Trollope, Jun., of the firm of Trollope & Sons, builders, Finsbury, in whose establishment the strike and lock-out in connection with the nine-hours movement in 1859-60 commenced, was the third and last witness. He went, throwing all the blame upon the men. He was very severe upon trades' union, considering them injurious to both employer and workmen. At the conclusion of the examination of this witness, the commission adjourned. Mr. Moul, the secretary, and several members of the General Master Builders' Association, were present. Mr. Connolly attended on behalf of the Trades' Conference Committee to watch the proceedings.

INSTITUTE OF PAINTERS IN WATER-COLOURS.

By admitting to their exhibition pictures by M. Gallait, M. Madou, Madlle. H. Browne, and Madlle. Rosa Bonheur, the Water-Colour Institute have strengthened the collection, but it seems to us a mistake nevertheless. If they have room they should, as we think, strengthen their ranks rather by electing some of the many excellent water-colour artists still unattached to either society, than by filling it with the works of foreign artists already sold, as it is publicly stated, to dealers.

The collection consists of 819 pictures. Mr. L. Haghe has several works, necessarily with high merits, but less interesting than on previous occasions. Four large drawings by Mr. H. Tidey, typifying, each by a single female figure, the Seasons, would seem to be intended for decorative purposes. Mr. Edward Corbould sends a rich piece of colour in (211), "Contest for the large Diamond," but it was more than "half-miracle" if Lancelot's one thrust drove the whole pile of men and horses against the barrier in the manner therein represented. Mr. Edmund Warren exhibits a landscape of considerable size and importance (226), "The Battle of the Waters." It is admirably painted, and cannot fail to advance the reputation of the artist. "Parting Rays" (25), by J. Mogford; "On the Downs at Eastbourne" (40), by H. G. Hine; "The Snowdon Range from Llyn" (77), by J. C. Reed; "Autumn" (246), by G. Shalders; "Luxor" (253), by Charles Vacher; "West Portals of Abbeville Cathedral" (193), by L. J. Wood, are charming and admirable landscapes.

THE ROYAL ACADEMY.

The present exhibition is one of considerable interest, including capital pictures by F. Goodall ("Rebekah"), F. Leighton ("Spanish Dancing Girl"), Poole ("Lear"), Millais ("Sleeping"), E. Leaning ("Her Majesty at Osborne"), E. M. Ward ("Juliet in Friar Lawrence's Cell"), T. Raed ("The Poor Man's Friend"), Frith ("King Charles I.'s last Sunday"), Horsley ("Lady Jane Grey"), Herbert ("St. Edmund, King of East Anglia"), the late J. Phillip ("Antonia"), Elmore ("On the House-top"), E. W. Cooke ("Canal of the Giudecca, Venice"), E. Nicol ("Country Booking-office"), J. Lobbey ("The Dole"), Hook ("Herrings from Banff"), W. F. Yeames ("The Dawn of the Reformation"), J. Pettie ("Treasure"), Calderon ("Home after Victory"), M. Stone ("Nell Gwynne"), Mrs. Ward ("Joan of Arc"), V. Prinsep ("A Venetian Gaming-house, sixteenth century"), Thorburn ("The Marys at the Sepulchre"), G. D. Leslie ("Willow, Willow"), Holman Hunt ("Il dolce far niente"), and others. Amongst the artists showing most advance are two bearing architectural names, E. J. Poynter ("Israel in Egypt," a remarkable work), and A. B. Donaldson ("The Garden of Faith").

Under the head of "Architecture" there are fifty-two works, twelve of which are sketches abroad. To the designs we shall return.

LINNEAN SOCIETY.—PRESIDENT'S SOIRÉE.

At the meeting held at Burlington House on the 1st instant, the so-called "mimicry in nature" received some remarkable illustrations. Mr. Wallace exhibited a case of large butterflies, the creatures in which when seen alive and flying, with the wings displayed, are very attractive objects, coloured with black and orange; when pursued by birds they suddenly, and by instinct, poise themselves upon a branch and display the under side of the closed wings, which so exactly represents a dead leaf as to

defy detection. One corner of the wing is elongated to form a leaf-stalk, from which springs the mid-rib of the leaf; from this mid-rib spring various lesser ribs, in colour and in every other respect so exactly resembling a leaf as to become perfectly marvellous. Closely adjoining were displayed certain bold and rapacious birds side by side with other species belonging to distinct families, exactly mimicking each other in form and colour; but in nature, whilst the first are bold and given to plunder, the latter are in the same degree timid and inoffensive;—the mimicry is evidently a means of evading attack from creatures of superior power. Mr. Rogers exhibited some excellent wood-carvings, and showed a specimen of insect mischief in the lime-wood carvings of Grinling Gibbons, in which the whole interior of the work was eaten away, leaving a mere shell, which was perforated by the insects in every direction. Mr. Hardwicke sent two very large sheets of coloured drawings of mushrooms and toadstools he is about to publish, being the first attempt to thoroughly popularise the subject of "fungophagy" in this country. No little attention was given to a drawing (to a sixteenth scale) of the Piccadilly elevation of the new works proposed at Burlington House, exhibited by Messrs. Banks & Barry.

LIVERPOOL ARCHITECTURAL SOCIETY.

On the 1st inst., the concluding meeting of the season was held, when Mr. J. A. Kilpin, the retiring president, was re-elected for the ensuing year; and Messrs. Horner and May were elected vice-presidents. Messrs. W. H. Picton, Grayson, Ridsdale, C. Hermann, and Vane were elected as the council; and Mr. D. Black was re-appointed librarian, Mr. Bradley treasurer, and Mr. Statham secretary for the next twelve months.

The president then delivered an address, the interest of which is chiefly local. At the close he said,—"The adage that 'a prophet has no honour in his own country,' is not in all cases of universal application, as our society numbers amongst its members our popular friend, Lewis Hornblower, to whom the town council, acting under the advice of the best judges, with the universal approbation of the public, have awarded the first premium for the designs for Sefton Park. This award has excited as little envy and as sincere congratulation as human nature—I mean professional human nature—is perhaps capable of. It is not to be regretted, I think, that he has availed himself of the services, as his coadjutor, of M. André, the French landscape gardener, who has greatly distinguished himself in that capacity in Paris. The plans are so laid out as to promote largely the advantage, health, and pleasure of the public, and ultimately, from the sale of the lots appropriated for building, to prove a source of profit to the corporation. Permit me to close by repeating a wish that these may be—

"Soon adorned with villas, in infinite variety, And all designed by members of the Architectural Society."

PROPOSED WORKHOUSE FOR ST. MARTIN'S-IN-THE-FIELDS.

The Committee appointed to consider the requirements for the new workhouse to be erected at Wimbledon, after inspecting the workhouse recently erected at Shoreditch, the site of which is a plot of ground measuring about 360 ft. by 150 ft., have arrived at the conclusion,—

"That usually in constructing workhouses, the mode pursued is defective in principle and wanting in convenient arrangement, inasmuch as the persons who, by infirmity, muscular assistance, medical aid, and so forth, are located at the summit or highest part of the building, which is frequently difficult of access, and inconvenient from that point of view of the establishment from whence every requisite can be obtained."

The committee say that they have had submitted to them a rough sketch of a building, in which the requirements are provided for, upon a scheme not previously designed for the consideration of any Board, and which to the committee appears desirable; and, that the plan may be fully discussed, they have directed a sketch to be prepared to scale, which will, it is expected, be ready by the next meeting of the Board, when the committee advise the consideration of the mode of proceeding with reference to the appointment of architect.

COMPETITIONS.

Albert Institute, Windsor.—The designs for the proposed Albert Institute at Windsor, sent in by the competing architects, have been on view in the Council-chamber at the Town-hall. Eight architects were invited to compete, and five submitted designs, which were placed on view. The building sub-committee, by a majority of five to four, decided to recommend the design of Messrs. Bacon & Bell for adoption. A general meeting of the committee will consider the subject, and the question of final adoption will in all probability be submitted to a meeting of the members of the Literary and Scientific Institute, an institution which will be merged in the Albert Institute. The committee estimate that they will have about 3,000*l.* at their disposal, and out of this sum they propose to erect in Sheet-street an ornamental building which will afford accommodation to the members of the institution and be available for lectures, concerts, and other public purposes. The five competitors are Messrs. Bacon & Bell, of London; Mr. W. Sim, of London and Windsor; Mr. Alfred Bedborough, of Southampton; Messrs. Robinson & Bradbury, of Westminster; and "X. X. X.," the signature to a plan contributed by Mr. Underhay, jun., of Windsor. The plans are not all drawn to the same scale. The selected design is Greek in style, with a seated statue of the Prince in a niche over the entrance.

THE PRESIDENCY OF THE INSTITUTE OF ARCHITECTS.

At the annual general meeting on Monday last, Mr. W. Tite, M.P., was elected by acclamation President for the ensuing year, and, on taking the chair, addressed the meeting, and expressed his determination at all times to support the dignity of the profession and further the interests of its professors. Mr. Tite spoke forcibly and feelingly.

Mr. Beresford Hope, M.P., the retiring President, to whom a hearty vote of thanks was accorded for his services during the past two years, also made an interesting address, in the course of which he alluded to the extent to which he was influenced in his pursuits by desire to carry on the architectural traditions of his family.

THE ASHTON AND DUKINFIELD CEMETERIES.

THESE conjoined cemeteries contain nearly 40 acres within the boundaries purchased by the Ashton-under-Lyne Corporation and the Dukinfield Board of Health for the purpose. To the eye, the whole appears as one cemetery; and so far as the buildings are concerned there is no division, each structure serving jointly for both. Each cemetery is subdivided into three parts, respectively appropriated to the Church of England, to Nonconformists, and to Roman Catholics, in the proportion of three-eighths to each of the first two sections, and two-eighths to the last named. No manifest demarcation appears between the allotments of the Nonconformists and the Roman Catholics—a pathway only intervening; and metre stones at certain corners mark the pathway dividing the consecrated ground from the remainder. At present a considerable portion of the Ashton land is to be inappropriate for interments; the proportion of the several sections meanwhile remaining as before stated. Each section has its own chapel, and each chapel stands upon the ground it represents, but the buildings are common to both cemeteries. Those of the Church of England and Nonconformists are united in one block of building, though under separate roofs. The shape of the plan is like the letter T; the stem representing the Church of England Chapel (which lies east and west), and the Nonconformists' standing at right angles with it. In the angle of junction next the carriage road is a tower, 16 ft. square, 55 ft. high to the cornice, terminating in an octagonal lantern, 20 ft. high, and a spire 50 ft., additional, to the top of the vane, total height 125 ft. This feature, standing on the brow of a slope, 130 ft. above the river Tame, is a prominent landmark for many miles around. The two chapels are each 54 ft. long, 22 ft. wide, and 36 ft. high, to the ridge, but the internal arrangements differ. Seated accommo-

dation is provided for 180 adults in each chapel. Adjoining each, but separated from it by an arcade filled in with plate-glass, is a mortuary chamber, intended for the reception of corpses during the time of service. For the Roman Catholics a detached chapel has been erected, cruciform in arrangement, and without a mortuary chamber. This building has two porches immediately opposite each other, and a straight path to each porch extends a long distance on each side. Over the porch facing the carriage road is a sculptured figure of our Lord, "Salvator Mundi." All three chapels have vestries and other conveniences, and Haden's heating apparatus is fitted up in a cellar under each building. The style chosen by the architects is the Geometric. The heads of the windows are filled with stone tracery, in varied patterns, and glazed with coloured glass. All the seating is of red deal, resembling pitch pine, and stained and varnished.

Externally, a contrast between the body of the wall facings and the stone dressings has been obtained by the use of wall stones from a neighbouring stone quarry, of a warm reddish grey colour. Sufficient of this material could not be secured in time for the domestic buildings, and these are consequently faced with stone from Dunford Bridge. Adjoining the western entrance-gates is a house for the registrar and offices for business; surmounted by a clock tower, 65 ft. high. The clock is illuminated, and has been supplied by Dent, of London. Opposite the registrar's house is a lodge and a waiting-shed in connexion with it, having retiring-rooms and all conveniences. At the eastern entrance-gates another lodge is erected. These buildings will be occupied by the chief sexton and gardeners. The carriage-road has been planned in curvilinear form, with a gradual rise from Hall Green to the combined chapels. The grounds have an open palisading in the boundaries, instead of a close wall. The design of the ironwork is in keeping with the buildings, and is arranged in lengths with stone piers between to suit the inclination of the surface. At present no planting has been done. Indeed, the earthworks are not yet complete. All the works have been executed from the designs, and under the superintendence of the architects, Messrs. Paul & Ayliffe, of Manchester; but this firm having been dissolved under the care of Mr. Paull, alone. The clerk of the works is Mr. Gregory Gill. The contractor for the masons' work is Mr. O. Horsman, of Wolverhampton; and all the other works, to the buildings, have been contracted for by Mr. Barton, of Ashton. Messrs. Grierson, of Ashton, have supplied the palisading; and Mr. Dovey, of Manchester, has executed the wrought-iron entrance-gates. The carving is by Mr. Earp, of London.

PATENTS CONNECTED WITH BUILDING.

APPARATUS FOR HEATING PIPES BY HOT WATER.—*G. W. Canning & J. K. Edmonds.* Dated February 10, 1866.—This invention relates to improvements in the construction of boilers for heating pipes by hot water, applicable to hot-houses, buildings, and other purposes where water is circulated through such boilers by means of a system of tubes or pipes. The patentees construct a boiler of the shape known as the saddle-boiler, by preference; but they also propose to use a common boiler, or any hot-water boiler suitable in shape and capable of adaptation for a flow or circulation of hot water. Such boiler or boilers is or are to be inclosed or surrounded by a series of water tubes or pipes of a circular, elliptical, or any other shape, such pipes or tubes being connected with the boiler in order that the water may circulate through them. Pipes are also brought into connexion with the series of tubes and boiler for the purpose of conveying the flow and return of hot water, and of transmitting such hot water to the rooms of buildings or other places. The fire and heated products from the furnace pass around the boiler and tubes and rapidly heat them. Over the boiler and tubes a horizontal smoke flue is formed in the masonry, and communicates with the furnace by means of three or more vertical flues, so that the heat may be drawn to all parts of the tubes and boiler. Below the fire-bars chambers are formed for the entrance of cold air to the ash-pit, and thence between the bars.

OPENING, CLOSING, AND SECURING WINDOWS, DOORS, AND SHUTTERS.—*J. Carter.* Dated June 14,

1866.—This invention consists in the following arrangements:—A screw or screws is or are arranged on either side of the sash, shutter, or door, as the case may be, and the shaft or shafts of the screw or screws is or are provided at one end with a bevel pinion gearing into corresponding wheels or pinions upon a horizontal shaft. Nuts are secured to the side or sides of the window, door, or shutter, into or through which the screws pass. When it is desired to lift or close the sash, door, or shutter, an attendant imparts motion to the horizontal shaft by means of a cranked handle or otherwise; or, in the case of very large windows, shutters, or doors, motive power may be employed for effecting the lifting or lowering. If desired, the window, shutter, or door may be so arranged that one of the nuts should be made capable of being detached from the side, so that the window, shutter, or door, can be turned round on the opposite screw as a hinge or centre. By means of this invention the part to which it is applied can be rendered fixed and permanent in a position so that the necessity for any kind of lock, as now employed, is avoided.

FROM SCOTLAND.

Edinburgh.—Mr. Ross, of Rockville, has given 2,000*l.* towards the erection of a fountain in East Princes-street Gardens. The town council have granted the site, and have agreed to supply the fountain with water. The fountain, which will be chiefly constructed of bronzed cast-iron, will stand on the upper terrace of the garden, midway between the Scott monument and the Wilson statue, and will be a conspicuous object. The design is that of M. Durane, of Paris, and was shown during the Exhibition of 1862. The diameter of the great basin is 60 ft., and the height to the head of the highest figure is about the same. The entire cost is calculated to be not less than 3,500*l.*, of which sum 1,500*l.* must be raised by public subscription. Several donations have already been received, and subscription-papers are to be sent out shortly. We should be better pleased to have this money spent in the production of a fine fountain by English artists.

St. Andrew's.—The chief stone of a new College-hall has been laid with masonic honours, by the Grand Master Mason of Scotland, Mr. John Whyte Melville.

Perth.—Part of a train on the Scottish Central section of the Caledonian railway has fallen over a bridge 60 ft. high over the Carron stream, at Larbert junction. The train was loaded fortunately with cattle only, many of which were killed. Strange to say, the guard, conductor, and a shepherd, who were thrown over, escaped with but slight injuries.

PRIVATE AND PUBLIC BUILDINGS OF CONSTANTINOPLE.

SIR,—Such of your readers as have not made a tour through Turkey can have little idea of the remarkable buildings in that country.

The city of the Grand Seigneur, on the western shore of the Bosphorus, is remarkable for its beauty. A declivity promontory, secured by narrow seas at the east of Europe, stretches out to meet the continent of Asia, and the strait is so narrow that in a quarter of an hour a boat can row from one side to the other. This channel is the Bosphorus, and runs about twenty miles from the Black Sea, and, before the river is lost in the Sea of Marmora, it makes a deep elbow to the right, flowing between the triangle of Constantinople and the suburbs of Galata and Pera, forming the port called the Golden Horn.

Stamboul is built on seven hills, which appear to rise above one another. The ridge of the first is occupied by the seraglio; behind which, a little on the reverse of the hill, the dome of Santa Sophia can be seen. The second is crowned by the mosque of Osmanieh, the dome of which is strikingly bold and lofty. The third has the Grand Mosque of Soliman; whilst an ancient aqueduct unites the summits of the third and fourth hills. All these are intermingled with houses painted of different colours: the gilded domes and the slender minarets crowned by the Conishing crescent, show the magnificence of Constantinople. The minarets form one of the most pleasing and striking features in the architecture of Constantinople, and nothing can surpass the effect produced on the nights of illumination,

when long strings of lamps are hung in festoons from one to the other of these slender lofty towers. Its situation upon these hills is not only the cause of its beauty, but of its salubrity, as it catches the breezes from the Bosphorus and the plains of Thrace. It occupies the whole of a triangle, outlined by old walls flanked by towers. The interior of the city, however, but ill corresponds with the beautiful *coup d'œil* which it presents at a distance. It consists of an assemblage of dark and narrow streets without names, badly paved, and choked up with dust or mud. Galata lies on the west side, and resembles the worst part of Wapping. The streets are very steep, dirty, and unpaved. This is the chief business quarter for European merchants. Pera is situated immediately above Galata, and stretches more than two miles along the summit of a lofty hill. It has long been the residence of the Corps Diplomatiques from the different nations of Europe, and each has a palace here, but not much has been done to render it a habitable place. On one of the seven hills stands the palace and gardens of the Seraglio. The palace is enclosed with lofty walls, the whole space of which is covered with suites of apartments, mosques, baths, gardens, &c. So many glittering domes produce at a distance a very beautiful effect, which, upon a closer inspection, is entirely lost, for they are huddled together without symmetry or order. The principal entrance is on the west, through the Babahoumjan Porte, which is built of marble, and has a very heavy appearance. Within is the first court, containing the Mint and the Vizier's divan: opposite is the Baba Salem, or Gate of Health, leading to the second court, where the audience chamber is, containing the throne, which resembles a large four-post bed. The gate terminating the second court is called Baba-Saadi, or Gate of Happiness, through which no stranger is allowed to pass. The walls of the palace are wainscoted with jasper, veneered ivory, and mother of pearl.

In Constantinople there are fourteen imperial mosques, sixty ordinary mosques, varying in size and beauty, and over two hundred inferior mosques and mesgids: the latter are distinguished as places of worship by having little minarets contiguous to them. The Mosque of Santa Sophia, situated near the principal gate of the Seraglio, is the first both for its architectural magnificence: it was built by Constantine. Among the numerous pillars which adorn this mosque are six of green jasper, which once supported the roof of the Temple of Diana at Ephesus, and eight of porphyry, that had been placed by Aurelian in the Temple of the Sun at Rome, and were removed thither by Constantine. The immense size of the building, the stupendous concave of the dome, the magnificence of the columns, and varieties of marbles; the singular manner in which it is illuminated with globes of crystal, and lamps of coloured glass, and ornamented with ostrich eggs, &c., produces a striking effect. The most handsome mosques after Santa Sophia are that of Mahomet II., which crowns one of the seven hills, and stands upon the site of the celebrated Church of the Apostles; that of Achmet I., constructed 610, at an enormous expense, and which has six minarets of great height and beauty; that of Bajazet, in which are twenty columns of remarkable size and value, viz., ten of verd-antique, four of jasper, and six, ten of Egyptian granite; that of Solymen II., which is esteemed of superior symmetry and elegance. The Mosque of Laleli, or the Tulip, is small, but elegant, and was built by Sultan Mahmud in 1753. It is wainscoted with veneered marble, and has two large embroidered tablets, on which are represented the cities of Mecca and Medina. Every mosque has in general a large area in front, surrounded by a lofty colonnade of marble, with gates of wrought brass, and in the centre a fountain of polished marble. Adjoining to each is the sepulchral chapel of its founder, where its remains are deposited. Some of these tombs are exceedingly pretty, and in looking through the grated windows of these, the coffins, mounted by shawls and turbans, and slightly veiled from the floor, with little lamps constantly burning, and immense wax torches lighted on particular occasions, strike the eye with peculiar effect. The tomb of Sultan Mahmud is a beautiful building, entirely composed of white marble, and only recently erected. It is the most handsome tomb in Stamboul. After the mosques, the public fountains are among the chief ornaments of this remarkable city. Some of these, with their marble fronts, elaborate arabesque ornaments, and Chinese-like

roofs, are most beautiful objects, and their number is extraordinary; they meet you which ever way you direct your walk; they stand by every mosque—for before a Turk prostrates himself in prayer he must perform his ablutions. The quantity of water required to supply these fountains is immense, and is brought from artificial lakes near the forest of Belgrade, about twelve miles from the city. It is conveyed by means of subterranean aqueducts and souterazi, or hydraulic pyramids, which latter are placed at regular distances, and ingeniously contrived to overcome the inequalities of surface presented by the country. The bazars are very peculiar and are very extensive, and essentially Oriental in appearance. They consist of lofty cloisters, or corridors, built of stone, and lighted by domes, which are admirably adapted for the climate. Every trade has its particular quarter. In one street nothing is seen but arms of different kinds: another is filled with jewels, &c.; and so on through all the streets of the city. There is a peculiar square called a Han, or Khan, surrounded by buildings, with galleries all round, a tree or two, and a fountain or coffee-house in the middle; and there are nearly two hundred of these places for the accommodation of merchants.

W. G. P.

RAILWAY MATTERS.

The Metropolitan Underground Railway.—The increase of traffic on this line is exhibited in a return of passengers conveyed on Easter Monday during the past three years, viz., 1865, 66,232; 1866, 87,692; 1867, 101,493: number of trains (exclusive of goods, coal trains, and engines) running over the line on Easter Monday, 1867, 462; and during one hour, from 8 a.m. to 9 a.m., on the same day, thirty-five trains passed between the King's-cross and Farringdon-street Stations, or one train every second minute. The system of signalling by telegraph, and constant supervision, seconded by the co-operation of the company to convey this enormous number of passengers in one day without the slightest confusion or mishap of any kind.

Traffic Receipts.—The traffic receipts of the United Kingdom amounted, for the week ending April 20th, on 12,776 miles, to 713,110L, and for the corresponding week of last year, on 12,516 miles, to 695,525L, showing an increase of 260 miles, and of 17,585L.

Progress of Mont Cenis Tunnel.—This tunnel continues to progress much more rapidly now that the quartz rock has been passed through and a softer material encountered. The whole distance as yet penetrated is, on the south, 4,119 metres, and on the north, 2,528 metres; total, 6,647 metres; which, as the entire length is 12,220 metres, leaves yet to be executed 5,673 metres.

THE LATE SIR ROBERT SMIRKE.

SIR,—I have read with much interest the sketch of my late brother, Sir Robert's, life in your number of the 27th ult., and for the favourable tone of his remarks I cannot but feel grateful to the writer; but the sketch, though brief, is not without various errors, which will be very apparent to those who knew the subject of the sketch. The only error, however, that I think it necessary specially to note, is the statement that he ever had "a longing to be an actor." That he had a great personal regard and esteem for John Kemble (a feeling which I have reason to know was mutual) is perfectly true; but that he ever entertained the slightest idea of the stage as a profession, or, indeed, of any other professional pursuit whatever, except that to which from his earliest years he was ardently attached, is wholly without any shadow of foundation.

SIDNEY SMIRKE.

WINCHESTER SEWAGE COMPETITION.

SIR,—I read with much pleasure the indignant letter on this subject in your last journal from "One of the Rejected." Nothing could be more irregular or improper than the course which the Local Board have adopted. So strongly did I feel this to be the case that I wrote to the town clerk a letter, which I enclose. The courtesy of an acknowledgment or reply has not been accorded me; but a few days afterwards my designs were returned, with a circular-note in the same form as that addressed to your correspondent. Like him, I have had experience in town drainage, having been engineer for about a dozen provincial works; and I feel not a little vexed that the time

and money I had bestowed upon these plans should have been ignored, simply because, in common with two-thirds of my brother engineers, I selected the nearest available lands upon which to distribute the sewage, in ignorance of the preconceived and predetermined views of the Board. It is the first time that I have competed for drainage works, seven rejected ones ought not to be more than a slight mortification to me. The injustice done to us is so gross and so palpable that I think we should even yet endeavour to obtain for our designs the consideration which has hitherto been denied them; and I therefore invite the six gentlemen who, together with myself, have been dismissed from the competition, to communicate with me, in order that we may take counsel on the subject.

Park-street, Westminster.

G. W. STEVENSON.

CHARCOAL FILTERS.

SIR,—Last July I procured about seven pounds of animal charcoal, and made myself a filter on the same principle, which yields about 1½ gallon per minute. This has apparently acted very well until about two months ago, since which time, if no water is drawn for a few hours, the first gallon or so emits a slightly offensive odour. Can any of your correspondents oblige me by stating if the animal charcoal loses its good effects so soon, or should some other filtering material be inserted for the water to pass through after it has been acted upon by the animal charcoal? The water filtered is that supplied by the Southwark and Vauxhall Company, which appears so clear as scarcely to require filtration. The cistern it flows into is also kept thoroughly clean. The hot weather is approaching I think this is likely to be a matter of some interest to many of your readers, who, like myself, can manufacture an article of the kind for their own use, and to whom the price asked by the professional filter-makers is an object.

E. J.

THE WIDENING OF PARK LANE.

AFTER the demonstration last summer in which the railings separating Park-lane from Hyde Park were levelled, the vestry of St. George's, Hanover-square, passed a resolution apprising the Government that a great boon would be conferred upon the public if a portion of the Park running parallel with Park-lane were given up for the purpose of being converted into a roadway, in order to add to the width of the present thoroughfare. On Thursday last, a letter was read at the vestry from the First Commissioner of Works, stating—"That upon the representation to her Majesty that the width of that portion of Park-lane within the parish of St. George, Hanover-square, is not sufficient to provide for the safe widening of the increasing traffic through it, and that the passage of so much thereof as abuts upon the Royal demesne of Hyde Park would be a great public improvement, her Majesty has been graciously pleased, in order to facilitate this improvement, to authorize the setting back of the public boundary fence." The permission is accompanied with the proviso that "it shall not operate to divest or prejudice the Crown's right of soil in or over the portion of Hyde Park which may be appropriated for the purpose of the improvement." The cost of paving the portion of the park thus given up will amount to about 2,000L. After a discussion at the vestry, in which great pleasure was expressed at the prospect of the speedy widening of a portion at least of Park-lane, by the offer of the Crown, it was agreed that negotiations be carried on with the First Commissioner relative to the drawing up of the necessary plans, &c., showing how it was intended to carry out the proposed improvement.

KINGSHOLM ST. CATHERINE, GLOUCESTER.

THE drainage of this district has just been completed by the Local Government Board, and the whole of the sewage is now diverted from the Twiver. The works comprise a new main outfall sewer and sewage-depositing tank, with overflow for storm waters into the Severn, brick and pipe branch sewers in all the streets, with appliances for flushing and ventilation. The works have been carried out by Messrs. King & Godwin, of Gloucester, under Messrs. Gotto & Beesley, Engineers, of London.

CHURCH-BUILDING NEWS.

Fulham.—A private chapel has been erected for the Bishop of London at Fulham Palace. Mr. Butterfield was the architect. An organ has been specially constructed for it by Mr. J. Robson, of St. Martin's-lane, under the supervision of the Rev. Mr. Stittwell, of Stepney, assistant-chaplain to the bishop.

Chetwynd (near Newport, Shropshire).—The new church here (of which a short account, as proposed to be built, was given in the *Builder* of October 21st, 1865) was consecrated on the 25th of April by the Bishop of Lichfield. In addition to the particulars therein mentioned it may be stated that the spire is about 120 ft. high. The nave is separated from the south aisle by an arcade of four arches. The columns are of polished Devonshire marble, and the

capitals are of stone, carved. Over the arches on the nave side are illuminated texts by Mr. Charles Hudson, of London. The chancel arch is supported by marble shafts on corbels, and similarly enriched by an illuminated text. There is a lych-gate at the entrance to the churchyard on the north side, of framed timber work, covered with oak shingles. The total cost has been about 3,000*l.*, the expense of which has been defrayed by Mr. J. C. Burton Borough, of Chetwynd Park, and friends. The architect was Mr. Ferrey, and the contractor Mr. Richard Yates, of Shiffnal.

Buxton.—St. John's Church has been re-opened for public worship, after having been reseated and decorated. The alterations were carried out by Mr. Hall, of Nottingham, builder.

Callow.—A church, dedicated to St. Peter, has been consecrated at Callow by the Bishop of Lichfield. The style of architecture is Early English. The architect was Mr. S. Rollinson, jun., and the builder, Mr. Wright, of Chesterfield. A want of funds prevents the erection of a spire at present.

Maidstone.—St. Philip's Church is to be enlarged by 200 additional free seats, and other alterations and improvements carried out, comprising north and south transepts, with a tower and spire facing the town. Mr. E. W. Stephens, architect, Maidstone, has prepared plans. It is estimated that the total cost will be about 2,000*l.*, of which the sum of 1,127*l.* is either promised or paid.

Worpleston.—The church here has been restored, under Mr. Woodyer, architect, by Messrs. J. Goddard & Son, of Farnham, builders. The contract price was 1,800*l.*, and the probable cost, including extras, 2,200*l.*

Bolton.—The chief stone of a new church has been laid here, by Mr. Peter Ormrod, who is to defray the cost, which, it is said, will be not less than 30,000*l.* The architect is Mr. E. G. Paley, of Lancaster; and the contractors are Messrs. Cooper & Tullis, of Preston. The style will be Decorated Gothic.

Binfield (Oxon).—St. Mark's Church has been consecrated. The style is Early English, and the material brick. Mr. A. W. Blomfield, of London, was the architect; and Mr. Joseph Lawrence, of Binfield, the builder. The plan is cruciform, and the entire cost was 1,650*l.*

Brookdish.—The parish church here has been restored, under Mr. Marrable, of London, architect, by Messrs. Wells & Son, of Dickleburgh, and George Kemp, of Brookdish. The carving was executed by Mr. B. Barrett, of Norwich.

Upper Heyford.—The parish church has been rebuilt and opened for divine service, Mr. Talbot Bury, of London, was the architect; and Mr. Cowley, of Oxford, the builder. The style is Perpendicular, and there is a tower, with belfry.

Allstree (Derbyshire).—The church here has been restored, at a cost of upwards of 4,000*l.*, and reopened. The general architectural character of the church is of the fourteenth century. The building works have been done by Mr. Joseph Thompson, of Derby. Mr. James O'Shea, of Derby, has executed the stone and wood carvings. The heating apparatus has been carried out under the immediate direction of Mr. Holmes, of Makeney, by Mr. Crump, of Derby, who have also fitted up the church with gas cornices, suspended from the roof. Mr. Haslam, of Derby, took the ironwork in hand. The architect's clerk of the works was Mr. George Moat, jun., of Sandwich. The restoration was carried out under Messrs. Stevens & Robinson, of Derby and London, architects.

Faversham.—The new tower of Ospringe church is approaching completion. Flint, faced with Caen stone, has been employed, and the entire expense borne by Major Hall, of Syndale House. Mr. Whiting, of Ospringe, is the builder.

—Preston church has been reopened. A north aisle has been added; the south porch rebuilt on the old foundations; and the tower has been raised about 12 ft., and a spire of about 30 ft. added. The total cost of the restoration is about 2,000*l.* The architect was Mr. Joseph Clarke; and the builders, Mr. Lewis Shrubsole, for the flint and wood work, and Mr. Henry Kirby for the stone work. Mr. Nott acted as clerk of the works.

Stapleton.—The church of St. John the Baptist, Stapleton, has been restored and reopened. The north wall being, in its centre, 7 in. out of the perpendicular, has been strengthened by a flying buttress; and the east wall having been found crooked from the top to the bottom, has been moved 7 ft. eastward, and rebuilt with the old stones. The old internal

quoins in the south wall are left *in situ*, to mark the original wall line. The church has been restored under the direction of Messrs. W. Slater & R. Herbert Carpenter, of London. The works have been carried out by Mr. W. Jones, of Stapleton; and the chancel seats and eagle are by Mr. Pepper, of Brighton; the ironwork and brasswork by Mr. T. Potter, of London; and the warming apparatus by Mr. Rimmington.

DISSENTING CHURCH-BUILDING NEWS.

Wedgebury.—The memorial stones of the new Wesleyan Chapel, now in course of erection at Spring Head, Wednesbury, have been laid. The architects are Messrs. Loxley, Brothers, Wednesbury, and the builders Messrs. Trow & Sons, Wednesbury. The estimated cost of the new building is 2,830*l.* The building will be Italian in style, brick being the principal material used, with stone dressings. Internally, it will be 84 ft. long by 56 ft. wide, and will be fitted with galleries and other conveniences. The timber work will all be stained and varnished.

Rotherham.—A new Congregational Church has been opened at Rotherham. The site is near the old windmill on the Doncaster-road. With the exception of a few minor details, and the erection of a proposed tower, the church is now completed. It is built of stone obtained from the Thrybergh quarry. Externally the style of architecture is Early Decorated, which has been so modified in the interior as to suit the requirements of the Congregational form of worship. The plan of the church is cruciform, having a nave 90 ft. by 38 ft. and a north and south transept, each 20 ft. by 18 ft. Abutting on the west end of the nave are the vestries, surmounted by a tower and spire rising to a height of 170 ft. At the opposite or east end of the nave, which abuts on the new road branching off at right angles to the Doncaster road, the gable rises to the height of 50 ft., and is surmounted by an iron cross. In the upper part of the gable is a trefoil light, beneath which is a large window with five lights, 20 ft. high. On either side the window are the two principal entrances of the church, consisting of deeply-recessed arches with columns, the doors being of oak, with foliated hinge irons. There is a large window at the end of each transept, and three smaller ones at each side of the nave. At the east end of the nave there is also a gallery, and it is proposed to erect one in each transept, when the church will afford accommodation for 1,000 persons: at present it will seat 900. The pews are of stained wood, as is also the ceiling, which is arched and is constructed with the object of rendering the building as perfect as possible in an acoustical point of view. The pulpit is in a prominent position, standing immediately in front of the organ-loft and singing-gallery, which are over the vestries at the west end of the nave. It is anticipated that the total cost of the building will amount to 4,500*l.*, though the first proposed outlay was only 3,500*l.* Mr. Shaw, of Rotherham, is the architect.

Bacup.—The corner stone of a new Wesleyan Chapel, to be built at Heald, near Bacup, has been laid. The site of the building has been given to the trustees by Messrs. C. H. Sieber & Co., of Irwell Springs Mill. The chapel will be built from plans by Messrs. Russell & Whitaker, architects, Rochdale; is estimated to accommodate 500 persons; and the cost will be about 2,000*l.*

Edgworth.—A new Congregational Church has been opened at Edgworth. The site of the building is close to the proposed Bolton new waterworks. The edifice is in the Geometrical style, and will accommodate on the ground-floor 340 persons, and in a gallery at the west end, about 100. The cost has been 1,500*l.*, exclusive of land and fencing. The architect is Mr. J. Maxwell, of Bury.

Sheffield.—The chief stone of a Primitive Methodist Chapel has been laid between Sunderland-road and Harlestone-street. The architects are Messrs. C. J. Innocent & Brown, of Sheffield. The style is Italian Gothic, and the work has been contracted for at 3,157*l.*, including boundary walls.

Selsey.—The chief stone of a new chapel for Bible Christians has been laid at the entrance to the village. The architect is Mr. Smith, of Portsmouth; and the contractors are, for the masonry, Mr. Carpenter, and for the timber work, Mr. Harwood, of Chichester. The cost will be between 500*l.* and 600*l.*

Longsight (Manchester).—The chief stones of a new Wesleyan Chapel have been laid on the Stockport-road. Mr. G. Woodhouse, of Bolton, is the architect, and the style is Early Decorated. The cost will be between 5,000*l.* and 6,000*l.*

Christchurch.—On Good Friday a new Congregational Chapel was dedicated at Christchurch, Hants. It is built in the Italian style, freely treated. The walls are of white and yellow brick, with gauged arches to doors and windows, and relieved with Bath stone dressings. At the south-west angle are a tower and spire, 100 ft. high. The interior of the chapel is 75 ft. long by 40 ft. wide, and accommodates, with the galleries, 700 persons. The interior of the roof is open, of framed timber, ceiled at the collar-beam, subdivided into panels by moulded ribs, slightly stained and varnished, and the ceiling and walls being tinted. The panels are pierced for the purposes of ventilation. The building is heated by a hot-air apparatus, supplied by Mr. Haden, of Threabridge. The architect is Mr. W. J. Stent, of Warminster, Wilts; and the contractor, Mr. Walden, of Christchurch.

Books Received.

Extracts from Reports in favour of the Extension of Municipal Institutions to the Metropolis. Published by the Metropolitan Municipal Association, 1, Adam-street, Adelphi, 1866.

With the view of exciting the requisite attention, in order that reformation of the municipal institutions of the metropolis may be effected, the Metropolitan Municipal Association, of which Lord Ebury is president, and Mr. Beal, of Piccadilly, honorary secretary, have here published a thick pamphlet of 216 pages, containing various more or less lengthened extracts from the second report on municipal corporations (1837); from report of commissioners appointed to inquire into the existing state of the Corporation of the City of London (1854); and from reports on metropolis local taxation and government (1861, 1866) in favour of the extension of municipal institutions in the metropolis; including suggestions by the chairman (Mr. Ayrton) of the committee on metropolis local taxation not adopted by the committee, and various other evidence. A speech by Mr. Beal in explanation of the proposal to extend municipal institutions to the metropolis has also been separately printed.

Stannak's Tables for Engineers, Iron Manufacturers, Shipbuilders, &c. London: Virtue & Co., Ivy-lane. 1867.

The accuracy of these tables being taken for granted, they must be very useful to those for whose purposes they are intended. They give weights of angle and T iron in lbs. per lineal foot, in about 9,000 sections, ranging from $\frac{1}{4}$ to about $\frac{3}{4}$ of an inch thick inclusive, advancing every sixteenth of an inch; and are systematically arranged. The compiler states that they were prepared originally for his own use, and, as he felt that such tables were much wanted, he has published them, carefully recalculating and proving them again before sending them to press.

A Treatise on the Law of Window Lights. By FRANCIS LAW LATHAM, Barrister-at-Law. London: Butterworth, 7, Fleet-street. 1867.

The ancient-light question, owing to the demand for enlarged buildings within the area of our large towns, becomes more important every day, and Mr. Latham has done well in producing a new treatise on the subject, and setting forth some of the more recent decisions of the courts. The law cannot long remain as it is, but till it be changed, it is necessary we should know what it can and cannot do, with which end we refer our readers to Mr. Latham's book. It is well arranged and clearly written. The author has a chapter treating "of the evidence and measurement in cases of alleged injury to the right to window lights," but does not show acquaintance with the recent discussions on this part of the subject, and the means proposed for measuring the extent of deprivation. Mr. Bacon, by the way, made a happy quotation not long ago in a light and air case, when commenting on the evidence of a witness who had attempted to prove the exact number of degrees of light which would be obstructed. He compared him

to the philosopher mentioned in "Indibras," who, he said,—

"By means of geometric scale,
Could tell the size of quarts of ale."

Mr. Latham may attach no greater importance to the proposed system, but it should have been mentioned. We recommend the book nevertheless.

VARIORUM.

"Hardwicke's Science Gossip" goes on well, and will in hundreds of cases give to country life a fresh pleasure. The current number has an able illustrated paper by Dr. Tilbury Fox on the Chignon Fungus, which he has grown under various circumstances. As to its influence in the production of disease, Dr. Fox arrives at the conclusion that in England "the total danger on the whole is slight."—"Ellerslie House: a Book for Boys. By Emma Leslie. Partridge." The object illustrated in this tale is the necessity of a firm resistance to wrong-doing and adherence to principles, spite of laughter and abuse. It is calculated to interest boys, and to benefit them.—"What's What in Paris, 1867" (Baily & Co. Cornhill), is a rattling gossip about the French metropolis, its ways and weaknesses; and it contains many hints not to be found in Murray's or Galland's, to assist explorers in seeing something of Paris "life."—"The wood engravings which illustrate the second part of the Paris Universal Exhibition in the Art-journal (Virtue) are admirable specimens of the art, and thickly strewn every one of twenty-four pages devoted to the catalogue.

Miscellaneous.

THE PLATE-GLASS TRADE.—A deputation from English plate-glass manufacturers, including Mr. W. Swinburne (chairman of the British Plate-glass Manufacturers' Association), and Mr. G. Williams (secretary to the association), had an interview with the Duke of Richmond, the office of the Board of Trade, relative to the French duties on plate-glass.

LONDON BRIDGE.—With reference to a recent communication, Mr. O'Keeffe, C.E., reminds us that in the *Builder* for 1855, Feb. 3rd, he suggested the formation of a superway for foot-passengers across London Bridge, based on two rows of columns, 15 ft. high and 30 ft. apart, so distributed as to divide the slow from quick traffic below, while also supporting transverse and longitudinal girders, on which superway would be laid, and which would be ended by some thirty steps.

THE CANNING AND OTHER STATUES, PALACE.—In reply to questions put in the Commons, Lord John Manners said that, in consequence of the great increase of traffic in the neighbourhood, his predecessor in office had submitted a plan for giving increased facilities of approach to the House of Commons, which had been adopted by the House. It commanded an improved carriage way and an improved footway, and when the latter was complete the statue of Canning would stand at the end of it, and that of Sir R. Peel at the other. Lord Palmerston would also be placed in immediate neighbourhood.

WEEPER-BORING INSECT IN AUSTRALIA.—The insect referred to in the *Builder* of April 20, is, out doubt, the *Toxicus monographus*, so named in India for perforating the casks containing malt liquors, and quite new to Australia. It has been known for a very long time, and representations of its effects on the casks have been made to this country for the last few years or more, and committees have sent out to investigate the nature of these little creatures, and the cause of the attack. It is calculated that one cask alone was perforated in every direction in more than 130,000 places, causing fearful leakage and waste. At one time it was asserted that the insect was sent to this country, but happily at present we do not find the creature here: the statement must be without foundation. Sometimes they are sent in such uncommon, at other times they swarm in great numbers, and are plentiful now, causing enormous waste. At one time they were almost sent to Burmah, but now Secunderabad appears to be their head quarters. The best way to destroy them is to introduce boiling water to their notice.

AMERICAN STATUE OF SHAKESPEARE.—The United States sculptor, Dr. Ward, has received a commission for a statue of Shakespeare for the central park of New York.

STONE-CUTTING MACHINE AT SWANSEA.—The Local Board of Health has just erected a stone-cutting, or rather stone-crushing, machine, worked by hydraulic power, and capable of breaking 40 tons of stones per day. The cost of the stones to the Board is thus reduced from 1s. 3d. to about 3d. per ton.

THREATENED STRIKE ON METROPOLITAN OMNIBUSES.—A publication called the *Whip*, says,—"We have reason to believe that unless a petition, on the eve of presentation from the employés of the London General Omnibus Company, be complied with, a general strike among the conductors and drivers will take place before the end of the month."

NEW RESERVOIR OF HALIFAX WATERWORKS.—The first and of a large new reservoir in connexion with the Halifax Waterworks has been cut at Mixenden. The reservoir will hold about 100,000,000 gallons, and will be a supplementary and storage reservoir at Ogden. The cost of the new one will be about 20,000l. This is the last reservoir of the scheme which the corporation has Parliamentary power to make, and upon which the town has expended or will expend several hundred thousand pounds.

ELECTRO-MAGNETISM IN IRON SMELTING.—The use of an electro-magnetic current in the smelting of iron has been tried at one of the leading ironworks in Sheffield, it is said, with complete success. A fixed electro-magnet is placed opposite an opening in the side of the furnace: the magnet is excited by means of a Smee's battery, and the current of magnetism is directed into the molten metal. The effect is described as being surprising. The metal appears to bubble and boil; the metal is expedited, which economizes fuel; and the quality of the iron is so much improved that for toughness and hardness it can hardly be equalled.

NEW FIRE ESCAPE.—A public trial of Messrs. Jones & Hedge's patent portable fire-escape has taken place at Scotland-yard, Whitehall. It is small and portable, weighing but a few pounds. The most useful size contains 40 ft. of wire rope, and is 10 in. in diameter and 1½ in. thick; and its arrangements are such as to enable those going down by it to descend at whatever speed they please, or, if required, to stop at any window they may pass in descending, and take out any other person that may need rescue, and then reach the ground in safety. In descending, the apparatus is fastened to the body by a leather strap, and the wire made fast to something above. The apparatus can also be made fast above, and a basket or bag slung to the rope, so that when its load is safely landed, the person above can wind it up and let himself down. It can be fastened to any article of furniture, to the bars of a grate, or to a permanent crook or pin fixed in the wall or window-frame. In appearance the whole apparatus is little more than a flat wire rope, to which any sort of conveyance can be attached.

TWINING'S LECTURES TO THE WORKING CLASSES.—In a letter, Mr. Twining, of Twickenham, of whose valuable museum we have heretofore spoken, writes, of the course of lectures which he has prepared for reading by others to working class auditories,—

"I am happy to be able to say that, from the commencement of the course in Lambeth up to the present time, it has been almost constantly under delivery, weekly or fortnightly, and often at two places in the same week; and though audiences numerically equal to those at the Baths were not to be found elsewhere, yet everywhere the same order, earnest, and appreciative attention has prevailed. I use an illustration without inconvenience, I gladly take charge of everything, except placards and advertisements, only desiring the prospect of a working-class audience of not less than 300 persons, in a suitable meeting-place. I provide for distribution any required number of programmes, containing a full syllabus. The type is kept up by my Twickenham printer, who has merely to alter a little the title-page, and change the dates for those appointed for each successive place. Eight thousand have been printed up to the present time, and forwarded a few copies, by which you will see at once the educational character of these preparatory lectures, comprising, firstly, an introductory explanation of the scope and importance of domestic and sanitary economy, or the science of common life, and of the necessity for preparatory knowledge of the elementary sciences, on the application of which it is founded,—the most interesting and useful of the physical properties of bodies. Secondly, a continuation of the foregoing, including the mechanical forces in their application to daily life. Thirdly, practical notions of acoustics, hydrostatics, and acoustics. Fourthly, light and heat. Fifthly, elementary outlines of chemistry."

DRAINAGE OF BATTERSEA.—It is asserted that the main drainage works at Battersea are not equal to their purpose.

THE PUGIN STUDENTSHIP.—Mr. Henry Walker, of Leeds, has been elected Pugin Travelling Student for the year 1867.

SOCIETY OF ENGINEERS.—The president, vice-president, members of council, and other members of the Society of Engineers have made arrangements to proceed to Paris on the 1st of June, to visit the Exhibition. A meeting of the Society and a dinner will take place in Paris during the first week in June.

CARVED PICTURE-FRAMES.—We have before us photographs of a number of picture-frames prepared by Mr. C. Rowley, of Manchester, and sent by him to the Paris Exhibition, some of which are very superior in point of design to those generally used. Mr. Rowley called in to his assistance Mr. W. H. Rogers, Mr. J. Whitehead, and Mr. W. J. Muckley, the head-master of the Manchester school of art, who have supplied him with some elegant and appropriate designs.

VALUE OF LAND AT HAMPESTEAD.—The residence, known as Branch-hill Lodge, at Hampstead, Middlesex, and 13a. 3r. 37p. of pasture and garden ground adjoining, were sold at the Auction Mart, near the Bank of England, on Monday last, in one lot. After a spirited competition the lot was knocked down to a City wine-merchant, for his own occupation, at 20,050l. The late owner and occupier purchased the estate fifteen years ago for 10,000l.

PICTURE DEALING.—Particulars have been given in the newspapers of the prices realized at a sale last week of English pictures; the property, as asserted, of a well-known picture-dealer. The history of some of these sales would be curious, and not very satisfactory, we are disposed to think. It is asserted that pictures are sold backwards and forwards, and that all sorts of dodges are resorted to to get up or keep up the prices of particular artists' works. If all that is stated be true, there has been a complete conspiracy for some time past against the picture-buying part of the British public, and large fortunes have been made by some of the conspirators.

METROPOLITAN BOARD OF WORKS.—A return just made to Parliament shows that in the ten years 1856-65 precepts were issued for levying rates amounting to 1,080,572l. for the general expenditure of the Metropolitan Board of Works, and 2,182,650l. for the main drainage rate. The total expenditure on the main drainage works had, at the close of the year 1866, reached 3,798,208l., and a further outlay of 701,791l. was required to finish the works. The main drainage is now complete with the exception of the northern low-level sewer and works. The total amount received by the Board up to Lady-day, 1866, whether from rates or loans or otherwise, was 8,912,333l., and the total amount of debt then owing by the Board was 5,271,186l.

THE SANITARY ACT IN ST. GILES'S DISTRICT, HOLBORN.—The Board of Works for the St. Giles's District have been seeking, as bound, to carry out the regulations of the "Sanitary Act of 1866" as to houses let in lodgings. For a time these will be felt to be stringent, and will require to be put in force with discretion. We are not surprised therefore to hear that considerable opposition has been manifested in some quarters, and that the Board find it necessary to issue an explanatory statement. The regulations are of the utmost importance, and must not be disregarded, however cautiously it may be necessary to proceed in enforcing them at first. Very much depends on the persons who are charged with putting them into force.

ROYAL HORTICULTURAL SOCIETY.—On Tuesday last, the first May *fête* took place at the Horticultural Gardens, South Kensington. The day was fine, the gardens were charming: they seem to improve upon each fresh visit: the crowd was large and gay. Where, by the way, are the uniformed bands? Though that in attendance on Tuesday played well, we do not not prefer Mufti on the occasion of these enjoyable promenades. We hear that the gardens are to be made use of on the 20th of this month, when the Queen will lay the first stone of the central Hall of Arts and Sciences. It is hoped that her Majesty will walk round the gardens amongst her people, that they may again see her taking an active part in the work her lamented consort loved so well.

VIRGINIA WATER.—The well-known Chinese fishing temple at Virginia Water having become decayed, it will be replaced by another building, designed like a Swiss chalet, which will give increased accommodation when required by the Royal Family. It is to be completed by the autumn.

FALL OF A CHAPEL CEILING AT BARNSELY.—A large portion of the ceiling of the Primitive Methodist Chapel, in Westgate, Barnsley, recently fell, completely covering the pews in the gallery, and scattering lime and wood over the entire interior of the building. The estimated damage is about 100l.

THE FINE ARTS IN BIRMINGHAM.—The Birmingham Society of Arts has, during the past month, for the second time, opened a spring exhibition, and again with complete success. It contains nearly 600 examples of water-colour drawings displayed on the walls of the Society's gallery in New-street. Among the number of works exhibited, are a few oil-colour sketches and pencil drawings. Of the entire collection, many are by well-known artists.

PUBLIC BUILDINGS.—The annual charges for the maintenance and repair of public buildings and expenses connected therewith, as the supply of water and rents of houses required for temporary accommodation of public departments, amount to 128,905l. The chief items are 4,311l. for Chelsea Hospital, 5,434l. for the Royal Military Asylum at Chelsea, 3,187l. for the erection of a new Jewel-house in the Tower of London, and 2,868l. for supplying the palaces, Houses of Parliament, and public offices with water. A large proportion of the total estimate is required for rents of houses occupied by various departments, 1,284l. being paid for the offices of the Registry of Seamen and Shipping at Adelaide-place, London Bridge; 1,805l. for the National Debt Office, in Jewry-street; 1,960l. for houses occupied by the War-Office in Pall-mall; and 1,450l. for the temporary Foreign-Office in Whitehall Gardens. This vote also includes a sum of 2,053l. for maintaining, watering, and lighting Westminster Bridge, this item having hitherto formed a separate estimate.

A "PACIFICATOR."—M. Gustave Struve raises a corner of the veil which covers the new engine of war called the "ball-pump." He has published in the *Beobachter* of Stuttgart a letter full of the most terrible promises of destruction. He says: "All that is seen is an iron plate, which receives the balls, and a tube which discharges them with the rapidity of lightning. The visible apparatus is a winch worked by hand or steam, according to the weight of the projectiles." M. Struve has seen it in operation in both manners; it fired balls of two, twelve, and eight pounds, not at fifty a minute, as had been said, but at three hundred. The stream of bullets can only be compared to the jet of water from a fire-engine. There is no recoil, no noise, no smoke. The barrel never heats, if even red-hot shot be fired. The machine never fouls, and it works for ever. The range depends upon the strength of the motive power. "I have seen it," says M. Struve, "throw balls across the Hudson where it was a mile wide, when eight men turned the handle. The inventor has assured me that it would carry two miles."

THE METROPOLITAN GAS BILL.—On the order for resuming the debate upon the second reading of this Bill, Sir S. Northcote said he had been induced to arrange with the companies so as not to interfere with the distribution of profits within the limits of the Act of 1860. He had also agreed to omit the purchasing clauses. The companies had agreed, on these conditions, not to oppose the second reading. He complained that he had received letters from clergymen and widows, and all sorts of people, telling him that he was going to ruin them; and that if members still obstructed the progress of the Bill, the Government would abandon it altogether. Their intention was to act as arbiters between the London gas companies and the London gas consumers. On the part of the gas consumers, Mr. Ayrton repudiated any acquiescence in the proposed arrangement. He objected to the abandonment of all the rights of the inhabitants, who would not be bound by any such arrangement. Various other members spoke on the subject, and the Bill was then read a second time, and it was passed *pro forma* through committee before being submitted to a select committee. The amendments were inserted, and the Bill ordered to be reprinted.

LYNN.—Mr. Scott has been consulted as to the restoration of St. Margaret's Church. He proposes alterations at a cost of 1,000l., besides re-arrangement of seats, &c., at about 1,500l. more. Less urgent restorations are also spoken of.

THE NEW BUILDING ACT.—At the meeting of the Metropolitan Board of Works, on Friday, the Building Act Committee submitted the Bill to amend the Building Act, and recommended that the solicitor of the Board be instructed to take the necessary steps to introduce the same into the House of Lords. Mr. Shaw (St. Marylebone) pointed out several defects in the Bill, and moved that it be referred back to the Committee for reconsideration, which was agreed to.

PROPOSED LAW COURTS.—In reply to a motion by Mr. Lanyon, in the Commons, Mr. W. Hunt said the Government had no desire but to obtain the best designs for the contemplated work. He should, however, remind the House that the selection of the judges had been made before the Government came into office, and the eminence of the judges had not been questioned. The Government had every reason to suppose that the selection which had been approved by the late Government, and which for many months had not been questioned, was acquiesced in. Some weeks since the competing architects requested that the two professional architects appointed to assist the judges should be added to the number of judges, and if the judges considered that they would be strengthened by such addition, and that the commissioners also acquiesced, her Majesty's Government had no objection whatever to that course being adopted. Mr. Cowper said that, as one of the committee of judges, he could not entertain any possible objection to the proposal made by his hon. friend.

RESTORATION OF ST. NICHOLAS' STEEPLE, NEWCASTLE-UPON-TYNE.—The contract with Mr. Walker Scott for the restoration of the tower and steeple has been signed by the Committee of Management on behalf of the subscribers to the fund for that purpose, a clause being inserted in the contract protecting them against any personal liability. The appointment, by Mr. Gilbert Scott, of Mr. Henry Fulman as clerk of the works, has also been confirmed. The contract is divided into three sections:—

First.—Comprising underpinning of the north-east and north-west pillars, the introduction of various ties and binding courses in the walls of the tower 21,811 11 9
Second.—Comprising the lantern, arched buttresses, and pinnacles, and new diagonal ties 1,833 15 0
Third.—Comprising the repair and restoration of the tower generally 2,533 13 7
Amounting altogether to 46,275 0 4

The carrying out of the second and third divisions will depend upon the amount of the subscriptions realised, those promised being barely sufficient to cover the cost of the first section. The work of restoration has already commenced. The committee received nine tenders in all, embracing builders from Bradford, Durham, and Alnwick. Mr. Walker Scott's tender for the first section was the lowest.

INFECTION AND CONTAGION.—We had occasion not long since to complain that even medical men did not always make a clear distinction between the words infection and contagion, some diseases which are infectious being occasionally called contagious, and contagious diseases being sometimes said to be infectious. This distinction is a very material one. This looseness of expression has induced Sir J. C. Jerrold, in the Commons, to move an address to her Majesty, to cause such inquiry to be instituted as may lead to the better distinction between contagious diseases and such as are termed infectious, so as to obviate as far as possible the loss, alarm, and injustice consequent on the theory of the infectious nature of certain diseases when unsupported by demonstration. The question, he remarked, affected persons in every position of life, both at home and in the colonies. He had recently come across an article on leprosy [a contagious disease] in one of the public papers, in which it was stated that the infectious nature of the disease was believed in in many parts of India, and that such precautions were taken as inflicted the greatest cruelties upon the sufferers. The object he had in view was further inquiry. Lord Montagu, in reply, expressed his confidence in the machinery which at present existed for ascertaining the character of disorders.

TENDERS

For alterations to 239, Upper-street, Islington, for Mr. Harris 236 0 0
Johnson (accepted) 236 0 0

For building a studio for Mr. W. Oliver. Mr. F. Potter, architect:—

	Design A.	Design B.
Tracey & Co.	2340 0 0	2250 0 0
Stephens & Watson	219 0 0	245 0 0
Aylett	125 0 0	125 0 0

For the erection of a house at Pinxter, near London, for Mr. R. Brown. Mr. Reichel, architect:—

Tul	22,987 0 0
Poxon & Smith	2,165 0 0
Kemp	2,192 0 0
Lambie	1,743 0 0

For the erection of a villa residence on the Riddlesdown Park Estate, Kenley, Surrey. Mr. Thos. Denny, architect. Quantities supplied by Mr. Shrubsole:—

	Residence, Conservatory.	Fences.
Harrison & Edwards	21,108 10 0	219 10 0
Perkins	1,093 8 0	84 0 0
Hazell	1,075 6 0	25 0 0
Jarrett	1,064 7 0	16 17
Gardud	1,050 75 0	22 0
Rowland & Aldridge	970 32 10	14 10
Wilcox	869 83 13	13 0
Poxon & Smith	859 85 0	11 0
Nightingale	842 65 0	25 0
Tims	805 61 0	35 0
	68 0 0	25 0

For the erection of a house at St. Alban's, for Mr. Ernest R. Zaitz. Messrs. Bacon & Bell, architects:—

Wilcox	41,280 0 0
Poxon & Smith	1,123 0 0
Warce	1,060 0 0
Webb	1,040 0 0

For the erection of a house at Watford, for Mr. Clement Heaton. Messrs. Bacon & Bell, architects:—

Wilcox	21,182 0 0
Webb	1,020 0 0
Tims	969 0 0
Poxon & Smith	875 0 0
Warne	875 0 0

For new hotel, for the Hanley Hotel Company, Limited. Messrs. R. Scrivenor & Son, architects. Quantities supplied by the architects:—

	Contract No. 1. Building.	Contract No. 2. Plumbing, Painting, &c.
Naden & Son	219,900 0 0	21,100 0 0
Hilton	8,890 0 0	1,420 0 0
Collis & Hudson	8,990 0 0	1,285 0 0
Steel	6,220 0 0	1,275 0 0
Mathews	8,848 0 0	1,153 0 0
Barlow	7,610 0 0	1,296 0 0
Scarratt		1,148 0 0
Bickley, Brothers		1,083 0 0
Mellard		1,050 10 8

For building the Holy Trinity schools and residence at Kilburn. Messrs. Francis, architects. Quantities

	Schools.	Residence.
Myers & Sons	22,120 0 0	2,829 0 0
King & Sons	2,068 0 0	432 0 0
Howard	2,067 0 0	432 0 0
Colls & Son	2,030 0 0	640 0 0
Hill & Sons	2,034 0 0	6 0 0
Dove	1,925 0 0	575 0 0

For the erection of quarters for five sergeants, and other works, at the Wiltshire County Militia Stores.

Devises. Mr. Weaver, architect:—

Long & Jones	21,018 0 0
Gane & Co.	947 0 0
Long	917 0 0
Mullings (accepted)	840 0 0

For building schools, cult, and fence-wall adjacent to the Presbyterian Church, Tottenham. Messrs. W. Habershon & Pite, architects:—

Stautes	2,575 0 0
Osburn	668 0 0
Wilcox	640 0 0
Jubson	325 0 0
Kemp	315 0 0
Poxon & Smith	455 0 0

For sundry alterations, additions, &c., to a house at Fortis Green, Finchley. Mr. Wimperis, architect:—

Carte & Sons	4,000 0 0
Carte & Sons	507 0 0
Southcott & Wigdery	452 0 0
Watson (accepted)	475 0 0

For sundry alterations, additions, &c., to Leo Ho Finchley, common. Mr. Wimperis, architect:—

Carte & Sons	4,714 0 0
Watson	880 0 0
Wheeler (accepted)	430 0 0

For new front enclosure-wall and rehauling old gate at Fortis Green, Finchley. Mr. Wimperis, architect:—

Carte & Sons	2,390 0 0
Watson	355 0 0

For additions and alterations to a house at Fortis Green, Finchley, for Mr. J. A. Noble. Mr. Wimperis, architect:—

Carte & Sons	21,750 0 0
Moultrie	1,720 0 0
Carte & Sons	1,870 0 0
Watson	1,576 0 0
Wheeler	1,322 0 0

For building small picture-gallery, sundry alterations, general repairs, &c., to No. 6, Glasshouse-street, London. Mr. Wimperis, architect:—

Kilby	2,398 0 0
Bywaters & Co.	867 0 0
Scrivenor & White	329 0 0

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The Builder.

VOL. XXVI.—No. 1267.

A Walk and a Talk about Silchester.

REALLY interesting to those who see with mind and heart is a visit to Silchester, with which buried city of the Romans few persons, comparatively, seem to be acquainted. A few gossiping notes addressed to those who do not know of it, and have thought but little if at all of Roman Britain, may have a use. Silchester is in North Hants, on the line of railway that connects Reading and Basingstoke. It is about seven miles from the first of these towns and six from the second. From Mardock Station, on the line in question, it may be reached by a walk of two miles, but there

excellent roads, upon which at certain distances were places for resting, called *mansiones*, and *mutationes* where relays of horses were kept. Besides the towns there were military walled stations. The towns included fine public buildings; statues decorated the highways, and close by were amphitheatres of large size for dramatic representations, capable in many instances of accommodating thousands of spectators. Add to these towns and stations the extensive villas, nobly adorned, which, as the spade has shown us, were scattered over the country far and wide, and some idea may be formed of the appearance of Roman Britain.

A British town, Caer Segont, is thought to have occupied the site of Silchester before the Romans came and built their city supposed to be the "Calleva" mentioned in the itineraries. Some, whose opinion is entitled to great consideration, deny that Silchester can be identified with either of the Callevas recorded: we are contented, however, after consideration, to go with those who do not see this difficulty. It is asserted that the usurper Constantine, at the beginning of the fifth century, was crowned here. In that same century descended upon it those Saxons who became kings of England. They took it, but if we may judge from the result of diggings up to this time, could scarcely have occupied it for any time. A tradition connects with it "the blameless King," and—

— "The Table Round
Which good King Arthur founded, years ago,
With signs and wonders, there
At Camelot, ere the coming of the Queen."
Tennyson.

But there is nothing to show in support of the story.

True or false the tales, absent or present the written account, there now lies the Roman city; and, though it lies, no man can question its truth. No fear of false scribes in the history told in brick and stone. A drain-tile, a moulding, the plan of an apartment marked by a few flints left in the soil, speak with a veracity that none can doubt. The plan of the city is an irregular figure of seven sides, surrounded by a wall of flints, with bonding courses of stone at intervals, in parts still from 18 ft. to 20 ft. in height, with a fosse all round. This shape is very peculiar, for the Roman towns were usually square. We have not examined the walls all round: our notes are the result of but a hasty visit, and we are adopting received dimensions, not confirming them. The city was crossed by two main roads, as usual, its Via Prætoriana and Principalis, with four gates in the walls; and, if the indications observable on the crops at certain times of the year are correctly stated, the streets were all at right angles, notwithstanding the irregular form of the boundary. The wall is more than a mile and a half round, and encloses about 100 acres. Some years ago the ground was opened in two or three places; but recently, under the direction of the Rev. J. G. Joyce, vicar of Strathfieldsaye, and at the cost of the Duke of Wellington, the examination has been more systematically conducted, and with very interesting results. In one large excavation at the corner of two streets the plan is somewhat confused; and Mr. Joyce, in a valuable paper read last week at the Society of Antiquaries, pointed out that here are to be seen the walls of three successive buildings of different dates, or rather of enlargements and alterations of three different periods. The walls are of a rough character; those of the latest period are of flints, put together only with mud. Of cut stone work there is scarcely any visible. There are some few tiles, forming the openings and angles. Two small stone columns were found, one of good Roman character, the other much ruder, probably the work of a later date. We will not attempt to describe or appropriate the buildings; it could not be done without plans. We simply indicate a few of the more salient points. There is a hypocaust about 20 ft.

square, the conducting chambers of which radiate to a centre pillar, while circular flues are formed through the solid intervening portions, so as to bring all into communication. This, and other very interesting remnants, are protected by wooden buildings, but we understand that water rises in the hypocaust at particular seasons, so that its gradual destruction must be feared. A mosaic pavement, of somewhat rude character, was found in an apartment near. Various other pavements are to be seen in adjoining parts, mostly plain, of white and red tesserae. One includes hexagon and octagon tiles, somewhat peculiarly disposed. In many cases, as we know, the finer mosaic pavements used in Britain were brought from Italy. In Silchester such as were put down were probably made in the neighbourhood. The tools used by workers in mosaic have been found on the spot. Roofing-tiles of various kinds, many of them marked as usual by the feet of animals and birds impressed before burning, and hollow flue-tiles are seen in various places. Some of the latter are ornamented on the outside with lines formed apparently with a comb-like instrument, exactly similar to such flue-tiles found at Cirencester and elsewhere. Pieces of Samian and other pottery are preserved in a small building appropriated to the purpose; and here, too, will be seen specimens of greenish glass and pieces of plaster from the inside walls of rooms decorated with colour. A piece of glass tubing is amongst the most curious relics. The remnants here would afford sufficient text for a long essay.

Nearly in the centre of the area the lines of a large square inclosure, containing the foundations of walls, had been always observable at certain periods of the year, and had been regarded as the Forum. In July of last year the soil was removed, and the belief made certain. The inclosing walls, 3 ft. in thickness, form a parallelogram about 310 ft. one way and 275 ft. the other. Around this is an ambulatory, from 12 ft. to 15 ft. in width, and then come the foundations of various buildings and apartments, the most important of which, 60 ft. in width, is considered, and with reason, to have been a hall of justice or basilica. It has an apse for the magistrates, and the position of the bema, or tribunal, is marked out. Various apartments near it are alternately square and absidal. The walls here contain some bricks, and the work is sounder and better than in other parts. In a room adjoining the basilica the interesting discovery was made of the body of a bird in bronze, with means for its attachment, and which would seem actually to be a Roman legionary eagle.

Diggings are now going on in this inclosure, and Mr. Joyce will find his hands strengthened rather than otherwise, if we urge the men employed to examine carefully all the earth they remove. Coins are being constantly turned up, and, according to a list we saw on the ground, range from the time of Augustus Cæsar (29 B.C. to A.D. 14) to that of Honorius, who died in the year 423 of the Christian era. As is the case at Cirencester, Richborough, and elsewhere, the coins of Carausius are numerous. Some of our readers may not remember that Carausius was commander of a Roman fleet, who, having incurred sentence of death by an act displeasing to the Emperors Diocletian and Maximian, sailed over to Britain, assumed the purple, and ultimately forced the emperors to acknowledge him as their colleague. He came hither about the year 287, and was killed by his minister, Allectus, A.D. 293. Stukeley asserts that he was a native of St. David's. His coins were mostly minted in Britain, and, with those of Allectus, serve to illustrate its history during the ten years it was separated from the Roman empire, a period concerning which, we believe, few monumental inscriptions are extant.

The number of Roman coins that have been

is no vehicle to be had there except by previous arrangement. We are amongst the Strathfields here, Strathfield Saye (of which all the world has heard), Strathfield Turgiss (the Rev. C. H. Griffith, rector), and Strathfield Mardock. The "straight field," say some; but those seem nearer right who find the origin of the name in the proximity of these places to the great Roman Street, connecting Silchester with London, and which, as it was a fine sound work, has long been called the Devil's Highway. Most things that were above the comprehension of the early folk appear to have been ascribed to that same agent. "Stop," says an inquirer, "you mentioned Basingstoke just now, and as you are speaking of derivations, show us it that we so often hear of that word 'Stoke'—Stoke in Cheshire, Stoke in Kent; Stoke Abbots, Stoke Damerell, Stoke Newington, Stoke Poges, Stoke-upon-Trent, and scores of other instances?" The word is derived from the Saxon *stoc* or *stoces*, the stock or trunk of a tree, and it comes to be applied to these places, says one, because towns at first were built of wood, within a *stockade*, from the neighbouring forests. We may get back, however, a little farther, and find its primary sense is something set or fixed, from the Saxon *stican*, to stick; so that in Stoke we find intimation of an early settlement or fixing, and may read Basingstoke as the settlement of the Basingas.

Basingstoke, however, must not lead us away from Silchester, though it makes a nice continuation for a day's trip. Silchester gets its present name from the Saxons,—perhaps as *set-ceastre*, the castle or settlement in the wood; but of course other derivations have been proposed. As to part of the title, at any rate, there is no doubt. Nearly all places of Roman origin amongst us were distinguished under the Saxons by the term *ceastre* or *cester*, from *castrum*. They are usually oblong areas crossed by two principal streets at right angles. When the Roman soldiers were finally withdrawn Britain possessed at least fifty walled towns united by

found in this country is enormous and remarkable, and serves to make evident the fact, that the metallic currency was very abundant in ancient days. The difficulty of transmitting money in troubled times was very great, and it was largely concealed in the earth. Apart from this the owners must have been much less careful of their coins than we are: the sites of some Roman towns and stations were positively strewn with them. It is computed, for example, that within twenty years two collectors alone obtained from Richborough, in Kent, 2,000 specimens, though for hundreds of years previously Roman money had been found there in extraordinary profusion. The value of coins and medals to the historian, the antiquary, and the artist, can scarcely be overstated. They often serve to confirm the history of events in the most precise manner. It is scarcely fanciful to imagine old Chronos, when a bridge was commenced, or a town destroyed, shaking from his pocket on to the site an indestructible date for the benefit of posterity, which handed down at the same time a portrait of the reigning sovereign.

It puzzles one to imagine at Silchester what has become of the mass of material the old city must have furnished. Where, it may be asked, too, was the burial-place? An interesting find awaits the intelligent explorer. There must be, somewhere near, a British burial-place, as well as that of the Romans.*

Within the line of walls at Silchester stands the parish church, which has some Norman columns, an Early English chancel, a recessed tomb, and an oak carved chancel screen. The structure is in a terribly bad condition, damp and ruinous, and calls loudly for repair. A new church, too, seems wanted at the west end of the parish.

Just outside the walls stands a noble amphitheatre, one of the largest found in this country. The size of the arena enclosed by the mounds, once presenting ranges of seats (*gradins*), is called 150 ft. by 120 ft., and looks to be quite as much. The entrances remain obvious. The area of the amphitheatre at Cirencester is 148 ft. by 184 ft.; that at Dorchester is 219 ft. by 138 ft. There is not any masonry visible at Silchester; but this by no means proves that the amphitheatre was not walled, and we should be glad to have it carefully examined. The amphitheatre at Richborough presented no evidence of masonry; but on digging, an external wall was found enclosing an ellipse, of which the longer diameter measured 200 ft., and the shorter 166 ft. The wall was about 3 ft. 6 in. in width, and built with flint faced with chalk.† According to Murray's "Hants," one of the best of his good Hand-books, the area at Silchester is said to have been covered with fine sand to a depth of 2 ft. or 3 ft. We know that this was the practice, and in the same way that the Ring at Astley's was often called "the saw-dust," from its covering (and the racing system is known as the turf), so this sand (*arena*, Latin) gave a name to the floor of the amphitheatre, and afterwards to all places for display.

The area is clear, but the mounds are covered with large trees, which, though they increase the beauty of the picture, will gradually, it may be feared, destroy the character of the construction. Here, however, we must break off. We have probably said enough to show that Silchester has matter to interest many,—the antiquary, the lover of art, the student of history. It is impossible to walk round its picturesque walls, to ponder over the foundations in the Forum, or look down into the arena of the amphitheatre, without a flight of thoughts; and we do not envy those who receive them in a cold or careless spirit. Truly England is very populous to those who can read the past.

* Of what the former of these might furnish we have a suggestion in the history made last week in a narrow opened near Driffield, in Yorkshire. It contained the skeleton of a young Briton. The right hand grasped a fine bronze dagger, of very early type. The blade was thin, and oval-oblong in shape, the broad end having three bronze rivets, and retaining distinctly the semi-lunar outline of the end of the wooden handle. Upon the dagger was deposited a large flint knife, and beneath it a bronze awl or bodkin, a very curious implement. Before the chest and just below the chin were five very large polished jet buttons, quite 1½ in. in diameter. Behind the skeleton was a remarkably fine bronze ear, of the earliest type, evidently modelled on the plan of the old stone hatchet. The handle and sheath of the dagger had been of wood.

† See "The Antiquities of Richborough, &c." by Charles Roach Smith and F. W. Fairholt—a volume containing much interesting information on the subject. See also "Illustrations of the Remains of Roman Art at Cirencester, the site of Ancient Corinium." By Professor Buckman and C. H. Newnham.

THE PRINCIPLE OF SYMMETRY AND ITS DEVELOPMENT.

If it has appeared that the principles of proportion are the common endowment of both Gothic and Classic architecture, of necessity also and still more obviously must this be the case with the principles of composition;—in fact, if it were not desirable rather to concentrate than extend our field of view, we might argue that they override all the arts, and even declare themselves and are manifest in all the happiest instances of the beauty of independent nature. For composition in the largest sense is the studied disposition of diversified elements to the effect that they combine in harmonious union,—form a congruous whole. But a whole, whether natural or artificial, becomes so only in virtue of being congruous relatively to a definite and self-consistent purpose, and by the subjection to this of whatever influences approach it. All nature is crowded with examples in which the common ends of animated existence are effected through endless and seemingly spontaneous modifications of conditions of existence; but at a certain point Nature withholds her aid. Parent-like, she has set her most favoured son examples of composition in abundance; has furnished him with faculties and materials for self-help,—for art, and then has left him to face alone the nobler task which she spares the less gifted, of pursuing, though it may be through pain and labour, the completion of his proper problem.

The problem at large divides: it is with its architectural phase—itsself comprising innumerable secondary problems—that we are here concerned. The particular problems of the art, again, after every allowance for intrinsic complexity, have to be reduced in the first instance to distinctness and individuality of aim under the postulation of adequate resources: a main architectural purpose holds itself ever prepared to have regard to subsidiary, and to work under, special limitations of modes and means; but not even Nature herself deals in composition of incompatibles.

All unity in art holds ultimately, then, from unity and congruousness of the purpose; grade of dignity issues from its natural dignity, and special characteristics are inspirations,—evolutions from its ruling character.

Difficult indeed are the problems that for ever present themselves of effecting purpose under the given conditions; of reconciling subordinate with superior distribution, and separate with co-operative function; but these are fortunately as often the opportunities for the artist's triumph as the occasion of failure or despair.

Then the artistic expression of unity crowns its solid effectuation, like the "bright consummate flower," and many such a completed ideal invites the critic to leave aside abstractions and expatiate on examples. Declining, however, the more attractive analysis, let us endeavour to penetrate to the primary development of composition; evolve, if we can, its more universal characteristic; observing, if we may, an occasional illustrative application.

Excluding special purpose, therefore, for the present, we may consider architecture as concerned in common with some other arts, in the harmonious composition of,—

1. Forms,—by which word is implied solids, magnitudes of the three dimensions, such as a column or a buttress, a pinnacle or a dome.

2. Figures,—involving two dimensions only, although limiting or attached to forms; such as profiles, whether of mouldings or larger members, or the bounding outlines of the structure as a whole, or of portions of its plan, the triangle of the pediment, the rectangle of the chamber.

3. Lines,—either lines of whatever degree of complexity only not constituting figure by enclosing space; or lines of single dimension,—straight lines.

These may be considered as general terms, comprising the elements of composition as geometrical; taken thus generally, they imply nothing but the most unrestrained capacity for variation; they are, in fact, the undrilled elements of composition. In what manner and by what aids may they be reduced to some larger, and marshalled and brigaded? The purposes in hand of course dictate at once the selection of certain general combinations; the magnitudes and shapes of rooms are settled within limits, though not up to a limit, and so also the general types of supports, of arrangements to span intervals, of sloping roofs and openings for light, or issue, and so forth; all open to the

utmost variety in simplicity and complexity, regularity and irregularity.

The first reducing principle is Repetition,—a marked expression of that predominance of one influence, that unity implies; identical repetition, as of windows of like size, &c., or repetition in varied scale, as of large columns of peristyle and smaller of pronaoes,—piers of nave, and of aisle, &c.; thirdly, repetition of the same type but in varied proportions; an oblong chamber being succeeded by a square, a Gothic window broad and low being repeated, but made narrow and high,—the vault of nave modified in that of aisle, and so forth. The repetition of one type is the emphatic exclusion of others as irrelevant, and the tenacity with which it asserts itself even under enforced change of scale and proportion reinforces the emphasis.

But here, again, whether change of scale or of absolute proportions be resorted to, regularity varied tends to random variety, and variety to diffuse itself to infinity; the necessities of cases will not give strictly determining hints for adopting one dimension rather than another; and option must either resign to chance, or, what argues as little self-respect, merely follow with steadiness a norm adopted irrationally; the better course remains to seek out a rational norm. In either of the cases supposed the question is one of difference of Proportion, and can only be rationally decided by a proof of the propriety of one difference rather than another; at least of a presumption for certain absolute exclusions. Where convenience does not dictate absolutely, more general effect has claim, and ever under allegiance to the law of pertinence and connexion in composition, is influenced chiefly by regard to smoothness of gradation and liveliness of antithesis, vivacity of contrast. It is clear, therefore, that it behoves us to set the series of proportions in order, and to master, if we may, the principle on which sequences, in gradation but not overcrowded, in contrast but not harshly so, may be taken from the general crowd, and relied on in a given case as an effective scale.

When this shall have been done it will appear that the regulative value that applies to repetition of a form, figure, or line, will apply also to repetition of a given proportion; the same degree of difference may be repeated and insisted on over and over again, no less than equalities or identical forms; and again, as the variation of a repeated form by a change of proportion has its advantage, so also the retention of a proportion, but with varied application, will also help the expression of unity. Thus it is that in Gothic structures the proportions of the plan are occasionally applied to the elevation of a bay: the height of Cologne Cathedral measures its length, and so in the Parthenon the proportion of the stylobate re-appears in the front elevation of the order, as well as in many another verisimilitude presentation.

Simple repetition—apart from these more recondite, but, in fact, more artistic refinements—has had its value allowed in architecture in all ages, in all countries. It is a main instrument in that expression of solidity and repose which is so essential in an art of which the primary responsibility is equilibrium, that scarcely ever loses a reminiscence of dignity, and has so constantly aspired to and attained the majestic. The unrivalled magnitudes relatively to man with which the art deals, seem to impose this law upon themselves that they may not oppress and baffle and confuse the senses. By emphatic regularity again, architecture asserts itself as against the fluctuating and irregular forms of the nature with which it comes into comparison, and places itself resolutely in contrast, not to say in rivalry. The fenestration of a northern cathedral, or of a southern palace, admits the principle equally; it reigns as decidedly in the peristyle and the carved mouldings of a Greek temple as in the nave bays and string-courses of Westminster Abbey.

The essential, the indispensable complement of repetition is Symmetry; repetition vindicates its own propriety in commencement, but suggests none for its conclusion. The ancient who defined as the requisites of a tragic composition that it should have a beginning, a middle, and an end, may well be recognized as champion of that indispensable unity that is the living soul of all compositions.

Symmetry is the contrary opposition of equals and similars; thus, a Gothic doorway is symmetrical, because, if a vertical line or plane be passed through the apex of the arch, each half will have corresponding points equidistant from

identical points on the vertical; the two sides are exactly alike, with the difference that they face different ways. Thus the successive crockets on a pinnacle are similar, but not symmetrical; as compared with each other they form a case of repetition,—only as compared with opposite crockets, each with each, do they become symmetrical. Symmetry, therefore, gives us a centre, and in this a decided limit, a term that is unavoidable, not that, like a suspended repetition, may be optional.

No form that does not admit of exact bisection as defined, is properly symmetrical; thus the line of beauty of Hogarth—the spiral of double curvature—is as little a symmetrical figure as a single Ionic volute. Nay, it is only a fictitious symmetry that can be admitted in such a figure as the so-called Catherine-wheel, with spokes curved. In itself it is inconclusive, and requires to be opposed by another with spokes of contrasting curves. It is impossible not to recognise a certain restlessness of effect in those Gothic rose windows, which, regular as they are, are still as wholes unsymmetrical; it is the same effect that results from running a Greek wave border conspicuously round a circular cornice, and that is little helped by a single opposition in the direction of the waves at a motiveless and otherwise unaccentuated point. The manner in which the difficulty was corrected by interruptions and filled squares in the Greek fret will be familiar to all.

The Greek honeysuckle pattern is an example of the beauty evolved by the symmetrical disposition of unsymmetrical forms; a vertical line divides it into corresponding halves, each of which exhibits repetition of regular but unsymmetrical petals, varied successively by gradually proportioned curvature and contour. The intermediate ornament divides in like manner with petals of contrasted form.

Repetitions and contrasts, and repetitions of contrasts, are thus the elements of symmetry in the first instance, though afterwards symmetrical combinations may themselves be combined into larger symmetries. In the profile of the Attic base the scotia is similar, but contrasted,—the seeming contradiction is none,—to the torus; and the contrast is repeated with new modification between the upper torus and apophyge. By the circularity of the base the entire profile on one side reappears in true symmetry on the other. Here again in the charm observable in varied dimension of upper and lower torus we are referred to proportion, and to proportion on a principle to minister suggestions for ordering the variable dimensions,—variable inexhaustibly; for the ultimate arbitration of taste and genius, doubtless, but without need of recourse to random or caprice. In the Romanesque churches about the Rhine, at Cologne, at Bonn, may be seen charming applications of this type of the Attic base,—a duplication itself, duplicated in varied proportions on pier and pier base; and Gothic architecture traced through its developments brings us to the same motive over and over again.

The temptation of the subject must be resisted; but let it be enough to remark, or to remind, how the Attic base was reversed to form the Early English capital; was extended into base moulding, string course; was turned round archivolts; and by duplication, triplication, and altered proportions of contrasting rolls and sinkings, grew into those most artistic combinations—the fully moulded arch-openings of nave arch and doorways, and sedilia. But this is leading away.

Systems which, like many rose-windows, are susceptible of equally symmetrical division by several or numerous lines, have still not the last quality of decisive conclusiveness, and are too apt to suggest revolution on a fixed point, rather than permanence upon a fixed line.

Symmetries, again, which are little more than a juxtaposed pair of symmetries, have lack of emphasis. Nature gives us an example in the compound leaves with graduated fronds on each side of the stipe, but none at the end. In a Gothic doorway, a double-pointed door opening is only saved by the more important including arch; on the other hand, the omission of this may be as useful when the proper aim is to secure subordination; but only when the point is attained of a general bisection which is without a fellow or an alternative and of which the halves are not resolvable into parts all symmetrical independently, does symmetry effect the full service which it can render to expressive unity.

The importance of the central bisected member

in relative magnitude, is by parity of consequence very conducive to the expression of concluding and comprehensive unity; and this is the expressive value of the Greek pediment, which ancient said could not be spared even in the dwellings of the gods in Olympus, though there was no rain to be thrown off; and of the type of roof shield surmounting the large arch of a Gothic porch.

Infinite schemes may be devised for distributing predominance variously between centre and wings, and subdivisions of wings, and again we are referred to our studies of rational proportion.

In looking at the façade of Cologne Cathedral, as it will appear when completed, it is difficult to believe that the pinched-up west window, gable, and door will ever be able to assert the required central predominance over the pair of spires and their towers,—it has of late become far easier to be sanguine of German political unity. For the furtherance of unity, moreover, it is requisite that the lateral divisions should not be each in itself absolutely or even proximately symmetrical, and to this danger, again, the towers of Cologne are far too indifferent. Even here, however, in the combination and subordination of symmetries, is a field in which Genius has ever delighted to exercise itself; and prolific invention has followed up novelty with novelty, while theory follows after, like grammar dogging the heels of orator or critic, or straining his sight to follow the mazy transitions of a Greek lyric poet. Theory, nevertheless, will not desert, and, indeed, it should not; and it is not the accomplished artist who will condemn the grammar of his art,—the gamut of his harmonies, however inspiration may enable him to lead where they can only, sometimes can hardly, follow.

Collect or imagine whatever variety of schemata of composition the theorist may, the true artist will always surprise and shoot beyond him, and yet may he usefully warn the advancing, nay, may even do good service in stimulating to a rejoinder, otherwise unthought on, from one who is already on before. Be it enough, then, to remark how composition leans to repetition on the one hand and symmetry on the other, attempts them in every variety and proportion with each other, and with the chastened enlivenment of unsymmetrical regularity; and so conquers an expression of self-contained and self-sufficing unity, without forfeiting an intimation of internal variety, and a constitution, if aloof, not alien from the wilder diversities of the outer world.

The contrast which makes the character of an individual form glides, therefore, most easily into repetition, whether simple or of proportional gradations, and repetition into symmetry; and perfected symmetry brings us at once to the gates of that contrast which seems to be the opposite, but in fact is but the culminant point of gradation. This is the scale with which each artist in his proper art has to make himself familiar, and ever exercises himself in passing up and down it with ease and certainty, whether he would avail himself of its subtlest modulations, or dare boldly a wide transition.

The neglect and disturbance of subordinate symmetry, so long as it remains secure and thoroughly established in the main, often induces a certain grace of contrast in antithesis, and emancipating design from interference with trifles, leaves the grand governing principle of order unobliterated and unimpaired. The licence, however, under which these graces most liberally accrue are the more special appanage of sculptor and painter. In statuary the Apollo Belvedere is as distinctly symmetrical to our senses, albeit his limbs are in varied action, as the Egyptian statue, with its feet close together and arms hanging straight down on either side. Here symmetry, in a freer sense,—correlative if not parallel distribution, still remains in respect of kind and form and quantity of parts, and dominates their modifications in relative position. It also remains in the important respect of apparent balance of weight, and even of equality of plane visible surface. Symmetry, then, and antithesis constitute jointly the natural expression, as in nature they are the prevailing consequences, of the law that action and reaction are at once equal and contrary. They are equally and conjointly at once a declaration of difference and of equivalence. One side of the body may as truly be said to be antithetical to the other as symmetrical with it; and balance is not disturbed, but in truth established by contrast, when contrast is regulated by the norm of equilibrium.

valence. Symmetry thus interpreted has a larger sense than correspondence of dimension. It is applicable, and its correlative antithesis no less, to correspondence of force of whatever kind,—of value, of power. A painter works under observance of this higher symmetry when he effects a balance of lights and shades, of warm and cold colours, of interest and expression, as much as when he is careful to set mass against mass, and to relieve a prevailing inclination of lines by giving emphasis to others of counter inclination.

As regards the dignified composition of numerous figures, which has more analogy to architecture, we might pursue the analysis by tracing the gradual development of the formal and strict into the equally effective but freest symmetry, in Italian painting; thus in the subject of the Last Supper we have repeatedly the central Saviour with six apostles formally on either side. In the painting of Leonardo,—the Cenacolo by pre-eminence,—this arrangement remains, but the two sets are in most varied action individually, while still dividing into equivalent sub-groups that are recognizably antithetical.

But we have as striking examples in architectural sculpture; in the pediments of the Æginetan temple a central figure is supported by a double series, figure for figure to right and left,—ever equivalents, and in many cases, as in the angles, almost absolutely antithetical. In the grand composition in the western front of the Parthenon we see the contending pair of deities in the centre supported on either side by attendants and spectators, who again answer to each other figure for figure, group for group, with as absolute an expression of balance as at Ægina,—but with how much more developed a faculty for reconciling variations with general equivalence!

To architecture, however, by its nature, is conceded much less liberty of substituting the effective for the formal antithesis; this art is bound by the terms of its original charter to give leading value to the expression of permanence, of solidity. Hence the freest variations that can be associated with it must declare themselves rather as adjuncts than as elements; if the capitals of Gothic piers are all varied in fanciful sculpture the variations will be scarcely acceptable unless subordinated to some prominent uniform features and outlines. When such condition is observed the relief of sculpture is inestimable, and this precisely because architecture proper lies exactly here under a disability; the varied outlines of living forms and flexible draperies are all but absolutely required to unite the severity of even the most ornate but still pure architecture, to our feelings; but even so the law of symmetrical antithesis applies,—an antithesis which is not a random jumble of the disconnected, but a pertinent rejoinder,—no irrelevant protest, but a qualification that is perfectly to the point. The very sculpture that reflects upon the rigid architecture the flowing lines of living or agitated nature still admits the genius of the art it is for the time dependent on, and whether under Gothic canopy or Classic pediment, whether in niche or in metope, attempts its freedom with more of the formality of symmetrism than when it is fairly on its own independent domain and at liberty, and bound indeed to strain the liminary law to its very highest tension.

The greatest triumph of the antithetical equivalence of groups in modern art is in Raffaele's school of Athens,—in ancient, the Contest of Neptune and Minerva in the pediment of the Parthenon. Comparison of these will be found to illustrate admirably how of two artists, each at the summit of his art, one admitted exactly that degree of formality into his scheme of composition that enabled him to harmonize sculpture with architecture; and how the other, by availing himself of an exactly symmetrical architectural background, reduced to accentuated steadiness a combination of groups in which freedom of differentiation is played with daringly to the uttermost verge of proper composition.

THE NATIONAL PORTRAIT EXHIBITION.—The charming collection at South Kensington has failed up to the present time, strange to say, in attracting public attention. The total number of visitors last week was 1,732, and on more than one occasion we have found the galleries with fewer visitors in them than there are attendants. This is very much to be regretted.

ARCHITECTURAL-ARTS COURT, PARIS EXHIBITION.*

Among the many stone-carvers in England who profess to be foremost, or at any rate forward, in the modern revival of Medieval art-work, we find but one name, that of Mr. Forsyth; and on the Classic side none! What can have become of their love of art, their desire to make a name, or their readiness to court popularity, or at least publicity, which prompted them on former occasions to put forth their strength, and show what they could do? We must suppose them all fully occupied, or impressed with the fear of damage accruing to their fragile productions; for we cannot think they are so apathetic as to art, so careless as to business, or so afraid of the odds against them, as to decline the race on such grounds alone.

However, to Mr. Forsyth belongs the praise, as well as the courage, for running alone. To his executed works he adds models and photographs of those proposed or already completed. His works are so well understood by our readers, that we simply mention that his exhibits include a font and cover for church at Dudley; two fountains, represented by models (one designed by Mr. Nesfield), for the Earl of Dudley; reredos for St. Outbert's Church, at Wells; and a beautiful head of the Virgin in marble, inclosed in a vesica. The latter is altogether of a more ideal character than usual, and deserves to be pointed out.

We ought, perhaps, to add to the list Mr. Seymour, of Taunton, who has four stone capitals, copied chiefly from Wells Cathedral, including the celebrated tooth-ache head, all pretty faithful reproductions, but showing of course little of the power of design which such careful studies ought to, and perhaps have produced in this artist. Mr. Baylis, amongst the wood-carvers, has made himself a name of late years, and is represented only by a small clock-case, of architectural character, suitable for an Elizabethan mansion; and Mr. Kendall, of Warwick, shows by his birds and fruits that he can carve, though not making any claim to the speciality of architectural work.

In the catalogue we notice a list of prize works, in stone and wood carving, modelling in clay, marble mosaic and enamel, both transparent and opaque; but although we understand these were committed to the charge of the South Kensington authorities for transmission to Paris many months ago, we do not notice them placed in the court. This is particularly unfortunate for the subscribers to the Architectural Museum, who generously contributed for the prizes; who earnestly and disinterestedly endeavour to foster and encourage those arts which are "cognate to architecture;" and who from the first gave up their individuality, and merged their claim for space in the general demand by the Paris Architectural Committee. Doubtless, however, the absence can be explained.

So much has been said as to Messrs. Maw & Co.'s, and Messrs. Minton, Hollins, & Co.'s tiles, that we may spare ourselves the task of analysing their special exhibits on this occasion, merely remarking *en passant*, that the former are at especial pains to explain and illustrate the actual manufacture, by specimens of the clays and other ingredients composing the tiles, while the latter firm show their peculiarly fine mosaic tiles, and subdued though richly-coloured stamped tiles for wall decoration. We must not omit to mention, rather for the sake of the manufacture than because of the special success of the example, a picture (by Messrs. Maw & Co.), in mosaic, representing "Spring," an infant plucking a flower, intended to form but one small compartment in a pavement, though itself composed of more than 10,000 pieces; in fact, this number is required for one square foot of such work. The cost, however, makes it unfit for pavement, and more suitable for wall decoration at some little height from the eye, and in a position where any similar painted work would be liable to destruction and decay.

Nothing, however, for ecclesiastical purposes can come nearer in design and colour to ancient tile work than that by Godwin of Lugwardine, in Herefordshire, but the manufacture is limited, if we may judge by the small quantity exhibited; and, we may add, they seem very poorly laid for exhibition specimens. The Poole Pottery Company do not seem to show any novelties, and some of their works are not so well and carefully executed as usual. This is to be regretted. We cannot refrain from adding our

surprise that the present great demand for tiling should not have called forward other manufacturers, or, at least, that some specially fresh designs should not have testified to the desire of well-established names to show the inexhaustible vitality of their art, as well as the goodness of their manufacture. At present all seem to be resting on their oars; perhaps engaged in gathering in the profits of their well-earned reputation. At the same time, we would observe, it is not so that their reputation was made—not so that they can keep up with the ever-increasing demand for artistic work. One notable example occurs to us of a firm, trading on their reputation and inundating the country with mediocre copies of former first-rate designs, till one begins to nauseate even the old specimens, or, at least, become indifferent to them. So may it be, if, indeed, it is not so already, with many patterns at one time taken to be far in advance, but now greatly behind, the age—though still shown in an International Exhibition.

Of the decorative works, or, rather, works of decorations, as exhibited in this court, we are not able to speak with great favour except in a few instances; indeed, we think it would have been well for Messrs. Cox & Co., for instance, not to have exhibited at all, if they had nothing to send but "an oak *prie-dieu*," or "an oak chair." Really, such specimens of woodwork should be confined to the shop where they were made rather than be taken out for the purpose of exhibition anywhere, more particularly in Paris.

However much better may be the design of the wooden lectern, it is without any finish or surfacing, while a stone and marble font has a very close resemblance to the photograph of a similar work executed by Forsyth, and which is hung within a yard of it as if to challenge comparison. The brass work, too, is not what we might expect, and we find a fac-simile of a monumental brass—a mere painted board,—as if it were too much to send a real engraved brass. We hardly think, either, Messrs. Harland & Fisher can be satisfied with their cabinets,—one painted—one inlaid,—when they look at similar French work in the Exhibition; but we note they exhibit also a panel in marble mosaic. One small piece of ecclesiastical embroidery is shown by Frank Smith & Co.; but a large altar-cloth (designed, we believe, by Mr. Street) is exhibited by Messrs. Jones & Willis, who also supply patterns of carpets and hangings for the decorations of the doorways of the court, but no objects of plate, or furniture, or altar-fittings, for which they are celebrated, except the above. We are disappointed to find also but one article exhibited illustrative of the work carried on by Messrs. Heaton, Butler, & Bayne as decorators and decorative furniture makers; but this is designed specially by Mr. Charles L. Eastlake, and in accordance with certain principles. The success, however, of every effort so begun, is not always so great as to warrant unqualified praise; and, in this cabinet or book-case, our satisfaction arises chiefly from the negative qualities of the work, and not from its execution being equal to any very high aim.

It is a puzzle to us, however, how this exhibit came to be described as architectural decoration, and placed in Class XV., Group III., while a similar cabinet by another artist is in the adjoining class; perhaps it was on account of the exhibition, also by the same firm, of one of the panels of the reredos in the Lady Chapel of Chester Cathedral.

Messrs. Jesse Rust & Co.'s mosaic work and materials we have previously referred to, and we may close our notice with a repetition of our remark as to the architectural court, that as a whole we feel disappointed with the result of so much labour and trouble,—perhaps we may add, expense,—and while fully appreciating the disinterested efforts of the committee, we are glad to know that most of the works carried out every day under architectural superintendence (without exhibition) are superior to what are seen in this court. Foreigners, judging us without further knowledge than can be obtained here, will have a far lower opinion of art-workmanship in England than is deserved. At the same time, we believe great good will result from the grouping together of artistic objects connected with each other by ties of architectural affinity; and at any rate our architects have shown themselves capable of united action, and ready to enter the lists against all comers in the arts of design, not only on their own special ground, but in respect of everything connected with the arts cognate to architecture.

BETTER TIMES FOR RAILWAY SHAREHOLDERS.

THERE are few of us to whom it has not occurred to watch with impatience the clearing of the heavens after a violent and long-continued storm. In mountain districts, and from positions which command a wide horizon, the coming gleam of sunshine may be traced in its approach while the sky is yet black overhead, and the rain beats heavily around us. One by one, peak, and glade, and tree, shake themselves free of the gloom in which we are involved, and seem to laugh in the sunshine. And when at last the ragged edge of the storm clouds has reached the zenith, when the sky is all clear to windward and all black and murky to the lee, who has not been fain to attribute especial malignity to the last floating islands of Indian ink—to think the last drops of the shower the heaviest that have fallen, or even to wonder at the continued fall of water from invisible clouds? A few seconds more, and the storm has passed, leaving traces of its anger only in the foaming force, or in the fresh verdure of the landscape.

It is not often safe to say what a week or what a day may bring forth in the wider horizon of the social heavens. Yet men who have long shaken their heads when fine weather was predicted, now announce a steady, if not a rapid, rise of the political and financial barometer, and are even heard to associate a change to fair weather with the arrival of the anniversary of the fatal Eleventh of May. We have had black cloud to the very last, and the threatening gloom of the shadow cast by the fortress that was once the stronghold of the subtle Count de St. Pol, seemed to the last moment ominous of recourse to the bayonet. For the first time for many years the firm, modest, and successful activity of an English Minister for Foreign Affairs has met with the general gratitude of Europe. The cannon is not, as was feared, to be directed against the crystal roofs of the world's fair. Politicians at home have found the causes of party-warfare to vanish as rapidly as have disappeared those of international strife, and the word "public confidence" is pronounced without a grimace.

Some of the last drops in our own metropolis have fallen from a quarter from which has emanated no small portion of the gloom of the past year. Panic is one thing, the cause of panic is another, and so long as the latter is a *vera causa* it is but poor wisdom to rejoice in the removal of alarm. But in the instance to which we are referring the right persons are at last appearing on the scene. In industrial, as well as in political, questions, men are beginning to refuse to be sacrificed any longer for the emolument, for the ambition, or for the point of honour, of their leaders. The shareholders of the Brighton Railway seem at last to have arrived at the common sense conclusion that their property, such as it is, is their own, and that it will become rapidly converted from a positive to a negative value if they allow other people to manage it for them. The phrase to catch a Tartar is as familiar as it is expressive. But our language wants a phrase to denote that course of action which "defends" a fine property by doubling its capital expenditure with the result of increasing its income by some 20 per cent. That is about the result of the "defensive" measures carried out by the Brighton Board. What a war policy has cost to its competitors we shall probably know by and by; but the Brighton figures alone give us the impression that at least some six millions of the last eight expended by the direction have been little better than wasted. If we add South-Eastern expenditure, and South-Western expenditure, and, awful tale! London, Chatham, and Dover expenditure, how goodly a pile of shareholders' gold has been swept off by the rake of the croupier. And this is not all. It is not even the worst. It is bad enough for the shareholders to have acted so long the part of powder-monkeys, but we must own it has been their own fault. Had they stopped the supplies of ammunition the war would have gone out of itself. But the public have been sufferers by the Brighton and South-Eastern war to a greater extent than the shareholders. And it is very much to be feared that the public will be permanently injured by the results of the strife. We have repeatedly called attention to that studiously disorganised system of rails and platforms that delays the traveller south-east of London Bridge. So purposely has each branch, each junction, each crossing, been mapped out for offensive pur-

*See p. 286, &c., ante.

poses, that it is only by the most careful and most energetic application of the skill of the engineer that any very great amount of public advantage can be derived from the amalgamation of the working arrangements of these long-contending companies. London Bridge Station has long been a burden and a disgrace to the commerce of London that has attracted the wonder and the scorn of those who were familiar with travelling, but not familiar with travelling over Brighton and South Eastern points of junction. A wise and free reconstruction can alone permit of anything like the quiet punctuality that now characterises the Victoria Station being attained at London Bridge. The saving to the contending companies, by the mere abandonment of duplicate trains and similar measures of offence, has been estimated by competent authority at 150,000*l.* per annum, a comfortable crumb for original shareholders. We hardly think we should be up to the mark in estimating the time lost to the City of London by the bad arrangements of the lines concentrating at London Bridge at 50,000*l.* per diem—an amount not of loss out of pocket—but of business *not* done—time consumed in losing temper at junctions and stations, instead of being devoted to the pen and the ledger—to the correspondence of the merchant and the appointments of the purchaser or the seller. We do trust that in the wholesome reaction now setting in, the public may not be lost sight of. For the interest of the shareholders to be made the first object, rather than the success of the policy of the Board, will be in itself a reform of the most gratifying character, and as in all such cases the real interest of the public is that also of the railway company,—the true convenience of the customer is the best wisdom of the carrier,—we may hope before May 1868 to get from Forest-hill to Charing Cross, at least, in as short a time as from London to Slough.

In peaceful leagues, of some nature, lies the first hope of an improved future for railways. It is too late to *unspeak* the money wasted in duplicate lines. But the mere economizing of the wages and stores consumed in running duplicate trains, would make no inconsiderable figure in the half-year's balance-sheets. To the public it can make no manner of difference whether the train that stops at Croydon, or at New Cross, belongs to the Brighton or to the Dover Company. But it may make a great difference to the passenger provided with a ticket for the carriage of the one, if he is refused a seat in the train that suits his hour, because it happens to belong to the other. It is indispensable that in the ticket system, as well as in the timing of the trains, there should be a single and comprehensive service; and, above all things, it is needful that the best measures should be taken for separating the long and the short traffic, so that each may travel at its own speed to its own platform, without fear of interference with the other; and that the quiet spin of the City merchant from his villa at Sydenham should not be arrested for some odd ten minutes to allow of the passage of the French mail or the tidal train.

That the railways of each great district of the country must, sooner or later, amalgamate, we have for a long time expressed our belief. That a larger and a more intimate union will follow we think more than likely. But the first thing to be done is to stop the gap through which that which otherwise would be divided is running to waste; to prevent quarrels—to prevent rival works—to prevent rival bills; and this first step can only be taken, will only be taken, by the shareholders themselves. With the utmost forbearance for those gentlemen who have fulfilled the functions of directors in stormy times, we counsel all shareholders to avoid entrusting them with their proxies. Let them attend their own meetings, and vote on their own judgment. So alone can they hope to rescue their property from destruction. We recently took occasion to show that if an arrangement were made, which readily could be made, for paying a 4 per cent. interest on a consolidated debenture stock, and for relieving the lines from the burdens of renewal and of financing, there would remain, even without increase of traffic, or reduction of working charges, 6 per cent. on the gross preference capital, and 3 per cent. on the gross original capital of railway enterprises in this country. Attention to railway property, then, is not throwing good money after bad, or wasting valuable time in a hopeless pursuit. The property is sound at this moment, in spite of cruel waste and mismanagement, and

the mere reduction of working expenses that will arise from the fact of neighbouring lines working in union instead of in opposition, would be immediately evinced by a rise of dividend. With hostilities at an end, the natural development of railway traffic by light branches would follow, as a matter of course. That this subject should have received earlier and more serious attention abroad than at home, is exclusively owing to the rivalry and the quarrels of competing Boards. What would the six millions wasted by the Brighton Company have done for the Southern and Eastern traffic, if laid out in the prudent construction of light branches? Not a village in the district but might have been put in organic connexion with the metropolis. Six millions would have paid for the construction of a thousand miles of branch lines, and left a very handsome profit for somebody into the bargain.

This is not matter of estimate. If in this, the cradle of the railway system, we have been content to deal with the light traffic of 1845, other people have been more provident. Norway is an instance. There the railway system, with one exception, is on the light principle, and on a 3-ft. 6-in. gauge. The line from Grandsæet to Hammar, a distance of 24 English miles through an easy undulating country, has cost, including rolling stock and stations, 3,000*l.* per mile. That from Thronthjem to Støren, through 30 miles of difficult country, with a viaduct 620 ft. long and 110 ft. high, eleven other large bridges, two terminal and six intermediate stations, workshops and engine-sheds, locomotives, and rolling-stock, has cost 6,000*l.* per mile. From a northern latitude we may turn to a tropical climate. The railway from the Arcnum junction of the Madras Railway to the town of Conjevaram, 19 miles long, cost 3,900*l.* per mile, including telegraphs, stations, and rolling-stock. The same principle is now being applied to the Government railways of the colony of Queensland, about 50 miles of which are open for traffic. The works on certain sections of these lines are unusually heavy, with rock-cuttings and tunnels, one of which is 27 chains long, and with twenty iron bridges of spans from 60 ft. to 100 ft. in width.

It is expected that these lines will be constructed under the most difficult circumstances for between 11,000*l.* and 12,000*l.* per mile, and under ordinary circumstances for 6,000*l.* per mile, although the rates of labour ruling in the colony are from 6*s.* to 7*s.* per day for an unskilled labourer, and from 10*s.* to 12*s.* per day for a skilled workman. We refer our readers for further particulars to Mr. C. Douglas Fox's paper on Light Railways, which was read to the Institution of Civil Engineers on the 27th of November last.

If the long,—the unprecedentedly long,—period of gloom which has, we would fain hope, come to a conclusion, has had the result of leading the owners of railway property to look to their position in the face,—to prohibit litigation and rivalry, to economise working expenses, and to provide completely and inexpensively for the future traffic of the entire country, we may have gained from a long period of suffering and of struggle something worthy of the cost.

DUNKIRK.

SOME time in the seventh century (so goes the legend) two small hamlets were established upon the summit of two neighbouring hills or *dunes* on the north-west coast of Gaul, looking out upon the north sea. One of these hamlets put itself under the protection of Saint Eloi, the apostle of the country—the great Saint Eloi, the guide, philosopher, and friend of King Dagobert, whose good deeds are commemorated in the popular ballad,—

"Le bon Roi Dagobert faisait peu sa barbe en hiver;
Le grand Saint Eloi lui dit, 'O mon Roi!
Il faut du savon pour votre menton.'
'C'est vrai,' lui dit le Roi; 'as-tu deux sous?'—proté-
les-moi!"

The other took as patron Saint Gilles, or Saint Giles. In the course of time, a third village sprang up more to the east, which some two or three hundred years since changed its primitive name of Pierperkes to the more musical name of Roosendaal (the valley of roses), which it still retains, and is now a suburb of Dunkirk. About the middle of the tenth century, St. Gilles was enclosed with walls, and was called Dunkerque (l'Eglise des Dunes, or sandhills). Saint Eloi

became a suburb of the new town but was not incorporated with it until the reign of Louis XVI., some two hundred years ago.

Dunkirk was first fortified by Count Baldwin III. of Flanders, about A.D. 960. In the twelfth century Philip of Alsace equipped a fleet from hence for the Holy Land. After the death of Philip, Dunkirk passed by inheritance into the hands of the Counts of Hainault, who sold it to its former owners in 1250. The town was occupied by Philip the Fair from 1299 to 1305, and sacked in 1325, and again in 1357, in an insurrection by the Flemings against their count. It was again besieged by the French in 1488, but unsuccessfully. In 1558 the French Marshal de Termes was more successful, and having given the town up to pillage, his soldiers committed great cruelties upon the inhabitants. The battle of Gravelines, in which the Flemings, under Egmont, were victorious, afforded an opportunity for a terrible retaliation on the French prisoners. The town for the next century was occupied alternately by the Spaniards and French, neither retaining it for any length of time. In 1658 was fought the decisive battle of Dunes, in which the Spaniards, under Condé, were totally defeated by the allied armies of France and England, under Turenne.

In pursuance of the agreement with Cromwell, who had furnished 10,000 men to Louis XIV., on condition of receiving the first place captured by the allies, Dunkirk was taken possession of by the English, by whom it was fortified. Charles II., with his usual indifference, sold it to the French, in 1662, for 5,000,000*l.* (500,000*l.*). The town was then fortified on a grand scale, under the direction of Vanban; the harbour was deepened, and Dunkirk rapidly became a place of importance. When the war between England and France broke out, the privateers from Dunkirk, under the command of the celebrated Jean Bart and the Chevalier Forbin, inflicted very serious injury upon British and Dutch commerce. In ten years, from 1688 to 1697, the property captured or destroyed by them amounted to nearly two millions and a quarter sterling. By the Treaty of Utrecht it was stipulated by the allies that the fortifications of Dunkirk should be destroyed, and the harbour filled up. This stipulation was partly carried out; but the French endeavoured to evade the conditions of the treaty by forming a harbour at Mardick, and enlarging the canal which connects Mardick with Dunkirk. The English Government protested against the evasion, and the restriction was renewed by the Treaty of Paris, in 1763. It was found impracticable to insist upon the entire destruction of the defences of Dunkirk, and that portion of the treaty was repealed in 1783. The works were subsequently largely increased, and at the present time very considerable improvements in the harbour and defences of the town are contemplated.

The position of Dunkirk and its neighbourhood, many portions of which are below the level of the sea, have given rise to very extensive systems of drainage. In the time of the Romans this part of the coast was almost entirely covered by an arm of the sea which reached as far into the interior as St. Omer. In the seventh century dykes were constructed around the islands in this gulf, and the sea was gradually driven backwards. The country is now protected by tall mounds of earthwork and by a very elaborate system of sluices against the encroachments of the sea. The land thus recovered and rendered available for agriculture is about 100,000 acres.

The communication between France and Belgium is at present very imperfect, but when the railway from Dunkirk to Furnes is completed it will afford ready access to all the principal Belgian towns.

The cathedral at the angle of the Rue de l'Eglise and the Place Jean Bart, founded in 1440 and rebuilt about the middle of the sixteenth century, is rather a fine building, mutilated as it is by a portion of the nave at the west end having been demolished in the year 1783 for the purpose of making a new street. The brick belfry was then disengaged from the church, from which it is now separated by the width of the street, and a Corinthian façade was tacked on to the Gothic body of the building. The base mouldings to the nave columns and the mouldings to the arches, which die into the piers, are worth noticing. The chapels at the east end are very picturesquely planned, and the modern stained glass windows, although rather unequal in merit, are about the general level of such things in this country. A tablet near the door

of the sacristy professes to indicate the last resting-place of Jean Bart, who died at Dunkirk. His native place, in 1702; but his body was buried under the high-altar with great pomp, and the stone has probably been removed from another part of the church. Bart's second wife and his heroic son, François Cornil Bart, are also buried here. The other churches of Dunkirk are not in any way remarkable except for their ugliness and the number of *ex-votos* exhibited at some of the altars.

The theatre, in what was formerly the Place Jean Bart, is a pretentious-looking building, erected some twenty years ago. The plan is a parallelogram, with a rounded end, and an open porch next the Place. The semicircular end, formed by the arrangement of the boxes, is carried up to the roof, and has a very agreeable effect.

The interior is being entirely reconstructed, and will have new boxes, new ceiling, new floors, and will be entirely re-decorated. The opening of the proscenium is about 35 ft., and the depth of the auditorium, from front to back, about 50 ft.

The Palais de Justice, on the Place Napoléon, is a handsome edifice of two orders, with a large central hall, inaugurated, as a tablet in the interior informs us, in April, 1864: M. Develle, of Dunkirk, architect. The grand hall and staircase are constructed throughout of stone, the lower story has low segmental arches resting on square piers, and the upper floor, a handsome Ionic order, with very well designed detached columns and small Corinthian pilasters over, with enriched panels between. The decorations of the courts and the details generally are very carefully studied, and satisfactory in effect.

A new church is in course of construction, in the Rue de Paris, Basse Ville, on the Quai Saint Martin, and will very shortly be completed, the roof being covered in, and the walls ready for plastering. The style is Romanesque, and the materials are red brick with stone dressings, the plain faces on the inside being plastered. The church consists of a nave, 28 ft. wide, divided into five bays, side aisles 12 ft. wide, with a chapel in each bay, and semicircular apse, covered with a semidome at the east end. The bays of the aisles are covered with plaster domes, coloured and jointed to imitate stone, which has a very unpleasant effect. The nave has semicircular arches springing from round shafts, with enriched capitals, triforium with triple lights and lofty clerestory. The roof is not yet commenced, but will be vaulted in plaster, the vaulting shafts coming down on to the caps of the nave columns. Those portions of the plastering which have been finished are tinted in warm ochre, with the joints picked out in white. In the exterior the western end has two square towers, finished with slated spires, a plain entrance doorway, with wheel window over, filled in with plate tracery. The works are being carried out by M. Develle, the town architect, who appears to have most of the practice in Dunkirk.

In the Rue de l'Eglise, near the cathedral, some houses which are in course of rebuilding have been set back in order to widen the street.

The Museum, founded in 1838, and occupying the upper part of the Bourse, contains the usual medley of curiosities to be found in most provincial museums. Indian figures, snuff-boxes made out of remarkable trees, second-hand Napoleon relics, casts of the hands of English boxers, butterflies, and beetles,—these form some of the attractions to be enumerated. The provincial element is of course very strong, and considerable capital is made of Dunkirk celebrities who, for the most part, are very little known out of their native town. Some of the portraits, however, are interesting; among others that of the Admiral Coalaert, a native of the town, where he was born in 1584, according to the catalogue, dated "1630, *atatis sua 50*," which would make the year of his birth 1580. He is a fine burly fellow, with his hand on his sword, and, with his second wife, Jeanne Pierens, whose portrait is also here, form a very remarkable pair. Another portrait of a man in a Spanish dress, dated 1646 (No. 50), and portraits of Alexander Leys, syndic of the Corporation of Butchers in 16—, by Jean de Rey, a Dunkerquois, the painter of Admiral Coalaert, mentioned above, deserve particular notice, the last two being very remarkable for their spirit and accurate costume. A charming Rubens, 2 ft. 4 in. by 1 ft. 10 in., the Marriage of the Virgin, the Virgin a portrait of his second wife, Helena Forman, a head attributed to Spagnoletto, a very fine portrait of Luther, extremely expressive (62),

by Holbein, and a study of a man in a Spanish dress, by Giorgione, with some modern pictures from the annual Paris Exhibitions, the gift of the Emperor, are about the only objects worthy of remark among a wilderness of platitudes and provincial mediocrity. There are some outrageous patriotic performances on a colossal scale by Dunkirk artists, which only prove that the worthy Dunkerquois are better hands at wielding the sword than the brush.

A series of paintings by Jean Baptiste Descamps, a native of Dunkirk (born 1706, died 1791), are interesting, as showing the appearance of the town in the seventeenth and eighteenth centuries.

A view of the bombardment of the town in 1694 by the combined fleets of England and Holland, under Admiral Barkley, shows the two batteries at the end of the pier, and two forts in the sea to the southward.

A plan of the town, divided into six cantons, and dated "l'an 9 de la République," exhibits some curious changes of name. The Place Jean Bart was called *Place de la Liberté*; Rue du Parc de la Marine, *Rue des Droits de l'Homme*; Rue de l'Eglise, *Rue de la Vérité*; and such names as *Rue du Brutus*, *Rue de la Raison*, attest the classic and philosophical taste of the time. The quays have been widened, and some minor alterations made in the streets, but generally the configuration of the town remains unaltered.

Another plan shows the fortifications before their demolition in 1712. The shore is called Estran, a name which survives in the Ports de l'Estran. There are two forts shown in the sea, Forts Blanc and Riban, and a large fort, Fort Louis, with four bastions, on the canal from Dunquerque to Bergues.

It has been for a long time contemplated to improve the harbour of Dunkirk, which, although at present commodious and handsome, considering the importance of the town, is insufficient for the increasing commerce of the port. It is proposed to construct a new basin, called the Bassin de l'Ouest, 1,804 feet long and 410 feet in width, between the present citadel and the Bassin des Chasses. This work was decided upon as long as five years ago, the imperial decree authorising its execution being dated July 14th, 1861; but the French are not quite as prompt as we are at this kind of enterprise, their forte lying rather in works of demolition and reconstruction. It is also proposed to construct another basin, similar in size to that already mentioned, to the south-west of the Bassin de l'Ouest, communicating with it by locks and flood-gates. The present *arrière port* à flot, which connects the harbour with the Bergues Canal, will be deepened and enlarged, the unsightly buildings and yards to the west of the Parc de la Marine removed, and a handsome esplanade formed next the harbour. The fortifications on the east and west sides of the town will be thrown back, and the Canal de la Cunette diverted so as to get a greater depth of water at the entrance of the harbour.

There are no private houses in Dunkirk of a date anterior to the seventeenth century, but there are a few remaining (distinguishable by their fantastic gables), which belong to the period of the Spanish conquest at the commencement of that century.

The house where Jean Bart was born is not known; but the house where he died, in the year 1702, is in the Rue Royer, and is now a ladies' school, conducted by the Mlle. Gallaix.

About five miles to the south of Dunkirk is Bergues, a singularly quiet little town, said to contain 6,000 inhabitants. There are, however, but few to be seen in the streets, and the shutters of most of the houses being generally closed, and the grass growing in the roadways, gives the place a very desolate appearance. It was formerly a town of some importance, having been fortified as early as the tenth century, and was the scene of constant struggles between the French and the English from the fourteenth century down to the year 1793, when it was unsuccessfully besieged by the English. Its fortifications, by Vauban, are still intact, as well as four forts, which protect the approaches to the town. Its importance, however, has gradually decreased during the present century, and its more vigorous neighbour, Dunkirk.

Weaving is still carried on, and the whirr of the shuttle is heard from the interiors as you pass along in the streets.

The Hôtel de Ville is being rebuilt on a site adjoining the ancient building, and now forms

one side of the Grande Place, opposite the Belfry, some small houses which formerly surrounded the building on two sides having been removed, and it is now completely disengaged from the neighbouring dwellings. A portion of the old Hôtel de Ville has been demolished to make room for the new building; but five bays of a very picturesque Flamboyant and a small part of a Renaissance addition still remain, and it is to be hoped will be preserved as what the French call "an historical monument," the Government taking charge of all buildings which serve to illustrate the history of the country. The new building is an exact reproduction of the Renaissance part of the old building, the details being preserved with scrupulous care. There is some resemblance to our Elizabethan in the use of strap-work and flat decoration, but the proportions are good, and there is a breadth of effect which is wanting in our buildings of this period. The new structure has two lofty stories and an attic, and is built of a bluish stone from Valenciennes, finely tooled, which is very pleasant to look at. The works proceed very slowly, and although the building is already roofed in, it will take three years to complete.

Some of the houses are noticeable for their decoration; many have the date, in large figures in wrought iron, attached to the walls, between the windows, the figures sometimes serving as plates for the rods carried through the piers. A house in the Rue des Chats, dated 1750, has some cleverly-moulded panels in plaster, and a fine relief of the temptation of Saint Antony. The laughing devil with two black eyes is approaching the saint, attended by the drollest little devil in the guise of a Cupid, showing his cloven foot from under his trappings.

The belfry at Bergues is one of the finest in the department, and has a charming carillon, which plays every day from half-past eleven till midday. The other celebrities of the town are the ruins of the abbey of St. Winoc, and the Mont-de-Piété, a bizarre-looking brick building of the seventeenth century. J. H.

THE REMUNERATION OF ARCHITECTS.

In return to an order of the House of Commons, copies of the correspondence between the Office of works and Mr. E. M. Barry, the architect employed at the New Palace at Westminster, from the date of his appointment to the present time, respecting his professional remuneration, and of communications with the Royal Institute of British Architects on the subject, have been printed.

The main point at issue is the endeavour to devolve on the architect the duty of measuring and making out the accounts without charge, beyond his *five per cent.* commission. The following extract from one of the letters will show the position taken by Mr. Barry:—

"I am unable to concur in this opinion, and I do not think it can be supported by the practice of any architect of eminence at the present time. I enclose a printed list of rules drawn up by the Royal Institute of British Architects for the regulation of architects' remuneration, which rules are considered binding by my profession. Clause 13 defines the duties of an architect, as included in the charge of 5 per cent., and expressly excludes therefrom the obligation to measure and make out extras and omissions.

An architect's duty may be described as that of designing and superintending the erection of the work. Taking out the quantities at the commencement or measuring the work on completion, are duties entrusted to a surveyor. There is no difference in principle between these two operations. Measurement is in reality taking the quantities of a work when finished from the work itself, while taking out the quantities at the commencement differs only in that the quantities are in that case taken from drawings in the absence of the work.

I am not aware that it has ever been contended that an architect should pay the surveyors for taking out the quantities at the commencement of the work, and I must respectfully submit that no reason can exist for calling upon him to do so for measuring or taking the quantities on the completion of the work. The system of taking out quantities has been repeatedly recognised by the Board, and architects employed on Government works have received their full commission of 5 per cent. for their services, exclusive of taking out the quantities."

In this view he is supported by the Institute. If the profession think the question important enough to be taken up they should do what they can to at once strengthen the hands of the Institute, who still have the matter under consideration. The papers bring out clearly what the "practice" of the profession is; and if it be true that the "practice of the Department" is in opposition to it, the latter ought to be altered, as no reason can exist why the Government should pay less remuneration to its profes-

sional advisers than the public generally. Lord J. Manners has the opportunity of having the facts from the eminent surveyor attached to the Office of Works, than whom none knows better the practice of his profession, and that as a question of fact architects are never called upon to pay surveyors. Indeed, were it so, the profit of the architect might soon disappear altogether, as at the usual rates now obtaining the surveyors make far more profit than the generality of architects.

EXCAVATIONS AT OSTIA.

THE excavations at Ostia, commenced by the Papal Government in 1855, have been continued, and usually for six months of every year, since that date, with some vigour, necessarily interrupted, indeed, by the dangers of malaria during the sultry season, and for a longer period suspended owing to political circumstances, in 1860. It is by the labour of about forty *galeati* (convicts), who inhabit the picturesque old castle in the modern village, that these works are now prosecuted, and all contingent expenses are defrayed from the private purse of the Pontiff. We have already described the street of tombs leading to the principal gateway, the quarter of the city first laid open, the Mithraeum (or Mithras Temple), and that larger fane whose cells of fine brickwork, above a vaulted crypt, is surrounded by a peribolos (or sacred court) with marble colonnades, but whose dedication is uncertain; also the *Thermae* of Antoninus Pius, notices of which we find in history, discovered adjacent to that temple of Mithras. Many other edifices brought to light within the last year and a half, besides rich store of epigraphs, sarcophagi, and some admirable specimens of mosaic pavement, have well rewarded the labour on this desolate but promising site. The approach to the principal gateway, of which remains only the broad threshold stone, might remind one of Pompeii; for here also, as in the lava-buried city, we reach the habitations of the living through those of the dead; and close to that gate, on the outside, we find, as at Pompeii, a quarter for the *custodia militaris*, containing eight small chambers, in one of which we see, on the marble pavement, a relic of military amusements, consisting of a gaming-table,—such, at least, the apparent purpose of the series of circles, diminishing towards both extremities, incised on the surface. From the description of brickwork it is believed the Ostian sepulchres may date from the third and fourth centuries of our era; and among the more interesting is a mausoleum, with a spacious vaulted chamber, entirely inlaid with sarcophagi of terra-cotta placed in two parallel rows, each of the four sides opening in an arched recess above other tombs, like the *arcosolia* in Christian catacombs.

The baths near the Mithraeum comprise a suite of chambers, all roofless, besides a large hypocaustal court, the *Palæstra*, surrounded by a portico of Caryatian (green-veined) marble; first being entered the *spoliatorium* (for undressing), whose floor is paved with mosaic, black and white, in a pleasing pattern like carpet-work; next, the *gymna*, with niches round its walls, no doubt for sculptures, a female statue, found in one of which, has been taken to the Vatican; next, the chambers for the tepid and hot baths, in that for which latter purpose the terra-cotta tubes of the calorifers still remain, and we may look down into the hypocaust below. Among the mosaics in these interiors are some figures of spirited design, especially a Cupid riding on a dolphin; but the best, a coloured composition, has been removed to the hall in the Vatican, now known as that of the "Immaculate Conception," from the frescoes, illustrative of that doctrine and its definition, on its walls and ceiling. On the pavement of the *Palæstra* is a very curious (among Roman works, we believe, unique) representation, in black and white mosaic, of a labyrinth inclosed by quadrangular walls, and entered by four gates, the central compartment occupied by a large altar on which fire is burning. Most interesting, and relevant to the story of a singular religious system, is the Mithraeum, now entirely laid open, divided into three compartments, not by columns, but by differences of level. This consists of an oblong parallelogram, 16 by 5½ metres, with walls of lateral brickwork still preserved almost up to the impost of the vault, but no traces of windows,—illuminated, we may suppose, by lamps and candelabra, of which many were found here.

At one of the narrower sides is the chief entrance, and at the opposite, the altar, still in its place, a block of Caryatian marble, standing on the summit of four steps, with its dedicatory epigraph in good letters,—“C. Celsus Hermæ Antistes hujus loci fecit sua pec.” above which appears to have stood the group of the Mithraic sacrifice, namely, a youth in Phrygian costume and tiara sacrificing a bull, with various mystic symbols around, but of which sculpture remained only the principal head and the hand with the sacrificial knife, wrought in good style. Around the altar were found several masses of tufa rock cut into conic forms (a known Mithraic symbol, allusive to the sacred fire), and some columns of fine marble, probably for supporting lamps or symbols. The area of this cella is lower in the midst, more elevated, and reached by two steps along the sides; and those higher aisles (so to call them) served for the initiated; the central nave for the other worshippers; this part being paved with plain mosaics, along the edge of which is inscribed, alike on both longer sides, in mosaic letters, *Soli Invicti, Mith. D.D.* [done dedicit], *L. Agrippus Calendius*. The walls are painted red; and the remnant of sculpture found above the altar had also colour, the face carnation, and the Phrygian cap purple-tinted. Leaning against the steps of the aisles were found two statues with two reliefs of Mithraic priests in Phrygian dress, one lifting, the other reversing a torch,—the allusion thus conveyed by Oriental symbolism, and contemporaneous with Mithraic doctrines, to the sun in spring and the sun in autumn, as approaching and distancing our earth; these sculptures being also of some merit and retaining many remnants of gilding. Besides these were found other symbolic marbles—a lion's head (the animal of the sun, and the sign also of a high degree of initiation), and a Phrygian cap, evidently meant to stand on a basement, not for any head, pierced in seven places for so many rays to be inserted.

The most curious detail of all in this sacred building is one the explanation of which, published by the Chevr. Visconti, is both learned and satisfactory,—indeed, convincing. At an angle near the principal doorway is a small *edicula*, like an oven, about 5 palms high, with its recess and cover painted red on the same surface of intonaco as seen on the walls, and with a kind of predella at the basement. Other Mithraic monuments, found near two ancient cities of Dacia, supply the key to this mystery, both showing in relief a similar *edicula*, with an animal like a he-goat couchant inside, a devotee kneeling on one side, and seven altars, or *pyraei*, ranged in front. In this recess we may recognise the imaginary "Station of Capricorn," knowing as we do that the Mithraic theories assumed the existence of two solstitial points in the tropics of Cancer and Capricorn, regarded as the two gates of Heaven,—the former for the descent of souls to earth, the latter for their ascent to regain the celestial mansion, after a purifying passage through the seven planets. According to the Zindavesta, Mithras resides in Heaven, between the sun and moon, where he perpetually presides over the transmigration of souls; and as the kneeling figure in the relief represents the initiate or mystagogue, the seven altars represent the planets, and the *edicula* with the goat inside the heavenly portal under the sign of Capricorn. It is remarkable that a lateral entrance to this temple, as also a recess at the right of the altar, were found choked up with rubble, evidently to prevent ingress,—a measure ordered, no doubt, on the suppression of this Oriental worship, first abolished by law at Rome, A.D. 376.—See "The Epistle of St. Jerome (p. vii.) to Laeta." The names of consuls in the inscriptions below the figures of the priests indicate a date answering to A.D. 164, the time of Marcus Aurelius, under whom and the other Antonine emperors the Mithraic worship was at the zenith of ascendancy in the West. External to its temple here we enter several small chambers, probably for residence of the *Antistes*; one containing what seems to be a fireplace, or oven; another terminating in a curved recess above a staircase, lined with blue vitreous mosaic, and in the upper part adorned with a valuable art-work (now in the Lateran Museum), the figure in fine coloured mosaics, of Sylvanus, standing amidst trees, with a flaming altar on one side, his dress a tunic; on his head a crown of pine or cypress, like a halo; in one hand a cypress branch, in the other a sickle; a dog seated at his feet.

Visconti shows grounds for the conclusion,

that Mithraic worship was introduced at Rome so early as the year of the city 687; and first by the mariners of the fleet, who in that year had defeated Cilician pirates, and had probably learned those Persian doctrines from the pirates themselves (v. Plutarch's "Life of Pompey"). We might infer that Ostia was the first centre in Western Europe where such a superstition took root, seeing that no fewer than five Mithraic monuments (all now in the Vatican) had been yielded by this soil before the late discovery; and that two other Mithraic sanctuaries besides the above-described have been found here, one in the form of a cavern, as it appears were all those destined for the initiation in this worship,—first re-opened by the English artist, Fagan, who discovered much at Ostia, in 1797. A very significant Mithraic relief of the usual sacrifice by the *intercessory* to the higher deity,—Mithras to the supreme Ormuzd,—was dug up in Rome, under the court of a private house, in 1802.

Of other discoveries latest made at Ostia, most important is the more spacious structure for *thermae*, which, from their brickwork, may be referred to the time of Hadrian, and are, in some respects, the most complete yet known among Roman remains of this class. The halls of this building are descended into at some depth below the surrounding level, but are seen by daylight, and quite roofless; their most noticeable contents being the mosaic pavements, and the still perfect arrangements for the heating from below. In designs of much spirit (black and white, like the other examples) we here see an elaborate illustration of the athletic games, and the prizes won therein: winged genii holding palms for the victors; the trumpeter ready to sound his signal; the vase for the powder used to rub the body before the contest; and the *mensa agonistica*, or table laid with the crowns and palms bestowed on victors. In other chambers, Tritons blowing their horns, while each holds an oar in one hand; Nereids riding on marine monsters that combine the horse, the ox, and the tiger with the dragon form; and in the centre amidst these, Oceanus, a large, wild-looking head with floating hair and curly beard. In the hall for the sweating-bath (*sudatorium*), paved with plain mosaic, the whole method in use for such compartments may be apprehended better than in almost any other antique example; round its walls are seen the vertical tubes (*terra cotta*) for conveying hot air, and in the midst, near one end of the oblong, the circular furnace gaping open below the pavement, communicating with a narrow passage for the ministers, and several parallel conduits running thence under the mosaic floor. Here the work of disencumbering is not yet quite completed, and nothing has yet been touched or removed within these interesting ruins. Not far from the same spot we look down into another area, just excavated, where stand several massive columns, brick or concrete; and near the narrower end wall of a quadrangle, an ample puteal in *opus reticulatum* masonry, quite firm and perfect,—this being, perhaps, the outer court of some important mansion, or the residence of some collegiate body. Another area, whose uses are evident from its contents, is filled with immense *dolia*, laid up to their necks in soil, probably intended for deposit not only of oil and wine, but also of solids, grain, &c., as inferable from the marble weights here found, some to the amount of 100 lb.

Besides the mausolea forming that necropolis external to the city, have been opened, through recent works, several columbaria and other species of tomb-chambers, some presenting evidence of the co-existent modes of disposing of the dead by cremation and interment in sarcophagi. The largest of the columbaria has its vaulted interior entirely covered with decorative painting, but has been deprived of its most remarkable adornment, a picture of the descent of Orpheus to rescue Eurydice from Hades, now in the Lateran Museum. The pavement of that interior has a central opening, through which we look into a subterranean, probably for the interment of slaves, who were not allowed the honours of the funeral pyre or cinerary urn; and on one side, near the entrance, is an epitaph in the best characters of the best period to a child whose age is given, with affectionate minuteness, as one year, one month, eleven days, and one hour. Among other noticeable paintings in tombs recently found, are the Rape of Proserpine, Saturn devouring his children, and receiving from Rhea a swaddled stone, the maternal de-

vice to save the infant Jove; Mercury with caduceus and bag, as the god of commerce, standing near a ship, which several slaves are in the act of lading with grain; all these engraved in outline, being now purchasable in a brochure by the Chevr. Visconti, "*Pittura murale Ostiense.*" The ruins of the theatre, a scattered series of structures like low archways, quite without architectural character, have not yet been touched, but certainly claim attention; for this edifice is known to be of the time of Hadrian, and is mentioned in hagiography as that before which was beheaded the martyr Cyriacus, A.D. 300.

It is uncertain what was the dedication of that principal temple, the lofty brick walls of whose cella rise most conspicuous among the ruins on this wide extent of solitary sea-coast; some conjecture a *Cæsareum*, or fane of all the deified emperors; others, Castor and Pollux, or Neptune, as the deities here honoured. Its ruins were first partly cleared by works in the time of Pius VII., and have become much more interesting since was made accessible the crypt in two large vaulted halls, and disencumbered, as we now see, the surrounding area once paved with marble and enclosed within a portico, enormous fragments of whose fluted columns lie strewn on the soil. That cella had, as is evident, no vaulting, but a wooden ceiled roof; and the walls are shown, by the numerous cavities on both sides, to have been incrustured with marble alike on the outer and inner surfaces. In its actual condition, though presenting no architectural elevation to be called beautiful, a certain forlorn majesty is possessed by this temple; and the mournful solitude that reigns around adds to that effect. Within its spacious cella was assembled, on a fine day in March, a large party of English who had inspected all the Ostian antiquities and listened to the reading *in situ* of a descriptive paper translated from Signor Visconti's original Italian; the excursion having been arranged by the British Archaeological Society, and in every respect to the satisfaction of all concerned. One of the most picturesque, and of course the merriest, of scenes, in which were grouped about sixty individuals, during that day's adventures, was the mastering for the cold collation spread on the grassy ground, within that ruined cella. Thence the party drove to Castel Fusano, the forlorn but most romantic old villa of the Chigi family, amidst the solemn shades of a primeval pine forest that extends its dark belt, far from all other human habitations, along the sea-coast; and under whose shade we walk, for some half-mile at least, on the antique pavement of the Via Severiana, till reaching the sandy beach on which that forest continually encroaches.

On the return to Rome that evening, the effect of a cloudy but rich-toned sunset-sky, above the far-extending level of the Ostian coast, the wild village, and scattered ruins, was a sight not easily to be forgotten. Nor could any illumination have been more suitable to the landscape and its associations than the last pale gleams of that sunset on the winding Tiber, and on the few ruinous tombs that stand amidst uncultivated uplands and hollows beside the Via Ostiense.

NEW SOUTHWARK-STREET AND ITS ARCHITECTURE.

THE principles of action of the Metropolitan Board of Works have proved themselves, on the whole, broad, simple, and animated by the true "spirit of progress," in the fullest meaning of that term. Minor details in the carrying out of the vast improvements undertaken may be, more or less, open to criticism; but taking a fair general view of the working of this important institution, as regards both the theory and the actual reduction to practice of the various projects initiated, both system and working out have proved themselves so excellent and, in the main, so successful that our vast London is already deriving a number of advantages in the form of sanitary, artistic, and also commercial improvement of the greatest interest and importance. Among the chief of these may be cited the purification of the Thames by means of a new system of drainage, carried out upon a gigantic scale, as illustrating the general character of sanitary ameliorations. The practical carrying out of a system of embankment, by means of which spacious quays will be created on each side of the river, to be eventually occupied by stately buildings, which will

form the crowning glory of new London, if properly done with a right sense of the importance of the opportunity, ought to afford a splendid example of the artistic and monumental advantages to be derived from the course of action pursued; while the creation of new Southwark-street, connecting the eastern and western centres of our vast metropolis by a direct line of communication on the south side of the river, serves to illustrate the advantages of a commercial character which have distinguished the operations of the Metropolitan Board of Works.

Some method of relieving the crowded state of the traffic along the Strand, Fleet-street, Ludgate-hill, and Cheapside, had long been a desideratum; but no plan ever appeared so direct, simple, and inexpensive as the creation of a continuous and spacious new street on the south side of the river, and that idea has, at last, been successfully carried out, with results which have fully borne out its asserted superiority over all other suggestions. Before the improvement, the land on this side of the river was, comparatively speaking, cheap—a circumstance which enabled the Board, at a moderate outlay, to buy up the sites required for their purpose. The street having been formed, the frontages on either side were offered to the public, as freeholds, with a direct parliamentary title, or as leaseholds at a ground-rent, at such reasonable prices that the whole has been taken up much more rapidly than might have been expected, considering the great extent of building ground of a particular character thus thrown into the market at once.

Very few empty spaces now remain along the whole line, which has already become a great subsidiary thoroughfare from Westminster to London Bridge. The buildings which have thus rapidly arisen along the course of this new commercial avenue are, as a whole, of so distinctive a class that they appear to call for special notice as presenting in their aggregate an architectural aspect of somewhat unusual character. We have in other parts of London witnessed the recent erection of vast buildings destined to strictly commercial purposes, which from their dimensions and architectural merit must be accepted as important monuments of the architecture of the period. These vast stacks of buildings erected as manufactories, or warehouses, in various parts are frequently of very imposing aspect, but nowhere do they form so remarkable a general feature of a district as in Southwark-street, though in several cases individually superior. One of the chief causes of the distinctive general character of the new buildings of this spacious street, both individually and collectively, is that in most instances the buildings are detached from each other, like the great club-houses of Pall-mall, and so produce a very different effect from that of a series of façades like those of ordinary streets, which are closely contiguous, and, in fact, joined to each other.

The great warehouse-edifices of Southwark-street are nearly all sufficiently detached to give each the full advantage of its own distinctive features; and these features are, in most instances, sufficiently remarkable to warrant an individual assertion of their character. They have, however, a general homogeneity of generic character, arising, in the first place, from the generally adopted principle of fitness in determining the style of an architectural design; secondly, from the grand dimensions of most of the buildings and the seemingly prevailing feeling of both architect and capitalist that a structure for carrying on extensive commercial transactions in a country which has risen to greatness and riches by the success of its merchants and manufacturers, should present a more important character, even from a purely architectural point of view; and thirdly, from the fact of the buildings in question deriving a marked character from being constructed almost entirely of brickwork. The mansions of the Elizabethan serve to demonstrate that very grand and even palatial effects can be produced by brickwork, especially with stone dressings; and even in castellated architecture there are the magnificent and nearly perfect remains of Hurstmonceux Castle, and other equally fine examples, to show what grandeur of effect may be produced by an artistic management of the national red brick. But the use of brickwork, from an architectural point of view, had so utterly declined, and was still further declining, during the first quarter of the present century, that its treatment seemed unlikely to be resuscitated as an important branch of architectural study. In recent years, how-

ever, by great advances in the various ramifications of the architect's domain of action, the study of brick architecture has been revived with much success. Even churches have been constructed entirely of brick, in which not only have fine effects been produced externally, but even the interior surfaces of the walls, the columnar supports, the groining of the ceilings, and other features of internal decoration, have been made to display not only the great natural capacities of the material, but also new modes of structure; and the warehouses of Southwark-street furnish us with the most recent series of examples of the restoration in question.

Travelling eastward along the new street, the first building that forcibly arrests the attention of the architectural critic is the wholesale stationery warehouse of Messrs. Causton & Sons. The style adopted is bold and simple, and looks like a free adaptation of the spirit and general proportions of the best Renaissance period. The main structure is of brick, with soberly-introduced stone dressings, which are sparingly enriched with some, well-sculptured ornaments. The general mass of the building is upon a scale that invests it with a character that at once arrests the attention even of a casual passer by.

The next great stack of buildings, though having a generic affinity of character with the one just described, is yet distinguished from it by features of its own. Extending to the corner of an intersecting street, the angle of the building is formed of a well-designed tower, which rises slightly above the general height of the structure. The general cornice of the main front is made very ornamental by a judicious management of the brickwork, now in common practice, by means of which a pattern is produced similar to the "dog-tooth" ornament of sculptured stone mouldings, coloured bricks being sparingly introduced above the continuous arcade formed by the upper windows. The windows of the principal story are square-topped, and somewhat after the fashion of those frequently found in the domestic Gothic of the old German towns, the tier below being arched. The arch of these lower windows is formed of alternate white and dark bricks, each mass of colour occupying the space of about three bricks in breadth. This alternation of white with a tone of full violet black produces a bright and, at the same time, bold, effect, which enlivens the whole façade, and is the more acceptable as it is at once felt to be a legitimate feature of ornamentation naturally suggested by the material in use. Tait & Co., the army contractors, are the occupiers of the next noticeable mass of buildings of this class. The cornice of the whole structure is a bold and effective piece of brickwork, with a fascia enveloped by a well-managed pattern of red, blue-grey, and green bricks, the effect of which is very quiet, and appropriate to the general decorative treatment of the edifice. The upper windows, after a fashion now becoming very general in buildings of this kind, form a continuous and connected arcade, the arched top of each window being formed of red, white, and black bricks. These window-arches are supported alternately by single columns and pairs of columns, of polished granite; below this arcade the façade is divided into compartments by means of broad piers of slight projection, forming intermediate round-topped panels or recesses, in which are three tiers of windows, connected ornamentally by a conspicuous band of coloured brickwork of green and red. This band of ornament is interrupted at intervals by circular devices in relief, formed of the rose, shamrock, and thistle, which are coloured black, and relieved with gilding: they appear to be cast iron, painted, and gilt, or terracotta, so treated. The sills and lintels of the windows are stone, and so is the principal entrance-doorway, the treatment of which is founded upon that epoch of Gothic art known as Early English. Other buildings of similar character, though of inferior importance in dimensions, next occur; and, at the corner of Guildford-street, excavations are actively proceeding in preparation for another great mass of buildings of an analogous class.

Wigan and Crosier's hop warehouses next arrest the attention of the architectural explorer. They are perhaps on the whole the finest stack of buildings in that part of the new street, but being more in the ordinary style in which the advanced study of modern brickwork has most generally developed itself, the structure does not call for special description. We next meet with a continuous row of buildings combining

the character of retail shop and warehouse. Each of these façades is distinct in design, and two or three of them are remarkably good. A rather new feature adopted in one of them, in order to admit more light into the rooms in the roof, may be thus described. Instead of a row of dormer windows at distances (there might be room for four), there is a continuous glass gallery, which, rising from behind the parapet, and being surmounted by a rich bordering, or crest, of ironwork, relieved by gilding, produces an attractive effect. Opposite to this row of buildings is another detached warehouse, and then come Meers. Andrew Dunn & Son's iron-works. In this building, which is a combination of brick and cement, the chief decorative feature is formed by deep intaglio patterns in the cement dressings of the doors and windows. On the opposite side of the street, the next new building is that occupied by Messrs. Toulon & Dogget, hop merchants. Nearly the whole frontage of each floor is glazed, producing a light and pleasing effect, and the whole of the design, though upon a comparatively small scale, is neat and elegant. Adjoining are the important premises of the Hop Planters' Association, which are somewhat like most of the others of their class in this street, as combinations of brick and stone; the stone dressings in this instance, however, being rather more profuse and massive than in the neighbouring buildings. The general style adopted appears to be founded upon a study of the Norman and Byzantine epochs, but the gateway does not accord in architectural feeling with the rest of the building, being of a much lighter character, and rather Italian in aspect. Adjoining this structure is Calvert's buildings, a pretty elevation, in a set Elizabethan style; brick with stone dressings. The advancing spectator next meets with four warehouses, which are all fair average samples of the general advanced styles of brick buildings, with stone or cement dressings. The last structure on that side of the street is a handsome building, occupied by the Southwark branch of the Alliance Bank, which stands in a commanding position, forming the angle from which Southwark-street and High-street diverge, a point remarkable for the extremely decorative group of lamps which protects the centre of the wide crossing, illustrated in these pages some time ago.

Opposite to the Alliance Bank rises the Hop and Malt Exchange, by far the most important building in the new street. This structure occupies a frontage of 120 ft., and is fast approaching completion. The lower columns of the façade, the shafts of which are richly ornamented, are of cast-iron, and intended for further enrichment by means of bronze and gilding. The general front has an imposing aspect from its great height, consisting as it does of ten stories. The basement is occupied by two stories of cellars, which for extent and lightness of appearance, are of very remarkable character. Their roofs are supported on detached iron columns connected by girders, and are very successful pieces of construction. Above the two stories of cellars, and a little above the level of the street, is a covered area of 80 ft. by 50 ft., which is destined for the Exchange. The design of the floor of this noble chamber is very handsome, including encaustic tiles, and the roof over the whole area, at the height of 100 ft., will be of a very effective character, and composed of glass and iron. It is now in rapid progress, and will probably produce a very fine beautiful effect, admitting a flood of light, which it is not the intention of Mr. Moore, the architect, to lose the advantage of, in a decorative point of view; it being part of his plan to have the upper portions of the walls decorated with frescoes, representing hop planting, hop picking, the barley harvest, and other subjects of an appropriate character. Attached to this spacious covered area, nearly as large as the internal court of the Royal Exchange, is a large subscription reading-room, and also, on another side, a refreshment-room of more than usual dimensions. The interior of the Exchange itself presents an attractive appearance from the nature of the structure, arising out of its purposes. It is surrounded by four tiers of decorative galleries, each leading to a series of sampling rooms for hops and malt, and the approach to each of these rooms being formed by an arched entrance, has necessitated the creation of a series of arcades, one above another, to the height of four stories, which imparts a very unusual and impressive aspect to this remarkable interior, which, when completed, with its surmounting frescoes, decorating the closed arches

of the upper story, will be unlike anything of its class in London, and will recall to the mind of those who have visited Rome one of the courts of the Vatican, but with original features of its own sufficient to stamp it with a perfectly distinctive character. The entrance from the street to the Exchange is spacious and handsome, and for its final completion is only waiting for its decorative columns, which are to be of Irish marble. The pilasters, forming the chief decoration of the walls, are to be of that bright green marble of Galway; no other quarries in Europe furnish marble of a similar tone; and the detached columns are Limerick marble, of a rich ruddy tone, beautifully veined with both lighter and darker streakings of the same colour. The four first stories of the façade, above the basement, consist of offices destined for the use of hop growers, hop merchants, hop factors, and others connected with dealings in that great national staple, the central market of which has been long established in the part of the Borough of which the Hop Exchange will now form the appropriate centre. Other building features connected with improvements in this part of Southwark are well worthy of notice, but must await another opportunity.

A NOTE FROM THE CHAMP DE MARS.

I MUST preface a few remarks I desire to make on the Fine Arts Department of the Paris Exhibition with a protest against the exceedingly ugly marble bracket displayed in the front of the London Society of Arts' case of premiated objects, No. 86, Class 65. The subject is a Cupid and Dolphin's Head, and the bracket obtained the first prize, 15*l.*, in 1865. Nothing can be imagined more flat and shapeless than the left arm, or more frightful than the round mass which represents the right foot, and which suggests a club-foot with the toes only indicated but not developed; and the meaningless face is simply abominable. I do not presume to give an opinion as to the wisdom of the council or committee of the Society of Arts in awarding a 15*l.* prize for such a piece of ugliness; but I feel sure any lover of art will agree with me that to stick it up in *front* of the case, where it is impossible it can be passed over, is a mistake, and will join me in requesting it may be hidden away out of sight as quickly as possible.

The question as to whether the English or French mode of screening their picture-gallery from too much sunshine be best, is now most definitively settled, and in favour of the English method. The full height of our gallery has been preserved, the sun-blind stretching across from side to side from the summit of the walls. This blind is formed of thin white muslin nearly as wide as the gallery, and is laced down each side by red cord to a piece attached to the wall; the advantage of this being, I presume, that it was fixed up very quickly,—I saw it in operation,—and can be tightened if it should stretch and get slack; added to which the red zigzag, trellis is ornamental. Below this white muslin ceiling comes a broad band of deep crimson or bright chocolate colour on the walls, upon which, in legible gold letters, are inscribed the names of our artists, with the date of their birth and death; then comes the plain green wall, which is certainly not a pretty colour, but which harmonises with all sorts of pictures far better than does the ugly brickdust red of the walls in the French gallery.

But our greatest triumph is in having gone to the expense and trouble of laying the floor with cocoa-nut matting, which, besides being neat and clean, is so useful to one's poor weary feet after the gritty, dusty, muddy floor of the French gallery. I say "French gallery" because I have only seen that besides the English, and do not yet know what other nations have done; but I do know, to my cost, that three or four hours spent in the French gallery sent me home fearfully footsore, and horribly out of temper with the men who are everlastingly coming round with their water-cans and dashing the contents about, disturbing and annoying every one. In fact, the gallery is always in a state of gritty dust or mud. As to the pendent sunblind, it is extremely ugly; takes off from the height sadly; makes the gallery very hot; and the flat portions being all formed of paper, it is cracked and torn in all directions, and looks ragged and neglected. But the pictures themselves are very beautiful; too much cannot be said in admiration of them. Unfortunately, as is always the case in a collec-

tion of French pictures, one is obliged to turn away the eye from a vast amount of nudity, and blood, and slaughter, and distressing subjects of all sorts, which, to our English taste, so greatly detract from the pleasures of visiting a French picture-gallery; but this admitted and regretted, there remains so much careful study, delicate manipulation, bold handling and rich colouring, that all gazers, of whatever age or class, must reap great delight from a minute study of these fine productions. To mention alone Gérôme, who has thirteen works exhibited, most of them well known in England, to wit, "Duel au sortir d'un Bal masqué," "Les Gladiateurs," "Le Prisonnier," Arab fettered, lying across a Nile boat; Fichel, who has three gems; Meissonier, fourteen works, most of them also well known in England, and of which it is useless to say anything, they are all so charming; Edouard Frère, who has eight of his delicious little bits, of which "La Bibliothèque" seems to me to carry off the palm from its simplicity, truth, and tenderness. Two sisters, soberly attired in brown stuff dresses and green aprons, sit side by side on low stools in a dear old well-stored book-room; and the roundness of the heads, the manner in which the light falls on the figures, and, indeed, the whole composition of the picture, are perfection. Vetter, who has six pieces, of which "Le Départ pour la Promenade," a *beau galant* dressed in violet velvet and lace ruffles, is a marvellous bit of colouring; Toulmonche, Bellangé, well remembered by his "Doux Amis: Sébastopol, 1855," exhibited in our '62 International Exhibition, and here also; Rosa Bonheur; Claude, "Un Jour de Fermeture de Chasse;" Armand Leleux; and many very fine portraits, life-size, well substantiate the general admiration I have accorded to the oil paintings in the French Gallery.

There is a fine picture by Pierre Jollivet, called a "Dessin," which must not be passed over; especially as, from being placed high up, above the row of very excellent miniatures, it is the more likely to escape observation. The subject is an inspired-looking youngish man, in loose robes, standing on a platform of bare rock, surrounded by a vast expanse of sea and sky. The title of the picture is "Le Sentiment de l'Infini." The figure has the hands pressed on each side of the chest, as if to control the swelling of the heart, and the elbows are extended from the body, indicative of force and emotion. There is no other vestige of creation apparent, save the man, the rock, sea, and sky, and the effect is very sublime.

Another grand work, that does not seem to attract much attention, is a statue in plaster, by Camille de Veroy. It is a slightly-draped male figure, half-sitting, half-reclining on the ground, the subject Lafontaine's fable of the gourd and the acorn. Last one of your readers may not remember, I may tell them how the fable runs:—A philosopher lay one day beneath the shade of a vast oak; at his feet trailed a gourd-vine, loaded with its heavy fruit. "Had I been the Creator," said the philosopher, "I would have placed the large gourd on the strong tree, which is able to sustain it, and the light acorn on the delicate vine." At that moment an acorn detached itself from the branch above his head, and fell on his face. Then he understood that, had a gourd been in the acorn's place, it would have been a serious matter for him; and, re-proved and penitent, he raised his eyes to heaven, and exclaimed,—"*Dieu fait bien ce qu'il fait!*" This is the moment the sculptor has chosen for representing, and the result is a grand statue.

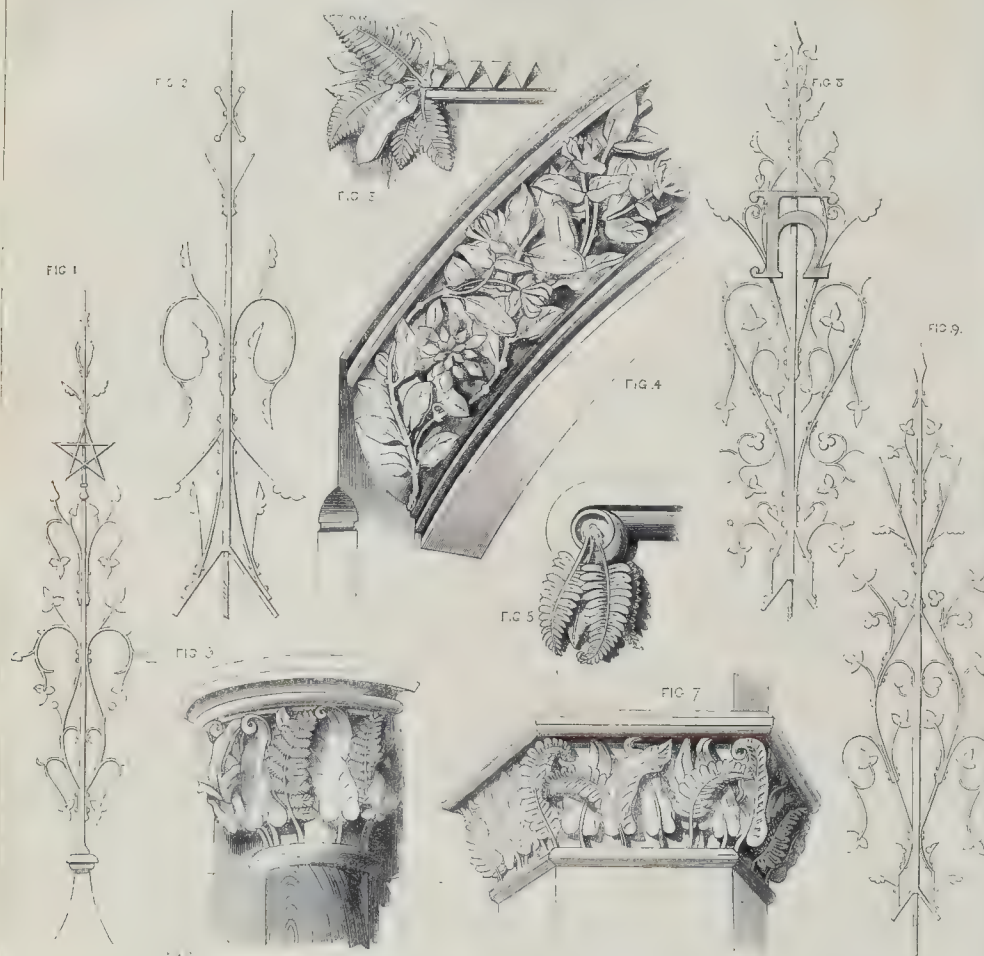
R. F. H.

N.B.—Many will be glad to hear that the Superior Council of the International Jury has decided that the number of recompenses, originally fixed, independently of the grand prizes, at 100 gold medals, 1,000 silver, and 3,000 bronze, are to be increased respectively to 900, 3,000, and 4,000. The 5,000 honourable mentions will remain without change.

MANCHESTER NEW TOWNHALL COMPETITION.—A correspondent complains that there is to be no exhibition of the preliminary designs. Architects may thank some of their own body for this regrettable determination. The letters that have been written on this competition by architects would almost justify the Manchester corporation, or any other corporation, in taking exactly what steps they thought best, without the slightest reference to the opinions of the profession.

ROCKHURST, WEST HOATHLEY, SUSSEX.—Messrs. G. & H. Godwin, Architects.

DETAILS OF CARVING AND IRONWORK.



Figs. 1, 2, 8, and 9. Wrought Iron Terminals.
Fig. 3. Carved Termination of Cornice on East side.

Fig. 4. Honeysuckle on Arch of Porch.
Fig. 5. Termination of String, Entrance Tower.

Fig. 6. Capital of Column, Principal Entrance.
Fig. 7. Capital of Pier to Library Window.

THE TRADES MOVEMENT.

Worcester.—A meeting of the master builders has been held to "consider, in the present state of affairs, the necessity of endeavouring to adopt some general system of rules and rates of wages." After the matter had been fully discussed, it was decided by the meeting to form themselves into a branch of the General Builders' Association.

The plasterers, carpenters, and joiners here have recently agitated to leave work at one o'clock on Saturdays, receiving the same wages as before. Messrs. Wood granted the concession, and the other builders followed suit.

Bradford.—The hours of labour of the journeymen plasterers and their labourers have just been reduced five hours and a half per week, and their wages at the same time increased 2s. per week. The wages of the plasterers in the town now range from 28s. to 31s. per week, and the wages of the labourers are 22s. per week.

Oldham.—The stone masons are on strike, in

consequence of the employers having refused to comply with a set of rules submitted to them by the men. The bricklayers' labourers are also on strike for an increase of wages; and the joiners have given notice that they will cease working on the 1st of June at all places where non-society men, or persons who have not served a regular apprenticeship to the business, are employed. The cabmen here have also struck, in consequence of their employers refusing to grant them a cessation from work for half a day on every alternate Sunday.

Glasgow.—It is estimated that there are 150,000 working men at present out of employment in this city.

America.—There are now twenty trades on strike in the States of New York, New Jersey, and Pennsylvania, and although some employers are able to stand firm, many have yielded to the demand for higher rates. In Chicago there is to be an established organ of the working classes, founded upon principles of which one is, "There are no rights but the rights of labour." Mr. Horace

Grealey, who accepts almost everything else the extreme popular party puts forth, takes exception to this maxim. He is an employer, and, like the rest of his class, is powerless against the governing body, which is made up of the labouring portions of the community.

ROCKHURST, WEST HOATHLEY.

In a recent number we gave a view and plans of the house lately built here,* and some particulars of this charming and remarkable estate. We now add illustrations of some of the carving and ironwork. The terminals present the same appearance seen from the side as in front. The ferns recognizable in the capitals are—*Hartstongue Fern*, *Scolopendrium vulgare*; *Polypody*, *Polypodium vulgare*; and *Buckler Fern*, *Lastrea Filix-mas*.

* See pp. 275-277, ante.



THE PAXTON MEMORIAL — DESIGNED BY MESSRS. GODDARD & SON, ARCHITECTS.

PAXTON MEMORIAL.

THE erection of a memorial to Sir Joseph Paxton, at Coventry, having been determined on, a committee of gentlemen was formed, with Mr. John Galsoun as chairman, for the purpose of carrying out that determination. A number of architects were invited to send in designs, and Messrs. Goddard & Son, of Leicester, were the successful competitors. We give an illustration of their design in our present number. The memorial will be executed in Portland stone, with polished granite shafts, and it is decided to erect it in the cemetery. Sir Joseph Paxton, as will be remembered, was M.P. for the city of Coventry.

MODEL OF PROPOSED NEW DOCK APPROACHES, LIVERPOOL.

MR. C. N. THWAITE, of London, has prepared a model of the scheme of Mr. Lyster, the dock engineer, for extensive re-arrangement of the dock approaches; and it is now deposited at the Albert Dock Warehouse Offices. It embraces every point of even the minutest detail, from the Albert Dock Warehouses on the south to the Waterloo Dock Warehouses on the north, and from mid-river to beyond the Town-hall. Mr. Lyster's plan includes the filling up of the George's Basin, the entire reconstruction of George's Dock, Man Island, and the Bridgewater Basin; the pulling down of the Gore-piazas, the construction of a new high-level road along the line of Strand-street to join the high-level approach to the Landing-stage, which will be approached from the heart of the town by a broad road running close to the south side of the Old Church, near the site of the present high-level footway. The high-level approach terminates in an extensive promenade overlooking the landing-stages. Various other alterations and improvements are included in the scheme. The one great objection to it is its vastness, the cost of which would be too great even for Liverpool; but the engineer has shown that there are many expensive features which may be omitted at present, and completed at a more convenient time.

CONCRETE BUILDINGS.—COMPARATIVE STRENGTH OF CONCRETE AND BRICKWORK.

SIR,—In a recent discussion at the Society of Arts on the subject of building in concrete, Mr. W. E. Newton, C.E., gave a detailed statement of what he had done in England, and is now doing, in concrete constructions. I should not have troubled you with any observations of mine on this subject (although my name was mentioned) had not some incorrect statements been made. I think Mr. Newton, in his speech at the Society of Arts, and in his subsequent letter, completely settled the question of economy of construction, and I can from a pretty fair experience fully corroborate him.

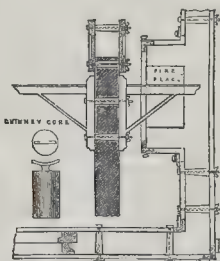
As some proof of the applicability of Portland concrete walls and constructions as described, I beg to forward you the plans of four 8-roomed villa-residences I am now building at Gravesend—a photograph of a pair of them in their present state and course of construction. You will see that the fireplaces are half their width out of the centre of the room. By this arrangement I am enabled to set all the flues in a 15-inch wall. As modern stoves are only 9 in. deep I get a back 6 in. thick. This arrangement will also give 50 cubic feet more space in each room, a great desideratum in building houses for the working classes. The cost price of these houses will not exceed 140*l.*, finished with the best materials and workmanship. The inspection and critical examination of these houses by architects and builders are invited.

As regards the strength of Portland cement concrete in comparison with brickwork, I can at once settle that question.

In the photographic view of the houses I am now building at Gravesend you will see that I am standing on a bracket or lever fixed in and extending 6 ft. 6 in. from the weakest part of the wall—namely, a pier 2 ft. wide between the windows. This pier is 9 in. thick and eleven days old. If the lever were placed inside the building there would be some support from the window-frames, as they would form a rebate, but being on the outside the reverse is

the case. There is also a block of concrete 3 ft. long, 12 in. deep, and 4 in. high. It is suspended from the bressummer in the opening for the bay windows. This block is made with seven parts of crushed stone to one of cement. A large box, 3 ft. long, 2 ft. 3 in. deep, and 18 in. wide, loaded with flints, stone, and brickbats, closely packed, is suspended from the block. I calculate this weight at about half a ton, but I have no doubt the concrete block would sustain double the load.

Professor Kerr asked, "Did any one mean to say he could build a wall 30 ft. long and 25 ft. high, 6 in. thick?" Mr. Newton said, "Yes," and I say, "Yes," and I am willing to satisfy those who doubt to give the following challenge:—First to attach one of my brackets, 6 ft. 6 in. long, to a pier built in concrete 9 in. thick, and my opponents to do the same, with a pier of ordinary bricks and mortar, 14 in. thick, 2 ft. wide, and eleven days old. The bricklayer is to carry up the pier without knowing that it is to be subjected to any test. The builder of that pier which sustains the heaviest load and strain to receive 50*l.*, which shall be forfeited by the other side. Secondly, subject to the same conditions; let a block of bricks and mortar be made the same size as the block of concrete, and the same age, that will carry 1.20th the weight of concrete block of the same dimensions, and I will forfeit 50*l.*



Thirdly, I will build a wall in concrete, using my bracket-scaffolding, in competition with a brick wall of the above dimensions, and 9 in. thick. Both walls to be built with my bracket-scaffolding, and each wall to be built 18 in. every day, wet or fine weather.

If the brickwork stands the test mentioned I will forfeit 50*l.* and the cost of the wall; and if it will not stand the test mentioned as above, the same shall be forfeited to me. All my concrete shall be made at half the cost of my intended opponent's brickwork.

The great desire you have always shown in your valuable paper to solve the question of building houses for the working classes, and also for the public in general, in an economical manner, have induced me to address you at this length, and if the challenge I have given be not taken up, I think I may then assume that my propositions are sound, and that I may say the question of building improved dwellings for the people is answered.

JOSEPH TALL.

THE GOVERNMENT POSTAL TELEGRAPH SCHEME.

THE Post-office authorities are said to be busily engaged in maturing their postal telegraph scheme. It will be incorporated in a Bill which is to be submitted to Parliament as soon as the Reform Bills have left the Commons. A compulsory purchase by the Government of the plant and interest of all the existing telegraph companies was originally contemplated, but the Treasury and the Board of Trade have taken some objections to this course, and the Bill will now be of a permissive character, giving the companies the option of sale on terms to be agreed upon with the Government. When the Government has acquired the telegraph-lines, they will become a department of the Post-office. New wires will be laid down, and existing wires re-arranged and redistributed on postal principles, combining despatch with a low uniform rate of charge, and pre-payment by stamps. It is proposed to begin with a shilling rate for any distance, which will frank a message of twenty words, without including the names and addresses of either the sender or receiver. The message will be delivered free by special mes-

sengers within the radius of a mile, so that a considerable demand will be created for the services of lads and young men. Railway companies, it is assumed, will be glad to sell the use of their surplus wires to the Government, and to permit additional wires to be laid down along their lines. In London each of the ten postal districts is to have its own central telegraphic office, and each receiving-house in those districts will be a subordinate office. Pillar-boxes will be used for the deposit of messages. More frequent collections will be established; and as soon as the message deposited in the pillar-box reaches the head office of the district the telegram will be transmitted to its destination.

PROVINCIAL NEWS.

Birmingham.—The new building for the Union Club, at the top of Newhall-street, has been begun. Mr. Yeoville Thomason is the architect. The new building is Italian in style, and possesses a frontage of 100 ft. to Colmore-row, and half of that extent in Newhall-street, the height of the elevation being 55 ft. The windows on the ground-floor are worked with recessed pilasters and sculptured key-stones. Those on the upper floor are arched, and ornamented with pilasters, cornices, and pediments, and are provided with balconies. The frontage will be set back about 5 ft. from the present line of the street, the basement area being protected by a railed balustrade. The whole of the elevation will be of Pillough stone, and the interior corridors will be laid with encaustic tiles. The builders are Messrs. Barneley & Sons, the contract being for nearly 13,000*l.*

Castle Eden.—A new Court-house, according to the *Gateshead Observer*, has been opened at Castle Eden. The building is about 200 yards from the railway station, on an eligible site adjoining the road. The frontage is about 90 ft., and faces the south. The building is from a design by Mr. W. Crozier, C.E., the county architect; and the contractors are Messrs. Stroughair & Cramon, of Hartlepool. The cost of the building will be about 1,200*l.*, which sum is defrayed by Mr. Burdon, who is also owner of the land on which it is erected, and he will lease the building to the county for an annual rent.

THE ARCHITECTURAL ASSOCIATION.

CONTRACTS.

THE ordinary meeting of members was held on Friday evening (the 10th inst.), at the House, in Conduit-street, Mr. R. W. Edis in the chair. On the motion of the chairman, a vote of thanks was passed to the clergy of St. Helen's Church, Bishopsgate, and to the architect, for their kindness in allowing the members to inspect the church, and also to Mr. Birch for the interesting paper which he read upon it. The chairman announced that the members of the association would be enabled, by the kindness of Mr. Gilbert Scott, to pay their next visit of inspection to the new Foreign Office in Downing-street.

The meeting proceeded to consider certain alterations in the rules of the society.

Mr. Rickman read the report of the delegates from the Association who had attended the last meeting of the Architectural Alliance, and a motion was subsequently made, that the form of contract suggested by the Alliance should be approved by the meeting. The reader said, that in ordinary contracts the architect was the sole arbitrator, and that he could object, without appeal, to the materials used, or to the manner in which the work was executed. Some builders, however, objected to so much power being given to the architect, and desired that in every form of contract a clause should be put in, providing that an umpire should be appointed in case of disputes. Under the present system the reference to an umpire might occasion delay in carrying out the works; and so great had the inconvenience been felt in some parts of the country, that at Birmingham, for instance, builders as a general rule would not sign any contract which did not provide for the appointment of an arbitrator. The new form of contract would, however, allow the works to proceed, and whenever the builder affirmed his work to be done, the power of the arbitrator would come into operation. The practice of inserting an arbitration clause was not usual in

London; but it would be for the meeting to say whether the proposed form of contract might not be a compromise, as, if adopted, no inconvenience would ensue to the client, as the works would not be stopped pending any delay consequent upon a dispute between the builder and the architect.

After some discussion, the Chairman moved an amendment to the effect that it was not desirable to introduce an arbitration clause into the building contract, as it was most important that the entire power should be left in the hands of the architect. His own experience led him to believe that such clauses did not work advantageously, and that they were calculated to encourage litigation, and to undermine the confidence which the client naturally placed in the architect. Moreover, it should be borne in mind that of all descriptions of litigation arbitrations were the most tedious and expensive.

This view was supported by Mr. Jarvis (who seconded the amendment), and by other speakers, and on a division was carried against the original motion.

Messrs. Edis, Rickman, T. R. Smith, and J. D. Mathews (Hon. Secretary) were appointed delegates from the Association to the meeting of the Alliance to be held in July next.

The next business brought under the notice of the meeting was the circular of the "General Builders' Association," and eventually, on the motion of the Chairman, a resolution was passed thanking the Association for their suggestions, but stating that, inasmuch as the same had been discussed at the Alliance, the meeting was of opinion that it would not be desirable for the Association to take action in the matter.

Mr. Wilson called attention to the measures which had been taken to erect a memorial to the late Mr. Wigley, formerly a president of the Association, who recently died in Rome. He stated that a very handsome stained glass window to his memory had been placed in the Roman Catholic Cemetery, dedicated to St. Mary, at Kensal-green.

WORKS ALREADY SELECTED BY PRIZE-HOLDERS IN THE ART-UNION OF LONDON.

From the Royal Academy.—Dean Swift and the Peasant, T. P. Hall, 150l.; The Mouth of the Harbour, J. G. Naish, 30l.; Highland Scots, A. Corbould, 20l.

From the British Institution.—Sappho (marble), J. T. Westmacott, 60l.

From the Society of British Artists.—The Life Boat, E. H. Hayes, 150l.; Heath Scene—Winter, C. Jones, 50l.; The Lesson, J. Tennant, 42l.; Off the French Coast, J. E. Meadows, 35l.; The Lunch, J. Henzell, 35l.; The Future Home, Miss Macleod, 30l.; Scene in Glentannoch, T. Whittle, 25l.; Mountain Stream, A. Barland, 25l.; Chaght Napping, A. A. Hunt, 25l.; Feeding Ducks, E. Holmes, 24l. 5s.; The Stream from Llyn Idwal, J. J. Cumoch, 21l.; The Plagues of his Life, E. R. Taylor, 15l. 15s.; Scene in North Wales, C. Pearson, 15l. 15s.

From the Water-Colour Society.—Shipping off Brixham, J. Callow, 21l.

From the Institute of Water Colours.—Stormy Weather, E. Hayes, 70l.; Coast near Beachy Head,† H. G. Hine, 107l. 10s.; Mnrano, Venice, S. H. D'Egville, 35l.; Quindici Anni, A. Bonvier, 40l.; Italian Landscape, E. M. Richardson, 31l. 10s.; The late Mr. Davis, Royal Huntsman, G. H. Laporte, 25l.; Oystermouth Bay, E. Hayes, 15l.

From the Royal Scottish Academy.—Autumn Morning on the Lochy,‡ W. B. Brown, 150l.

NEW RAILWAY STATION AT WAKEFIELD.

On the 1st of May the Great Northern Railway Company opened the large passenger station at Westgate, Wakefield. It is erected within 100 yards of the old Westgate Station, which is now being taken down for the purpose of completing the southern end of the passenger-platforms.

The new station is approached from Westgate by a carriage-drive 40 ft. wide, paved and flagged, having a gentle rise towards the station. The station is in the Italian style, having a frontage to the approach of 250 ft., and is divided into three parts; the centre of which stands out from the wings, and has a frontage of 55 ft. It is carried up much higher than the rest of the building, and the roof is crowned by

a gilded iron cresting with bannerets. In the front of this centre block, which is entirely allotted to the booking-office, an ornamental roof is constructed of cast and wrought iron, 85 ft. by 30 ft., the spandrels being filled with wrought iron and copper scrolls and flowers, gilded, &c.; the whole being covered in with glass, under which a platform and carriage-road have been formed.

At the south-east angle of the building a clock-tower has been erected, the height of which from the approach road to the centre of the dials is 53 ft., and to the top of the vane 77 ft., the total height from Westgate being 97 ft. There are four dials, each 8 ft. in diameter, one of which can be distinctly seen from the market-place. It is intended to have an illuminated clock. Above the masonry of these dials four cast-iron ribs rise and carry a lantern which is terminated by a gilded weather-vane. The space between the ribs is partly filled up with ornamental pierced cast-iron plates, under which a bell is hung; upon this the clock will strike the hours.

The booking-office, which has a wood coffered ceiling, will be used by the Great Northern, the Midland, and the Manchester, Sheffield, and Lincolnshire Railway Companies jointly. The remainder of the station comprises first and second class ladies' and gentlemen's waiting-rooms, refreshment-rooms, with cellars, kitchens, and hoist; station-master's office, parcels and left luggage, porter's and lamp rooms, telegraph offices, &c. At the south end a stone staircase has been constructed from Westgate to the level of platforms. A wrought-iron bridge, 84 ft. span, is carried across the four lines of railway, and the two platforms, for passengers to cross from one platform to the other, the access to which is by means of a wide stone staircase on each side of the railway, that on the west side being enclosed in a handsome tower, in which a fine staircase is also carried down to the station yard, which is level with Westgate.

The platform on each side of the railway is 500 ft. long, by 20 ft. wide, the greatest part of which is covered by a wrought and cast iron roof, covered entirely with glass, 24 ft. wide, the spandrels of which, and the finials to each bay, being of wrought iron, with copper foliage, coloured, and relieved with gold. The walls of the staircase, &c., have been built with white glazed bricks, with coloured brick friezes under the ceilings, which are of wood, coffered. All the woodwork is stained and varnished.

The total cost is 60,000l. Mr. Archibald Neill, of Bradford, is the contractor; and Mr. J. B. Fraser, of Leeds, the architect.

SUGGESTIONS TO PREVENT FIRES.

This is the season of the year when people begin to leave off having fires, and the time when most fires and loss of life occur, through the carelessness of servants in putting out lights and fires; therefore a few suggestions in regard to their prevention might prevent many of these sad occurrences. We propose to give a few of them.—Keep matches in metal boxes, and out of the reach of children; wax matches are particularly dangerous, and should be kept out of the way of rats and mice; be careful in making fires with shavings and other light kindling; do not deposit coal or wood ashes in a wood vessel, and be sure burning cinders are extinguished before they are deposited; never put firewood upon the stove to dry; never put ashes or a light under a staircase; fill fluid or spirit lamps only by daylight, and never near a fire or light; do not leave a candle burning on a bureau or a chest; always be cautious in extinguishing matches and other lighters before throwing them away; never throw a cigar-stump upon the floor, or spitbox containing sawdust or trash, without being certain that it contains no fire; after blowing out a candle, never put it away on a shelf, or anywhere else, until sure that the snuff has gone entirely out; a lighted candle ought not to be stuck up against a frame wall, or placed upon any portion of the woodwork in a stable, manufactory, shop, or any other places; never enter a barn or stable at night, with an uncovered light; oysters should never smoke about stables; never take an open light to examine a gas-meter; do not put gas or other lights near curtains; never take a light into a closet; do not read in bed, either by candle or lamp light; place glass shades over gaslights in show-windows, and do

not crowd goods too close to them; no smoking should ever be permitted in warehouses, especially where goods are packed or cotton stored; the principal register of a furnace should always be fastened open; stove-pipes should be at least 4 in. from woodwork, and well guarded by tin or zinc; rags ought never to be stuffed into stove-pipe holes; openings in chimney-flues for stove-pipes protected by metallic coverings; never close up a place of business in the evening without looking well to the extinguishing of lights, and the proper security of the fires; when retiring to bed at night, always see that there is no danger from your fires, and be sure that your lights are safe. The above suggestions, if carefully followed, may be the means of preventing numerous fires, and thereby saving thousands of pounds' worth of property, as well as preserving many valuable lives.

WORKING CLASS DWELLINGS IN LIVERPOOL.

THE borough engineer has submitted to the local Health Committee the following tabular statement, showing the number of houses at various rents which had been built in Liverpool for a number of years past:—

Year.	Under £12 per annum rent.	From £12 to £25.	From £25 to £35.	From £35 and upwards.	Total.
1838	461	423	86	50	1,020
1839	390	471	86	50	997
1840	623	623	780	131	2,157
1841	623	673	118	72	1,486
1842	724	914	325	84	3,047
1843	440	794	114	42	1,390
1844	1,040	950	333	127	2,450
1845	1,212	2,007	533	177	3,729
1846	710	2,323	330	138	3,499
1847	59	925	187	88	1,220
1848	74	608	49	28	659
1849	90	255	63	35	443
1850	41	207	41	41	430
1861	101	678	88	70	837
1862	223	727	78	110	1,138
1863	62	654	79	59	854
1864	62	655	123	56	896
1865	83	1,144	99	49	1,355
1866	17	1,455	125	108	1,705
1867	124	1,055	181	109	1,569
1868	114	1,289	282	123	1,717
1869	85	1,315	277	81	1,758
1880	161	1,129	163	95	1,549
1881	45	1,040	103	39	1,227
1882	23	1,145	208	141	1,517
1883	110	1,714	117	74	2,015
1884	123	1,982	217	98	2,420
1885	—	1,183	170	341	1,494
1886	—	907	131	80	1,038

The engineer called attention to the fact that no houses under 12l. a year had been built in Liverpool in 1865 or 1866. Dr. Dawson said this was an alarming state of things. They were taking down houses in every direction, and sending the people adrift, so that they must crowd somewhere. The chairman remarked that it did not follow that there were not houses for those people, for two or more families might live in a house at a rent of over 12l. a year. Dr. Dawson said 2,000 or 3,000 people had been driven out of Dale-street, and no provision made for them.

ST. DAVID'S CHURCH, NEATH.

This church, which was lately consecrated, is designed in the style of the thirteenth century, with French treatment of ornament and detail. It is built of local blue sandstone, with Bath stone dressings, and bands of red sandstone introduced, the roofs being covered with ornamental tiles in bands. The diaper pattern, with bands of blue bricks, the arches being brick, Bath stone, and red sandstone, in alternate sections. The plan of the building is cruciform, and it consists of nave, north and south aisles, north and south transepts, with north transept aisle (to be used as a vestry); chancel, terminated by a circular apse; tower, the lower stage of which forms the organ-chamber; south porch and narthex, or western porch.

The seats are of deal, stained and varnished and accommodation is afforded for upwards of 1,200 persons, all the seats being free. The roofs throughout are open, and of stained deal.

The nave is 101 ft. long, 31 ft. 8 in. wide, and 61 ft. high to the ridge, separated from the aisles and transepts by arcades of six arches, the easternmost arches (opening into transepts) being of much loftier proportions and greater width than the others. The columns of these arches are alternately circular and quatrefoiled. The clerestory windows consist of two trefoiled

* 116l. were added by Mr. Hughes, prizesholder of 35l., to obtain this work.

† 87l. 10s. were added by Mr. Ferguson, prizesholder of 50l., to obtain this work.

‡ Mr. J. McLaren, prizesholder of 45l., added 105l.

lights, with a large foliated circle in the head, enclosed internally under a pointed arch. The west window consists of four lights, with geometrical tracery in the head, comprised within a deeply-recessed, moulded, and pointed arch. The aisles are 13 ft. wide and 12 ft. high to plate.

The windows are alternately single and double trefoiled lights, each bay being marked externally by projecting buttresses, terminated by curved and panelled pinnacles; and a moulded and panelled parapet runs the whole length of the aisles.

The tower, which is placed at the south-west angle of the chancel, will consist, when completed, of four stages, surmounted by a low spire. It is square on the plan, and rises to a height of 88 ft. without break or buttress. At this point projects a battlemented cornice, from which a gradual slope of stone-work leads up to a series of low arches, supported by columns, which carry the spire. The cost of the tower has been estimated at 2,000l.

Pinnacles of square outline, with recessed panels, and surmounted by figures of the four evangelists, stand at the angles. The total height of the structure is 152 ft.

The whole of the carved work in the building has been executed by Mr. Shaylor, of Gloucester. The church throughout is laid with tiles of various patterns, the chancel and apse being of rich design. Three memorial windows of painted glass have been placed in the centre of the apse, by Mr. Gwyn, M.P., the subjects of the paintings being the life of Christ. The gas-fittings consist of brass coronas suspended from the centre of the apse and principals of the nave, with brackets painted and gilt for the aisles, and standards of wrought brass, with vermilion backing, on the chancel screen, and rows of lotus-flower lights, along the top of the stained screens of the vestry and organ-chamber. The entire work has been executed by Messrs. Hale, of Bristol. The heating apparatus has been erected by Messrs. Haden, of Trowbridge. The architect of the building is Mr. John Norton, of London, whose estimate of cost was 6,400l., and under whose superintendence the whole of the works have been carried out by Messrs. Jones & Son, of Gloucester. The clerk of the works is Mr. John Cooper.

FALL OF A HOUSE AT CROYDON.

An inquest has been held on the bodies of Anne Sophia Hawkins, aged five years, and Mary Anne Finn, aged four years. On the 3rd instant the deceased girls were crushed to death by the falling upon them of the side of the house, No. 18, Windmill-grove, Croydon. It appeared that alterations were being made in the house by a Mr. Henry Batchelor, with a view to converting the premises into a beer-shop.

Several witnesses were examined as to the removal of earth for the purpose of forming a cellar,—a too common practice.

Charles Hamilton, a labourer, deposed that he had been ordered to excavate for cellars to the depth of 6 ft., and when he had dug 4 ft. 6 in. he refused to go any further until he got timber to strut the house up. The water had rushed in from a spring.

Some further evidence was given, and after two hours' deliberation the jury returned a verdict, "That the deceased children came to their deaths through the criminal neglect of Mr. Batchelor." A verdict of Manslaughter was then recorded.

WATER SUPPLY FOR THE CITY OF HYDRABAD.

A PROJECT has been brought forward by Mr. Charles Lee, C.E., the secretary and surveyor of the Hyderabad municipality, for supplying Hyderabad with water. Computing the population at 40,000, and allowing seventeen gallons of water per diem per head, the daily supply would amount to 680,000 gallons. The probable consumption of the railway company (in the event of the Indus Valley extension being an accomplished fact) would be 25,000 gallons daily. The quantity required by the municipality for flushing sewers, cleansing and watering streets, for road-side trees, fountains, &c., will be probably 30,500 gallons daily, leaving an additional 14,500 gallons daily for any exceptional or miscellaneous purposes: total, 750,000 gallons to be supplied every twenty-four hours, or 273,750,000 gallons per annum. Of the two sources open, viz., the Poollie and the Indus, the latter has been chosen, both for quantity and quality of water. The spot selected as a source is near the entrenched camp, about 3 miles from the fort, where the head works, settling reservoirs, filters, &c., could be established. The cost of the two

works (from detailed estimates) would be as follows:—

1. Settling reservoir, &c.	Rs. 55,161
2. Engine-house for ditto	17,300
3. Egg-shaped tunnel	90,550
4. Covered reservoir	19,963
5. Engine-house at Hydrabad	20,000
6. Water-tower at Hydrabad	38,853
7. Two engineers' cottages	9,234
8. Tank for camp supply	5,000
9. Two sets firemen's huts	800
10. Machinery, mains, &c.	2,25,368

Total Rs. 4,89,294

The annual revenue is estimated at Rs. 96,480; and the annual expenditure, including 5 per cent. on capital, at Rs. 61,251: balance to profit per annum, Rs. 35,229. Mr. Lee proposes to carry out the whole of the works by a joint-stock company, and he anticipates no difficulty in realizing the capital required, if Government could be induced to assist and encourage the undertaking.

CHRIST CHURCH, ALBANY STREET.

SIR,—The transformation which has been performed in the restoration of this church is a credit to the skill of the architect, Mr. Butterfield. The church has been entirely re-dressed and repaired. The gallery on the north side has been shortened, to allow of the new organ being built there instead of in the end gallery, which is now used for seats for the school children; and the two children's galleries high up near the ceiling have been taken down from each side of the tower. New open wainscot oak seats in the nave, aisles, and choir, have taken the place of close pews. The font is of white marble, with a circle of Derbyshire or dove marble at the base. The floors in the nave and aisles are of encaustic tiles, plain, self-coloured, mixed with Portland stone. A copy of Raffaele's painting of the "Transfiguration" (the original of which is in the Vatican) has been raised to allow room for a reredos, composed of various marbles and of alabaster. The design of the chancel is rich and tasteful. Mr. Butterfield's great aim seems to have been to give force and religious character to a church which was, as far as the interior architectural design was concerned, very deficient in both; without in any way Gothicizing it. The materials which have been used in the chancel work are as follows:—Alabaster, Llan-gnedoc red marble, white marble, Derbyshire fossil, Dove, Irish green marble, and gold mosaic. There is a super-altar. The communion-table is not quite long enough to hide the white Portland stone at the back. The effect is peculiar on entering the church. The steps to the altar are marble,—risers of red and dove marble to white treads. The pilasters, walls, and ceiling at this end of the church have been painted in patterns of decided colours, with the inscription from the *Te Deum* as being suitable to Christ Church, "Thou art the King of Glory, O Christ." The walls of the nave and aisles, as well as the ceiling, have been tinted throughout in several tints, but less strongly than the chancel work. The lectern is modelled from that now in Southwell Minster, and which was raised from the lake at Newstead Abbey, Notts. A large organ is in course of being built by Mr. Henry Jones, of Brompton. It has in all thirty stops, thirteen pedals, 1,644 pipes, and will be finished and opened on Whit-Sunday.

B. FYFE.

MEPHITIC ATMOSPHERE OF THE UNDERGROUND RAILWAY.

It appears to me that a much more simple and effective mode to ventilate the above railway than that set forth by "A. J. B." and Thos. Goodchild would be to build the whole length of the underground portion of the railway tunnel and in the centre thereof, extending from the ground to the roof of the arch, a 3-in. brick wall, and thereby cutting the tunnel in two, or rather making two tunnels instead of one. The motive power I would bring to bear, so as to efficiently clear the tunnel, would be the trains themselves: each train as it rapidly passed in one direction would constantly keep the current of air in motion in one direction too, and deliver it in the stations, at which points simple arrangements could be made for its exit.

Any person who has walked through railway tunnels must have observed the force by which waste steam and air are ejected from the tunnel in the direction the train has just passed, and which current of air is immediately checked and reversed upon the entry of a train in the opposite direction; and if he have descended a mine he will not have failed to observe that, if there be not an upcast shaft, then there will be a shaft divided near the centre, so that the air going downward shall not be interfered with by the upward air. The contact of the two would be fatal to the proper ventilation of the mine. Other examples may be referred to, to illustrate the principle I wish to set forth, but I think I have written sufficient to make my meaning clear.

H. M.

THE DRAINAGE OF BATTERSEA.

"DRAINAGE OF BATTERSEA.—It is asserted that the main drainage works at Battersea are not equal to their purpose."

SIR,—I am afraid the above paragraph in the *Builder* will tend to make a wrong impression in the minds of my friends and of persons not acquainted with the facts, and who are not aware what the main drainage means.

Since the completion of the Battersea permanent sewers, and their connexion with the Metropolitan main sewer (the southern low-level), three or four cellars in the lower part of Battersea have been flooded to the depth of 21 in., and the cause is as follows:—In severe storms the water in the Metropolitan main sewer has risen to a greater height than the floors of the cellars; it therefore found its way into them through the drain connexions, and, of course, filled the tributary local sewer. The cause of this, I believe, is from the simple fact of the storm overflows in the southern low-level being a greater height than the floors of the places flooded.

A deputation of this Board are about to wait upon the Metropolitan Board of Works, to ask for an explanation and a remedy, when I have no doubt Mr. Bazalgette will be able to give one.

I enclose you a short description of the Battersea drainage, which has just been completed from my designs, and which is most perfect in all its parts, and I trust you will give a full explanation in your next impression, as it may injure my professional reputation.

THOMAS BUCKHAM, C.E.

* * The following is the description set:—

"The approximate length of the sewers is 18 miles, and they vary in size from 3ft. 9in. by 2ft. 6in. brick sewers to 12in. pipes. The most difficult portion of the sewers are in the town of Battersea, where a gradient of a fall of 1 in 1,100 only is obtained. The system of ventilation is of a design invented by the surveyor, and consists of a cast-iron ventilator fixed upon the top of a shaft immediately over the top of the sewers. The box of the ventilator is filled with charcoal, which perfectly destroys the noxious gases and gives every ventilation that is necessary to the sewers. Provision is also made for the surface drainage of the roads by the construction of a large quantity of gullies in appropriate positions, and there is also provision made for the insertion of a large quantity of water into the drainage connexion of houses and other property. The whole of the brick sewers are constructed in Portland cement and pressed Galt bricks, and are surrounded with concrete in Portland cement."

The above sewers were commenced in June 1865, and have just been completed, at a cost of 46,000l. Mr. Blackmore was the contractor. During the progress of the works upwards of 3,000 houses have been drained into the sewers.

INTERNATIONAL SCALE.

ABOUT a twelvemonth since you inserted a letter of mine, showing how a scale capable of expression in parts of English feet and inches, and also in any foreign decimal scale, could be constructed by repeatedly halving the full size and taking one-tenth of any of the products.

I have been asked to explain the process by constructing the following table:—

TABLE OF INTERNATIONAL SCALES.

Expressed in parts of feet and inches.	Expressed decimally for Foreign scales.
Full size	= Grandeur naturelle.
Half full size, or 6 in. = 1 ft.	= La moitie (1/2)
Quarter full size, or 3 in. = 1 ft.	= Le quart (1/4)
1 1/2 in. = 1 ft.	= Echelle 1/25
1 in. = 1 ft.	= Echelle 1/36
&c., &c.	

And one-tenth of any of these, viz.:

1 1/2 in. = 1 ft.	= Echelle 1/5
1 in. = 1 ft.	= Echelle 1/10
3/4 in. = 1 ft.	= Echelle 1/20
1/2 in. = 1 ft.	= Echelle 1/30
1/3 in. = 1 ft.	= Echelle 1/45
1/4 in. = 1 ft.	= Echelle 1/60
1/5 in. = 1 ft.	= Echelle 1/75
1/6 in. = 1 ft.	= Echelle 1/90
1/8 in. = 1 ft.	= Echelle 1/125
1/10 in. = 1 ft.	= Echelle 1/180
&c., &c.	

I hope the above may be found clearly intelligible and not without practical utility.

EDWIN LAWRENCE.

WHO SHALL DESIGN?

SIR,—The *Builder* has ever been distinguished in maintaining the professional rights of architects. Therefore I lay before you a subject which deserves your attention. Within the last few years some of the stained glass and other ecclesiastical firms have been in the habit of giving sketches free to those who request them, for altars, reredoses, fonts, pulpits, &c., which, I submit, are purely architectural objects of design. If in this age of competition a non-professional firm supplies without charge sketches for a costly reredos, why should they not give plans gratis for a church? The practice which I complain of is encouraged sometimes by architects even, who will not take the trouble to do this most interesting work in their own office.

A. B. I. E. A.

CHURCH-BUILDING NEWS.

Hayle.—St. Gwethian Church, near Hayle, has been rebuilt and reopened. The cost of the new edifice is 1,000*l*. The architect was Mr. E. Sedding, of Penzance.

Easthamstead.—A new parish church has been erected on the old site, and consecrated. It is dedicated to St. Mary Magdalene and St. Michael. Mr. John West Huggall, of London, was the architect, and the style is of the twelfth century.

Salisbury.—St. Edmund's Church has been restored and enlarged, and the new chancel consecrated. Mr. Scott supplied the plans. The contractor was Mr. R. Fletcher, of Fisherton, and the clerk of works, Mr. H. Cane. The works have been carried out under the superintendence of Mr. P. Benthif, of Fisherton. The total cost of the restorations was about 6,000*l*.

Heyford.—The parish church of Upper Heyford has been rebuilt, except the tower, at a cost of nearly 2,000*l*, and re-opened for divine service. Mr. Talbot Bury, of London, was the architect, and Mr. Cowley, of Oxford, the builder.

Leamington.—The foundation stone of the new south transept of the parish church has been laid. The plans were prepared by the vicar, the Rev. J. Craig.

Thorington.—The church of this parish has been re-opened after being partially rebuilt, and the remainder restored. The architect employed was Mr. Ewan Christian, of London; and the contractor, Mr. Joseph Grimes, of Colchester. The total cost of the restoration and gifts to the church, has been 1,700*l*.

Shrewsbury.—The first stone of the new church at Meole Brace, which will replace an edifice erected at the very commencement of this century, was laid on the 30th ult. It will consist of a nave 68 ft. 6 in. long inside by 26 ft., having north and south aisles; a chancel, the width of the nave, and 35 ft. long, terminating in a three-sided apse; and north and south chancel aisles, one being provided for the organ. There will also be a south porch, and at the west end of the north aisle provision is being made for a massive tower, for which there are not at present sufficient funds. The accommodation will be for 500 persons. The style of the church is Early Decorated, and the cost is estimated at 3,360*l*, exclusive of the tower. Red-hill stone is being used for the walling, Shelooke for the dressings, and for the shafts to arcade and chancel-arch, Besford wood. The architect is Mr. E. Haywell, jun., of Shrewsbury; the contractors being Messrs. Bowdler & Darlington.

Kilburn.—The new church called Holy Trinity Church, Kilburn, has just been completed in the Brompton-road, and was consecrated May 3rd. The church is situated in the parish of Willesden, out of which a new district has been assigned. The Ecclesiastical Commissioners, who own considerable property in the parish, have given the site. The church consists of nave, north aisle, chancel, north transept, vestry, tower and spire, and is in the Decorated or Middle Pointed style. The materials used have been brick for both internal and external facing, the dressings, windows, doors, strings, arches, and piers being of Bath stone. The spire is covered with slate relieved by green bands. The dimensions of the building are as follow:—Nave, 85 ft. 6 in. by 32 ft. to centre of piers; north aisle, 79 ft. 6 in. by 26 ft.; chancel, which is apsidal, 36 ft. by 28 ft. wide; north transept, 26 ft. by 16 ft. The tower, which is placed against the north wall of aisle, is 19 ft. square externally, and is 66 ft. high to base of spire,—the latter, which is plain with simple brackets, being 68 ft. high to top of vane. The roofs are of Memel fir, and are of wrought and unwrought timber, with boarding at back of rafters, the whole stained and partly varnished. The height of nave from floor to ridge is 57 ft. The necessity for a large accommodation obliged the introduction of galleries in the north aisle and at west end. The seats, pews, and stalls are of deal, stained and varnished; the pulpit also of deal on stone base. The chancel is paved with Minton's tiles. The lighting, which has been executed by Messrs. Hart & Son, consists of a series of coronæ suspended from the wall by brackets on each side of nave, assisted by wall brackets. The chancel standards, presented by the architects, are handsome and effective, and successfully light up the east end of the church. The whole of the carving, as also the font, has been executed by Mr. J. G. Amstey. The builders were Messrs. King & Sons. The cost will be about 7,500*l*. Messrs. Francis are the architects.

Bawdrip.—The parish church of Bawdrip has been re-opened after undergoing an almost thorough restoration, the work of which has extended over a period of nearly two years. The total cost has been about 1,500*l*. Three new stained glass windows have been put in the church at the expense of Mr. B. C. Greenhill, of Knowle Hall. The work of restoration has been done by Mr. Squibbs, of Bridgwater, builder. The architects employed were Messrs. Giles & Robinson, of London.

STAINED GLASS.

North-hill Church, Penzance.—A memorial window of stained-glass has just been placed in the south wall of the chancel of this church by the rector, the Rev. Charles Rodd. The window consists principally of three compartments, in which are represented the Nativity, the Burial, and the Resurrection of Christ. Beneath is a sedilia, designed by Mr. Edmund Sedding, of Penzance, and executed by Messrs. Bone & Son, of Liskeard, of polyphant stone, supported on four pillars of polished serpentine.

New Church, Sutton.—The Alcock memorial window has been completed. There are five chief lights to the window, as well as the canopy, with numerous foliated divisions. In the former figures representing the Ascension appear. In the centre is the form of the rising Redeemer. The city of Jerusalem, with its temple and public buildings, forms the background. In each of the other lights to the right and the left are figures of the apostles, three being apportioned to each light. They are all in the attitude of gazing upon their ascending Lord. Above is the emblematic device of the Lamb with the Cross, and above this the I.H.S., the smaller lights around being filled with foliage work and minor devices. The figures of the apostles are thrown up by a dark background, in which the foliage of the olive and the palm and the deep blue of the sky are mingled. The base of the window is also filled with foliage work. The stone corbels at the arch of the window have been carved into bunches of wheat and grapes, emblematic of the bread and wine of the Sacrament. The window was from the works of Messrs. Heaton, Butler, & Bayne, of London. The corona of the gas-pendant which hangs from the centre of the chancel roof at present interferes with the view of the window from the aisle and body of the church. It is intended to obviate this by the substitution of two pendants for the one, placing them on the sides. But with this improvement the window will not be seen to advantage until the side windows of the north of the chancel are also filled with stained glass, or the glare of light diminished by the addition on this side of the much-needed vestry.

Hawkhurst Church.—A stained glass window has just been placed in the south aisle of this church, by Mr. E. G. Hartzell, of Eilford, to the memory of an only son. The window consists of three lights, and in each is represented an instance of faith, as displayed by a Roman centurion. This is the fourth stained glass window which has been placed in the church since 1863.

Tunbridge Church.—A memorial in stained glass to the late Rev. Sir C. Hardinge, bart., has been put up in the east window of this church, by Mr. Wailes, of Newcastle-upon-Tyne, at a cost of 250*l*. The subject is the resurrection of our Lord, with several accessory incidents.

SCHOOL-BUILDING NEWS.

Park, near Bury.—A new building, intended for the accommodation of the Sunday scholars attending Park Chapel, near Bury, has been opened. The structure is of stone, 59 ft. 6 in. long by 40 ft. high. It is two stories high, and in a Classic style of architecture. The cost has been 1,000*l*. Mr. J. Maxwell, of Bury, was the architect.

Crockham.—The foundation-stone has been laid for the new parochial schools, designed by Mr. G. Habershon, and the building of which is entrusted to Mr. Worsell.

Blackburn.—The foundation stone of St. Thomas's Schools has been laid by the mayor. The site is adjacent to the church, occupies the whole of the space between Skiddaw and Pendle streets, and contains an area of 3,200 square yards. It is the gift of the Venerable Arch-

deacon Rushton. The building will be from designs by Mr. James Bertwistle, of Blackburn, and after the type of ecclesiastical structures of the Early English period. In the centre portion will be an infant school, 60 ft. by 30 ft., with class-room, 30 ft. by 20 ft.; the sides being the boys' and girls' schools, 65 ft. by 20 ft., with class-rooms, 20 ft. by 16 ft. The building will be set back 40 ft., having infants' playground and gardens in the front, being enclosed with wall and iron palisading. There will be two separate porches with archways, forming entrances to the whole of the schools. The boys' and girls' schools will also have separate side entrances, with lavatories, large open playgrounds, out-buildings, &c. The roof will be open timbered, having curved principals, supported by a large ventilator, and each gable will finish at the apex with an ornamental cross. The whole of the windows will be glazed with cathedral glass, of geometrical pattern. The infant school is the portion intended to be built. Messrs. Lewis & Gudgeon are the contractors for the masonry. The schools will be built of Haslingden Grane pierpoints, with freestone dressings, and quoins at the angles. The middle or the infant portion will be first proceeded with, and the estimated cost is about 1,000*l*, nearly all of which, we understand, is provided for. The plans have been prepared subject to the approval of the Privy Council on Education.

South Shields.—The foundation stone of the edifice which is in course of erection in Ocean-road, South Shields, by the executors of the late Dr. Winterbottom, Westoe, for a marine school, has been laid. This school was endowed by Dr. Winterbottom for educating seamen to fill the situations of mates or masters of vessels. Upwards of 30,000*l*. were sunk for this purpose. After allowing a large sum for the construction of the school, a liberal amount has been set aside for securing the best instructors.

Heage (Derbyshire).—The chief stone of the endowed schools at Heage has been laid. The edifice will be in the Elizabethan style. Mr. G. H. Sheffield, of Derby, is the architect.

Bedford.—The Bryan Memorial Schools were lately opened. The buildings are erected with red bricks and stone and white brick dressings. The front to Castle-end is 90 ft. in length. The whole of the rooms, corridors, and chapel have been heated by Pirkine's high pressure hot-water apparatus. The works have been executed by Messrs. Dickens, Massey, Cunwin, Carling, Kilpin, & Jarvis, under the superintendence of and from designs by Mr. John Usher, architect.

Books Received.

An *Encyclopædia of Architecture, Historical, Theoretical, and Practical*. By JOSEPH GWILT. A new edition, revised, with additions. By WYATT PATERFORTH. London: Longmans, Green, & Co. 1867.

WE remember to have said, when reviewing a previous edition of Gwilt's *Encyclopædia*, that it was one of the few books in which we always found what we looked for, and a longer experience of it does not lead us to withdraw the observation. Gwilt brought into it the pith of several of his previous works and the fruits of all his long reading, and the result is a body of information of the most valuable and comprehensive character. The book is too well and widely known to require now any observations on its contents: our duty is confined to making known the fact of a fresh issue, and the extent of the additions it has received at the hands of its editor. The chapter on *Pointed Architecture* has been entirely re-written. Chapters in the *Book on Theory* have been considerably enlarged, and made to include the latest information on the subjects to which they refer. Although headed *Theory*, the information here given is practical, and of great value. Good use has been made of the enormous mass of information on the various branches of building to be found in the *Builder*, the source being always fully and ungrudgingly acknowledged. The strength of beams, girders, and pillars, both timber and iron, is ably treated of, with the latest light. In *Book III.* a valuable chapter on *Medieval Architecture* has been introduced, and includes an elaborate account of the systems of proportion propounded by various investigators. When we add that the editor has made useful minor additions throughout, and has carried on the very important *List of Publications*

relating to the subject, it will be seen that this is really a new edition and not a mere reprint. Mr. Wyatt Papworth has executed his task admirably, and has honourably connected his name henceforth with this very valuable book, which ought to have a place in most libraries, and must find one in that of every architect. The original edition contained more than 1,100 engravings on wood. The present edition, it is stated, has 500 in addition. The woodcut of Beverley Minster, however good of its class, has scarcely weight enough to serve as frontispiece to a book of such importance as this.

Miscellanea.

HALL OF ARTS AND SCIENCES, KENSINGTON.—The first stone of the proposed Hall will be laid by the Queen on Monday morning next, with some ceremony. Her Majesty is expected to arrive on the ground at half-past 11 o'clock.

ALBERT INSTITUTE, WINDSOR.—At a general meeting of the subscribers and members of this institution, on Monday evening, the recommendation by the Building Committee of the design by Messrs. Bacon & Bell for adoption was ratified by a large majority.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—At the annual meeting on Wednesday, the 8th May, Mr. Planché in the chair, when Sir Charles H. House Houghton, Bart., was elected President, and the various other officers were elected; the Treasurer read the obituary for the past year, and the auditors produced the accounts, showing a balance of 263*l.* 13*s.* 4*d.*, all liabilities being discharged.

WORSE THAN EVER.—The following Tenders have been received for repairs to twenty-four houses in St. James's-street, Edward-street, and William-street, Barnsbury-road, Islington, for Mr. J. Ramsay. Mr. T. Danby, architect and surveyor:—

French.....	£1,100 0 0
Richards.....	1,017 12 8
Frithard.....	983 19 0
Foster.....	830 0 0
Wilcox.....	705 0 0
Smith.....	690 0 0
Perkins.....	680 0 0
Ransom.....	560 0 0
Beaumont.....	420 0 0
Trickett.....	400 0 0
Harrison & Edwards.....	358 0 0
Norris.....	325 0 0

SUNWAYS IN LONDON.—Mr. Tite has laid before the House of Commons a Bill giving power to the Metropolitan Board of Works to require that all new pipes to be laid under the surface of the Thames Embankment, and the streets constructed, or authorized to be constructed, by the Board, with sunways, shall be laid in the sunway. The Board may also require that pipes already laid down be removed into the sunway, submitting to arbitration the question of payment of the cost of such removal. The Board may demand rent for the use of the sunway, subject to arbitration if the amount be disputed. This Act is intended to be adopted also in future Acts for the construction of new streets.

PRINTING WITHOUT INK.—A specimen of printing without the inking of the types has been shown us, and from an account of the process given in "The Printer's Register" of 4th May, by Mr. Küster, of Messrs. Wyman & Sons's printing establishment, it appears that the system was invented by a M. Gustave Leboyer, and is exhibited in the Paris Exposition. Mr. Küster states that he saw the specimen referred to (which contains 145 letters in seven different kinds of types, and two colours—red and black) composed, and 100 copies printed, all in three minutes; the printing being done in 32 seconds! M. Leboyer has taken out a patent in England, as well as in other countries. His machines appear to be chiefly intended for cards and bills, letter-heads, &c. The time expended in the usual inking process must, of course, be saved in the working of hand machines. The colours show no defect of intensity: they are good colours and well printed. A chemical paper or other fabric overlies the card or paper to be printed on, and the types are rapidly stamped upon this endless chemical band, which impresses the colour on the card. The band lasts for several days in constant work, and costs only about three halfpence. Whether the types be of steel we do not know. Might not several copies on thin paper be taken at once, on the many-fold principle?

INSTITUTION OF CIVIL ENGINEERS.—At the last ordinary meeting, held on the 14th inst., Mr. Fowler, the president, announced that the late Mrs. Locke had bequeathed to the institution, on behalf of her deceased husband, Mr. Joseph Locke, M.P., who occupied the chair of the Society during the years 1858 and 1859, the full-length portrait, by Grant, of that eminent engineer (the companion portrait to the picture of George Stephenson standing on Chat Moss), as well as a sum of 2,000*l.*, free of legacy-duty.

A DRINKING FOUNTAIN IN THE COUNTRY.—A "Thirsty Traveller" writes,—Walking on a recent very hot day (something like 100° in the sun) from Pinner to Watford, I was pleased to find, by the kindness of Mr. Crewe, a drinking-fountain, attached to the offices of a house he has lately built near the highway, where I gratefully quenched my thirst. As water to drink is often more difficult to get in the country than in a town, I hope you will give fame to the name of Mr. Crewe, and so stimulate others to follow his kind example.

THE NEW SEFTON PARK, LIVERPOOL.—The Improvement Committee of the Liverpool Town Council accepted the contract of Messrs. E. André, of Paris, and Lewis Hornblower, of Liverpool, for completing the New Sefton Park. The terms arranged are 5 per cent. on the outlay. With generosity the committee gave Messrs. André & Hornblower a cheque for the 300 guineas premium, which, according to the conditions, might have been absorbed in the commission. The works are to be commenced at once, and the park is to be completed in two years.

UNIVERSITY OF LONDON.—In reply to questions in the Commons, Lord John Manners said that he had fulfilled the promise made before the Easter recess, namely, to place the designs in the library of that House for the inspection of hon. members. It was not for him to offer an opinion as to which of the designs should be adopted. Whatever decision might be come to as to the choice of those designs he would be prepared to adopt. Time was of great importance, and it was impossible for him to pledge himself to refer the designs to a select committee. He thought the course pursued in the case of the Foreign-office competition should be adopted.

SHERIFF COURT-HOUSES IN SCOTLAND.—The approval of her Majesty's Government has up to the present time been given for the improvement of existing or the erection of new court-houses in twenty-two cities and towns in Scotland, the total cost of which will amount to 136,458*l.* One-half of this sum has been paid or will be payable from public funds—Edinburgh requiring 42,060*l.*; Dundee, 13,587*l.*; Dumfries, 10,148*l.*; Perth, 13,273*l.*; Wigtown, 9,145*l.*; and Jedburgh, 7,065*l.*, for the completion of their court-houses and offices. The estimate for this year under the above vote is 21,000*l.*, a sum of 30,000*l.* having been expended last year.

METROPOLITAN CRIMINAL STATISTICS.—The Metropolitan Police returns for 1866 have been issued in a printed form. From these returns it appears that 65,806 persons were taken into custody; 28,524 were discharged by the magistrates; 33,179 were summarily convicted or held to bail; 4,103 were committed for trial; 3,188 were convicted and sentenced; 748 were acquitted; and 167 were not prosecuted, or bills were not found against them. Of those taken into custody, 44,679 were males, and 21,127 females; 4,845 males and 2,000 females could neither read nor write; 38,024 males and 19,082 females could read only or read and write imperfectly; 1,758 males and 45 females could read and write well; and 52 males had superior instruction.

PUBLIC WORKS IN BRUSSELS.—The ceremony of inaugurating the works for the deepening of the Senne took place at Brussels, in the presence of the King and Queen, the Count and Countess de Flandre, and the principal local authorities. The contract, taken by the Belgian Public Works Company, Limited, an English undertaking, was represented by Mr. A. Grant, M.P., chairman, and Mr. F. Doulton, M.P., director. M. Anspach, burgomaster of Brussels, received their Majesties on their arrival, and read an address, to which his Majesty graciously replied. The King afterwards had a long conversation with Messrs. Grant and Doulton, to whom he expressed his gratification at the advance already made in the works, and his hopes of their speedy and satisfactory completion.

WORKHOUSE FOR ST. MARTIN'S-IN-THE-FIELD. The guardians appointed six architects to prepare designs, viz.—Mr. H. M. Burton, Mr. F. Marrable, Mr. Kendall, Mr. H. R. Cotton, Mr. W. S. Cross, and Mr. W. Lee; each of the unsuccessful competitors to receive fifty guineas. These designs are now on view, but we must postpone particulars.

THE ROYAL LITERARY FUND.—The anniversary dinner on the 15th inst. was presided over by the Dean of St. Paul's, who made a scholarly and admirable address. Earl Stanhope, Dean Alford, Dean Stanley, Mr. A. Trollope, the President of the Royal Academy, Mr. Beresford Hope, Dr. W. Smith, the Queen's Advocate, Mr. Fairbairn, and others spoke. The donations amounted to about 700*l.*

THE BATH STONE COMPANY, LIMITED.—At the ordinary general half-yearly meeting of this company a dividend for the last half-year at the rate of 7½ per cent. per annum on the paid-up capital was declared; and it was stated that the business of the company was on the increase. A depot had been established at Paddington. The meeting authorized the issue of 150 of their hitherto unissued shares, with power to the directors to make calls up to 10*l.* at such times as they might see desirable.

GIBSON'S MONUMENT, ROME.—A monument is soon to be erected to the late Mr. Gibson in the Protestant Cemetery in Rome, the sculpture to be a simple profile head, executed by the late Mr. Spence (Gibson's most successful pupil); the epitaph written, at the request of the principal executor to the deceased, Mr. Henry Williams, by Lord Bulwer Lytton, who has treated this theme with such feeling and appropriate expression as might be expected. The sum of 50*l.* was all the great sculptor left for his own monument, desiring it should not be exceeded.

ARTISTS' BENEVOLENT FUND.—The anniversary dinner was presided over by Lord de Tabley, whose predecessor, Theodore Hook, knowing his love of pictures, said should have been called Lord de Tableau. There was a fair muster, thanks to the efforts of Mr. C. J. Dimond, the honorary secretary, and the collection was a good one. It was remarkable for including a donation of one hundred guineas, sent by an original member of the Artists' Annuity Fund (1810), Mr. Frederick Radolph Hay. The president of the Royal Academy, Dr. Sibson, Mr. Desanges, Mr. Dighton, and others spoke.

THE DWELLINGS OF THE POOR.—A joint meeting of the clerical and lay members of the Deaneries of Thingoe, Thedwastre, and Blackburn, convened by Lord Arthur Hervey, the archdeacon of Sudbury, has been held at the Guildhall, Bury, to consider the question approved by the bishop, "How may the dwellings of the poor in town and country districts be improved?" The members of other deaneries within the archdeaconry were also invited to assist in the discussion, which resulted in the appointment of a committee, to draw up a statement for circulation amongst them, showing the duty devolving upon them, and also pointing out some practical plan of building the necessary cottages cheaply, and so as to pay a good per-centage on money laid out. It is to be part of the business of the committee to ascertain what has been done in other counties where the same difficulties have arisen.

LOCAL GOVERNMENT OF THE METROPOLIS.—The second report of the select committee appointed to inquire into the local government and local taxation of the metropolis has been issued. Convinced of the necessity for establishing a strong and efficient local administration in London, for the purpose of assuring the health, comfort, and convenience of the inhabitants, the committee set forth, in a series of resolutions, the conclusions they have arrived at as to the means of attaining this object in a way consistent with the special circumstances of London, and the seat of her Majesty's Government. They propose the formation of a "Municipal Council of London," instead of the Metropolitan Board of Works, and with additional powers, its executive duties to be performed by means of committees, subject to revision by the council. Vestries would be superseded by "Common Councils" of the district. Gas and water supply would be placed under the control of the municipal council, and the Building Act would be amended, so as to prevent the erection of dwellings injurious to health.

SANITARY STATE OF THE THAMES.—As a proof of the improved condition of the Thames, it is stated that a fine, well-conditioned sturgeon, upwards of 60lb. weight, was caught on Saturday morning, at Westminster Bridge, and is now alive in a tank.

ALTON PARISH CHURCH, CREADLE.—The restorations and improvements are nearly, if not quite completed. In the nave of the church, which has been furnished with a new warming apparatus, all the pews have been cleared away, giving increased effect to the old arcade of Norman pillars, which dates from the twelfth century. The pews have been replaced by open stalls of oak, varnished. These are all on the free and open principle. The whole has been done by subscription. The chancel has been restored at the expense of Mr. Charles Bill, of Farley Hall.

MEMORIAL TO THOMAS STOTHARD, R.A.—During the month of March, the committee issued an address to the admirers of the works and character of Thomas Stothard, as an appeal for subscriptions towards having a bust of him executed by Mr. H. Weekes, R.A., to be presented to the National Gallery, as a companion to similar memorials of deceased British artists. That appeal has been so warmly responded to, that the committee have felt themselves justified in at once giving the commission to Mr. Weekes, who will lose no time in completing the work. Mr. William Smith, the honorary treasurer and secretary, will receive subscriptions at No. 20, Upper Southwick-street, Cambridge-square, W.

LIABILITY OF MANUFACTURERS FOR THE COST OF MOULDS EXPERIMENTALLY USED.—In an action at the County Court, Rotherham, to recover 50*l.*, value of a pattern or model for an ornamental flower-stand, supplied by Mr. Charles H. Whitaker, an ornamental designer, modeller, and draughtsman, residing in Birmingham, to Messrs. Wright & Chambers, stove grate manufacturers, Barton Weir Works, it was shown in evidence and admitted that the model, which had been delivered rather late in the season, had been used in the foundry, in order, the defendant said, to test the weight of the casting in iron. It was then returned, after being broken in the packing. The judge, after hearing the case, said if he were to give his verdict now, it would be for the plaintiff; but he would read over the correspondence, and see whether this contained anything which might induce him to change his mind.

JAPANESE ALLOYS.—A writer in an American scientific journal gives some interesting facts with especial reference to the alloys in use in Japan. The first alloy given may be regarded as a weak Japanese imitation of jewellers' gold. This "Shakdo" is an interesting alloy of copper and gold, the latter metal in proportions varying between 1 per cent. and 10 per cent. Objects made from this composition, after being polished, are boiled in a solution of sulphate of copper, alum, and verdigris, by which they receive a beautiful bluish-black colour. "Gin shi bu ichi" ("quarter silver") is an alloy of copper and silver, in which the amount of silver varies between 30 per cent. and 50 per cent. Ornamental objects made from this composition take, when subjected to the action of the above solution, a rich grey colour, much liked by the Japanese. "Mokume" is a mixture of several alloys and metals of different colours associated in such manner as to produce an ornamental effect. Beautiful damask work is produced by soldering together, one over the other in alternate order, thirty or forty sheets of gold, shakdo silver, rose copper, and gin shi bu ichi, and then cutting deep into the thick plate thus formed with conical reamers, to produce concentric circles, and making troughs of triangular section to produce parallel, straight, or contorted lines. The plate is then hammered out until the holes disappear, manufactured into the desired shape, scoured with ashes, polished, and boiled in the solution already mentioned. The boiling brings out the colours of the shakdo, gin shi bu ichi, and rose copper. Of brasses (sin chu) the finest quality of brass is formed of 10 parts of copper and 5 parts of zinc. A lower quality, of 10 parts copper and 27 parts zinc. Kara kans (bell metal) varies from first quality—copper 10, tin 4, iron 2, lead 2. The best small bells are made from the former quality, and large bells from the latter.

TORQUAY.—We hear that the ratepayers of Torquay have presented a testimonial to Mr. Shaw, their late surveyor and water-works manager. It is illuminated on parchment. The inhabitants have also presented a first-class level and staff, the inscription thereon being,—"Presented to E. W. Shaw, Esq., C.E., by the Inhabitants of Torquay, as a Token of their Regard and Esteem." A dressing-case, for Mrs. Shaw was added.

THE RESTORATION OF WORCESTER CATHEDRAL.—The public meeting of the inhabitants of the counties of Worcester and Warwick, convened by the Right Hon. Lord Lyttelton, lord-lieutenant of the county, was held at the Guildhall. There were about 250 persons present, including the bishop of the diocese, Lord Leigh, lord-lieutenant of Warwickshire, Mr. Scott and Mr. A. E. Perkins, the architects. The dean read the report. Appropriate resolutions promotive of the object in view, and of which we have already informed our readers, were unanimously agreed to.

TENDERS

For a pair of semi-detached villa residences, at Strat-ham. Mr. Chas. E. Barlow, architect.

Newman & Mann	£3,900 0 0
Mason	3,725 0 0
Goddard & Webb	3,625 0 0
Rigby	3,414 0 0

For additions to 154, Fleet-street (late Portugal Hotel). Mr. W. P. Griffith, architect.

Dimdale	£237 0 0
Mather & Read	370 0 0
Lidstone	360 0 0

For addition to 11, Highbury-park. Mr. W. P. Griffith, architect.

Lidstone	£569 10 0
Patman & Fotheringham	498 0 0
Harvey	388 0 0
Dimdale	354 0 0

For repairs to 13 and 14, Northampton-street, Clerkenwell. Mr. W. P. Griffith, architect.

Devereux	£246 0 0
Patman	285 0 0
Lidstone	249 10 0
Martin	204 8 0

For a pair of villa-residences at Hounslow, for Miss Payne. Quantities not supplied.

Batchelor	£737 0 0
Bruuden	735 0 0
Chester	6 7 0
Nias	598 0 0

For a new farm-house at Burraton, in the parish of Ermington, Devon. Mr. Henry Elliott, architect.

Elliott	£240 0 0
Triggs	615 0 0
Luke & Shillaber	697 0 0
Marshall	662 0 0
J. Crocker (accepted)	557 0 0
Jenkin	557 0 0
E. H. Crispin	490 0 0
T. Crispin	456 15 0
Brimblecombe	471 15 0
Elliott & Wyatt	445 0 0
T. Crocker	350 0 0

For abutment-arches to tower, and other works, to Alceanings Parish Church, near Devizes. Mr. Weaver, architect.

Marquis & Munroe	£208 0 0
Mullings (accepted)	163 0 0

For workmen's cottages at Morden Wharf, East Greenwich, for Messrs. Hollick & Co. Messrs. Goodman & Vinnal, architects.

Luton (accepted)	£1,075 0 0
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For the erection of warehouses in the rear of No. 255, Whitechapel-road, and repairs and alterations to 256, Whitechapel-road. Mr. P. G. Clarke, architect.

Deasley	£2,714 0 0
Kelley, Brothers	2,408 0 0
Corder	2,287 0 0
Kilby	2,203 0 0
Wills	2,228 0 0
Browne & Robinson	2,211 0 0
King & Sons	2,114 0 0
Abraham	2,193 0 0
Patman	2,068 0 0
Scriver & White	2,077 0 0

For additions and alterations to villa at Erith, Kent. Mr. Herbert Ford, architect. Quantities supplied by Mr. J. P. Rolfe.

Pritchard	£1,570 0 0
Brass	1,504 0 0
Crabb & Vaughan	1,483 0 0
Browne & Robinson	1,463 0 0
Turner & Sons	1,390 0 0
Piper & Wheeler	1,342 0 0
Henshaw	1,283 0 0
Mann	1,165 0 0

For the erection of a factory in St. John-street, Clerkenwell, for Mr. Thomas Glover. Mr. Alexander Peabes, architect. Quantities supplied.

Old materials, &c.	
Moreland & Barton	£4,330 0 0
Patman & Fotheringham	4,316 0 0
Macey	4,231 0 0
Brass	4,190 0 0
Myers & Sons	4,175 0 0
Knorr	3,676 0 0
Hill & Sons	3,657 0 0
	3,577 0 0

For new reservoir, engine-house, and other works, Springwell Paper Mills, Jarrow-on-Tyne, for Messrs. W. H. & A. Richardson. Mr. John Tiltman, architect.

T. & A. Cooke	£2,330 0 0
Hodgson	2,326 0 0
Young	2,082 0 0

For a United Methodist Free Church and schools, to be built at Southwick. Mr. John Tiltman, architect.

Masonry and Plastering.	
Hodgson	£547 0 0
Joiner and Carpenter's Work.	
Lazenby	£50 0 0
Plumbing, Gasfitting, &c.	
Thirkell	103 14 0
Painting and Glazing.	
Whinham	75 0 0
Slating.	
Dawber & Son	41 10 0

For a United Methodist Free Church and schools, to be built in Hood-street, Montevideo. Mr. John Tiltman, architect.

Masonry and Plastering.	
Hodgson	£355 8 0
Joiner and Carpenter's Work.	
Elliott & Hudson	309 14 5

Painting and Glazing.	
Preston	£9 0 0
Whinham	£7 7 0
Whinham	125 10 0

For erecting house, shop, workshop, with other appurtenances, in Maple-road, Penge, for Mr. John Devereux. Mr. Samuel H. Hope, architect. Quantities supplied.

Cressell	£1,110 0 0
Stevens	1,077 15 8
Evans & Martin	659 0 0
Lawrence	869 10 0
Jennings (accepted)	837 0 0

For additions and alterations to Bruce Castle, Tottenham, for Sir Rowland Hill, K.C.B. Messrs. Goodman & Vinnal, architects.

Henshaw	£1,636 0 0
Browne & Robinson	1,630 0 0
Brass	1,487 0 0
Jackson & Shaw	1,350 0 0
Humphreys	1,350 0 0
Piper & Wheeler (accepted)	1,347 0 0

For alterations, Nightingale Tavern, Alpha-road, Lissongrove. Messrs. Finch Hill & Paraire, architects. Quantities supplied by Mr. Gate.

Richards	£3,388 0 0
Eaton & Chapman	3,087 0 0
Langmead & Way	2,726 8 3

For alterations and additions to Elm-grove, Barnes. Messrs. Goodman & Vinnal, architects.

Brass	£1,806 15 11
Rhodes & Roberts	1,804 0 0
Jackson & Shaw	1,877 10 0
Adamson	1,694 10 0
Sanders	1,600 0 0
Wilson (accepted)	1,491 5 1

For restoring and re-seating the church and building a new school chapel at Moulton, Lincolnshire. Mr. W. Smith, architect.

Church.	
Wallace	£4,627 0 0
Halliday & Carr	£2,766 0 0
Brown (accepted)	538 0 0
Bennett	780 0 0
	805 0 0

For Rochester Castle Market. Mr. Henry Andrews, City Surveyor.

Contract No. 1.	
Iron work.	
Dence	£1,325 0 0
Chiff.	1,170 0 0
Smyth & Co.	896 0 0
Colyer	845 0 0
Solitt	816 0 0
Hill & Smith	805 6 0
West	805 0 0
Norton	789 0 0
Naylor	770 0 0
Coulson	697 0 0
Hollingsworth	650 0 0
Sponcelly	629 0 0
Clements	629 0 0
Contract No. 2.	
Builder's work.	
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For rebuilding No. 20, Budge-row, for Messrs. Petes Lawson & Son. Mr. John Nimble, architect.

Ashby & Horner	£7,860 0 0
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Hart	£2,528 0 0
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For additions to nave, &c., new aisle and vestry to Christ Church, Warrington, for the Rev. G. Fitzgerald. Mr. D. A. Cobbett, architect. Quantities supplied by Mr. George Mortimer.

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Jackson & Shaw	2,619 0 0
Brass	2,560 0 0
Browne & Robinson	2,320 0 0
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Arber	2,275 0 0
Hedges	2,230 0 0
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Elliot	21,638	0	0
Brooks & Son	1,617	17	7
Robt & Co.	1,483	10	0
Twiss	1,578	11	0
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For new wing to the Royal Hospital for Incurables. Mr. W. P. Griffith, architect.

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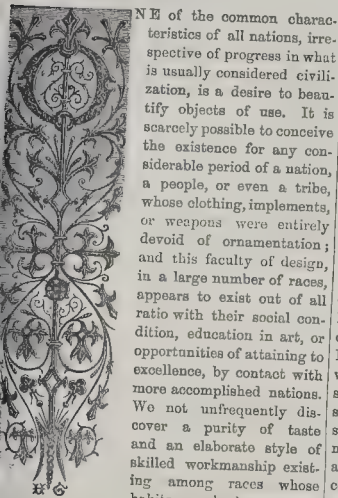
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ONE of the common characteristics of all nations, irrespective of progress in what is usually considered civilization, is a desire to beautify objects of use. It is scarcely possible to conceive the existence for any considerable period of a nation, a people, or even a tribe, whose clothing, implements, or weapons were entirely devoid of ornamentation; and this faculty of design, in a large number of races, appears to exist out of all ratio with their social condition, education in art, or opportunities of attaining to excellence, by contact with more accomplished nations. We not unfrequently discover a purity of taste and an elaborate style of skilled workmanship existing among races whose habits are barbarous, and whose education has not yet commenced. This is an indication that a love of decoration is human, and the exercise of it independent of transmitted skill. Indeed, the infancy of a race has sometimes been a period of its greatest success in design; and future epochs in its history only served to develop some principle of government or solve some social problem, whilst its natural powers have been lost, as its acquired knowledge of other subjects advanced towards perfection. These remarks apply only to those longings and strivings after the ornamental, which are common to the human race, and necessarily are therefore inapplicable to those highest developments of this common faculty, which are dependent upon a long-continued progress in art-culture and study. Among a rude people we seldom find any outgrowth of the first principles of ornamentation, so that their efforts are confined to decorating weapons or implements, such as the handle of a spear or the paddle of a canoe; and as seldom find anything which is not an outrage when art-love tempts them beyond this simple exercise of their natural taste. We question whether an accurately-proportioned imitation of the human figure has ever been discovered which was produced by a people who had not made great progress in the sister arts, or who did not possess a literature and a history. In this, then, it is but a rational deduction of design and ornament up to a certain point of human requirements, beyond that point are accomplishments and luxuries of a conventional civilization. Consideration of these principles will lead us to see the very great importance of the conservation of the arts of design, both to the happiness and the prosperity of a nation;—to its progress, because bad art like bad food or bad habits, or corrupt and wicked government, helps to destroy a nation's character, diminishes pure sources of enjoyment, and retards its development; to its prosperity, because the possession of skill in the arts of a people closes

against it the markets of all nations save those who are ruder than itself, and has a tendency to limit its wealth to the natural products of the country in which it is located. Wealth is but accumulated labour, and the highest human skill which demands and receives the greatest value and reward is the product of continued labour, and is equivalent to wealth. In ordinary conditions of society then, national skill in the fine or industrial arts means national wealth, because skill is a coin of universal currency, limited only by local requirements.

In the products of many branches of industry, the value of the material used is but a fraction of their pecuniary worth; and in none, not even in the precious metals, is the value of the manufactured article unaffected by the character of the art employed in their production. In proportion, then, to the original valuelessness of the raw material, and the difficulty of reducing it back again to its first condition or worth, the importance of skilled labour becomes evident in its production. A terra-cotta sketch, the value of the raw material of which is too small to be represented by any English coin, may become, by the application of skilled labour, worth more than its own weight in gold; and a golden chalice, moulded at a period when there was less wealth of art than of metal, may be worth only what it will fetch for the melting-pot. Beautiful stone and choice wood may be so wrought as to have even their original value destroyed, by either ignorance of art, or a too scrupulous attention to the vagaries of a whimsical and fleeting fashion, whilst upon the rudest materials the cunning craftsman may so work as to resemble the fabled touch of the alchemist, converting the grossest material into the most precious possession.

This power of design in the most developed form comes not, however, by chance, but is rather the result, as we have before pointed out, of long continued and patient labour, of favourable conditions of society, and of enlightened public action in the encouragement of the arts. To the whole human race belongs the faculty of appreciating ornament, but to cultivated nations only appertains the wealth resulting from systematic application of the arts of design. In our own country the introduction of more highly skilled labour than has previously been employed in a manufacture has increased, immediately and beyond all calculation or precedent, the money value of the objects produced. Such was the case with the pottery of Wedgwood when the skill of Flaxman was employed. The demand for the elaborate and costly race cups, shields as testimonials, and other large works in the precious metals, has really been created through the employment by firms such as Hunt & Roskell, Hancock & Co., and Garrard & Co., of the highest artistic labour that was obtainable; and such labour only has been procurable since we have recognised nationally the source of wealth we had entirely ignored by leaving art education unprovided for until comparatively recent times.

It is somewhat curious when examining the application of design in various branches of industrial manufacture, to observe how perfect may be the taste displayed in the exhibited works of a nation in some special subject, whilst other branches of industrial art by the same people may be characterised by either an absence of taste or design upon utterly false principles. This is the case with some of the exhibited works of Russia, and is nowhere more evident than in a comparison of her common earthenware pottery with her silver plate. In the Russian Court one large stand or table is almost entirely devoted to the display of rough pottery in earthenware, such as jugs, basins, mugs, ewers of various sorts, all having the prices marked, varying from a few kopecks to many, or in English money from a few pence to a few shil-

lings. The forms of these utensils are, with hardly any exception, as graceful and beautiful as anything in the Exhibition, whilst the colours of the clay and those applied to it are refined and chaste. The glaze is hard and brilliant, and can hardly be removed even by violence. We compared this rough cheap pottery with similar productions of other countries, and could find nothing which approached it in the beauty of its form or the exquisiteness of its colour. Doulton & Co., of Lambeth, deserve great praise for an effort to improve this stone ware, and exhibit some jugs, marked with such names as Cambridge, Pompeii, Doric Salisbury, Herculaneum, which are really excellent in form and of a more refined colour than the sickly yellows and reds we are accustomed to see. But these, which are the only examples of common earthenware comparable with the Russian, fall entirely beneath them in both colour and form. It seems hardly possible to believe that the glass and plate and furniture and a chimney-piece in marble, exhibited in the Russian Court, can be the works of the same nation whose common pottery stands so high. We sincerely hope that some of the almost general announcements of "Vendu" on this Russian pottery have been advised to them on behalf of the South Kensington authorities; for it is now impossible to secure examples of the ware, so great has been the appreciation of its excellence. In the more expensive kinds of pottery, china, and porcelain, the Russians have a meagre display, though some elaborate and no doubt costly sets of tea services in cabinet cases have high qualities of manufacture. But in design, whether in plate or furniture, or glass or fabrics, the prevailing feeling in the Russian display is that where the productions of other nations have not been copied, the ornament is rude in drawing and coarse in execution, and the forms are without grace, whilst the colours are gaudy and vulgar.

The imperial manufacture of Sevres holds its own in the larger descriptions of porcelain, vases, ornaments, and elaborately-painted china, though in the majority of its once unrivalled productions it is closely competed with by the Berlin Royal Manufactory and our own private firms of Copeland & Wedgwood. The system of design, which appears to be inevitable in all the porcelain works referred to, is doubtless contrary to all true principles of decoration, and the beautiful materials used seem to be treated for the sole purpose of obtaining costly productions. For this reason both the forms and the ornamental treatments are apparently at a standstill; and all the variety obtained is that which is arrived at by putting two different flowers on two similar plates, or varying the landscapes or figures with which the surfaces of the objects are too generously covered. Though there are unquestionably many good examples of design in some of the more modest works exhibited in the Sevres display, we prefer some of the plain white porcelain on the side-tables of the Sevres and Gobelins court to the elaborate works in the centre. The forms and manufacture of this colourless Sevres porcelain are very exquisite, and deserve the attention of the student of form. The same remark holds good of the white porcelain in the French court, exhibited by Gibus & Co., of Limoges, and by Mons. Burguin, of Couleuvre. Where the effort is not to produce mere costliness, there has been more scope for design in form, and the result is that there is really nothing so purely chaste and so serviceably lovely in the more expensive productions of the French manufactories referred to, as in these modest and cheap objects. We do not hesitate to say that in these, as in the stoneware of Wedgwood and Doulton the rude earthenware of Russia and coarse pottery of Denmark, there is more of the true spirit and actual fulfilment of good design, than

In the more expensive and elaborate productions of the great porcelain factories of whatever country. It is a comparatively easy matter to design a form sufficiently good to make the background of a picture, or to exhibit the prettinesses of floral decoration exactly imitated from nature; and given the power of painting, it is no difficult task to distribute rustic scenes or pretty faces, or pleasing natural objects, over a tescup or a dessert-plate, so that the result shall appear elaborate, and its effect luxurious and costly. But let an artist sit down to design a tescup, which shall be colourless and have no decoration or ornament whatever, or an earthenware jug, with the limitation of two or three colours, and no ornament, and he will find that all his knowledge and all his taste are required. For this reason we give some credit to the works in which design has stood upon its own merits, and owed nothing to the help of adventitious arts it would be better without.

It may be taken for granted that whenever designers so far forget their occupation as to reproduce objects or scenes from nature, however badly or beautifully executed, to ornament objects of common use which are given to them to decorate, it is a plain indication of the fact that to them it is easier to imitate than it is to design. And when this stage in any industrial process has been arrived at, and people are contented with it, we may expect no further development of design, but rather what we now see in the most costly porcelain, manipulative skill applied monotonously, and variety only in degrees of erroneous design.

It is pleasing to turn from porcelain and pottery to a branch of industrial art in which design is of greater consequence to the value of the manufactured article, and in which it is in a more satisfactory condition, viz., wall-decoration. The improvement in the character of the design for both common and expensive wall-papers is one of the most pleasing features of the Exhibition, and none the less so because our own manufacturers occupy a prominent place in this advancement. At the time of the first International Exhibition there was no branch of furniture in which so utterly bad taste prevailed as in paperhangings, and even costliness in their price only gave us radically false principles of design in a little better style of manufacture. Since 1851, a good deal of attention has been paid by the manufacturers in selecting designs in better taste, appropriate to the decoration of wall surface, treating it as a background for the better display of works of art or the furniture of the room. Mr. Owen Jones has done good service in this direction; the excellent papers designed by him in that tempered Moorish style he has made his own, having been the pioneers to a purer style in wall-decoration. The English exhibitors, Messrs. H. W. Woollams & Co., J. Woollams & Co., Messrs. Scott, Cuthbertson & Co., of London; and Messrs. Potter, of Over Darwen; and Cooke, of Leeds; all show specimens of wall-papers in the best taste, and remarkable for the excellence of their design in both form and colour. Perhaps the most satisfactory in the refinement and beauty of colour are those of H. W. Woollams & Co.; the raised patterns of Scott, Cuthbertson, & Co. being also superb examples of manufacture. In all the examples displayed by the firms referred to we miss the atrocious natural imitations of fruit, flowers, and landscapes, once so popular among all classes, and in place of them, a sober, conventional treatment of foliage, exhibiting considerable skill in design and arrangement, the colours used being the warm and cool neutral tints which are well adapted for backgrounds in rooms of every description. The English makers are fairly entitled to stand at the head of exhibitors in this class, for though the French distinguish themselves as much as ever in the high qualities of their manufacture, there is less of sound taste observable in their productions than in the English. In Belgian paperhangings may be observed better colouring than form or composition, the designs being too frequently in that highly relieved style which was once common with us, but which has recently given place to a quieter and better system of flat treatment.

It will be observed generally that in those classes of manufactures which include such articles as paperhangings, carpets, tapestry, furniture, all intended to be subordinate features of house furniture and decoration, much better taste prevails than has been observable in former exhibitions. A certain amount of embodiment of the national characteristics may be expected in articles of so general use in all

European countries, as paperhangings and carpets, and this can be easily detected in them. Thus the French papers are generally of a lighter colour, of more fantastic design, and richer and more ambitious in composition than the English; and in the latter we see very sober colour generally, comparatively little gold introduced, but dark reds, maroons, buffs, and drabs, the designs being severe and very usually geometric in character, and never erring on the side of a redundancy of imagination. The carpets of the two countries cannot so well be compared, the French manufacturers adhering to their very national taste in them, whilst they certainly produce some remarkably handsome works. Our own carpets show a tendency still further toward the Eastern sombre colours and simple design, so characteristic now as ever of the Oriental carpets. A carpet is of the highest character ornamentally, remembering its position and functions, when it has the least possible character as to form. Its task is to be unobtrusive and harmonising, improving the effect of the furniture, but attracting no special attention to itself. Any design for a carpet sufficiently large that characteristic portions of it may be hidden by tables or chairs, or couches; or of such high merit as a composition that we or of such high merit as a composition that we feel sorry to tread it under foot or spoil its graceful lines, is in radically bad taste. A thing that is made to be seen on account of its beautiful design, ought not to be concealed by its use; and that which is made for a purpose by which a greater portion of it will be hidden, ought not to be so designed that we want to see more of it than is exposed to the eye. In other words, subordinate features such as carpets and paperhangings must either be negative in colour and unobtrusive in design, which is their true character, or they become impertinences.

It is very gratifying that in some of the most entirely decorative portions of house furniture such good taste should prevail; and pleasing, also, that this improvement is not confined to wall-papers and carpets. In the various articles comprised under the names of cabinet-making, upholstery, and furniture generally, there is observable in the French, English, and German works, a more refined style of design, and a much higher class of art-workmanship in detail, than has been hitherto seen in previous Exhibitions. In such objects as cabinets, bookcases, &c., the most original feature in the French and English work is the very general introduction of medallions in terra-cotta, porcelain, and bronze, and of coloured details of ornament, when the object is otherwise in one kind of wood, and not ornamented by inlays of wood of a different colour. There is also apparently a greater variety of woods, in their natural colour, and of stained wood used in the manufacture of the highest class of works, now than formerly; and the introduction in some of the larger and heavier articles of the pale-green and ash-grey woods and stains, give a lightness and grace which is quite novel.

In English furniture, the Messrs. Trollope exhibit works which are remarkable for an absence of this new system of inlays, hardly any being used in their cabinet-work; but in other respects, the design and carving, though the latter is rather heavy, are highly commendable. The Messrs. Hunter, of London, use in their wardrobe and toilet-table a profusion of Wedgwood medallions, white on coloured grounds, which have a refined and pleasing effect.

The same use of medallion inlays, sage-green colour, also is to be seen in the very chaste sandal-wood bookcase exhibited by Messrs. Wright & Mansfield, of London; whilst Jackson & Graham include, in rather an extensive display, some of the choicest ebony furniture, inlaid with ivory, in the whole exhibition, as already mentioned by us. The oak cupboard and side table of Messrs. Holland & Sons, in the substantial old English style, are also rare examples of the use of inlays, of various materials. In all these works of English exhibitors there is an absence of extravagance, and a sound and conscientious style of design and workmanship, both in the construction of the objects and in their decoration by carving and inlays, which is very praiseworthy. The workmanship in them is unsurpassed, and the designs in their general composition, use of enrichments, and architectonic spirit, together with their adaptation to purpose, are a great stride upon anything yet exhibited by this country. It seems to us a matter of regret that almost all the most elaborate objects, both in the English and foreign furniture, should be in so dark a wood as ebony. There is, of course, the

answer that fine work must be in hard wood in order that a good surface may be obtained to take the finish, and an absence of grain allows of the cutting of delicate parts. But these qualities are obtainable in lighter hard woods, such as box-wood, and the carved enrichments show infinitely better in them than in ebony. Though the French exhibit a fine collection of furniture, and are as fond of ebony as a material, they manage to relieve it from the sombreness of effect caused by the darkness of the wood, by a variety of methods. Thus it is not uncommon to see an ebony cabinet, the edges and projections of which are protected by brass, the hollow mouldings enriched by electrolyte friezes, in copper or silver; a fretwork of ivory inlay developing the principal lines of the design, and, at intervals, coloured enamel introduced in the panels. In some cases only one or more of these materials are used; but hardly any of the most elaborate works are without either bronze enrichments or enamelled medallions. The walnut-wood cabinet of Fourdinot is among the most tasteful of the French works, and is an instance of the use of stones of various colour as inlays. The design and carving of this cabinet maintain the high reputation obtained by the artist so long ago as our own Exhibition of 1851. In this, as in the best works exhibited by France, there is less disposition to over-relieve the ornament, but rather to let parts of the construction serve the purpose of breaking up the masses in the composition, leaving the sunken portions to be ornamented by carving. In the ebony bookcase of Guerot Frères there is, perhaps, some of the best work, as far as technical manipulation goes, that can be seen in the French department, but there is a profusion of carving, which destroys the otherwise good design. Better in every way is the thermometer case in pear tree, by the same firm, the carving of it being minute and wonderful, and the composition effective. Of the remainder of the French display, the following are worthy of examination:—No. 49, Ebony cabinet, inlaid with enamel, by Sormani; No. 50, Bookcase, in different coloured woods, and inlaid with enamel, by Gerson & Weber; a bed, by Roll, the same, by Gerson & Weber; a bed, by Roll, of Paris, No. 30, valued at 1,000l.; the bedroom furniture of Clère & Drapier, in pale green wood, as well as their ebony cabinet; and, lastly, wood, as well as their ebony cabinet; and, lastly, though by no means least, the "Meubles de luxe" of Diehl. In the extensive use of bronze and bitur, there is an extensive use of bronze and bitur, together with wood inlays, most tastefully introduced, and having a superb effect. We would especially direct the attention of art-workmen to the cabinet to contain coins exhibited by this maker. It is in cedar wood, the drawers being in walnut, and the mouldings, which are not elaborately carved, being enriched by bronzes or electrolytes. For this cabinet the maker asks the trifling sum of 2,200l.

In these articles of luxury, we do not see the great superiority in design or workmanship of the French so much as in 1851 or 1853. Our own makers have steadily progressed, and now compare well with the exhibitors of any country. There is certainly even yet to be seen the imperfect struggling after a high standard of drawing in our carved work, and this will be so until our workmen can draw as freely as French workmen.

The furniture exhibited by the Italians is characterised by very great profuseness of carving, which is on the whole well executed; but the designs are heavy and tasteless. The ornament is coarse and in high relief, made too important in many cases, as in the picture and mirror frames in the Italian Court, where from its prominence in relief and the largeness of its members, the frames appear simply as a collection of ornamental details, and the construction disappears under a crowd of carving. The undue importance of ornament is observable in the Belgian furniture, though in a less degree. A nation producing the elaborate pulpita which the Belgians seem so proud to exhibit, can hardly be expected to fail in the manipulation of wood, and consequently we see a very masterly treatment of the material in all the Belgian works; but little can be said of the skill shown in the designs which this manipulative power is exercised upon. It is refreshing to see even the simple and comparatively rude designs of the Danes, after the very elaborate compositions of the Belgians, though the furniture of the former is inclined as far to the opposite extreme of meagreness of ornament as the latter is to profusion. To the Belgians art seems a necessity, recognised so long that the country is a museum of the churches picture-galleries, and every provi-

THE SOUTH KENSINGTON SECOND NATIONAL PORTRAIT EXHIBITION, 1689-1800.

"THE Science and Art Department of the Committee of Council on Education" has done good work in collecting for the use and service of Great Britain and "elsewhere," a "second special Exhibition of National Portraits, commencing with the reign of William and Mary, and ending with the year 1800," the fortieth of the long reign of the grandfather of Queen Victoria, though, strange to say, the exhibition has been made to contain, pleasantly enough, "counterfeit presentments" of men and women, known to our comparatively young sovereign. One example will be enough. Here we find Sir Thomas Lawrence's very fine portrait of the *Reform Bill* Earl Grey, who died as recently as 1845, when "Victoria R." had been long on the throne of these countries.

In all we have at South Kensington 866 portraits, from full-lengths to Kit-Kat, and all of interest to the many who carry information with them, and are prepared to carry information away with them. When (as at South Kensington), we have placed before us examples of the art of Sir Thomas Lawrence, whom so many still remember alive in then fashionable Russell-square, we feel that we are with the dead, and can occasionally recall to life (and with pleasure), those whom we have seen as they moved in the flesh, and as they spoke, or attracted attention, in public or in private life.

In this collection (of which we are now speaking for the second time), it is delightful to find 154 examples of the Great Master of English portraiture—Sir Joshua Reynolds; forty-eight examples of his Rival and Friend, Thomas Gainsborough; followed historically and ably by specimens of Hoppner, Owen, Raeburn, Phillips, &c., and fourteen examples of Sir Joshua's grandsons in the presidency.—Sir Thomas Lawrence.

A committee, however active and well-informed, could not fail in having to encounter a difficulty where and when to draw a margin or line, when to begin or where to leave off. Thus we find—and are not displeased in finding—four portraits from the pencil of Sir Peter Lely, who died in 1680 (eight years before William and Mary sent father-in-law and father "a packing"), and forty-nine from the easel of Sir Godfrey Kneller, who died in 1723, in the ninth year of the reign of our first Hanoverian King.

A defect of the catalogue is, that it lacks an index of painters and persons painted. How is Sir Peter Lely represented? The catalogue does not condescend to tell us. Let us learn for ourselves. We have four examples:—

14. Roger North, the charming family biographer. Lent by Mr. J. T. Gibson Craig.

23. Sir Isaac Newton, when young. Lent by the Earl of Dartrey. A picture too little known.

49. Anne Digby, Countess of Sanderland. Lent by Earl Spencer.

75. Henry Sidney. The handsome Sidney of De Grammont's Memoirs. Lent by Earl Spencer.

We could have wished to have seen Lely's "Cowley," the poet, and Lely's "Wycherley," the dramatist, both from Drayton Manor. How is it that our third Baronet of Tamworth, how Robert Peel, is so selfish? He did not even send to Manchester. Are the pictures at Drayton and Whitehall immovable?

From Sir Peter Lely it is a natural descent in art (we write heraldically) to Sir Godfrey Kneller. What has President the Earl of Derby, and his "Committee of Advice," done for us towards an education in English Historical Portraiture? Much we admit, and are thankful for, but there are omissions and oversights, possibly to be corrected and supplied hereafter. "Students" (more than that) of what Mr. Murray calls "Student's Humes," and "Student's Mrs. Markhams," will enjoy a thorough reading of Kneller's contributions to the gallery at South Kensington. Here they are, with the numbers prefixed, and a running commentary of what may be remembered. Sir Godfrey opens the exhibition.

Sir Godfrey Kneller's Portraits at South Kensington.

1. Godart De R. Kinkel, first Earl of Athlone. 6. Crewe, Bishop of Durham. He was Kneller's neighbour and fellow parishioner in Covent Garden; and was plagued (as the Parish Registers of Covent Garden testify) with newly born "Tom Joneses" deposited at his door.

9. Mrs. Anne Pitt, one of the maids of honour to Caroline, Queen of George II., and sister to the first Mr. Pitt. She was a wit. A little anecdote will illustrate this. Dr. Johnson's Lord Chesterfield, in the latter part of his life, called upon Mrs. Anne Pitt, the sister of the great Minister of that name, and complained very much of his bad health, and his incapacity of exerting his mind. "I fear," said he, "that I am growing an old woman." "I am glad of it, my lord," replied the lady; "I was afraid that you were growing an old man, which, you know, is a much worse thing."

We resume our Kneller numbers.

15. Lady Middleton. A Hampton Court "Beauty," from Hampton Court. We could have wished that the Committee had chosen Lady Ranelagh instead, for the sake of Fielding, Tom Jones, and—Sophia Western. See Fielding's "Tom Jones."

24. Tillotson. Archbishop of Canterbury (from Lambeth Palace). We may add to what the catalogue says, that Tillotson was the first English prelate who wore a wig.

27. Duchess of Ormond. (Lent by the Duke of Beaufort.) She was a Somerset, and the cataloguers might have added with advantage, the wife of the second and last Duke, and daughter-in-law to the gallant Ossory, known to all who read Dryden.

30. John Locke. (Lent by Lord Sherborne.) Signed and dated at back "1697." We were glad to become acquainted with this little known picture, though the features of Locke are well-known.

32. Prideaux, Dean of Norwich: died 1724. This is doubtful.

33. Sir Isaac Newton. (Lent by the Earl of Portsmouth.) Dated 1689. Compare the Thornhill, No. 35.

37. Gilbert Burnet, Bishop of Salisbury. Lent by the Earl of Hardwicke. Genuine.

40. John Locke. Lent by Christ Church, Oxford; the College from which he was expelled—properly and improperly.

42. Elizabeth Percy, Duchess of Somerset.

52. Charles Montagu, Earl of Halifax. A great man who, by preferring Addison to Pope, will live in immortal English verse.

56. John Sheffield, Duke of Buckingham (died 1721). Should be Buckinghamshire. The catalogue tells us that the duke is "holding a plan." We may add, for the information of some at "Buckingham Palace," or "Our Palace at Pimlico," that our poet-duce holds two ground-plans of "Buckingham House," one room inscribed "18 feet high," the other (a hall?) inscribed "15. 6."

57. John Dalrymple, 2nd Viscount and 1st Earl of Stair.

58. Secretary Sir Joseph Williamson.

60. William III. (small full-length).

61 and 67. Thomas Betterton, (61) the actor, by Pope, the first after Kneller; and 67, the original. No. 67, at Knowle, in Kent (the Countess Delawarr's; and No. 61, at Caen Wood, Middlesex (the Earl of Mansfield's)).

Pope,—more than "possessed" with a thirst for knowledge,—was by his mother's side nearly related to Samuel Cooper, the celebrated miniature painter. He himself studied a little under Kneller, and was a collector of pictures. Would the same genius that made him a great poet have made him a great painter?

Colley Cibber reminds and informs his "Apology" readers (present and to come), that there is a mezzo-tinto of Betterton after Kneller "extremely like him." (Cibber's "Apology," p. 98, 2nd ed. 8vo. 1740.)

65. John Dryden, lent by Mr. C. B. Dryden.

* * * This we more than doubt; and we have paid great attention to the received portraits of the great poet.

69. The father of Pope's Lord Marchmont.

76. Secretary Sir William Trumbull, one of the principal secretaries of state to King William III. Pope's fine epitaph in verse on Trumbull recurs to us.

77. Sir Robert Southwell, Secretary of State to William III.

78. Sarah Jennings, Duchess of Marlborough, wife of the great duke. Lent by the Duke of Marlborough. The catalogue calls her Sarah "of Sandridge, co. Hereford." For Hereford read Hertford. The great Duke was created Baron Sandridge. Oh, the time and money we have spent in Hertfordshire, and elsewhere, in seeking to find when and where Sarah Jennings, daughter of Sir John Jennings, of Holywell, in St. Alban's, was married to Colonel John Churchill (son of Sir Winston). Of the early

cial town an academy of art, in which from the Middle Ages the artist youths and art workmen have studied and drank in art culture just as we in England fall down and worship the goddess of money-making. But to the rude and simple Dances art is a luxury, and in their furniture and other branches of industrial art ornament seems to be regarded as a garnishing of the most simple necessities, recognised as the requirements of refined people, but employed very sparingly. If we only had the Danish display of art in this Exhibition as data, and were required to judge of the character of the nation exhibiting it, the decision must inevitably be that the Danes were a primitive and severe people, regarding art as an indulgence and an indication of weakness.

The visitor who is disposed to examine the attainments in art of a people of long-continued culture, should by no means miss the Prussian pottery, especially that exhibited by König, of Berlin. Without being ambitious of the most sensational effects, the art shown in his works is perfect in refinement and grace. In the ornamental porcelain displayed there seems to us to be a delicacy of colour, neutral generally, though sometimes launching into more brilliant tints, which compares well with the Sevres and English works. The art of design in form appears to be studied thoroughly, and colour added as an accessory to develop form, rather than as an apology for its absence or its rudeness.

The cabinet work from Dresden is also well worthy of notice, especially the ebony jewellery by O. B. Friedrich, and the coin cabinet of J. A. Türpe.

In the precious metals design is becoming more and more an element which is required to receive, and does receive, attention. It seems to us that in race-cups, tazas, and large works in the round, our own silversmiths stand pre-eminent; in shields, and all works requiring bas-relief of figures, scenes, and historical subjects, the Germans excel; whilst, in the design applied to objects of use, such as domestic plate, the French display more taste and aptness of design than any other nation.

Regarding the subject of design from a general point of view, both as to its application in industrial processes and its condition in all countries, we judge from the examination of its application upon all objects that progress in refinement is undoubtedly being made. The character of the art element, and the manner of its application in the various manufacturing processes, is getting to be better understood and refined; and we see less of the peculiarities or necessities of one process imitated as a matter of taste in another, of which these peculiarities are of characteristic. Thus, in paperhanging, designers have given up the freak of imitating the square notched lines which are necessities in oven fabrics, and rely more on the capabilities of the different process in the manufacture of paper staining itself, developing a style of ornament and an arrangement of colours adapted to book-printing. Some improvement is also observable in the productions of the principal artists exhibiting in the matter of purity of style, and the application of original ideas of variations in the use of any historical style it may have been adopted. There is more of them, of consistency, and of developed thought, the manner in which a style has been used, the majority of the best works; though, if a specific feature be unmistakably impressed upon the highest works, it is that they shall be as elaborate as design can make them, beautiful possible, but costly beyond all precedent.

There is lamentable luxury evidenced in too many of the exhibited articles of all the great European nations, a sort of feverish desire to make things as expensive as possible, even though the beauty of the things themselves be sacrificed by this excess of ornament. The only exception to this art-plague is the ecclesiastical and decoration in the English department, which may be observed the union of good design and excellent workmanship, without the inclusion of ornamental features which is to be seen elsewhere. To this subject we shall recur, the Ecclesiastical and Domestic work being of too important a character to be dismissed at the end of a notice of the general condition of design. There is, however, the Exhibition a sufficiently prominent indication of improvement generally, in design, to us very hopeful for the future; and we realise a more decided progress in design in five years between this and the last International Exhibition, than even in the interval between 1851 and 1862.

life of the great Duke of Marlborough little or nothing (and to think) is known.

82. Sarah, Duchess of Marlborough and Lady Fitzhardinge. Lent by the Duke of Marlborough. Signed "G. Kneller, fe. 1691."

85. Queen Anne's son, the youthful Duke of Gloucester. Lent by Mr. J. Fairfax Chinnery.

87. John, Duke of Marlborough, and General John Armstrong. Lent by the Duke of Marlborough.

88. Prince Eugene, of Savoy. Lent by the Duke of Marlborough.

89. Sarah Jennings, Duchess of Marlborough.

90. The same, "supporting her long hair with right hand." Why did not the cataloguer tell the ladies, at least, the charming story of the Duchess cutting off her hair to vex her husband?

91. Ladies Henrietta and Anne Churchill. Here an extract from Colley Cibber's Apology would come in to good purpose.

96. John, fourth Baron and first Earl, Ponleith, K.G. Lent by Mr. Baldwin J. P. Bastard.

98. Lord Treasurer Oxford. Lent by the trustees of the British Museum. A more interesting portrait, holding the Succession Bill, is at Welbeck—the Duke of Portland's.

99. Sir William Wyndham—the Wyndham of Bolingbroke and Pope. Here the cataloguer rightly favours us with a quotation from Pope.

100. Pope's Lord Peterborough—looking from his left heroically. Lent by Mr. W. B. Stopford, and very fine. There is a finer portrait of this heroic and romantic nobleman at Burghley House, the Marquis of Exeter's.

101. Lord High Treasurer Godolphin, with his staff. Lent by Earl of St. German's. We have seen finer heads of the Lord Treasurer than this example.

104. "Granville the Polite," of Pope. Lent by E. V. Kenealy, LL.D.

108. James, first Earl Stanhope. A gift to the National Portrait Gallery from Earl Stanhope, President of the Society of Antiquaries, and a noble contributor to modern English history and biography.

111. Sir Richard Steele,—the famous Kit-Kat Jacob Tonson picture.

112. Sir John Vanbrugh, another of the same far-famed set.

114. Addison's Countess of Warwick. Lent by the Earl of Bradford.

115. Addison,—the famous Kit-Kat Jacob Tonson picture.

116. Congreve. The same remark.

117. Diamond Pitt, grandfather of the first Earl of Chatham.

118. The first Marquis of Wharton, a famous Kit-Kat Jacob Tonson picture.

119. Charles Dartington,—commemorated by Pope. A Kit-Kat Club picture.

120. Sir Godfrey Kneller himself. The cataloguer tells us that Sir Godfrey was "buried at Whitton, near Hampton Court." The parish register at Twickenham records that he was "buried at Twickenham," November 7th, 1723. There is no church at Whitton.

122. Sir Spencer Compton, Earl of Wilmington, a Kit Kat Club picture. The visitor may like to be reminded that Thomson dedicated his poem of "Spring" (one of "The Seasons") to Speaker Compton.

123. Charles Lord Mohun, killed 1712, in the famous duel with "Duke Hamilton." The catalogue informs us that Lord Mohun was buried in Westminster Abbey. In what way this is to be reconciled with the burial register of Totteridge, in Hertfordshire, we are not able to say. The register of Totteridge records his burial there. (See Lysons's "Environers" under "Totteridge," vol. iv., p. 46. 4to. 1796.)

And thus ends the catalogue of the Knellers in this most interesting and instructive exhibition. We shall probably have something to say on the "154" Sir Joshua's; for this South Kensington gathering is not for a season in memory and interest, but "for all time."

DISCOVERY OF A SILK PLANT.—The Department of State at Washington has received information from the United States consul at Lambayeque, Peru, that an important discovery had recently been made in Peru of the silk plant. Preparations were being made to cultivate it upon an extensive scale. The shrub is 3 ft. or 4 ft. in height. The silk is inclosed in a pod, of which each plant gives a great number, and is declared to be superior in fineness and quality to the production of the silkworm.

STONE CUTTING AND FACING MACHINERY.

AN interesting paper on new machinery for cutting, tunnelling, quarrying, and facing slate, stone, and marbles, was recently read by Mr. W. Fothergill Cooke, at the Society of Arts.

This machinery, said Mr. Cooke, depends chiefly for its efficacy on the peculiar forms of the cutting tools or moveable teeth; firstly, in the application of them as attached to holders or sockets fixed in the edges of the blade, instead of the blade itself forming the cutting edge; and, secondly, as applied to the circumference of cylinders for surfacing. The tools, or cutting-teeth, are, in consequence of their being moveable in the sockets, easily replaced as required without any reduction of the diameter of the blade, which so soon renders the circular saw, when applied to the cutting of stone or slate, useless.

These moveable tools or teeth are capable of application to machinery for a variety of purposes; firstly, to the sawing of blocks and slabs of rock of considerable thickness, for building or other purposes; secondly, for facing the surface of squared-up stones in an ornamental manner; thirdly, for tunnelling, for undercutting stone, slate, or coal *in situ*, where the rock lies more or less on the incline, and also for the vertical cutting of the living rock almost as readily as a haycutter cuts hay out of a stack.

These moveable tools, held in moveable sockets, are, as I have said, the distinctive features of this machinery, and they are exclusively the invention of Mr. George Hunter (now of Maentwrog, North Wales). "Hunter's saws," which the improvements which have rendered them so effective for many purposes, and as it is known to many now present that my own name is united with Mr. Hunter's in several recent patents, I will observe that my share has chiefly consisted in extending the application of the moveable tools and tool-holders (the real essence of his invention) to fresh and wider fields of usefulness, whilst the

arts of adapting the machinery to each novel application, and in so doing producing an entirely new result, has fallen upon the inventive genius and mechanical skill of Mr. George Hunter.

The moveable cutting tool, now most in use, is a bolt made of the best rod steel: the head is forged into a cupped or trumpet form—turned, and then hardened. When in use it is simply slipped into its socket, which is also made of steel, and wedged tight by a piece of paper or a thin shaving of wood. When the edge is dulled or chipped the tool is turned in its socket so as to offer a fresh cutting margin: and, as it wears away chiefly on the advancing side, the tool will generally offer three, sometimes four, fresh surfaces before it is worn out. These tools, according to the circumference of the saw blade, are from 4 in. to 8 in. long, and the cutting head itself from half an inch to one and a quarter inch wide. The length of the bolt allows of the tool being softened, again set up, turned, and hardened, until it is too short for further use.

The stems of the sockets are of the same thickness as the blades that receive them, and are slipped into grooved openings in the margin of the blades, to which they are fitted with accuracy by machinery. As the blades revolve slowly, the tools are usually replaced, or merely turned round in their sockets when necessary, without stopping the machine, and should thus be kept always in good cutting order.

The cupping, shaping, and tempering of these tools require modification in each case, to adapt them to the texture of different kinds of stone. Limestone and sandstone, for example, cut away in large chips, whilst slate has to be scraped away, and the tool must be made to suit each case.

The next tool to which I will direct your attention is formed by the double action of a punch. The first action cuts out a round disc from a plate of steel, like the punching of a boiler plate; the second action converts the disc into a tool precisely similar to the head of the bolt-like tool just described, only ready cupped and sharpened, with a boss behind, to fit into a corresponding groove in the back of its holder, and with a hollow in front for a nipping bolt, or pinching screw, to grip it. These discs, so punched into the exact form required, only need tempering to be at once fit for use. The holder of the disc-tool grasps it between (as it were) its finger and thumb with perfect firmness, and as the cutting rim projects only very slightly beyond the holder, it offers very little leverage to the resistance of the stone, and never gets

loose or displaced. Either of these forms of tools may frequently be used for the same object, but each has its specific application as well.

Another form of tool, equally simple in its character with the last, but peculiar in its adaptation to a distinct purpose, is formed out of a symmetrical, acute-angled trapezium, cut from a riband of steel, two or three sixteenths of an inch thick, according to the roughness of the work it has to do. To convert these slips of steel into the required form of tool, they are bent sharply on their middle, so as to bring the acute angles opposite to each other, but slightly turned out at their cutting angles.

These tools are cut from the ribbands of steel without any waste, and if not left sufficiently sharp by the shears, a number of the flat slips are screwed up together in the vice, and sharpened by the file; they are then bent and hardened, and are fit for use.

The socket for this form of tool is extremely simple; it is merely a hole into which the tool slips, and in which it is held by the spring of its own arms. The chief use of this tool will be the roughing down grindstones, and scarifying the rough surface of slate and stones, preparatory to the facing tool; and it is, perhaps, the best form of tool for under-cutting coal.

In addition to those already described, there are flat, concave, and other formed tools, all adapted to the holders, for giving ornamental and apparently hand-tooled surfaces to ashlar, quoins, sills, &c.

For cutting window-sills, door-posts, steps, coping-stones, and a host of other building materials, out of rough blocks of slate—which were formerly necessarily thrown away as useless, because there was no means of working them—we employ now in Hunter's saw three or four blades of 4 ft. diameter, all cutting at the same time upon the same axle. These blocks, frequently 12 to 16 in. thick, and weighing several tons, are simultaneously reduced to five thick slices, and immediately split up into the required thicknesses for planing, or tooling, as most suitable. An immense amount of paying work is thus turned out of rock formerly all thrown away, and still accumulating by thousands of tons yearly on some of the giant and wasteful rubbish-heaps of the Welsh slate-quarries.

Under a recent improvement, we use a succession of tables always advancing, on which the blocks are prepared before the saw is ready for them, which saves the time of running back the table, unloading, and preparing another block.

The next application of the moveable cutting tools differs but little in principle from the last, but is productive of very different results. The axle of the cutters is above the table, but capable of being raised or lowered, as the cutting tools are in the ordinary engineer's plane. Instead of two or more blades fixed on their sliding collars, carrying an array of cutting tools on their peripheries, as in the saw, the axle itself, or a removable cylinder slipped on, or bolted in halves to the axle, receives the tools.

The object of the machine now under consideration is to give a finished surface to building or other stone of a more or less ornamental character; and breadth, not depth, has to be cut. The tools are fixed in holders, placed spirally round the axle or cylinder, so that a divided and regular pressure may come upon the face of the stone at intervals of two or three inches, always nearly uniform, but ever passing spirally from right to left. In the specimens of ashlar shown, the tools formed one spiral, each fourth tool cutting at the same time, and six tools were entering into the cut as other six were leaving. A double spiral, in which the tools followed each other more closely in their cut, would have given more uniformity of strain, but could hardly have produced a more perfect piece of work. The fluting here produced may be varied without limit, or the margin work cut by the flattening tool may be carried over the whole surface. By the introduction of a second cylinder, the beginning and end of each stone will receive a border across the stone corresponding to the long margin of whatever pattern it may be. For fluting, or similar work, the punched tools have a great advantage, whether of the disc or flat-faced form, as they are always of exactly the same diameter, and produce uniform work. The marginal tool may cut off a chamfer if required.

Anything that parallel working tools on a revolving axle can execute, will be done readily by this machine, and on a larger cylinder tools of different shape may work along the same line

as to vary a running figure, by alternate markings. In fact, the outline of work thus produced seems unlimited, and ornamental figures, that this machinery cannot complete, may yet be prepared by it in outline ready for the sculptor's hand. Take the instance of a Gothic church window. The perpendiculars would be easily cut out in any running pattern, on a straight moving table, by a series of tools corresponding in their forms to the required surface.

The roughing-tool can be made to imitate the marks of a pickaxe in rustic stone work with the usually chiseled work around it.

Some of the patterns of flat tooling by these machines can be made to imitate chisel-work so closely as to be distinguishable alone by the finer finish given by the machine. The finer kinds of lime-stones, including especially those of the Isle of Anglesea, receive almost a polish from the cutters.

A class of stone rarely or never seen, I believe, in London buildings, but much used in the best buildings in North Wales and some parts of England, the tertiary limestone, is very durable and cheap, and takes an excellent face, almost approaching to a polish, under the new tool. Sandstones, Portland, Caen, and Bath stone, are all much softer and mostly less durable than limestone, but not more easily worked. The harder stones, including the granites and granite-like rocks, cannot be operated upon by this machinery at all.

These machines will be of moderate weight except when required for the facing of massive blocks, and a very small power works them, so that they could be sent about the country to prepare the stones for a building on the spot, where an equivalent complement of masons could only be obtained by collecting them from great distances.

In the machines for cutting stone, &c., out of the living rock in the quarry itself, the principle is, I believe, new. The cutting tools, instead of being placed in a single row around the rim of this blade, are fixed in rows of twos and threes alternately across the margin of a wheel-like disc, so as to clear away a wider space. The outer portion of this wheel-like disc is a ring of fine malleable cast-iron armed on the outside with tools, and carrying a cog-wheel within. This cogged wheel is made to revolve on a broad metal plate as its axle. This broad plate is of great strength, and forms four-fifths of the diameter of the entire cutter, and can be firmly bolted to the machinery frame by any part of its surface nearest to the cogged wheel which carries the tools, and the latter so held is made to revolve by a pinion around it. This arrangement allows eccentrically-held cutters to penetrate the rock to a depth exceeding the semi-diameter of the disc. A machine of this kind, cutting horizontally, works with great freedom, and advances rapidly through slate rock upon which it is employed.

There are other applications of these movable cutters which I would gladly have introduced to the attention of the Society, especially the coal-cutter, but the time allotted is too short for my venturing upon them in the present occasion. There are some photographs, however, which display the formidable character of the tunnelling machines. One form includes a construction two parallel borers, cutting two tunnels each 5 ft. 4 in. in diameter, side by side, and freeing two cores weighing more than two tons each at every cut.

Another form of the tunneller, which is now being erected in a quarry of the Ffestiniog valley, will cut a single tunnel 6 ft. 9 in. in diameter, and penetrate 28 in. at each cut. This machine will excavate more than five tons at a cut.

A high authority in engineering has lately undermined the principle of "planning" out a round core as a mistake. I hope before the end of this month to prove, by a second successful success with a second machine, that this is better than theory.

These machines were made expressly for slate and tunnelling, and have not yet been tried on sandstone or limestone rock for tunnelling purposes.

THE MYSTERY OF AVERAGES.

At the recent dinner of the Royal Literary Fund it was announced that the grants made by the committee during the past year amounted to 1,608*l*. In the previous year they amounted to 1,882*l*; in 1864 they were about 1,500*l*, and in 1863, about 1,600*l*. Considering that these grants are uniformly made according to the special merits of each particular case that is brought before them, and without the slightest reference to what will be the aggregate amount at the end of the year, this agreement, or agreement of average, is certainly curious. Not merely here, however, but in every quarter, averages are puzzling. At the South Kensington Museum, for example, the number of visitors will run on week after week to about the same number, say 10,000, until something peculiar or fresh occur to produce a change.

Here are two returns that we happen to have before us. The number of visitors during the week ending 2nd of March was 11,614. The average of corresponding week in former years is 11,027. The visitors in the week ending 9th of March numbered 10,402; and the average of corresponding week in former years is 10,515. Again, during last Easter week (ending 27th April), the total number was 26,564; and the average of corresponding week in former years is 26,076. Now, why should this be, and why should just 10,000 persons come for six or eight weeks running, and not 15,000 one week and 5,000 the next? It seems hard to answer satisfactorily. Or take the case of a theatre during the run of a successful piece; such a run as we have seen several instances of in recent days, when 150,000 or 200,000 persons have visited the theatre during its continuance. Why should the theatre be steadily filled night after night by (say) 1,500 persons, some few going away occasionally for want of room? Why should not 10,000 persons, when every one is talking about the piece, go one night and not half sufficient to fill the house on the next representation?

We might follow the inquiry in many other directions; but we have probably said enough to justify our observation that there is a mystery in averages.

THE ROYAL ALBERT HALL OF ARTS AND SCIENCES.

The first stone of the structure proposed to be erected in the Kensington-road, on the plot of land adjoining the gardens of the Royal Horticultural Society, and opposite to the national memorial of the Prince Consort now in course of erection in Hyde Park, was laid on Monday last by her Gracious Majesty the Queen, in the presence of some thousands of her subjects. A more successful ceremony or a more brilliant scene has been seldom witnessed. The incidents of the event have been well described by the daily press, and we shall give what space we have at disposal rather to official particulars of the undertaking (though of this our readers are not wholly uninformed) and of the proposed building, illustrations of which we are enabled to append.*

The Prince of Wales, in the address read by His Royal Highness on Monday, said,—

"It is not necessary for me to remind your Majesty that the building of which you are graciously pleased to lay the first stone to-day is one of the results of the Exhibition of 1851, and that it forms a prominent feature in the scheme contemplated by my dear father for perpetuating the success of that Exhibition by providing a common centre of union for the various departments of science and art."

And to this address, her Majesty replied,—

"I thank you for your affectionate and dutiful address. It has been with a struggle that I have nerved myself to this day's ceremony; but I have been sustained by the thought that I should assist by my presence in promoting the gratification and affection of the country are now rearing a noble monument, which I trust may yet look down on such a centre of institutions for the promotion of art and science as it was my fond hope to establish here. It is my wish that this hall should bear my name to whom it will have owed its existence, and be called 'The Royal Albert Hall of Arts and Sciences.'"

In the prospectus issued in December, 1865, the Provisional Committee† stated that her

* See p. 295.

† The Prince of Wales, chairman; the Duke of Edinburgh, the Earl of Derby, the Earl Granville, Lieut.-General the Hon. C. Grey, the Right Hon. R. A. Bruce, M.P., the Right Hon. R. Lowe, M.P.; Mr. Thos. Baring, M.P.; Mr. Edgar A. Bowring, C.B.; Mr. Henry Cole, C.B.; Mr. John Fowler, and Mr. Henry Thurg.

Majesty's Commissioners for the Exhibition of 1851, offered to grant a site for the hall, and to guarantee a sum, not exceeding 50,000*l*, towards the preliminary expenses and the cost of its erection. The principal conditions of the grant and the guarantee were, that such an amount should be subscribed, before the 1st of May, 1867, as would be sufficient (inclusive of the commissioners' guarantee), to insure to the satisfaction of the commissioners' surveyors the completion of the building, and provide for the payment of every contingent expense.

Towards the fulfilment of the foregoing conditions, by the summer of last year, subscriptions to the amount of 112,000*l*. were obtained, but the monetary panic that took place about that time induced the committee to refrain from pursuing measures to obtain further subscriptions from the public. In the month of July, 1866, a proposal was made by Messrs. Lucas, which enabled the committee at once to take all the preliminary steps required for proceeding with the work, and Lieut.-Col. Scott, R.E., on behalf of the Provisional Committee, prepared plans of the hall, on the designs approved by a Committee of Advice,* and placed them in the hands of the surveyors. These gentlemen having certified that the building can be completed, externally and internally, including the fittings, and every expense connected with it, for the sum of 199,748*l*., the Provisional Committee accepted the proposal of the Messrs. Lucas to subscribe for sittings to the amount of 33,000*l*., and to contract for completing the hall at ordinary trade prices, on the estimate and valuation of Messrs. Hunt, Stephenson, & Jones, acting as surveyors to the commissioners, as well as on behalf of the Provisional Committee. It is understood that the sittings taken by Messrs. Lucas are to be disposed of to the public before the sale of further sittings on account of the Provisional Committee.

A royal charter has been obtained, which provides, amongst other things, that the purposes of the corporation shall be the building and maintaining of a hall and buildings connected therewith, on the estate of the commissioners at South Kensington, and the appropriation of the hall to the objects hereinafter mentioned, "that is to say, to—

Congresses, both national and international, for purposes of science and art.

Performances of music, including performances on the organs.

The distribution of prizes by public bodies and societies.

Conversations of societies established for the promotion of science and art.

Agricultural, horticultural, and other like exhibitions.

National and international exhibitions of works of art and industry, including industrial exhibitions by the artisan classes.

Exhibitions of pictures, sculpture, and other objects of artistic or scientific interest.

Generally any other purposes connected with science and art.

With power for the corporation to furnish the hall in such manner, and with such works and objects of scientific and artistic interest as they think fit, and generally to do all such acts and things, whether such acts and things are or are not of the same character or nature as the acts and things before enumerated, as they think conducive to the purposes of the corporation, or for the benefit of the members thereof, having regard to the purposes aforesaid."

The design for the building is by Lieut. Col. Scott, R.E., assisted by Mr. G. Townroe, artist. It is based on ideas originated by the late Capt. Fowke, R.E. The plan of it is elliptical. The main walls are to be of brick, the exterior of red brick with terra cotta enrichments, chiefly of a buff tint. The roof is to be of wrought iron covered with lead, with a central skylight. The floors, stairs, and all partitions will be fire-proof.

Immediately over the upper tier of boxes is a corridor 20 ft. wide which can be used either for the exhibition of pictures, sculpture, or other objects, or it can be seated for an audience. An upper corridor, also 20 ft. wide, and top lighted, can be similarly used. The boxes are each provided with a separate room to which access is gained from corridors 9 ft. in width. Below the boxes is an amphitheatre, and an area 103 ft. long and 68 ft. wide, measured on the axes of the ellipse occupies the centre of the building. Small lecture and concert rooms, refreshment and retiring rooms, and offices for societies using the hall, are contained between the outer wall and that of the hall itself. The cost of the building is estimated at 200,000*l*.

The necessary funds for erecting the building are being raised by the sale of seats. The seats which are not sold will be at the disposal of the

* Messrs. James Ferguson, J. Fowler, J. Hawkshaw, R. Redgrave, R.A.; W. Tite, M.P.; and M. D. Wyatt.

MACHINERY AND CONSTRUCTION AT THE PARIS EXHIBITION.—It is a bare act of justice to mention, that all matters in the Paris Exhibition connected with machinery and engineering are being very fully treated of and illustrated in the *Builder*. Some of our readers may be glad of this information.

governing body, and the revenue arising from letting them will be applied to the maintenance of the hall, and to defraying the expense of carrying into effect the objects for which the hall is erected. Of the 6,000 sittings which it will contain it is proposed to sell 2,000. The portion of the hall set apart for the orchestra contains seats for 1,000 performers, not included in the above estimate, and these seats will be also available for the public when the orchestra is not required.

Each step or bench of the amphitheatre will be 3 ft. wide, and the whole will be seated with chairs. The freeholds of these sittings are to be sold to subscribers for 100l. each sitting. The sittings themselves will be transferable by sale or otherwise, or the right of occupying them may be sold either for a period or for any particular occasion. In all there will be about 1,720 of these amphitheatre sittings, and of these 360 can be converted if necessary into box sittings. The remaining part of the oval will be occupied by sittings for the orchestra and an organ. Above the amphitheatre again will rise two tiers of boxes. Those in the lower tier are each to contain 10 persons, and are to be sold for 1,000l. each; those in the upper tier will contain 5 persons each, and are to be sold at 500l. the box. There will be 43 in the principal tier, and 36 in the upper. The portions of the building which are saleable lie in the amphitheatre and boxes. The Provisional Committee, in arranging this, have proceeded on the principle of retaining full powers for the shareholders over those portions which can be used for exhibitions or for other purposes connected with the objects of the undertaking. No seats will be sold which in any way may interfere with the various purposes for which the hall is intended. Above the boxes will be the corridor already mentioned, which is to be fitted with movable seating. It will give space for seating 2,700 persons. The wall of the corridor may be considered to bound the hall proper, and from wall to wall on the longer diameter of the oval it will measure 230 ft., and on the shorter 180 ft., which is all to be covered in with a roof in one span, resting on piers, between which the spectator in the hall will see the architectural features of a top-lighted picture gallery and promenade running completely round the hall. This gallery would also be available for a seated audience on great musical festivals. The total number that could be conveniently seated in the building is said to be 8,000, including the orchestra; and if of these the Provisional Committee have to sell 2,000, as the statement put forth by them implies, there will be 6,000 sittings for persons who take the hall or for societies and others using it. From the top of the piers which separate the upper galleries from the main body of the hall the ceiling will rise in an elliptical curve to the great central skylight, both ceiling and skylight being suspended from wrought-iron arched ribs or girders, similar to those of the Cannon-street and Charing-cross stations, only that they all converge on a central ring, instead of being all parallel, as in the roofs of those stations. The total height from the floor of the arena to the skylight will be 135 ft. Below the upper gallery there will be numerous offices, rooms for societies using the hall, and refreshment and promenade rooms, and extending from the general contour of the hall there are to be over the entrances on the one side a lecture theatre, and on the other a small concert room. Below this floor will be the crush rooms, which are to give admittance to the corridors surrounding the boxes, and also to the galleries. Behind the orchestra at the ground level, and also on a level with the lower tier of boxes, will be long refreshment and promenade rooms. The basement will be occupied with the kitchen, stores, &c., as arranged, it is stated, that the lifts from the kitchens will pass through all the refreshment rooms on the three floors above.

As to modes of ingress and egress: for the arena it is proposed that there shall be four staircases on the south-east and south-west side, and two on the north side. There will be six staircases to the box tiers, besides an entrance from the conservatory of the Royal Horticultural Society, where there will be two flights of steps. To the lower gallery, which will be occupied by persons admitted for comparatively small payment, the provision is not so lavish; but still there are six staircases, each 6 ft. 6 in. wide, for 2,700 persons. The upper gallery is to be provided only with two staircases, 6 ft. 6 in. wide; but space is to be left for additional staircases, in case of their being required. The

amphitheatre sittings will be entered from the level of the ground in Kensington-road. Counting two entrances to the corridor of the Horticultural Society, from the arena level there are to be twenty-nine exit-doors. For the refreshment department there will be provision made for dining, if necessary, 1,000 persons.

The executive committee are the Duke of Edinburgh, General Grey, the Right Hon. H. A. Bruce, Mr. Henry Cole, Mr. Bowring, and Mr. Thring.

Touching the proposed arrangement of the building, especially that of the arena and stalls around, we have opinions, but defer discussing them. One suggestion, however, we feel compelled to offer at once, and we do so with but one feeling, a sincere desire that the undertaking should be carried out in the most successful manner, and that the building should be eminently worthy of its purpose and of the age. What we desire, and what we urge most earnestly, is that a properly educated and qualified professional architect be at once associated with Lieut. Colonel Scott in the erection of the building. We are not captious: we are not bigoted. Paxton and Fowke received at our hands a frank and hearty acceptance to the extent of their very remarkable capabilities. Colonel Scott may be a heaven-born genius: we know nothing to the contrary; but he has had no experience in the designing and carrying out of large edifices such as this will be—an office not only monumental but one calling for a perfect knowledge of detail and of all modern discoveries and aids. Even in the case of poor Fowke for a long time everything was necessarily experimental; and, even up to the close, difficulties were skipped and few things were finished: and so it will be with the Albert Hall if the course we suggest be not taken. It is no reply to point to the Committee of Advice. These gentlemen will have no responsibility in prospect,—no reward, we perhaps might add, no power. What we seek, and what we do most earnestly ask the Provisional Committee to appoint, is a properly qualified professional architect, duly paid and duly responsible.

THE LATE CLARKSON STANFIELD, R.A.

THERE are few, where animated canvas speaks to all emotions, who will not hear with regret that Mr. Clarkson Stanfield, our English Vanderelde—and something more—is no longer with the living. The Charles Dibdin and Captain Marryatt, the William Falconer and Thomas Campbell of our painters died, sad to think, "after a lingering illness," at his house in Belsize Park, in his long-loved Hampstead, on the 18th of this month and year, a few months under the reverential age of seventy-five.*

When Stanfield quitted the "behind the scenes" of Sunderland and Edinburgh, he made or worked his way "by water" to London, and was charmed with Tilbury, with Deptford, with Greenwich, with Wapping Old Stairs and old London-bridge. We have before us while we write a most admirable line-engraving by George Cooke, after "Clarkson Stanfield, R.A." of what he calls "The Diving Bell used at the Thames Tunnel after the Irruption of the Water on the 18th of May, 1827. Rotherhithe Church in the distance." Very animated indeed is this engraving; quite up to the drawing.

Let us recal (our readers will not regret our so doing) a brief after-dinner speech made by Mr. Stanfield at Edinburgh, Wednesday, 29th September, 1858, at the noble entertainment given by "The Royal Scottish Academy" to Mr. Stanfield and Mr. Roberts. The president, the late Sir J. Watson Gordon, R.A., called on the meeting to dedicate a bumper to the health, fame, and prosperity of Mr. Stanfield, whose works, whether composed of scenes and incidents on the high seas or on the land, were universally admitted to possess the highest qualities of artistic and poetic beauty, and whose prolific genius had brought a large amount of reputation both to himself and the British school of which he was one of the most esteemed living masters. Sir John alluded with the eloquence of true feeling to the warm affection and regard, with which Mr. Stanfield was esteemed by the whole of his professional brethren, and by a very wide circle of the most eminent persons of the age.

We transcribe Mr. Stanfield's reply from a local

paper of the time, of which we had a copy sent to us by Mr. Roberts:—

Mr. Stanfield, who was received with great cheering, expressed his happiness in being so received by his brethren of the Royal Scottish Academy—the worthy daughter of the body to which he more particularly belonged, namely, the Royal Academy of London. Passing from the high compliments which had been paid him by the distinguished president, his mind had great pleasure in reverting to his early days as an artist, which might be said to have begun in Edinburgh, where he first made the acquaintance of his friend, Mr. Roberts, who at that time had commenced his career by painting scenes for the Theatre Royal, while he, Mr. Stanfield, was similarly employed in the rival establishment at Corrie's Rooms. That acquaintance had ripened into a friendship, which had weathered the vicissitudes of a pretty long career, and had surmounted and survived the professional rivalries which had always accompanied them, first in Edinburgh, then in London, to which they were both at the same time summoned,—he, Mr. Stanfield, to paint for Covent Garden,—Roberts for Drury-lane.

Here Mr. Stanfield humorously described the rivalry as an earnest one, the respective managements mistaking to the painters' professional enthusiasm: whole acres of canvas were covered by them with scenes and moving dramas, until he believed both managements were ruined by their scenic ambition and rivalships. Then [said he] in a new field—the walls of the Royal Academy—our rivalries continued, and do continue; but the friendship begun in youth had also continued, and he believed those feelings of mutual affection and esteem would never cease. Mr. Stanfield alluded with satisfaction to his election as an honorary member of the Scottish Academy, and promised a close and constant alliance with it at its annual exhibitions.

The reporter remarks (truly enough, as we have heard) that "the natural grace, feeling, and humour of Mr. Stanfield's remarks were listened to with intense interest and pleasure." A very wise, appropriate, and honourable appointment (of little remunerative value) was given to Mr. Stanfield by the Governors of Greenwich Hospital—that of Curator or Keeper of the Painted Hall at Greenwich. Though "Stanny" knew little or nought about Blake or Van Tromp, or King James II.'s "Flagman," yet he attended to his work with a loving respect, and gave Sunderland and seaman-like a good whitebait dinner, once a year, at "The Trafalgar," or the Ship, to a select few. We had the good fortune to be a guest on one of those occasions, and have pleasant remembrances of our host there as elsewhere. There was a maritime savour in all the great painter said, and in all our liberal entertainer had cooked.

The selection of his pictures for the memorable Manchester Art Treasures Exhibition of 1857 was made under the written advice and assistance of Mr. Stanfield himself. We remember them well. The happy possessors will find an additional pleasure, and now an additional market money-value (when needed) in the following approved list—(Clarkson Stanfield (*primarius*)—843. Passage of the Myra, Earl of Ellesmere; 353. Dartmouth. J. M. Arthur, Esq.; 377. St. Michael's Mount, Cornwall. H. W. Eaton, Esq.; 387. The Wreck, T. Birchell, Esq.; 483. Battle of Roveredo, painted 1851, F. D. P. Asley, Esq.; 499. Dork on the Maas, painted 1850, J. P. Davis, Esq.; 504. The Abandoned, painted 1856, Thomas Baring, Esq.; 574. Bidasoa, painted 1863, Charles Morgan, Esq.

Nor was the public at the time, nor are we,—after ten years' lapse,—inclined to doubt the propriety of Mr. Stanfield's selection.

Mr. Stanfield commanded a large price for his pictures; the prices he received have been doubled, and more, when the same pictures passed under the hammer of Messrs. Christie & Manson, and others of the same inevitable fraternity.

"Castello d'Ischia" brought, at Knott's sale at Christie's, 680 guineas. This was again sold, in March, 1865, by Christie, at the sale of John Whitaker, esq., deceased, of Hurst, Ashton-under-Lyne; but for what we forget. An engraving from this was the seventh plate issued by the Art-Union of London.

"Wreckers off Calais" painted for Watson Taylor, bought at Taylor's sale, by the Duke of Buckingham, for 300 guineas, sold, 1848, at the Stowe sale, to John Naylor, esq., of the Manor House, Cheshire, for 430l. 10s.

But these quotations are as sought contrasted with the sums Mr. Bicknell's four Clarkson Stanfields brought at the memorable Herne Hill sale of 1863:—

1. "Shipping; French Coast near St. Malo" 27½ in. by 43 in. Dated 1858. Printed for Mr. Bicknell (85 in catalogue)—1,201l. 10s. (Vokes).

2. "Lago di Garda, Lombardy" 27½ in. by 43 in. Painted for Mr. Bicknell in 1839 (101 in catalogue)—361l. (ditto).

3. "Bellatain, on the Moselle, the Hunnesh Mountains in the distance" 45 in. by 63½ in. Exhibited at the Royal Academy in 1837 (107 in catalogue)—1,574l. (Vokes).

4. "Pic du Midi d'Ossau, in the Pyrenees; with Smugglers" 83½ in. by 69 in. Exhibited at the Royal Academy. Painted for Mr. Bicknell (121 in catalogue)—2,677l. 10s. (Vokes).

* On the 18th inst., at his residence, Belsize Park-road, Hampstead, after a lingering illness, Clarkson Stanfield, esq., R.A., in his 74th year.—The Times of Tuesday, May 21, 1867.

i.e., 6,405*l*. (six thousand four hundred and five pounds) for four pictures. What did Mr. Bicknell give for them?

Since Mr. Stanfield was elected a Royal Academician, in 1835, the following *twelve* Fellow Academicians, his juniors in membership, have died,—before him:—Sir William Allen, John Gibson, C. R. Cockerell, J. P. Deering, Thomas Uwins, William Wyon, David Roberts, Sir Charles Barry, Sir William Ross, William Dyce, Sir J. Watson Gordon, Augustus Egg.

This is a melancholy and suggestive list; nor do we see how the places of such men can be readily refilled.

The London residences of so great an artist deserve to be recorded. When he first came to London from his favourite Edinburgh, he went (1825), to "No. 14, Buckingham-street, Adelphi," where he lived in the same chambers (or under the same roof), with William Etty. In 1831 he moved his easel to 36, Mornington-green, Hampstead-road, near to *Sal's-cross*, where Wilkie first took root in London; from thence he removed (1843), to No. 48, Mornington-place, and not long after to Sir Thomas Martyn Wilson's farm, Hampstead, dear to Leigh Hunt and the late London School of Poets.

His last exhibited picture is said to be seen on the walls of the Royal Academy, "Off the Coast of Heligoland." Some could see no falling off in his powers, though *seventy-four*, yet it certainly seemed to us, that like the mighty minstrel on his well-strung harp,—

"His hand had lost that sprightly ease,
Which made security to place."

Stanfield did not possess much of that poetic enthusiasm which both "elevates and surprises." His picture (1853) of "The Victory," with the body of Nelson on board, towed into Gibraltar," wants the dignity such a subject would have inspired in Turner. Mr. Stanfield would have drawn "*Stonehenge*" more topographically than Turner, but he would not have thought that Druidical combination of clouds over the ruins which Turner has shown in the drawing that Mr. Rogers, the poet, had and loved, and which Thomas Warton has made us see, or fancy we see, in his magnificent sonnet, written at Stonehenge. Stanfield's pictures are, nevertheless, full of truth and full of beauty.

WORKHOUSE COMPETITION, ST. MARTIN'S-IN-THE-FIELDS.

ACCORDING to the instructions given to the six architects selected to prepare designs for the proposed new workhouse at Wimbledon, for St. Martin's-in-the-Fields, the building is to form a home for 400 *old men and women*; 348 of them being healthy and to have a separate bed, and 500 cubic feet of space each, in their dormitories, with day-rooms, work-rooms, &c.; 40 infirm to be provided with 850 cubic feet, in rooms on the ground-floor; there are to be also, separate sleeping-rooms for six married couples. The materials to be red or stock bricks, and Bath ground stone; the cost of this building to be about 25,000*l*.

The plan suggested to the Board by one of their officers, Mr. West, and laid by them before the architects, was a central circle, with dormitories, wards, and other buildings, radiating from it all round. To what extent this arrangement was made a condition of the competition we do not know; but only one of the architects, Mr. F. M. M. (Marrable), can rightly be said to have carried it out, substituting for the circular form an octagon. The result is a building of very great compactness; and although many of the rooms are necessarily of awkward shape, it seems eminently worthy of consideration. The estimate is 28,332*l*, exclusive of boundary-wall. Mr. F. M. Burton sends as an alternative design a variation of Mr. West's notion, but it is not fully brought out. His principal design has three stories, which are objected to, and is not over agreeable in appearance. The building, irrespective of boundary-walls, &c., is estimated at 30,820*l*. Mr. H. R. Cotton's plan, although it covers a large extent of ground, has merits; its elevation is pleasing. 29,406*l*. is the sum set down for it, and 1,300*l*. for walls. Messrs. Rendall & Mew have sent a good plan, adopting the pavilion system, and they estimate the cost at 27,800*l*. Mr. William Lee has adopted the pointed style and seven towers, and adheres to the corridor system. His estimate is 28,000*l*. Mr. W. S. Cross confines himself to two stories,

covering a good deal of ground, and brings his estimate to 28,023*l*, and 1,550*l*. for walls.

It is to be hoped that the guardians will not attempt to decide between the designs without professional assistance. Their respective merits and demerits require to be discovered, and then carefully weighed and balanced. As we mentioned last week, each of the unsuccessful competitors is to receive fifty guineas. The building, if we rightly understand its purpose, ought to take the shape of a retreat, rather than that of a workhouse or hospital.

THE NEW AMPHITHEATRE, HOLBORN.

A NEW theatre, mainly for equestrian performances (and wrongly called, like others of similar form, an Amphitheatre), has been constructed on the north side of Holborn, where the Horse Bazaar stood, nearly opposite the luckless Inns of Court Hotel, under the architectural direction of Messrs. Thos. Smith & Son. The area covered is said to be 130 ft. by 76 ft., much too small for the purpose. The stage in consequence is only 20 ft. deep, and if the house held a sufficient number of persons to pay, at reasonable prices, for first-rate performances, we are deceived by its appearance. At any rate, it could not possibly compete with a theatre of such a size as the purpose would conveniently admit of. In distribution the house consists of what may be called pit, boxes (one tier only), and gallery. The ceiling is flat, formed of a canvas strained, *velarium* fashion, from all sides, but having in the centre a ring to admit a sunlight with many burnans. The roof above is of iron. The box tier consists of a series of private, or family, boxes, with one row of stalls in front. The seats appear to be comfortable throughout, and no doubt the interior, when the decorations are finished, will look bright and pretty. It is a mistake, nevertheless, to cram a theatre into the midst of a parcel of houses on an area scarcely big enough for two good shops, and gives another proof of the want there is of a proper code of laws to regulate the erection of places of public amusement in the metropolis and large towns.

The exterior has at present nothing architectural to mark it.

APPRENTICES AND EMPLOYERS.

In days—happily for the credit of mankind—long since passed, an apprentice was regarded chiefly as a fit subject for the abuse and spleen of the hard-hearted master. No matter how trivial the offense, or how slight the shortcoming, the word and the blow, and often the lash, without the admonition, followed closely on the transgression. The life of the apprentice was a constant scene of starvation, overwork, and personal indignity; and the press of remote periods had usually a column or so, in which an individual was depicted as fleeing from the wrath behind him, with a bundle and a stick—his sole earthly possessions. "Walked away—too lazy to run," was the common heading; and "one shilling reward" was offered for the apprehension of the fellow, as the most caustic satire that could be uttered respecting the value of the fugitive's services.

Hogarth thought it not beneath his eminent talent to illustrate the career of the idle apprentice; and he did it in such a powerful manner that it awakened universal attention. The regeneration of the apprentice system cannot, of course, be traced to the publication of these pictures; but it is very certain that in this country a much-needed and desirable reform has been gradually brought about, until it may be safely said that the artisan's assistant is more favoured here than elsewhere.

In former times, when the arts were as yet undeveloped, the idea prevailed that a trade which limited the number of its members enhanced its value in the community, so that by observing the law rigidly, the organisation could demand any compensation it chose. Were it possible to do this, if the laws of supply and demand were variable to suit circumstances, and if the seasons of the year were all equally busy, then some such arrangement might be feasible, but it is not, for the reasons set forth. When apprentices were bound for a certain period they almost invariably ran away before its expiration. The young man seeking

to acquire mechanical knowledge is no longer bound, legally, to a stated period, but enters the handicraft he chooses, in most cases, of his free will and accord. He signs no parchment rolls, but his agreement is none the less binding or compulsory upon him on that account. Certain instances have occurred wherein young men have broken faith with their employers, and violated the confidence reposed in them; and these cases are the most flagrant because, in pursuing such a course, the apprentices damage their own characters for integrity and veracity.

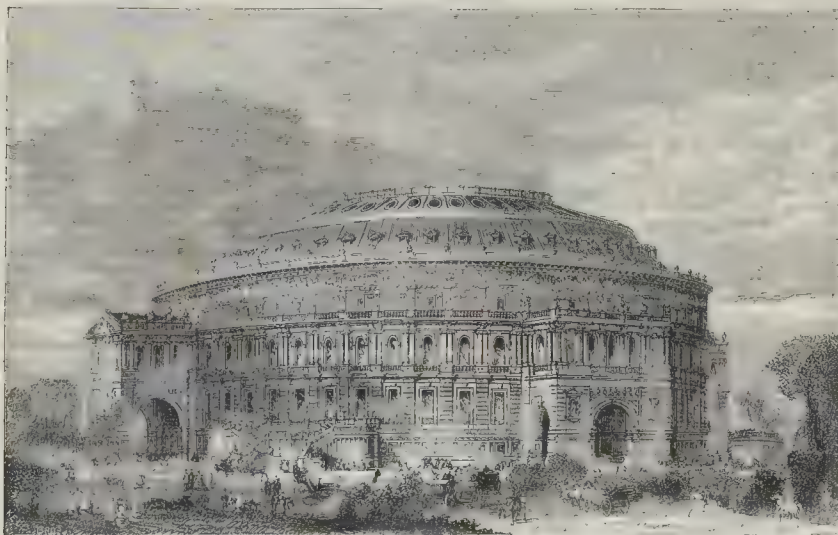
When a manufacturer takes a youth into his service, he does it at a considerable loss for the first two or three years, expecting to remunerate himself in the closing term of the novice's education, by the skill he may have acquired. When, therefore, the apprentice violates his verbal pledge, he is, in effect, dishonest, because he carries away with him a portion of experience for which he has rendered no equivalent. Extraordinary cases sometimes happen, no doubt, which admit much extenuation, such as those wherein the self-respect of the apprentice will not brook the indignities to which he is subjected; but these are of rare occurrence, and we mention them with hesitation, lest we furnish a specious excuse for some young man desiring to defraud his employer of his time. Our manufacturing mechanics and firms are, as a class, liberal in their provisions for the welfare of the young man under their care, as it is for their interest to be so; and it is desirable that young men who are dissatisfied with their condition and treatment should remonstrate, if necessary, quietly and respectfully, under the advice of those competent to decide for them, before taking hasty steps, which they may regret hereafter.

FIRE PROTECTION.

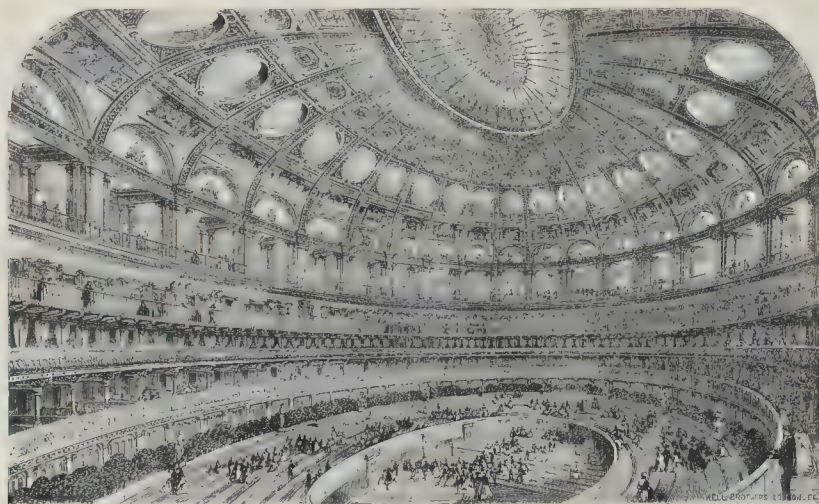
MR. M'LAGAN gives evidence, as chairman of the committee of the House of Commons he has been instrumental in appointing, that he desires to get at the root of the matters into which the committee inquires: the increase in the number of fires, the proportion of suspicious fires, the best means of extinguishing fires, and the legal measures that should be adopted to reduce fires and consequent loss of life and property to a minimum. But we fear that the committee will have considerable difficulty in agreeing to a report from the conflicting nature of the evidence which has been given to them; one witness giving evidence with reticence, another almost with rashness; one commending a certain expedient, another condemning it; one making a distinct allegation upon a certain point, and another denying its truthfulness. At a meeting of the committee, Mr. Swanton, superintendent of the London Salvage Corps, which is supported by the insurance companies, gave evidence, and expressed his belief that the number of fires had greatly increased for a number of years past in the metropolis. In a given district in the west of London, the fires had been, in 1852, 1 to 2,659 persons; in 1862, they were as 1 fire to 1,252 of the population. The number of fires compared with the number of houses had increased in a like ratio. The increase in the number of fires from unknown causes had been remarkable. In 1865, 700 fires out of 1,500 had been from unsatisfactory causes; 40 per cent. of them, he believed, of a suspicious character. The figures he quoted referred to a radius of say ten miles round London. In 1866 there were 589 fires not satisfactorily accounted for, of which 480, or about 5-6ths, were in insured property. The proportion of suspicious fires had increased in the last few years over 10 per cent. In 1852, the fires in proportion to houses was 1 in 354; and in 1865, the proportion was 1 in 269, being an increase of a fourth.

Of a large number of the unknown fires very many were doubtless wilful. He considered the water supply in London very unsatisfactory, both as regarded quantity and pressure. If the mains were continually charged there might be sufficient pressure, but the water was often off during the whole day. He recommended that watchmen should have keys of the fire-plugs, and that every water company should be bound to give notice to the fire-brigade authorities, in case of their cutting off the water supply. He also recommended an increase in the number of mains, and that certain regulations should be observed as to storage of petroleum and other inflammable materials. He decidedly approved of judicial investigation concerning fires of

THE ROYAL ALBERT HALL OF ARTS AND SCIENCES, KENSINGTON.



View in the Kensington-road.



View of the Interior.

suspicious origin, and believed that the coroners were competent, with the assistance of deputies, to conduct such investigations. He recommended that their remuneration should be by fees, paid from the same funds as those from which the fire-brigade was supported. In warehouse construction he recommended that the space between the flooring and ceiling should be filled with concrete. Being brought back by Mr. Tite to the question of water supply, Mr. Swanton repeated that he had known many cases in which the mains were found not charged, and recollected instances in which the engines did not get to work at all from want of water. He knew of forty-six cases in six months last year in which the engines were kept waiting for the arrival of the turncocks. The fire-plugs ought to be indicated by pillars, and made accessible to the men of the fire brigade. He would also recommend the provision of improved hydrants. Mr. Becker, metropolitan fire superintendent at Chelsea, was the

next witness examined, and concurred in the statements concerning the increase in the number and destructiveness of fires. The supply of water was for the most part efficient, but the brigade had difficulty in finding the plugs. The witness was understood to say that he considered the turncocks a useless set of functionaries. After being waited for, they were often drunk when they arrived, many of the calls being after ten o'clock at night. He considered the constitution of the fire brigade defective: the men were principally sailors, who were the worst class of men for the duties required. In Glasgow and other places the fire brigades were composed of masons, carpenters, warehousemen, and slaters, who were better qualified for the respective duties; and to avoid the destruction of property by water, which is often greater than that by fire. He considered that the steam fire-engines had caused loss to the companies by deluging property with water, as many fires being washed out as burned out. A great deal

of water was wasted in the extinction of fires. Mr. Becker recommended the employment of hose-reels, the adoption of a number of central stations, and an improved mode of telegraphic signals to and between the stations, under the direction of a telegraphic engineer. Plans, drawings, and models of Mr. Becker's system were exhibited, and will probably be gone into at the next meeting of the committee.

It may be mentioned that in 1866 the Metropolitan Fire Brigade had 1,338 calls to fires, exclusive of 102 chimney and 103 false alarms. As regards the causes of these fires, 19 were from children playing with lucifers, 6 from children playing with fire, 11 from blocked-up flues, 28 from defective flues, 2 from timber in the flue, 9 from defective hot-air flues, 2 from fumigating bugs, 54 from escape of gas, 73 from sparks from fire, 17 from lucifers, 6 from spontaneous ignition, 4 from incendiarism, 589 unknown, and the remainder from a great variety of causes.

SANITARY MATTERS.

Dwellings Unfit for Habitation.—At the Newcastle Police Court recently, Mr. Ackrigg, inspector of nuisances, stated that several houses situated in Pandon Dene were in a very dilapidated condition. They had neither ashpit nor privy accommodation. The windows were not constructed so as to open, but were permanent fixtures. Dr. Dalgleish and Mr. Veitch, assistant inspector of nuisances, corroborated Mr. Ackrigg's statement, and the Bench gave instructions for the closing of the places complained of. Another statement was made by the inspector, with reference to the polluted condition of a stream which turns a mill belonging to the same person.

Remarkable Epidemic at Dublin.—Great interest amongst physicians and much public alarm have arisen in the Irish metropolis from the occurrence of several cases of a disease previously unknown there. The first case was on the 18th March, 1866, in the person of a most healthy student of medicine, and three others took place within the succeeding month, but during the present year over twenty cases have occurred in Dublin and the neighbouring suburb, Kingstown. Sudden prostration, almost black purpuric discoloration of the skin, and death within a very few hours, have marked all the cases. The duration of the disease from seizure to death (for all the cases have been fatal) has varied from seven to ninety hours. The symptoms indicate that the malady may be closely related to cerebro-spinal meningitis, which was epidemic in Ireland in 1846, and in West Prussia in 1865. No rank of life more than another attracted the disease, which numbers among its victims a young nobleman, two students of our profession, three soldiers, and some other persons living under the best hygienic circumstances. It preceded and immediately succeeded the outbreak of cholera in Dublin, Kingstown, and Tullamore. From Dr. Mapother's reports, it would appear that the disease is not at all communicable.

PROVINCIAL NEWS.

Horsham.—The Town-hall Restoration Committee have reported that the tender of Mr. Potter, for the restoration of the hall for the sessions, amounting to 371*l.*, had been accepted; and that the extra works would increase this sum to 396*l.*, besides the architect's charges, &c. The report was adopted at a meeting of the inhabitants, and money granted to proceed with the works.

Ashton-under-Lyne.—The corner-stone of a new building which Mr. Mason is about to erect for the use of his workpeople at the Oxford Mills, Ashton-under-Lyne, has been laid. The workpeople have enjoyed for some time past the advantages of reading, smoking, and lecture rooms, which Mr. Mason has provided for them free of charge; and the extensive use that has been made of those rooms has induced him to erect a large building, in which there will be spacious baths and other improvements upon the original design. The existing lecture-hall will seat 250 persons; and during the season of lectures and concerts it has been overcrowded. In the new room there will be accommodation for 400 persons; and the reading and smoking rooms will be proportionately larger. All the rooms will be spacious, well lighted, and lofty; and there will be large and well-arranged baths for both sexes. Messrs. Paull & Robinson, of Manchester, are the architects of the new building, which will cost about 3,000*l.* The ceremony was attended by the whole of Mr. Mason's workpeople, with a band of music; and by a number of ladies and gentlemen who had been entertained at Groby Lodge.

Liverpool.—A "trade palace," described in the *Albion*, is in progress at Church-street, and will soon be completed. Compton House stands on a block of land nearly square, with its principal front to Church-street: its side fronts to Basnett-street and Tarlton-street, and its rear to Leigh-street. The front to Church-street is 156 ft. long; to Tarlton-street 173 ft.; and to Basnett-street, 169 ft. 8 in., the whole occupying an area of 2,980 square yards. An additional space is gained by vaults running under the pavements of 470 yards. The total area of floor-space is 17,322 square yards, or 3½ acres, of which nearly three acres are to be devoted to business purposes. The style of architecture adopted is Italian, with

certain modifications suited to street erections. The height of the building to the top of the main cornice is 60 ft.; but above this rises a curb roof, making the height to the leads 74 ft. At each corner of the Church-street front rises an imposing tower, 27 ft. square, to a height of 110 ft. The top of the roof is flat, 15 ft. square, and is surrounded by tall iron railings. The highest point of the building is 120 ft. The principal front is treated in the best manner for the display of merchandise, and the ornamentation of this front is rich and chaste in a high degree. The stone carvings are a notable feature. The basement, the ground-floor, and the first-floor are devoted exclusively to business purposes. Accommodation is besides provided for boarding 400 persons of both sexes. There are, therefore, extensive kitchens, numerous bed-rooms, a dining-hall, 68 ft. by 35 ft., lighted from the roof, and capable of dining 200 persons at once. There are also a library and writing rooms, billiard, smoking, and chess rooms, and a gymnasium, ladies' recreation-rooms, &c. On the fourth floor is an extensive range of workshops, occupying 890 square yards, lighted by skylights, and affording accommodation for 300 workpeople. The ventilation throughout the whole building has received especial care; and an elaborate system of talking-tubes is ramified through all the departments. There will be bedroom accommodation for 300 gentlemen and 100 ladies. From the towers on either side access is obtained to promenades on the roof. Messrs. Haigh & Co. are the contractors. The sub-contractors are,—for brickwork, Messrs. Roberts & Robinson, Liverpool; for masonry, Messrs. Gabbott & Son, Liverpool; ironwork, Messrs. Weber & Co., Liverpool; plumbing, &c., Mr. Nicholson, Woolton and Liverpool; slating and plastering, Mr. T. Jones, Liverpool; stone carving, Messrs. Williams, Manchester and Liverpool; ironwork, Messrs. Smith & Son, Birmingham; brasswork, Messrs. Clarke, London; ventilating apparatus, Mr. E. Watson, Halifax; and hydraulic lifts, &c., Messrs. Armstrong & Co. The clerk of the works is Mr. John Kneale.

Hanley.—The contract of Mr. A. Barlow, of Stoke-on-Trent, for hotel for the Hanley Hotel Company, at Hanley, Staffordshire, has been accepted,—8,788*l.*

Frome, Somerset.—A building to contain a museum, library, news-rooms, and offices is being erected in this town at the cost of Mr. John Siskins, J.P., of Wallbridge House. The design is of Italian character. The exterior will be constructed chiefly of Bath stone and red Mansfield. Mr. James Hine, of Plymouth, is the architect. The contract has been taken at 2,100*l.*

Plymouth.—Additional wards are being built at the Royal Eye Infirmary in this town, under the direction of Mr. James Hine, architect.

ROCK-BORING MACHINE FOR BLASTING.

A NEW rock-boring machine has just been completed at St. Peter's Foundry, Ipswich, for the Tarragower Gold Mining Company, Victoria, Australia, for boring holes in rocks, preparatory to blasting,—a process which, up to this time, has been performed almost entirely by hand. The machine, it is said, will bore a hole in the hardest granite, 20 in. deep, 2 in. diameter, in twelve minutes—a work that would take two men at least two hours and a half. The process is effected by air compressed into a large boiler-shaped receiver, of about 170 ft. cubic capacity, to a pressure of 90 pounds per square inch. This is done by a pair of powerful air-pumps, the air being forced through water, to deprive it of heat, which it evolves in the process of compression. The air-pumps are worked by a portable engine. From the receiver the compressed air is taken by flexible tubing, or any sort of piping capable of bearing the pressure (90 pounds per square inch), to the rock-boring apparatus, which may be placed at several hundred yards or a mile distant. The machine for boring consists of a carriage running upon rails, which carries a small (steam) engine, worked by compressed air, also the apparatus for boring. This looks rather a complicated piece of machinery. When placed, the tool, an instrument made of the best cast steel, about 3 ft. long, commences jobbing into the rock, at the spot where the hole is required. The hardest rock very soon yields to the powerful blows, at the rate of from 300 to 400 per

minute. The blows are effected by the compressed air being let into the cylinder containing a piston, to the end of which the boring tool is fixed. The air, after having done its work, escapes into the atmosphere, and will serve to ventilate the mine in which the apparatus may be employed. After the machine has bored a series of holes it propels itself backwards, and when the blasting operations are over it advances again to a fresh series of holes. This machine is expected to work a great reform in tunnelling operations, both for railway and mining purposes. It was designed and patented by Mr. George Low. Experiments with it are said to have been very successful in boring a hard block of granite,—the hardest that could be got.

ACCIDENTS.

By the swerving of a cut-water caisson at New Blackfriars Bridge, while being lowered into the river, and the giving way of a beam and the timber supports of a large platform, one man has been killed and several others seriously injured.

Extensive carpenters' and joiners' workshops, with piles of timber, belonging to Mr. Rodda, builder, have been destroyed in Park-road, Stoke Newington. The origin of the fire is unknown.

At the brickworks, Stubber-green, a poor fellow, an engineer, has been literally ground to pieces in a mill for grinding clay. He must have stumbled in stepping over the cog-wheels and fallen in. Verdict: accidental death.

In the West Port, Edinburgh, a singular accident has happened. There are in M'Gibbon's land some miserable rickety and unwholesome tenements built over the ruins of old malt kilns. While a man with his wife and child were in a room, in one of these tenements, the hearth-stone gave way and precipitated the man, who was reading a book at the fireside, into a cavernous pit filled with water, where he would have been drowned had not his wife nobly flung herself into it after him, and her clothes floated both till help arrived. The pit had several feet of soft mud at the bottom, with between 6 and 7 ft. of water above it, the surface of which was between 5 and 6 ft. from the flooring.

At Portobello, near Edinburgh, a railway embankment is said by the *Scotsman* to have been on fire for upwards of six months, and has defied all efforts for its extinction. A nauseous smell arises from it; but of what the material consists, whether oily shale, or what is not mentioned. Red-hot cinders from a locomotive set it on fire in October last.

A church at Louesnes, in France, fell in daring divine service on Sunday before last, and two persons were killed and twelve others more or less seriously hurt.

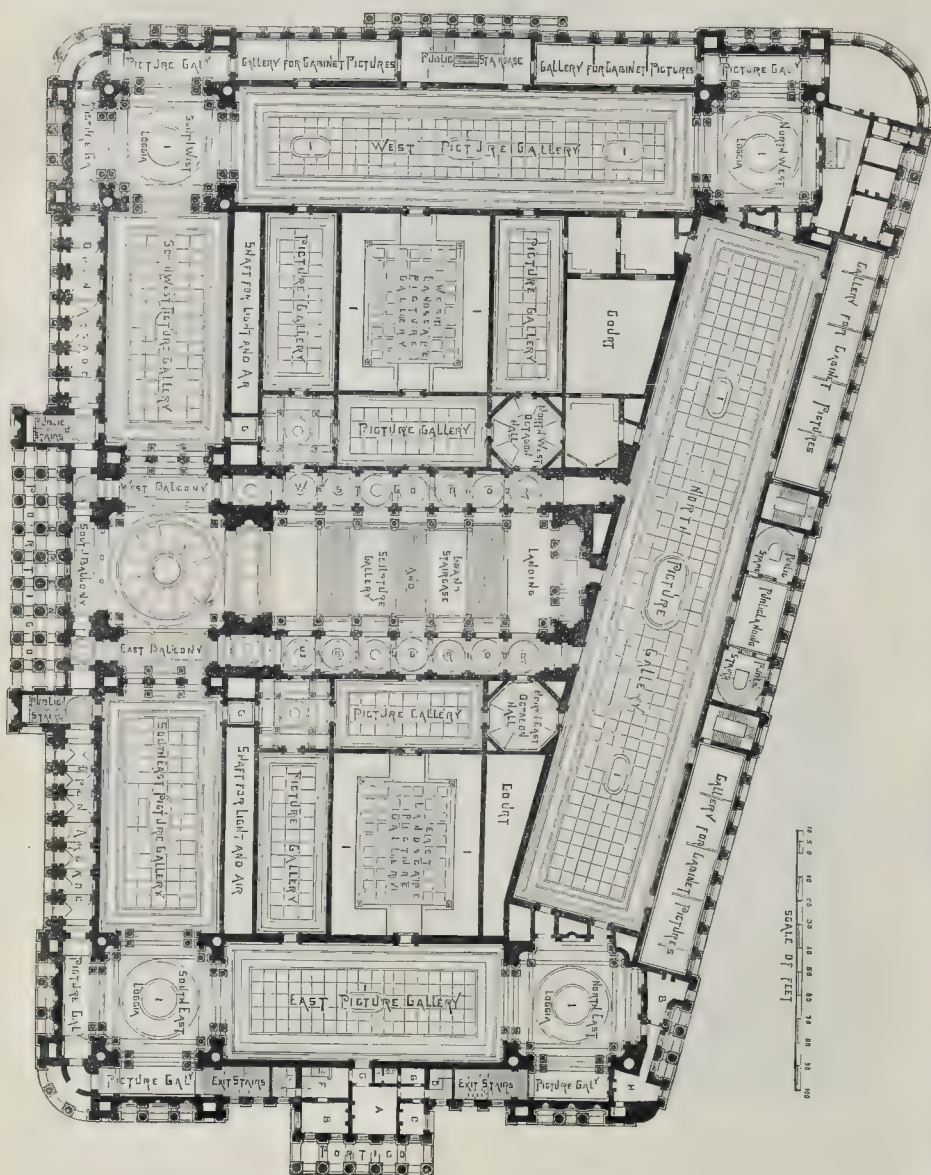
DESIGN FOR PROPOSED NATIONAL GALLERY.

ALTHOUGH the appointed judges did not select for execution any one of the designs submitted for the proposed National Gallery, they named Mr. E. M. Barry's design as best meeting the requirements. We have thought it desirable, therefore, to record in our pages a view of the Trafalgar-square front and the plan of the principal floor. We have before now reviewed this and the other designs at considerable length: we content ourselves, therefore, on the present occasion, with setting forth the architect's own intentions and views.

In designing the exterior, the architect considered it important to give to the building as much height and consequent importance as possible. A dome of large dimensions resting on a lofty centre building, with smaller domes at the angles, seemed to him a suitable mode of obtaining this result. The ground at the back of the building is about 13 ft. higher than in Trafalgar-square, which circumstance has led the architect to propose a ground story, the height of which would vary in the different fronts according to the levels of the ground, and which, while affording the opportunity of providing much useful accommodation, would enable such a height to be given to the mass of the building as is imperatively required, if it is worthily to occupy a site which has been justly extolled.

The instructions contain no reference to sculpture galleries, and the architect has not, therefore, felt at liberty to introduce them into his

DESIGN FOR THE PROPOSED NATIONAL GALLERY.—Plan of Principal Floor.



design. He has thought, however, that the building should afford suitable facilities for the display of sculpture historically treated, and he has, therefore, suggested its decoration by groups of sculpture, as well as by single figures. Under the dome he would place allegorical groups and statues of the great old masters. The staircase and corridors forming a grand sculpture-hall, he would reserve for statues of deceased British architects, sculptors, and painters. By such an arrangement the public would be led to form correct ideas as to the past history of art, and honours would thus be paid to British artists, similar in degree to those often accorded to their foreign brethren, although not hitherto customary to any great degree in this country.

The picture galleries are shown of various

sizes and descriptions. The largest galleries have a width of 50 ft., and a few small galleries are provided with side-lights for cabinet pictures, as prescribed by the instructions. As a general rule, however, the author recommends top-lighting, and he has borne in mind the generally-admitted success of the picture galleries of the Exhibition of 1862. He has, in fact, made the section of his galleries correspond in all essentials with the section of the Exhibition galleries. The prescribed width of 50 ft. for the principal galleries has of course exercised an important influence on the plan and the extent of accommodation provided.

The architect has also provided for a landscape gallery of a construction such as we described some time since in writing of Munich. The centre

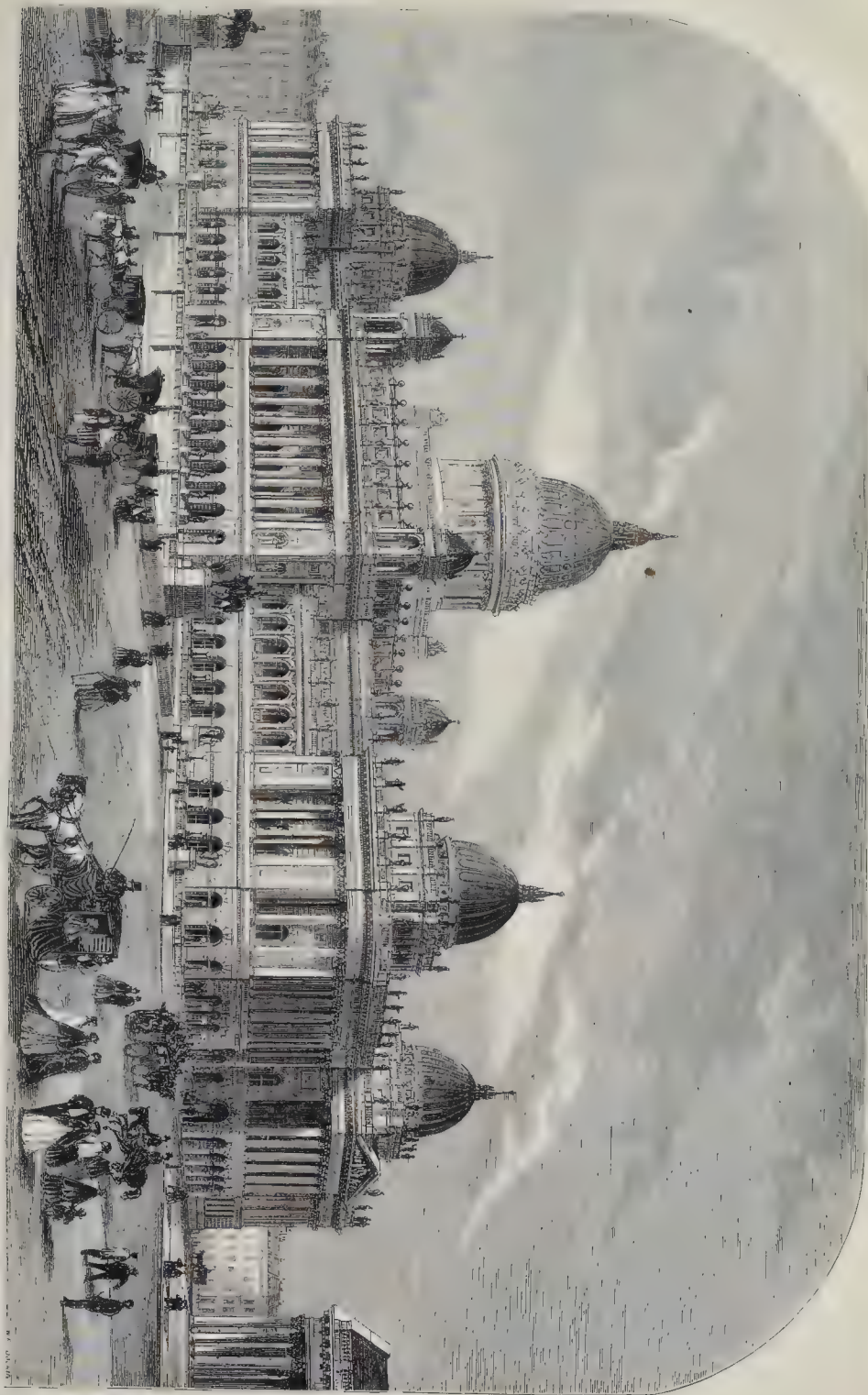
of the room is kept in half light by means of a low ceiling, over which light is conveyed to the pictures in such a way as to show them without inconveniencing the spectator. This plan is suggested as being suitable for landscape and subject pictures of moderate size.

The estimate, based on the price of 1s. per cubic foot, with an extra allowance for the architectural treatment of the exterior, brings the cost to about 480,000l.

REFERENCES.

- A. Room for Students' Specimens.
- B. Messengers' Room.
- C. Office.
- D. Students' Stairs.
- E. Keeper's Stairs.
- F. Board-room Stairs.
- G. Lobby.
- H. Store-room.
- I. Well-hole, to light Floor below.

DESIGN FOR THE PROPOSED NATIONAL GALLERY, TRAFALGAR SQUARE.—By MR. E. M. BARRY, A.R.A.



THE SIXTY-THIRD EXHIBITION OF THE SOCIETY IN WATER COLOURS.

TASTES vary, it is said. Nothing can be more true when the remark is accompanied by the reflection that there are certain limits of variation, and that, if these are over-past, the variation itself becomes that between good and bad taste. The variety of nature is infinite, but in every instance of startling contrast or of apparent anomaly, the accomplished student can detect the presence of fixed and unalterable law. The expression of that law may even be so subtle as to mock definition; but its presence is ever perceptible, so that nature is never at war with herself; and in her moods of most sombre gloom, or most wild and sportive exuberance, there is no such thing as bad taste in nature. Men and women would be happier beings, however, than they are, if there were no such thing as natural bad taste. To a certain, nay, to a great extent, such depravity is the result of ignorance, and will slowly disappear before enlightened culture. In this office of cultivating the artistic tastes of the masses our great annual exhibitions play no unimportant part. Nor can they be visited year after year,—still less can they be revisited after a lapse of five or ten years, without finding in them evidence of cheering and steady progress.

With all this, however, bad taste, far from being content to be quietly improved to death, makes epigrammatic and persevering efforts to re-establish a positive power. It may be true that purchasers are in no slight measure to be blamed for this, for few artists will paint merely to enforce their own ideas on the world—because few, and in this case, happily few, can afford to do so. But still it is the painter who is the teacher of his art. The faults of a bad picture are best exposed by contrast with the merits of a good one. Criticism may do something to aid, but the true artist is the master of the situation.

The conventionalisms of the thirteenth and fourteenth centuries seem out of place on the walls of London galleries of the nineteenth century, but they are to be found there nevertheless. Cupids that are neither charming nor dangerous, and Psyches that excite no emotion but a certain feeling of distaste, are better unpainted. We do not, for all that, fail to recognize the powers possessed by the author of them.

Since Sir E. Landseer and Rosa Bonheur did so much to call attention to the nobler features of animal life, we find cattle play no small part in any new collection. We have several very life-like cattle pieces in the present Exhibition. The picture which first attracts the attention of many a visitor is a remarkable desert scene, which excites at once our admiration and our perplexity—No. 117, by Carl Haag. The drawing is good, the colouring powerful, the rolling waste of sand and boulders that loses itself in the distant hills is impressive; but the idea of an Arab amusing himself on his pike as he leads his camel across the desert, while his wife, mounted on the "ship of the sands," dances her infant to the tune, is a startling innovation on our experiences of travel. The light, too, though very effective, is not easy to understand. It would seem to be that of sunset while the moon is rising in the opposite horizon, but if this were the case the shadows would be longer, and, on any theory, the skeleton of the dead camel ought to throw some shadow at all events. It is a striking and a meritorious, but not a satisfying picture. "Spring in the Highlands," by Basil Bradley, No. 28, is a northern landscape with cattle, refreshing to gaze on after the glare of the desert. "Morning in the Highlands," No. 35, by H. Brittan Willis, is another that well repays attention. Another by the same artist, "A Fall Out by the Way," No. 69, is a very faithful and life-like representation of an encounter of two sturdy little bulls. The intent fury of the combatants, the scattered occupation of the herd, and the eager alarm with which the herdman rushes towards the field of battle with uplifted stick are all true and harmonious pastoral incidents aptly rendered. In "A Scene in Glen Nevis, Argyleshire," No. 68, by T. M. Richardson, the foam and tumble of the river, brown with the stain of peat, is very true to nature. And the deer are very good also; but several of them appear to be crouching before and turning from a storm which might well be rushing from the hills, but of which no sign is to be traced on the vegetation. No. 181, "Tilling the Ground, Sussex," by the artist of No. 26, is a very good study of the old English farm horse, a creature

quite distinct in his physiognomy from his noble consins in Flanders, and again from those superb quadrupeds, the glory of some of our great breeders and contractors, that bear witness that naturalists are not in error in ranking the horse so near to the elephant. No. 201, and we see with surprise that we have again unconsciously noticed a work of Mr. Bradley, is not a pleasant subject. And the litter, not an agreeable foreground, is not well reproduced. But for those who are content to look to the porcine family for the bean ideal of "a happy mother" there is a very good sketch of one. And the six little piglings might have run from the pigsty into the picture, where they stand alive and unabashed—one with his foot on another, according to inviolable habit when so many are in company. The game cock, too, is the real bird, and no mistake. No. 136, "A Winter Morning," where a flock of sheep are in trouble in the snow, by E. Duncan, completes a note of the cattle on which we should turn a wistful eye if happily engaged in purchasing.

In landscape, while there is nothing to equal the "Mountain Road" of J. T. Linnell in this year's exhibition of the Royal Academy, there are not a few pleasing, and some very pleasing pictures. "Ullswater, from a point near Lylph's tower," No. 142, by G. A. Fripp, is a grey evening scene of great truth and beauty. No. 180, "The Rising Mist," by A. P. Newton, is a charming picture. These, and their neighbour No. 184, "Arenig," by David Cox, jun., in the quiet truthful harmony of their English tints, form a very striking contrast, a contrast which is only the reflection of that which nature herself presents, with the deep blues of lake and sky in No. 185, the "Lago Maggiore," by Collingwood Smith. No. 5, "Llyn Idwal, North Wales," by J. P. Jackson, is another scene of mountain mist and glow on which it is pleasant for the eye to dwell. The rural scene "At Shiplake, on the Thames," No. 11, with sheep going over a bridge, is a very beautiful rainbow scene, a phenomenon, by the way, that is represented as if by photography, in "Latitude 53° 15' N., long 5° 10' W.," by Mr. Brett, in the neighbouring gallery. No. 17, "Early Moonlight," by C. Branwhite, gives a calm and graceful group of pines, the dark shadow mellowed by the moonlight. No. 59, "Evening in the Valley of the Ledr, North Wales," we find again to be from the pencil of Mr. S. P. Jackson. In 109, "Bridge of Badia, River Arno," by T. M. Richardson, the mountains are piled one on another as they often loom through gorges of the Apennines. No. 246, "A Dutch Fishing-boat in a Gale off St. Abb's Head," by E. Duncan, is a fine bit of dirty weather and angry sea. No. 165, "The Carnarvonshire Range of Mountains," by J. W. Whittaker, with the flecked clouds of a tint between rose-colour and orange, is another of those charming scenes of English mountain scenery in which the present collection must be considered as rich.

The figures, as a whole or as individual pictures, cannot be said to rival the landscapes. We must, however, make signal exception in favour of one which seemed to us the gem of the entire gallery. It may be called unfinished, but the want of finish is not slovenly but artistic, the chief attention of the painter having been riveted, as will be that of the spectator, on the lovely face. It is a peculiar feature of water-colour painting to allow of this very effective mode of treatment. The effect of portraiture suffers to a greater extent than is readily conceivable from background. The old form of column and crimson curtain is abolished, but the difficulty remains. Even the photographers have discovered the ill-effect of the obligatory chair and desk with twisted legs, and have advanced to the more artistic form of vignette background. Hardly any faces look with such life from the canvas as do those which, like Sir T. Lawrence's "Wilberforce," have been painted by the artist, and left otherwise unfinished, the work of the assistant undone, the form a mere sketch, and the whole picture concentrated in the face. The picture to which we now refer is No. 157, "From Cairo," by E. Lundgren, and the face is charming, not only from its treatment, but from its great beauty and its thoroughly Egyptian character. It might have been that of a beauty of the court of Thebes during the reign of the eighteenth dynasty—the lips having the peculiarly chiselled fullness of the sculptured monarchs of that great period of ancient art, while the rich, warm colour gives a charm that is wanting in the granite colossal forms. Turn, as a contrast, to another very pleasing drawing-room scene—a quaint, richly-furnished room

with spider-legged harpsichord, deep relieve of the entry into Jerusalem immured over the chimney-piece, and portrait of a scarfed and Vandyke-collared cavalier, whose head, however, becomes a vanishing fraction of his person. Prettiest piece of the furniture is the young lady who is "demeaning" herself by offering to feed an odious little marmoset in a manner only permissible, in the case of pretty women, to birds—the brute stretches out five feeble little fingers in vain. 189, "Our little Pet," by the late O. Oakley, is a sweet face, and one treated in what we believe to be the true and, therefore, the best, water-colour style. In No. 204, "Exiles from the Cloister: Monastic Suppression in Italy," we recognise the well-known type of those holy men (taking holiness to be equivalent with idleness), the brown Franciscans. They are not of the southern type, the true *far niente* monk, but brethren of some more northern province. The puzzled, half-considering look of one of the more distant monks is very natural, and we seem to be intimately acquainted with the ex-superior. But Mr. Smallfield has amply invented his incident! To find such a stream as they are crossing is rare in Italy. Perhaps that may account for the inveterate antipathy entertained by all colours of the Franciscans to clean water,—of soap we can say nothing. *Omne ignotum pro magico*. One other figure we refer to as an instance of a likeness which does credit to the painter's ingenuity, if it is designed, and does more credit to his knowledge of physiognomy and power of expression, if it is accidental: it is No. 62, "Catherine," by Walter Goodall. The pretty shrew has the features of the famous Duchess Sarah of Marlborough.

Among architectural pieces the eye is at once arrested by the interior of the cathedral of Toledo, No. 111, by E. A. Goodall. No. 202, by William Callow, "A Street in Rouen," is a faithful and picturesque rendering of one of the fast-vanishing remnants of old French architecture. The procession sweeping into the porch of the cathedral is one more likely now to be met in the streets of Ghent, than in this old fortress and battle-ground of "Hugonoterie." Mr. John Burgess's drawings of old French cathedrals possess both artistic worth and architectural value. In No. 160, "The Cathedral of Auxerre," he has well rendered the crumbling texture of the stone. This picture, however, is either not set exactly in its frame, or there is a want of perpendicularity in some of the main lines which, if existing in fact, threatens the stability of the edifice. 205, "The Cathedral of Dol, in Brittany," is another good example of an interesting series. But the pair of sketches which, simple and very likely rapid in their execution, appear to us to be the finest examples of the application to architectural limning of the true principles of water-colour drawing, are Nos. 219 and 227, the entrance to the Amphitheatre at Salona, and an arch of the Aqueduct at Spalatro by Carl Haag. "The Reigning Duke of Saxe-Coburg and Gotha," in these times of royal distress, has at least known how to select a master of this graceful style of painting.

On glancing again through the catalogue, we find that we have omitted to mention Mr. A. D. Fripp's "Commisariat Party," No. 294, hardly more than a sketch, but with subject, faces, and expression all alike cheerful and pleasing. "Judge Croke," No. 210, Margaret Gillies, is one that improves on acquaintance, and each visit to it raises it in our esteem. The face and figure of the judge are full of truthful physiognomical portraiture, and the scene is one eminently fitted to be treated by a woman.

Paul Nafel has given us, in No. 218, a stream running into the Wharf, a very truthful representation of one of those thickly wooded dingles, pierced by a brawling stream, that characterise this valley, so famous in legend and in song; and in 221 he shows us the winding track of the wharf itself, after passing by the well-selected locality of Bolton Abbey, looking all unconscious of its late fierce rush through the iron gate of the foaming Strid—the watery grave of the "Boy of Egremont." The Italian skies again smile on us in No. 233, "San Remo," by W. Evans; and larger and fuller than any grapes of Mediterranean vintage are those presented to us by C. Rosenberg, No. 264, where grapes, and peaches, and wooden press, and, indeed, every detail of the picture, are perfect marvels of truthfulness in rendering texture, as well as in observing the difference between a down, a gloss, and a bloom.

We would not omit to mention a picture which can neither be considered pleasing nor picturesque in its subject, but which renders the brick houses and square windows of the Georgian era with the fidelity of a photograph, while Wren's steeple soars beyond—a picture which does for a bit of London what Canaletti did for Venice, and preserves so faithful a record that some centuries hence it would have historic value. We mean No. 208, "Where stood Bridewell Hospital and Prison, painted in June, 1866," by G. P. Boyce.

There are, of course, many pictures in the Exhibition of which the names of the painters will alone be sufficient to call the attention of every reader of the catalogue. Let such see and judge and admire for themselves. We think it a fairer mode of dealing with a collection of the kind to note those pictures that first strike or longest detain the eye, rather than to undertake a studied criticism of the works of each well-known artist.

THE WALTHAMSTOW PUBLIC HALL.

This building, situated in Orford-road, Walthamstow, has been erected by a company formed for that purpose, having a local direction, and of which Mr. Alfred Pittard is the secretary. It was opened a few months back, with a reading by Miss Glyn, and has since been in good demand for readings, lectures, and concerts. On the 17th inst. a reading by the Rev. J. M. Bellow took place; and on that occasion the reader offered spontaneous testimony to the capabilities and acoustic properties of the hall. It is 60 ft. long by 40 ft. wide; and will accommodate between 400 and 500 persons. It has a ceiling polygonal (almost segmental) in form, the extreme height being 24 ft. At the northern end are committee rooms, and other conveniences. The cost of the building, as it stands, has been about 1,500*l.*; and a somewhat similar amount will be required for the institute buildings. The architect, from whose designs and direction the building has been carried to its present stage, is Mr. Frederick Wallen.

FROM IRELAND.

Cork.—The contemplated additions to the Roman Catholic church of St. Vincent, Sundays Well, Cork, were commenced on last Sunday, by the laying of the foundation-stone. The mayor presided on the occasion. The additions consist of a large bay, on the western side of the nave, 30 ft. long; and on the north-west angle a tower is to be erected, 140 ft. high. Other additions besides those which go to the completion of the structure are intended. Among these is a presbytery, to be at right-angles to the western side: the presbytery, the eastern elevation, and the church itself, will form three sides of a square. The presbytery, where it joins the church at the eastern end, will be three stories in height; but on the south, in consequence of the incline of the ground, it will have an elevation of 4 ft. The basement story will comprise a cloister, 80 ft. by 22 ft., in which six windows, with geometrical tracery at the top, will be shown. The recess of the windows in the basement will be furnished with stone seats, and the ceiling vaulted. Leading from this will be the refectory, a room about 30 ft. square, exhibiting a curved ceiling of timber, resting on a cylindrical column in the centre, around which will be ranged the dining-tables. Immediately over this will be the library, 60 ft. by 22 ft., and a parlour, 22 ft. by 16 ft. on the same level, will be the community-room, which will be right over the refectory, and exactly the same size. A corbels circular turret, crowned by a conical roof, will be over the south-western angle, showing a large bow-window for the community-room, and other chambers on top. Two stories of bed-chambers will be above the library. The kitchen and other offices will be situated in this wing. The entrance to the church will be at the north side, and the principal staircase, connecting the different parts of the building, will be near the entrance. Messrs. Goldie are the architects, and Mr. M'Mullen the builder.

Belfast.—The new Roman Catholic church of St. Mary Whitehouse, Belfast, which was dedicated on Sunday, the 12th inst., is of the Early Pointed style. In its interior, the church may be said to be finished, and is provided with stone

altars, pulpit, font, and open benches. The church presents, outside, a south-western tower, which, when completed, will be about 180 ft. high. The nave and chancel are of equal height. It has also a Lady chapel, aisles, two porches, and sacristies. The west doorway has arches deeply moulded and partly carved, resting on small columns. The chancel and nave have ceilings; and a chancel arch, springing from the "wall columns," resting on carved figures of angels, divide them. The ceilings are done in panelling, and the principal timbers of the roof are exposed. The chancel ceiling is arched; that of the nave is wagon-shaped. The appearance of the interior is agreeable, and the work is in harmony. The floors of the chancel and chapel are laid with encaustic tiles. The nave is lighted by a clearstory of folded windows, by a triplet of lofty lancets at the west end, and a complete of lancets, surmounted by a wheel window at the east end of the chancel. The walls are built of black stone, but light cut stone dressings are introduced for relief. The altars and roods, which are of Caen stone, were executed by Mr. Earp, of London. Mr. John O'Neil was the architect. The body of the building was executed by Mr. John Ross, and the fittings by Mr. John Murphy. Messrs. Davison, of Belfast, executed the ornamental painting in the interior. Ecclesiastical and street architecture, for the last fifteen years, has made rapid stride in Belfast, and no place in Ireland at present displays so much commercial activity as this northern capital of Ireland.

SUN DIALS.

In answer to "G. W. T."—First, it may be as well to have a concise idea of what a sun-dial really is.

The earth moves round the sun in one plane, and completes its revolution in one year, and round its own axis in one day.

Now, if its axis were perpendicular to the plane in which it moves when going round the sun, few would have any difficulty in understanding; but it is not perpendicular, but inclined at an angle of 23° 30' to the plane. Now, conceive, at an immeasurable distance, a star, and that one end of the earth's axis ever exactly points to that star, and that there is no parallax, or, in other words, that the earth's axis is at one time exactly parallel with every position it has occupied in travelling round the sun. Now, call the ends of the axis poles. If the earth were transparent, and a huge board were to travel round the sun with the earth, and opposite to the sun and parallel to the earth's axis; and if the earth had previously been divided into twenty-four equal sections by cords strained from pole to pole, then once every hour the shadow of the axis would cross a line of section, and, at the same time, the shadow of the axis and line of section would coincide on the board, and thus we could tell the time. Now we may represent this on a small scale.

First by observation, with Hadley's sextant, or by referring to an atlas or geography, discover the latitude. Suppose it is 61° 35' north latitude: then find by observing the sun dip by the sextant, or by the compass, which is due south; mark it exactly on the ground, then fix the stile in the mark, and at 61° 35' to the ground, the upper end to be exactly above the line, so that suspending a plummet will touch the line (always fix the stile at the angle that is equal in degrees and minutes to the latitude). Supposing your ground is of wood, then from the upper end of the stile which reclines from the sun, and with a large set-square placed against the under part of the stile, cut the north and south line on the ground; then measure the exact distance from the end of the stile to the said mark; then on a wide board, and with the above-named distance as radius, describe a semicircle. Divide it into twelve equal segments; draw a line from the centre the semicircle was described from and perpendicular to chord or diameter of semicircle, and passing through the division between the sixth and seventh sections, then temporarily fix the board to the end of stile and ground, making point of division between sixth and seventh sections coincide with mark already made on the end of the stile. Then run a straight-edge from division in the semicircle, till the lower end corners into the ground (or wooden horizontal platform). Mark these points very carefully. Then remove semicircle, and with your straight-

edge draw lines through points to the lower end of stile, and they are your hour-lines. The stile must always be at the same inclination, but the index may be at any inclination, the points of division being got from a semicircle offered so that the stile already fixed is at right angles or perpendicular to face of board containing semicircle; and the lines from the wall (or as the case may be) being got with a straight-edge as before. If the index be on a wall, the upper end of stile must be fixed, and the semicircle applied to lower end of stile, and so that the stile is perpendicular to the board containing the semicircle.

HENRY AMBROSE.

ANOTHER NOTE FROM THE CHAMP DE MARS.

In my description of the British Picture Gallery at the Paris Exhibition, I omitted to mention the admirable screens on which the water-colour drawings are hung, and which display them to perfection, bringing them on a suitable line of sight; but they detract greatly from the apparent size of the gallery; for, being placed across it, instead of longitudinally, they cut it up into a series of small compartments.

I suppose, however, this arrangement was unavoidable, from the necessity of gaining as much surface as possible. They are placed two and two all down the gallery, and have brown holland blinds skilfully affixed to them, which are drawn down before the gallery is shut up in the evening. These blinds are so arranged that on sunny days they can be pushed out from the top, like the sun-blinds to windows; thus allowing human eyes to rest on the pictures from below, but effectually screening them from the too ardent gaze of Phoebus' scorching glance.

The iron-doors at all the entrances of our gallery have been already mentioned in the *Builder*. They are of English manufacture, as are also those on a different principle at most of the portals of the Exhibition building.

The French people ought to feel much indebted to Messrs. Clark and Co. for showing them how to make good and slightly iron shutters for doors and windows; for it is impossible to conceive anything more frightful than those in use all over Paris, of two various designs, one of which I have named the prison-style, and the other, the iron-clad. The former is made of separate shutters, which are placed upright and have a handle on each side to lift them by; being tall they must needs be very heavy, and their appearance suggests that it must be a painful task to lift them in and out of their places. The "iron-clad" are frequently painted a dull red, and look exactly like the rusty old hull of a vessel; they are formed in five or six long strips which overlap from above, and are, I believe, wound up and down into position.

To return to the British Pictures.—Our Art-world is acknowledged to be not well represented; and yet almost every picture exhibited is a gem, as a perusal of the catalogue will show. True, that many of our most honoured names are absent from the list; and that, of exhibitors, the best pictures are, in many instances, not seen; but yet a goodly store remains. Look at the "Bay of Naples," by our now lost and lamented Stanfield! What a grand picture it is! And, following closely in his footsteps, what a fine thing E. W. Cooke shows, in his "Deal Lifeboat rescuing a Crew from the Goodwin Sands," what a magnificent stormy sky, and what grandly surging billows. David Roberts's two views on the Thames, "Houses of Parliament" and "Greenwich Hospital," show out admirably, as does also Millais' "Romans leaving Britain." This latter was placed too high when exhibited in the Royal Academy, and the desolation expressed by the expanse of distance was lost, but here it looks, and is, a fine thing. We English certainly do not indulge in the gigantic canvases in which foreign artists revel, but if the merit of a work of art is to be deduced from the delicacy of workmanship and the emotion produced in the beholder, our artists may boldly hold up their heads among all competitors. For the former of these attributes, delicacy of workmanship—if I may be allowed the expression—I may cite Wallis's "Death of Chatterton," T. G. Linnell's "Gipsy's Hamlet," such a gem, but being of small size, it may perhaps be passed over unobserved; and Arthur Hughes' "Woodcutter's Return Home." As a

Frenchman at my elbow remarked, "Tout est fait; le fond et le devant tout est fait." And for the second attribute, emotion produced in the beholder, I will mention from a host of others, O'Neil's "Eastward ho!" Elmore's "Tuleries, June 20th, 1792;" and "On the Brink;" Burgess's "Bravo Toro;" Phillips's "Spanish Wake;" Calderon's "English Embassy at Paris, the night of the Bartholomew Massacre;" and Yeames' "French Ambassadors at the Court of Elizabeth, after intelligence of the Massacre had reached England."

In various styles, but all admirable, the following pictures must not be passed over in silence.—Hook's well-known "Sea Urchins;" "From the Bottom of the Sea," the miner, with the extinguished candle still in front of his broad-brimmed hat, being welcomed by his wife and child; and "Fishermen;" the Misses Matrie's charming flowers, with which no others save nature's can compare in the Paris Exhibition; J. Brett's "Capri at Sunset," so delicate, yet bright, peaceful, and true; Armistage's fine piece, "Esther's Feast;" Victor Cole's "Summer's Golden Crown," which seems to have mellowed into richer beauty with its few years of existence; Egg's "Knighting Scene from Thackeray's 'Emmond,'" Britch's "Claude Duval;" Leslie's "Clarissa," such a bit of days gone by; and Frost's "River Nymph."

Then in water-colour—in which walk of art, I presume, there is no question that the English are pre-eminent over all other nations—we find Corbould's richly-coloured "Mort d'Arthur;" Bayliss's almost equally rich "Sainte Chappelle;" Brett's "Gust of Wind in the Mediterranean;" Callow's "Falls of Schaffhausen;" David Cox, Senior, "Snowdon," which is a fine thing; and from the hand of his son, "Passing of Llanberis;" Louis Haghe's "Church of St. Gomer;" Carl Haag, "Family of Wandering Arabs;" our dead Hunt's "Dead Peacock;" Jopling's "Frédérigo," a head and draped shoulders in rich deep colouring; Edmund Warren's "Cuckoo's first Chant," and a "Forest Scene," with some capital Foxglove in foreground; Harrison Weir's "Morning Hymn," lark rising from clover; two good interiors by Carl Werner; and a characteristic Britain, Willis, "Scene in the Highlands," with cattle.

Of the sculpture, I cannot speak in such high terms. The generality of it appeared to me very poor; and this remark does not apply solely to the British Gallery. Our own Munro sends two subjects, one of which, "Joan of Arc," a bust in plaster, has the true inspired look one would expect to see, and is, altogether, very satisfactory. A large work by Marshall Wood, a life-size seated figure, is a falsehood, and therefore a mistake in art. It is titled "The Song of the Shirt," and is dated "1867." The worn figure, the broken chair, and the old Church-hassock on which the feet rest, are doubtless cleverly portrayed; but at best the portrayal is a low type of art, and though the sad story was only too true when Hood wrote his touching poem, it is quite past away, and false as a representation of an episode in English life, in the present era of sewing-machines.

Before closing my somewhat lengthy "note," I must say a few words on the vexatious manner in which Frenchmen contrive to disguise our English names of men and places. It is difficult to recognize our own Princess Mary when printed in their catalogue the Princess of Jeck; and the "household words," Faed, Frost, Frith, sound strangely uncouth and unfamiliar when read Taed, Trost, Trith; Edouard-Henry Corboud would be tempted to deny his own identity, but that his fine handiwork betrays him; travellers in Wales would be puzzled to find the Passes of Slamberis; Tennyson never wrote of Finnever; Mr. Home has changed his name a second time, and figures as Home-Zion; a well-known suburb is Crap-ham; Redgrave changes to Redgrawe and Redgrawe, Smallfield to Smalfeld; Warren to Warren, Landseer to Landsear, Knight to Knight; and so on, and so on. This is an old grievance of ours against the French, and it is high time such a clever people as they are should not allow it to be said of them any longer, that they suffer themselves to be conquered by a few hard words.

In the foregoing remarks, I have made a patriotic, if feeble, endeavour to stem the tide of depreciation which English writers seem to delight in pouring over their own country and countrymen. Many of the notices that have appeared in the English papers with relation to our exhibits, and notably those on porcelain

and faience, seem to those persons who have carefully studied the display in the Champ de Mars, both unjust and untrue; and with regard to the British picture-galleries, it must be borne in mind that exhibitors had to brave the perils of four journeys by land and two by sea for their art-treasures; and, this considered, the great wonder is, that the English Commission contrived to produce so goodly a collection as is here presented. There are certainly no gigantic battle-pieces, nor frames containing yards of canvas, like those in other galleries; but if they were wanted in England they would soon be produced.

We English live in our own compact houses, and like to have our walls adorned with works of art; and therefore our artists paint such subjects as will most delight us—pleasant episodes in real or imaginary life; dear old cathedrals; lovely landscapes, cheering and refreshing the beholder. Where, in a French gallery, can be found the charming country scenes that year after year crowd the walls of our exhibitions? Perhaps our excellence in landscape-painting arises from the tender hues presented by the frequent atmospheric changes in our greatly-advanced but, after all, better-than-any-other climate. Frenchmen get grand, sombre, truthful treatment in many of their *payages*, but the sweet loveliness, which is the peculiar characteristic of English landscape painting, we may seek for in vain in their sunless, gloomy landscapes.

R. F. H.

BUILDERS AND ARCHITECTS.

SIR,—The annual meeting of the General Builders' Association was held at the Volunteer Club in this city (Bristol) on the 9th instant, presided over by Mr. Alderman Neill, mayor of Manchester, who is president of the Association. His worship, in a long speech anything but complimentary to architects generally, is reported to have said, "he believed when a good case arose, and it was taken into a court of law, the builders would be able to teach the architects a lesson,—to teach them for the future to be honest and do justice."

Now, Sir, this appears to me to be such an unwarrantable piece of impertinence on the part of his worship, and such a gross insult to the members of the architectural profession, that it ought to be exposed and properly dealt with by the Institute of Architects and all other architectural societies, as also by your own and other similar journals.

WM. BRUCE GINGELL, Architect.

PERIODICAL CHIMES.

SIR,—In the *Builder* of the 4th inst. I notice that Mr. Thomas Walsby refers to Boston respecting *carillons* that are to be erected in the Tower. The following extract from the statement issued to subscribers may be interesting:—"This gentleman (Mr. Van Aerschoot, of Louvain) carefully examined not only the belfry of the church, but also the eight bells, which constitute the present peal; and he expressed his opinion that these bells could be made to form part of the contemplated set of chimes. He proposed to add to them thirty-six other smaller bells, giving a total number of forty-four bells. The price of these extra bells would be about 300*l*. Messrs. Gillett & Bland, the well known clockwork mechanicians of Craydon, also sent a member of their firm to Belgium to examine the machinery of the chimes in that country, and they have since invented a new system of machinery which far surpasses any hitherto in use, and one special feature of which is its power of ringing the chimes loudly or softly as the passages of the music may require. The expense may be considered to stand thus:—

Cost of thirty-six new bells, say	£300
Mechanism for ringing the chimes, say	750
Recasting tower and other bells, and incidental expenses, say	250
	£1,300

Above 1,100*l*. have already been subscribed, and contracts signed for supplying the thirty-six bells and machinery by the firms before named. It is expected that the chimes will be complete before November next. The tenor-bell being cracked, necessitated its being recast.

WM. GANE.

SIR,—Everybody must agree in condemning the unmusical chimes that proceed from many of our church steeples and towers; yet cannot this be remedied by other means than by the introduction of costly machinery similar to that in use on the Continent, which would be practicable but in few places?

I would call attention to the fact that tunes can be played by hand in a very pleasing manner, and without much trouble, it being necessary for only one of the chimes to possess an ordinary knowledge of music. It may be objected that the bells would have to be "clocked," but surely there is not a greater likelihood of cracking the bell by its being struck on the interior than if (as would be the case if machinery were used) it were struck on the exterior of the sound bow. Of course the chimes would not be recurred, but they could be struck at stated hours and on any particular occasion, and there would be the

advantage of appropriate tunes being played, and an avoidance of monotonous repetitions.

It would require only four men for a peal of eight, or six men for twelve bells, and the number of tunes that could be played would be only limited by the number of the bells.

That the scheme is quite practicable is proved by the circumstance that it has been adopted by an amateur band of ringers at St. John's, Hackney, for the last twelve months, with perfect success, and has given great satisfaction.

G. H.

THE ARCHITECT OF THE HALL OF ARTS.

SIR,—In the published papers relating to the Prince Consort Memorial competition is contained the circular to the seven architects who were invited to send in designs in that competition. These gentlemen, Messrs. C. Barry, E. M. Barry, Donaldson, Hardwick, Penmethorne, Scott, and Digby Wyatt, were instructed to combine the design of the Hall of Arts and Sciences with that of the Memorial in Hyde Park, and with one or two exceptions they did so, the circular to them expressly stating that "the committee have decided not to invite other designs, except in the event of no one of those by the architects now selected being considered satisfactory." In her Majesty's answer to the report of the committee, "Her Majesty very fully participates in the regret expressed by the committee that it has been found necessary" (from want of funds) "to abandon, for the present, the idea of the Central Hall," but so far from there being any intimation that no one of the designs is satisfactory, the committee refer to "the ability, ingenuity, and taste displayed in all the designs as such as to prove the wisdom of the course" that had been adopted.

Such being the facts of the case, I should be glad to know why it is intended to ignore the competing architects, and entrust the great architectural work, for which they furnished designs, to an engineer officer.

VIGILANS.

THE FOLKESTONE COMPETITION.

As your columns have been open to competitors, perhaps I may be permitted to say that I will advise the Directors of the South Eastern Railway Company that the best design is that which was submitted by Mr. Ernest Turner, of No. 1, Varnham-buildings; and the second best that of Mr. T. C. Sorby, of Brunswick-square.

EDWARD RYDE.

PARIS EXHIBITION.

SIR,—In your paper of Saturday last, after a discriminating and valuable testimony to my economic tiles, as shown in the Paris Exhibition, it is said "the manufacture is limited, if we may judge by the small quantity exhibited." Permit me to say that the manufacture, so far from being limited, has been very largely increasing for many years past, and the smallness of my exhibit is explained by the simple fact that I was only able to obtain one-tenth of the space for which I applied. Thinking myself shabbily used, I had determined not to exhibit at all; but this intention was overruled by some influential gentlemen, and the result is that which has procured so favourable a notice in the columns of the *Builder*.

Laguardine.

WILLIAM GORDWIN.

THE TRADES MOVEMENT.

Oxford.—The labourers employed in pulling down the old front of Balliol College, and those engaged at the new London and County Bank, have struck for an advance of 6*d*. per day, their pay being 1*l*5*s*. per week. The men paraded the town, and were joined by labourers engaged at the Sisters' Home and other buildings now in course of erection in Oxford; the strike, however, is not a general one. The masters have announced their determination not to accede to the required advance.

Worcester.—A difference has for some time past existed in this city between the master builders and the men, which has at last unhappily resulted in a strike, the effect of which has been to temporarily throw out of employment between 600 and 700 men. The master builders resolved to form themselves into an association, and appoint a committee, composed of themselves, to draw up a code of rules, which was accordingly prepared and adopted, and issued to the men. These rules were similar to those framed under the arbitration of Mr. Lloyd, the banker, and adopted by masters and men in

Birmingham. They were submitted to the men as an ultimatum, but were rejected. A deputation of joiners waited upon Mr. Joseland, of the firm of Wood & Sons, to know whether their employers would consent to arbitration, and his reply to them was, that if the arbitration was made general he was of opinion that the employers would consent. The bricklayers and joiners have unanimously consented to arbitration, and furnished Messrs. Wood with resolutions guaranteeing themselves to abide by the result of arbitration. The masons, however, repudiate arbitration altogether, and say they are strong enough to enforce their claims. The plasterers recommend a meeting of the masters and men to settle the matter, but the labourers repudiate arbitration. The men in the employ of Messrs. Hughes & Collins, the contractors for the cathedral restoration, and also those of Messrs. Hemming & Son, are at work. A committee meeting of the masters was held, when it was decided to decline the question of arbitration, inasmuch as the proposal had only come from two of the parties engaged in the building trade, while three had rejected it.

Coercion of Masters.—In the Court of Queen's Bench, the conviction of a secretary of a trade union, for attempting, by threats, to force a master to dismiss a workman for not joining the union has been confirmed; Mr. Justice Blackburn observing that the enactment in question was evidently designed to protect masters from being compelled to employ union men. It was a very beneficial provision, for it was impossible to imagine a greater piece of tyranny than to insist that a master shall have his work stopped unless he consents to dismiss a workman for not belonging to a society, which he has a right, in the exercise of his liberty, as a free subject, to refuse to belong to.

Coercion of Workmen.—At the Marlborough-street Office, Thomas Gray, a journeyman tailor, has been committed for trial on the charge of conspiring, with others, to force Alexander Verbon, by threats and molestation, to depart from his hiring, and to leave working for his employer. Mr. Tyrwhitt, the magistrate, remarked, that defendant and others had tried their powers on an unfortunate man who wished to work for his bread. He must either join them or find himself a martyr, perhaps, for life. He could not see how it was, if passion did not interfere, that men could fail to perceive that such a course towards a fellow-workman was tyrannical and oppressive. It was a question, whether a man should be permitted to work and get bread for his family, and this, too, in a land of so-called liberty.

COMPENSATION FOR DAMAGE WHILE EXECUTING RAILWAY WORKS.

An appeal in the House of Lords (May 16), before the Lord Chancellor, Lord Cranworth, Lord Westbury, and Lord Colonsay, in the case of the Rulkar, the Metropolitan Railway Company (in error), has been decided.

This was a proceeding in error, brought to reverse a judgment of the Court of Exchequer Chamber, reversing a decision of the Court of Queen's Bench upon a special case stated for the opinion of that Court.

The Lord Chancellor said, the facts of the case were as follow:—The plaintiff was the lessee of a public house, called the Pickled Egg, situated in Crawford-passage, the parish of St. James, Clerkenwell. The company, in forming a tunnel under a public carriage-way, called Copping-row, and in the lawful exercise of their powers, caused a temporary obstruction of parts of the carriage-road in Copping-row, and placed a boarding on each side of it. The footway, however, was not obstructed. The company constructed a bridge, by which foot-passengers could cross over Copping-row from one footpath to another. The obstruction was continued for such time only as was necessary to enable the company to construct the tunnel, being about twenty months, and at the end of that time all the streets and public highways in the neighbourhood of the plaintiff's house were restored to their former state. During the time that the obstruction continued the number of foot-passengers coming towards the public-house was greatly diminished, and the custom to do the trade of the public-house greatly fell off, and it did not again improve when the obstruction remained, nor after it was removed. The plaintiff claimed compensation under the Lands Clauses Act, 1845, on the ground of his public-house being injuriously affected by the execution of the work by the company. His opinion was that the damage which was the foundation of the claim to compensation was too remote to have been the subject of an action. Under these circumstances, he might have been content to rest his judgment in favour of the defendants in error upon this ground alone, but the diversity of opinion which had prevailed among the judges as to the application of the clauses of the Acts in question to such a claim as was now under consideration rendered it almost imperative upon the House to pronounce an authoritative final decision upon the whole case. His lordship then proceeded to examine a great number of cases bearing upon the question, and said that upon a review of all the authorities, and upon a consideration of the section of the statutes relating to this subject, he had satisfied himself that the temporary obstruction in this case would not have been the subject of an action at

common law, as an individual injury sustained by the plaintiff in error, as distinguished from the rest of the public, and that, therefore, the plaintiff had failed in bringing his case within the general principle upon which a claim to compensation under the Acts in question had been determined to depend; that upon the construction of the clauses upon which his claim rested the 6th section of the Railway Clauses Act and the 68th section of the Lands Clauses Act were both inapplicable, as his damage arose from the temporary operations of the company and not from their permanent works, and that upon the 18th section of the Railway Clauses Act, which did apply to his case, the damage was not of that nature as to entitle him to compensation, the interruption of persons who would have resorted to his house but for the obstruction of the highway being a consequential injury too remote to be visited thereon by that section. He, therefore, advised their lordships to affirm the judgment of the Court below.

Lord Cranworth agreed with the judgment of the Lord Chancellor.

Lord Westbury dissented.

The opinion of the Court below was affirmed, and the appeal dismissed.

ARBITRATION.

BADCOCK v. CLARE.

This case came on for hearing at the Court of Queen's Bench, on the 20th of December last, before the Lord Chief Justice Cockburn. It was an action brought to recover damages for alleged carelessness on the part of defendant in erecting some patent revolving shutters in plaintiff's house at Brantree, whereby they were rendered unserviceable. After the examination of the plaintiff had been partly proceeded with, his Lordship expressed an opinion that the matter should be referred to a non-professional arbitrator, as he considered it was hardly possible for any jury to decide the question. The suggestion of his Lordship was accordingly adopted, and a verdict entered for the plaintiff for 100*l.*, subject to a reference.

Mr. Henry Stock, architect, was appointed arbitrator. The arbitrator has just now given his award, "that the shutters in the declaration mentioned were properly in use and that the said Robert Badcock had not at any time since any cause of action against him, nor at any time since the commencement of the said action, nor at any time since the said shutters were erected, nor any claim or demand whatever against him in respect thereof; and that the said Robert Badcock is not entitled to recover anything in the said action."

We understand that the expenses of the trial and reference will amount to between 6*l.* and 700*l.* The original price paid for the shutters was 36*l.*

DISTRICT SURVEYORS

UNDER METROPOLITAN BUILDING ACT.

At the meeting of the Metropolitan Board of Works, on the 17th inst., the following motion by Mr. Shaw was considered:—"That the four vacancies amongst the district surveyors now in the employment of the Metropolitan Board, and that afterwards the vacancies then created by the filling from amongst the candidates applying for employment, and after a question as to whether it was in order, considering the Board was summoned to proceed to the election, had been decided in the chairman in the affirmative, Mr. Shaw said he considered it only right that those surveyors who had been in the employ of the Board since their places should be filled up by the new applicants. It was a mere matter of common sense, and did not require him to move it without taking up any more of their time. Mr. Robert Taylor seconded the motion, and said he was at 6 o'clock, a year each, whereas many of the present surveyors were only in receipt of a large majority. The Board then proceeded to the election of district surveyors for the districts of Newington and part of Battersea, Central Lambeth and part of Battersea, and Northern Battersea, and to accept the resignation of Mr. Hawes, district surveyor of the northern division of St. George, Hanover-square, and to elect a successor. A large number of candidates attended, and the names were reduced by a show of hands being taken for each with the following result:—For Newington, Mr. Long; Central Lambeth and part of Battersea, Mr. Jennings; Northern Battersea, Mr. Hanson; and Northern Division of St. George, Hanover-square, Mr. Bell.

CHURCH-BUILDING NEWS.

London.—The chief stone of St. Matthew's, New Kent-road, has been laid, nearly opposite the Elephant and Castle Railway station. The edifice, from the design of Mr. Jarvis, architect, will be in the Gothic style, with stone frontage; and is to be erected by Messrs. G. Myers & Sons, of Lambeth, builders.

Horsesham (Kent).—The restoration of the Parish Church has been completed. The architect employed was Mr. Wyatt. The cost, exclusive of the organ by Messrs. Hill, in a case, the gift of Mr. J. F. Austen, of Broadford House, amounted to 1,600*l.* The gallery has been removed, displaying the arch between tower and nave, and the western windows. The plaster has been scraped off from the walls, and the stone work shown and pointed. The whole of the paving has been raised and relaid upon a body of concrete, in the aisles in York stone, in the chancel in encaustic tiles. Open seats of oak have been substituted for the deal pews.

Ashford.—The new church, which has just been completed for the South Ashford and Beaver districts, has been opened under licence of the Archbishop of Canterbury. The edifice is arranged to accommodate nearly 500 adults and 120 children, and all the sittings are free. It consists of a nave 74 ft. by 20 ft.; north and south aisles, 75 ft. 4 in. by 11 ft. 8 in.; chancel, 27 ft. by 18 ft., and walls 20 ft. 3 in. high. The style is transition. The walling is of Kentish rag stone, with quoined angles of the same material; the exterior and interior dressings of Bath stone. The roofs are framed in Memel fir, and covered with local red tiles and ridge cresting. The church is fitted with deal open seats. The architect was Mr. Hubert J. Austin, of London.

Bedford.—St. Paul's Church tower and spire have been rebuilt, from plans by Mr. Palgrave, of London, architect. The old stones were as far as possible used, the deficiency being supplied with new Bath stone. The clustered columns of the arches supporting the tower and spire are of Portland stone, being 31 ft. in height from the ground-line of the church to the soffit of the arches, above which is the stone corbelling supporting the ringers' floor, and higher up are the clock and bell chambers, also supported by corbells of Portland stone. The height of the tower from the floor-line is 51 ft. 6 in., internal dimensions being 25 ft. 8 in. square, or upwards of 102 ft. in circumference. The height of the new spire, from the top of the tower to the apex, is 78 ft. 11 in., the spindle, scroll-iron, and weathercock being 6 ft. more, making the total height of the new tower and spire, from the floor-line, 167 ft., or 30 ft. higher than the old structure. A lightning conductor has been fixed to the spire. Additional aisles to the church are included in the plan of improvement. The north and south transept fire-light windows are large, and the north and south transept arches, as well as those of the north and south nave, together with that leading into the chancel, are all of stone, 3 ft. 6 in. thick, with clustered columns. The length of the interior of the transepts and tower is 96 ft., and the width 19 ft. 6 in., which will make room for 134 additional sittings. Messrs. Myers & Son were the contractors, who were represented by Mr. Horsman, as foreman of the works.

Gresford.—The parish church of Gresford has been reopened for divine service after the restoration of the interior. The church has been re-seated with benches to be free and unappropriated. The restoration also includes new flooring, with an encaustic tiled chancel pavement, and the paint and whitewash cleared from the panelled ceiling and walls. The architect was Mr. Edmund Street, of London, and the principal contractor Mr. Yates, of Shifnal. The cost, some 2,721*l.*, has nearly all been subscribed.

Blurton.—The church of St. Bartholomew, Blurton, has been re-opened after restoration, chiefly of the nave, and at a cost of about 400*l.* The work was carried out under the superintendence of Mr. Lynam, of Stoke-upon-Trent, architect; Mr. Barlow, of Stoke, being the contractor.

Meole.—The parish church of Meole Brace is being re-built, from plans by Mr. E. Haycock, jun., architect. The church will consist of a nave 68 ft. 6 in. long inside, by 26 ft. wide, having north and south aisles; a chancel the same width as the nave, and 35 ft. long, terminating in a three-sided apse, and north and south chancel aisles, one being provided for the organ. There will also be a south porch, and at the west end of the north aisle provision is being made for a tower. The accommodation will be for 500 people. The style will be Early Decorated. Red Hill stone is being used for the walling, Shelvock for the dressings, and for the shafts to arcade and chancel arch. Bedford Wood stone, Messrs. Bowdler & Darlington, of Shrewsbury, are the contractors. The estimated cost is about 3,500*l.*

Chymenallade.—The new church here has been consecrated by the Bishop of Salisbury. The style is Early English, and the edifice will seat 133 persons, in open seats. There is some stained glass in the windows, supplied by Messrs. Harwood, Brothers, of Frome, glass-stainers. The eastern window was supplied by Messrs. Clayton & Bell, of London. It represents the Annunciation, Nativity and Baptism, Last Supper, Crucifixion, and Resurrection. The organ was supplied by Mr. Willis.

Westhite (Herefordshire).—The parish church of Westhite has been reopened, after various

restorations have been effected during the last few months. The works have been done by Mr. C. Burton, of Cole Pitchard, under Mr. Blashill's superintendence. The tower foundations are in a bad state. The chancel has been rebuilt, together with the north wall of the nave. The south aisle has been re-roofed, and a new porch and vestry have been built. The altar, lectern, and altar rails are of oak, the pulpit of Bath stone, with columns of grey marble, similar to Parbeck, obtained from Messrs. Simpson & Malone's quarries at Brough, in Yorkshire. The fittings generally are in pitch pine, lightly stained and not varnished. The church is heated by a Gurney stove. The nave is paved throughout in stone, with borders of tiles. The chancel floor is of tiles, by Godwin of Lugwardine. All the fittings are movable.

DISSENTING CHURCH-BUILDING NEWS.

Plymouth.—The Catholic Apostolic Church in Princess-street is now undergoing enlargement and alteration, under the direction of Mr. H. Elliott of this town. A new chancel is in course of erection and new vestries. The alterations will comprise a new roof and side windows to the nave, and a new front or street elevation of wrought limestone of the neighbourhood, with Portland stone dressings to the windows and doorways. The present low-pitched roof of nave, with its flat plastered ceiling, and also the present dilapidated street front, of common-place character, are in process of removal, to allow the new work to be proceeded with it. Various other works for the improvement of the building, including the re-arrangement of the seats and other internal fittings, are intended to be done. The style of the building, when completed, will be Early Decorated.

London.—The new Congregational church, Whitechapel-road, has been opened for divine service. The new edifice has been erected from designs by Mr. T. C. Clarke, of London. The outlay, including all expenses, is estimated at 5,200l. The debt remaining is 1,200l. It has been stated that had it not been for the rise of prices in the building trade, owing to which the tenders came out much higher than had been anticipated, the committee would have opened the new chapel free of debt.

Tunbridge Wells.—The memorial stone has been laid of the Countess of Huntingdon's Church, now in course of erection on Mount Ephraim. Messrs. Wimbale & Taylor, of London, are the architects, and Mr. J. S. Anscombe the builder. The works are being carried out under the superintendence of Mr. H. Stapley. The funds in hand for the edifice amount to 2,578l.

Arnold.—A new chapel, in connexion with the United Methodist Free Church, has been opened at Arnold. The building, which was erected from designs by Mr. Collyer, is of brickwork and stone, 51 ft. long, 28 ft. in width, 21 ft. high in the interior. The seats on the ground-floor are capable of accommodating 200, and a gallery at the back will accommodate 100 more. Underneath the gallery is a spacious room, which it is intended to use for school purposes; and by means of sliding doors it can be thrown open to the body of the chapel. The material of which the pulpit, gallery, and furniture are composed is plain varnished pine. Mr. Jew, of Arnold, was the contractor; and the cost is estimated at 400l., of which 200l. still remain to be paid off.

Miscellaneous.

ROMAN VILLA NEAR ANDOVER.—Last week the Rev. E. Kell and Charles Lockhart examined a field at Andover Down Farm, called Castle Field, which tradition reported had once been occupied by a castle, and on which had frequently been found fragments of Roman pottery. By means of a long iron rod, they alighted on the wall of a Roman villa, which turned out to be of oblong form, sixty-five feet in length and forty-one in breadth, with a portico on its western side. The roof had been supported by six or eight massive pillars, the vestiges of six of which remained. Many roofing tiles, in good preservation, were found. Two fireplaces were discovered, one of which has been transferred to the museum at Andover; but there was no hypocaust or bath, nor a single piece of tessellated pavement. Various coins were found.

PRINCESS'S THEATRE.—All who heard Miss Glyn's remarkable reading of "Antony and Cleopatra" in St. James's Hall will doubtless renew their acquaintance with the play as produced under the direction of Mr. Vining at the Princess's Theatre. It has been put upon the stage with great care, and Mr. T. Grieve and Mr. F. Lloyd have painted for it some very beautiful scenery, including a view of Rome, an Egyptian palace, and a view of the Sphinx at the foot of the Pyramid. But for great pressure on our space we should be led to comment on it at some length.

TESTIMONIAL TO A FOREMAN.—Last week a testimonial was presented to Mr. Slade (who for twenty years has been foreman of the brass-workers, at Messrs. Hart & Sons, of Wych-street), by the men lately engaged under him. It consisted of a silver tea-service, of good design, made by Tysal. It was subscribed for exclusively by the workmen of his own shop, in recognition of his good qualities, and on the occasion of his leaving the firm to commence business as art-metal-worker on his own account. Tea-services were previously presented to his colleagues, Messrs. Richardson & Ellison (by the men of their respective departments), who under the name of Richardson, Slade, & Ellison, have added one more firm to the art-metal-workers of London.

ARTISTS' GENERAL BENEVOLENT INSTITUTION. This institution celebrated the fifty-second anniversary festival on Saturday evening at the Freemasons' Hall, under the presidency of Mr. Anthony Trollope, supported by Sir Francis Grant, P.R.A., who has accepted the office of president of the institution, vacant by the death of Sir Charles Eastlake. The Chairman referred to the contemplated orphanage. A gentleman whose name he did not know had offered to build one for the reception of twenty-five children, on condition that his friends should raise a sufficient fund for its endowment. The list of subscriptions had already been commenced, and Mr. Agnew headed it with a guarantee of 2,000l. When established there was a gentleman who would build a second orphanage, with the intention that, as vacancies occurred in the senior one, they should be filled up from the junior one.

THE NATIONAL PORTRAIT GALLERY.—The tenth annual report, just issued, shows that the Board of Trustees of this gallery has undergone changes during the past year by the death of Mr. W. H. Carpenter and the nomination of Sir Coutts Lindsay and Mr. Beresford Hope, in the places of Lord Elcho and Lord Dudley, and now consists of fifteen members. The gallery was enriched in 1866 by the presentation of nine portraits and busts, including likenesses of Cobden, Clarkson, and W. S. Landor. The most important donation is a full-length portrait of the late Prince Consort, painted by Winterhalter, and presented by the Queen, whose portrait will also be given at some future time. Fourteen additions have been made by purchase during the past year. The total number of donations received since the formation of the gallery is seventy-two, and of the purchases 163. The total number of visitors to the gallery in 1866 was 24,660, an increase of 8,024, or nearly 50 per cent. over the preceding year.

ARCHITECTURAL STUDENTS IN MANCHESTER.—The Manchester Architectural Association has approved of the formation of a students' class in connexion with its body, for the purpose of mutual intercourse, and advancement in the art and higher branches of their profession. The promoters of the class state that at present many young men leave the profession in disgust on the completion of their articles, and sometimes before, because they find the drudgery of office routine, and the perpetual square work and traoting to which they are kept, fall so very far short of their previously-formed ideal. The class will afford these young men an opportunity of culture in matters archaeological and artistic, which, with some few exceptions, are neglected during office hours. All members must be associates of the Manchester Architectural Association; and if such a number of members shall join as will justify the rental of a room, the Association has promised to provide a room, which will be at the disposal of the class at least one evening in each week. There will be an out-door sketching-class for Saturday afternoons. The committee consist of Messrs. Batty, Langton, Bennett, Alley, Darbyshire, Oldham, and Ward; and of these Mr. Langton is appointed secretary *pro tem*.

THE WEST HAM SURVEYORSHIP.—On the 21st inst. the West Ham Local Board elected Mr. Lewis Angell, late of Portsmouth, to the office of Surveyor. There were seventy-nine candidates for the appointment.

SILCHESTER.—In our paper about Silchester, last week, for "Mardock Station" and "Strathfield Mardock," read *Mortimer* Station, and *Strathfield Mortimer*. Mardock is on the Great Eastern line; a slip of the pen confused them.

GLASS HOUSES.—A building, five stories high, to be used as a factory, is being erected in the Rue de Tardy, at Saint Etienne. The three sides consist of iron frames supported by stone columns, and filled in with sheets of thick glass.

THE SCANDAL AT GREAT GEORGE-STREET.—We have received several communications on this subject, but do not think it necessary for us to join in the cry against a man who is down. We shall be exceedingly glad if he succeed in setting himself right again.

NEW ENGLISH CHURCH IN PARIS.—At a meeting held at the Grand Hôtel two days back for the purpose of considering the desirability of building a church in Paris to fully represent the Anglican communion, it was agreed that such an erection was required, and a resolution to that effect was passed unanimously.

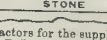
THE NEW DRILL-SHED AND ARMOURY AT NORTH-WICH.—On Saturday last, a meeting of the Finance Committee of the Northwich corps was held for the purpose of receiving tenders for the new drill-shed and armoury; Captain Cheshire in the chair. Tenders were received from six builders in the neighbourhood, and it was resolved to accept that of Messrs. Drinkwater & Leicester. The building operations are to commence at once.

NEW CEMETERY FOR JARROW.—Plans of a new cemetery have been prepared for the local Burial Board by Mr. Thompson, surveyor, and approved by Mr. P. H. Holland, the medical inspector. The site is a piece of ground belonging to the Dean and Chapter of Durham, and situated east of the Springwell Paper Mills. The ground is 15 acres in extent, and this it is proposed to divide into two lots—one of 6 acres for the consecrated side, and 9 acres for the unconsecrated. The estimated cost of the whole, including ground and enfranchising, is 7,000l.

CRYSTAL PALACE RESTORATION FUND.—A great festival is intended to be held on Wednesday, 26th June, in aid of the Fund for the Restoration of the Palace. The long list of eminent artists whose services are placed at the disposal of the Directors for this occasion will render it one of unusual interest. It is anticipated that a notification will be made in the course of a few days of the issue of guinea stalls for this great musical festival, which will be under similar arrangements to the Great Handel Festivals held at the Crystal Palace.

ANOTHER "IRON" CHURCH BURN.—Christ Church, Kensington, has been totally destroyed by fire. The iron collapsed, and the whole front fell across the carriage-road, nearly killing two men, and setting fire to the hoarding of several newly-erected houses, as well as igniting about twenty houses in Wellington-terrace and Portobello-lane, and damaging cow-houses and a timber-yard at the rear of the church. The flames continued to rage for hours, notwithstanding an abundant supply of water, and could not be extinguished until the church was totally destroyed. These "iron" churches are, in fact, mostly built of wood, and their imagined ability to resist fire is a complete mistake, as we long since pointed out.

NEW CHURCH IN ST. JAMES'S, LONDON.—The Duke of Cleveland, the Earl of Derby, Earl Spencer, and Lord Egerton of Tatton, have each subscribed 500l. towards the erection of a new church in St. James's, Westminster, the district for which has been carved out of the northern part of the parish; and 3,000l. having been raised for its endowment in 1865, it was in the course of that year constituted a Peel district, and placed under the charge of the Rev. W. Edwards. The population exceeds 5,000, and by far the largest portion is of the poorest class. For the present the church services are held in the conservatory of the Pantheon, which Messrs. Glibey, the recent purchasers of that property, have lent for the purpose. It is understood to be the wish of the rector of St. James's, who has set on foot this undertaking, to obtain a site for the new church in Great Marlborough-street.



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2. $\Delta \leq 1$ and $\Delta \leq 1$ are not equivalent. For example, let $\Delta = 1$ and $\Delta = 1$ be two different sets of data. Then $\Delta \leq 1$ is true, but $\Delta \leq 1$ is false.

The Builder.

VOL. XXV.—No. 1269.

A French Survey of English Theatres.

THREE months ago the Prefect of the Seine deputed M. G. Davioud, architect-in-chief of the service of walks and plantations of Paris and of the theatres of the Châtelet, to visit the different theatres of London, especially those to which the public are admitted at a low price, with a view to an inquiry into the possibility of introducing similar places of amusement in Paris. The fame of the Britannia Theatre, with its entrance-fee of sixpence, caused special instructions to be given that this establishment should form one of the centres of information. Accordingly, M. Davioud waited till the architect of that edifice was in town, and then commenced his task. We propose to give a condensation of the historical, architectural, and financial report he furnished to Monsieur le Préfet on his return, as it is not only interesting as a French architect's opinion of London theatres, but valuable for the classifications and contrasts made in it. He divides his subject into six sections, and commences the first by saying that the number of London theatres has increased very notably since the Bill passed in 1832 which suppressed theatrical privileges, and left any one free to open a *salle* for the performance of dramatic and lyrical works; although it would be difficult to state what the number is, for some of them are mixtures of concert-halls, theatres, and *cafés* impossible to be classed in a definite category; and others, constructed especially for the performance of music, are at the present time more frequently used for political and religious meetings. After describing the modern feature of the tables in the pit and galleries on which the frequenters can place their glasses, M. Davioud expatiates on the transformation capacities of the class of establishment in which refreshments are sold to the audience, describing how, when the bad season for spectacles sets in, they transform themselves into concert-halls by throwing a flooring over the pit, and building an orchestra in the centre of it, around which the company can circulate, one or more buffets attractively installed still forming a leading feature of the accommodations. But the two and three-fold purposes of these convertible *salles* are great perplexities in the consideration of the form of theatre he would recommend for selection; for, whereas in the best Italian theatres facilities for seeing are most thought of, and in those destined for the performance of the drama the acoustic perfection is first attended to, these, with their fairy-spectacles and promenade concerts, must have more requisites than both of them.

M. Davioud translates our music-halls as *cafés-concerts*, and gives parenthetically what he considers the English equivalent as "public-house-hall." He took count of the places of amusement in all quarters of the town and city, not ignoring "l'East-End," and arrived at the conclusion that not one of them presented any

novelty either in lighting or ventilation. He found that they generally take the form of the plot upon which they are erected, and are either rectangular, square, irregularly polygonal, or circular, according to the site; and for the reason that these sites are mostly in the centre of plots of houses their exterior appearance is little more than a door, more or less grand and more or less *ornée*; and their fenestration opens into the rear grounds with which they are surrounded. In some *salles* the ventilation has no other provision than that which the windows afford, while those which are more complete provide for the escape of the products of combustion of gas by openings in the roof above the chandeliers.

The London theatres proper,—that is to say, theatres in which the audience do not *consume* as they sit in their places,—are divided into three categories. The first comprehends those reserved for the performance of operas; the second the national drama, and foreign plays. The price of seats in the *parterres* of these, we learn, with somewhat of astonishment, varies from three and four shillings to a sovereign. We have, indeed, heard of exceptionally high prices on very rare occasions, but should be scarcely disposed to quote a sovereign as one of the varieties of the usual prices of a seat in either of the houses mentioned as in this class: Her Majesty's Theatre (Le Théâtre-de-la-Reine), Covent Garden, Drury Lane, Haymarket, Saint James's. The first and three last constructed under the *régime* of privilege, present several interesting features to the French architect's eye, especially in their vestibules and staircases; but Covent Garden, rebuilt since the removal of the hamper in question, offers so many technical and economical novelties that he devotes a special chapter to it. Passing on to the second category, built, according to M. Davioud, for the interpretation of Shakespeare and performance of pieces adapted from the modern French theatre, we find the following selection: Sadler's Wells, Astley's Royal Amphitheatre, Adelphi, Lyceum, Princess's, Olympic, and Strand Theatre. With due deference to the author of this classification, we must record the remembrance of a charmed circle hushed in saw-dust, where the possessor of the loudest cracking whip and the brightest buttoned jacket in the world reigned over a tribe of spangled equestrian fairies, for whom he kept a stud of long-tailed earth-pawing steeds, with which they diverted themselves through the live-long night, riding them round and round at a pelting gallop, leaping, as they rode, through wreaths and over festoons of flowers, and performing all sorts of fantastic gambols, that were neither Shakesperian nor adapted from the French. Astley's should have enjoyed a place apart from the theatres with which it is grouped. Few of these possess constructional features of interest to the author of the survey, as they owe their origin to the period before the withdrawal of privilege; though fire has caused some of them to be reconstructed. The Adelphi is selected for a special examination. The third category comprehends the theatres supposed to be frequented exclusively by workmen and *les marins*, which are, for the most part, situated in that scarcely recognisable region l'East-End. In these he finds no boxes, but one vast amphitheatre, or place in common, in which the scale of price is regulated by the distance from the stage. They appear to him to be "*annexes de public-house*," or the cause of which the public-house is the effect; as he has learnt that it is not rare to find, in London, *cabaretiers* building halls for the purpose of bringing business to their taverns. The City of London Theatre, the Surrey, the Victoria, Marylebone, Pavilion, Garrick, and Britannia are named in this group, and, as we might assume from his instructions, the last-mentioned is selected for a detailed report.

Before proceeding to the examination of the three edifices chosen to illustrate the three categories, the author of the survey reviews the precautions for public safety required by law, dwelling on the clauses in the Act relating to public buildings which render it illegal to erect corridors, passages, staircases, and their supports otherwise than in stone or equally unflammable material, the discretion allowed to district surveyors, the neglect of art, and the rigorous economy with which private speculators comply with the letter of the law. The obligations of the English Act he nevertheless deems slight compared with the numerous requirements of the Préfet of the Parisian police. The particular mode of construction for the interior and the stage is left an open question, no apparatus in case of fire is fixed upon, heating and ventilating are not obligatory, workshops are not interdicted, neither are there any stringent regulations relating to the comfortable seating of the public, obligatory items which materially encumber the constructors of Parisian theatres, and upon which an ordinance of the Préfet, dated 1st July, 1864, insists more stringently than before. Private enterprise and personal responsibility are left to themselves, with us, to make arrangements that a paternal Préfet takes upon himself. Covent Garden is the theatre which has most closely approached the obligations of the Parisian ordinances; but even here there are short-comings, at which M. Davioud is aghast. He shrugs his shoulders as he views the quantity of wood used where the Préfet would object to it; and makes a special note to the effect that to such a degree of economy is the construction carried that the wall which separates the stage from the body of the house and which receives the curtain, is built of light masonry, and partly wood, and that it does not rise above the *voûte de la salle*; so that should fire break out in the upper part of the stage machinery or scenes, it would spread with the greatest rapidity over the whole edifice, as well above the heads of the spectators as over the stage; whereas, in Paris, the same wall would have been built of strong masonry and carried up to the roof of the house so as to effectually cut the building into two parts, and the opening on to the stage would be furnished with an iron blind which would descend every evening after the performance and close it.

M. Davioud commences his section on Covent Garden Theatre by remarking that it is as absurdly the vastest and most remarkable of the aristocratic theatres of London, as well as the most recently constructed, and that it has been built from the designs of Sir John Barry, the son of the architect of Parliament! and he finishes it with the twin comment that it is the most complete expression of the *théâtre de luxe* in London, supplemented with the opinion that it presents the particular qualities of English construction, grandeur of material, and the employment of practical ingenuities, but in point of taste, architectural skill, and researches after comfort, it offers nothing remarkable nor worthy to be signalised. Between this beginning and end he mentions the leading features and novelties of the structure, with an accompaniment of criticism that may be called fair, and generally favourable; but, as we have placed all the particulars of this edifice before our readers, we will not follow him from point to point. He confesses to inability to speak of the acoustic properties of the house, as he did not assist at any representation, and the ventilation he considers voluntarily neglected. Of the Adelphi he cites a short history, telling how it was rebuilt in 1858 on the site of the theatre built in 1821, which succeeded the occupation on the same spot of a *salle de divertissement*. Favourably situated in one of the most frequented of thoroughfares, it advantageously rivals the best secondary theatres, and is, moreover, remarkable

for the production of English versions of French pieces. Built more recently than any other edifice in this category, M. Davioud looks to it specially as likely to afford him study of the most improved modes of theatrical construction. The exterior elevation consists only of a large doorway, the decorations of which compose all the external ornaments of the edifice. A long corridor conducts the company from this doorway to the *bureau de billet*, or pay-place, and divides it into two streams, though it by no means shelters the whole of those who would enter, who, meanwhile, station themselves in the public way till they can gain admission. The ground-floor of the house is level with the street, and two staircases give access to the tiers of boxes and gallery. The form of these is that of an elongated ellipse, of which the curve is graceful, and opens well as it approaches the side-scenes for the purpose of increasing the facilities of seeing. Behind them runs a narrow passage, following the same curve, from which the company can arrive at the part of the tier in which their seats are placed; and leading out of these narrow corridors are refreshment-rooms. The urinals are well installed on each floor at the extremity of a passage, and well aired from the spaces or courts that separate the theatre from neighbouring houses, divided from one another, and capable of receiving five or six persons at a time; but these our French surveyor is sure the French police would not tolerate. He appears to have introduced them at the theatres of the *Place du Châtelet* of equal spaciousness, and with not less provision for the maintenance of propriety, with the difference that they were only to be found by a descent of fifteen steps, when the use of them was interdicted by the police. The body of the house is lighted by an ordinary lustre, with an opening for ventilation above it; but no means are taken to cause a constant renewal of air, beyond that which is afforded through the doors of the boxes and galleries, which in their turn are refreshed from the corridors by the simple act of opening the windows. The space below the stage is not so considerable as it is in French theatres; nor is the machinery anything like so costly or so complicated, nor are the illusions made by it anything like so complete. The manoeuvres on the French stage are performed almost exclusively by machinery, ropes, and counter-weights, while that now under the scrutiny of the Parisian architect requires a large staff of manual labour. Finally, he perceives that the walls and floors are incombustible; the staircases are of stone and the roof of wood. As in every other enterprise, remuneration for capital invested is the chief aim of the constructor of theatres: art is scarcely taken into consideration, and imagination is more enchanted with the useful than with the beautiful: these are the characteristics which are to be seen still more fully developed in the last theatre to be dissected.

It is for the Britannia that our author reserves his strength.* In point of fact, it is the real cause of his survey, Paris being already stocked with first and second class theatres. This third-class place of theatrical entertainment is unknown there, the nearest approach to it being the *Cofis-Chantants*. He describes the site and appearance of this specimen of popular places of amusement—a public-house in High-street, Hoxton, having on either side of it doorways, which serve as entrances to the theatre in the rear of it; and dwells on the four-fold character of its proprietor, director, actor, and publican, as an indication of the reason why, though destined for the accommodation of as many as four thousand persons, the exterior preserves the character of a public-house, rather than suggests the representation of theatrical pieces within. The two doors divide the stream of persons desirous of entering; that to the left is reserved to those who intend to take seats in an upper circle; that to the right affords access to the pit: waiting the opening of them the company stand partly in the vestibules, extending the depth of the public-house, and partly in the street beyond. Wooden barriers and pay-places divide the crowd again, which ascends two staircases, one leading to the highest priced seats and the other to second-class seats, though both ascend to the full height, so as to facilitate the departure of the *secondaries* at the closing of the house. The pit is gained by three doors facing the stage, it contains twenty-six rows of forms, rising on an incline, of which

the first five rows are reserved places at a higher price than the rest. The house is of the form of a demi-ellipse, of which the great arc would be parallel with the *rideau*, and of which side-scenes prolong the curb. It has but two complete tiers, for the third gallery only exists at the sides. Eight rows of benches face the stage on the first tier, and fifteen on the second. To enable spectators to take possession of these seats there is no passage-way behind them, as in other theatres, but simply a space where the public can circulate, or, on occasions of great crowding, stand and view the performances. On the floor above, the staircase opens directly into the gallery, in which people take their seats as they arrive. The absence of regulations concerning the exact amount of space that constitutes a seat augments very considerably the number of persons that can be accommodated. This licence strikes our surveyor forcibly. Where only three persons would be allowed to sit by the French police eight or nine people can find standing room in the Britannia Theatre. He contrasts the theatre of the *Châtelet* with this East End *salle*, and shows how impossible cheap theatres are in Paris as long as the existing regulations endure. The French house will hold but three thousand spectators on its *surface de places* of 965 metres; while the Britannia, with a surface of 680 metres, has held upon crowded nights as many as four thousand five hundred persons. In a word, though fitted with but 2,700 seats, 4,500 people can find room, and are permitted to do so. He next makes some useful remarks about the facilities for leaving the theatre in case of a panic. Though the two staircases are sufficient for an orderly entrance, he doubts whether they would be so, should the enormous number of spectators endeavour to get out simultaneously, as they would do in case of real or false alarm; and if the great crowd rushing out of the hall came in frightened contact with the streams from the staircases, a disastrous collision would take place, ending in a calamity frequent in the history of theatres. After describing the size of the site, the size and form of the house, and then detailing the construction of the different parts, he mentions with surprise the thinness of the brick walls and the strength and adhesiveness of the bricks which converts the slight barriers of bricks into veritable monoliths. The dressing-rooms of the actors also strike him as unlikely to be tolerated in Paris, being very few in number, and placed over a refreshment-room and part of the stage. The ventilation he considers very simple, and no attempt is made at heating. On the 29th of August he noted the result of the precautions taken for ensuring ventilation, namely, the insertion of windows in the *boites* abutting upon the space around the theatre, and observed, that in the first gallery, two hours after the commencement of the play, there was an elevation of from 3 to 4 degrees, and a slight odour from the concentration of people; an hour afterwards, in the upper gallery the temperature was still more elevated, and the nauseous odour made a stay there very disagreeable.

In considering whether a similar kind of theatre is applicable to Paris, and whether it could be had there, he takes account of the cost. The Britannia cost 9,000*l.* sterling, 225,000 *frs.*, or about 200 *frs.* the imperial metre, without including the public-house in the main street, the magazines for the decorations, the refreshment saloons, and the urinals in the rectangular perimeter, which cost 50,000 *frs.* (2,000*l.*) more, all of which, however, are part and parcel of the same scheme, and indispensable to it. He concludes that it would not be possible to erect similar structures in Paris, with any chance of their proving a success. Three principal causes lead to this belief.—1st. the high price of sites in Paris compared with those of London; 2ndly, the regulations of the police which insist upon the apportionment of much more space to each spectator than that which the English spectator gives; and, thirdly, the same police obligations which are binding as to the monumental nature of the fabric, the security of the public, and the safety of adjoining properties. The site in Paris most approximating to the populonousness of that in Hoxton-road, M. Davioud thinks, is the neighbourhood of the Temple, and here instead of 28 *frs.* the superficial metre, as at Hoxton, land is already worth 200 *frs.* or 300 *frs.* per metre. As the French police would not allow 4,500 persons to crowd themselves into a place which was only furnished with half that number of seats, the full number must be provided, which would materially add to the size as well as the

cost of the theatre; and the building restrictions concerning the kinds of materials, the dispositions of all the parts, the exaction of well-lighted *couloirs* or passages, for each tier of galleries and boxes, exactions again for heating, ventilation, or for apparatus to extinguish fire, for the furnishing of offices for the police and their commissaire, and the requirement that the urinals should be on the public way, and not in any portion of the theatre, which prevents the existence of any shops on the site, all combine to increase the cost very materially. The Britannia Theatre covers 1,830 metres, and accommodation for the same number of spectators, arranged on a French basis, would call for a site of 2,745 metres; and the 200 francs per superficial metre laid out on the Britannia edifice would become, under French police restrictions and obligations, 400 francs: and thus the cost would be swelled to 1,098,000 francs for the structure, and including the cost of the site, as well as of the constructions, it would become a total of 1,647,000 francs. Our architect can by no means recommend our cheap theatres to M. le Préfet. "Born," he says, "of a speculative idea," they satisfy the wants of cheap amusement, and the moralist alone can say whether they serve the popular cause. Before leaving us quietly in possession of our questionable property, he gives us his final opinion as to the value of our higher class of houses. "If from the popular theatres we ascend to the *théâtres de luxe*, where the building should be in accordance with the literary and musical works which are interpreted there, one is forced to allow that England is far from being the country of the arts and of comfort applied to masses of individuals." Our railway stations, hotels, public places, theatres, and concert-halls are to a certain degree striking from the grandeur of their conceptions, just as we are great by our wealth and not niggardly in anything. But the speculators who undertake our theatres do not fatigue themselves with details or deign to satisfy wants which arise from without. The day, however, will come, he thinks, when this same speculator will find that the pleasures of the theatre will pall to those who have to partake of them under the disagreeable conditions such as no seat, no ventilation, and insufficient light; and then he will have to beat himself. No progress has been made in this direction for the last three years. As though pondering over the remembrances of our hard seats and the desperate squeezes in our narrow entrances on crowded nights, he cries,—"I have shown of what fashion London possesses theatres truly popular and their conditions; and I must finish my task by recording that the *théâtre de luxe* does not exist there."

With reference to the reasons why he does not think popular theatres would pay in Paris, he says the expenses would be nearly as much as those of the ordinary theatres; and further, he thinks a *sentiment égalitaire* would prevent the working classes from frequenting a place especially built for their use. But more than these two reasons put together are the many precise, imperious, and costly requirements of the French police.

WHAT HAS BEEN DONE IN GLASGOW.*

It is unnecessary to dwell upon the mercantile glory and the engineering triumphs of the River Clyde: its noble bridges, extensive quays and wharfs, its ship-building yards, and its graving docks. We shall just mention that the widening and deepening operations on this river have cost from first to last upwards of two millions sterling. At Glasgow bridge fifty years ago there was only a depth of 5 ft. at high water; it is now at least 20 ft., therefore navigable by vessels of the very highest class.

Of course the Clyde is at this moment in the condition in which the Thames was previous to the high-level sewerage operations; and the purification of the river is one of the great tasks which must yet be accomplished. But we observe that it is now engaging the attention both of the trustees and the town council. The subject is freely ventilated; several of the local engineers are in arms, with various schemes for intercepting and utilising the sewage; and therefore, in the present aspect of the question, we abstain from discussing it. Even with all its pollution and noxious smells, the River Clyde is the centre of attraction in Glasgow, the place to which the

* The Britannia is very fully described in a previous volume of the *Builder*.

* See "A Run through Glasgow," p. 325, ante.

stranger will always gravitate. It is a most delightful change, for instance, to emerge from the "vonnels" and closes of the Briggate, and taking a stand on the fine granite bridge of Stockwell, look up or down at the broad expanse of the noble river, the splendid range of buildings on both sides and the forest of masts in the distance. The Clyde is certainly a beautiful river: let us hope that its purification will not be long postponed.

It is also unnecessary to recite the history and progress of the water supply of Glasgow—one of the most splendid triumphs of hydraulic engineering of our generation. This undertaking, indeed, in its conception and its execution—the magnitude of its operations, the simplicity of its principles, the difficulties which had to be overcome, and the highly successful results—places Glasgow with regard to its water supply in the very front rank of modern cities. The general result of the undertaking is that Glasgow is now furnished with a pure and plentiful supply of water from Loch Katrine—a Highland lake about 35 miles northward in the range of the Grampians—that the water is supplied on the system of constant service, and that the quantity given at present amounts to 26 millions of gallons per day. It may be added that enormous as this quantity is, the works connected with the source at Loch Katrine are so constructed as to be capable of furnishing at least 50 millions of gallons per day—and that, too, with a very small addition to the height of the embankments.*

Having been so successful in regard to the matter of water supply, the Glasgow Corporation has not neglected the important question of gas. About three years ago they applied to Glasgow the Act of Parliament under which the sale of gas may be regulated; and during the interval which has since elapsed arrangements have been in progress for the carrying out of that resolution. Suitable premises have been provided next to the police-office in South Albion-street, and an inspector under the Act has been appointed. One of the chief objects contemplated is the periodical testing of the gas produced by the two local companies; and we are glad to report that there is no difficulty found in keeping up the Glasgow gas to the legal minimum of ten candles; in fact, it is said that as a general rule the gas—which is entirely produced from cannel coal—is equal in illuminating power to 27 candles! In addition to this testing of the value of the gas, experiments are also made by the inspector with regard to the best and most economical description of burners used in the consumption of it. Lastly, an important provision is made for testing the accuracy of the gas-meters which are used in measuring the consumption. It is said there are 70,000 or 80,000 gas-meters scattered throughout Glasgow; and, should any doubt exist as to the condition of one, for the moderate charge of sixpence, it may be sent to the test house and duly certified.

With regard to the lighting and paving of streets, construction of sewers, erection of public "stopping-places"—we do not know as to water-closets—public ash-pits, &c.—we have only to report generally that the Corporation has not been negligent of its duty. The underground sewerage of Glasgow, we understand, is very good, and deserves a better outlet than the basin of the Clyde at Bromielaw. There are upwards of 150 miles of paved streets. The pavement is unquestionably good, for Glasgow possesses great facilities for procuring granite cubes from the Argyllshire quarries. We cannot speak so favourably of the footpaths which even in the best quarters of the town are laid down with asphalt, and are of course cracked and broken in every direction. There is a very spacious cattle market erected so far back as 1818, but it is still the best in Scotland. There are also two or three magnificent cemeteries, the Necropolis and the Spring-hill Cemetery being the chief, and occupying sites at once picturesque and secluded. We may add here that the Corporation Buildings in Sauchiehall-street, the Sheriff Court Buildings in Nelson-street, and the new Police Buildings in Albion-street, as well as the whole of the public buildings under the control of the magistrates, are in every respect suitable for their respective purposes,

and not unworthy of the city to which they belong.*

In speaking of the progress of Glasgow, we cannot omit to advert to its extraordinary increase of population. At the period of the union it was only 14,000. By the last census it was within the Parliamentary boundary, 395,503, including suburbs, 446,639. In the year 1864, the population was estimated at 467,114; and at this moment we may safely assume it to be 480,000. Within a period of fifty years the population has more than quadrupled, and it has been augmented tenfold since the period of the American war.

The number of dwelling-houses within the Parliamentary boundary amounted in July, 1864, to 92,480, of which 87,604 were occupied, and the remainder empty. These empty houses are now filled up, and rents are rising, therefore we may presume that building will again increase.

The gross rental of Glasgow for the same year was 1,778,728*l*. Within the three preceding years it had advanced no less a sum than 110,576*l*. For the present year the rental, as furnished by Mr. Donaldson, the assessor of the city, is as follows:—

Houses, shops, warehouses, factories, gas, water, and other works within Parliamentary burgh.....	£1,799,212
Railways and canals.....	26,688
	£1,825,900
Royalty beyond Parliamentary burgh—Houses, shops, factories, &c.....	27,702
Railways and canals.....	9,422
	£,1,893,024
Showing an increase on last year's rental of	64,594

A city which increases at the rate of 50,000*l*. and more of annual rent, is certainly in a very flourishing condition; and if we were sure the population made a corresponding increase in education and intelligence, there would be very little left to desire.

But in any proper estimate of real progress, we must always keep in view the relative values of the increments as contrasted with the aggregates of a population. The value of a London population, for example, as compared with Glasgow, will be found greater in the ratio that it absorbs a higher or, at least, a richer, class of people. It must always be remembered that a large city like Glasgow sucks up population from the adjacent country districts like a gigantic sponge; and it has no choice,—it cannot be particular in selecting. The fact is, that Glasgow has suffered more than any town in the kingdom from the character of its poor population. Liverpool has had its Irish indeed, but Glasgow has been overwhelmed with Highlanders and Islanders, as well as Irish; and among these foreigners, when they become resident, there is propagated a native population of the very lowest type!

Indeed, it does not require much consideration of our own previous remarks to detect the fact that the great blot on the general prosperity of Glasgow is the wretched condition of the poorest quarters of the city. This circumstance had been often pointed out. Mr. Chadwick, in one of his early and most vigorous reports, made the statement that the population of these wynds and closes was not only the worst he had seen, but the worst of whom he had been able to obtain any account! Subsequent investigators, ourselves among the number, only confirmed the truth of this sad statement; and even a superficial observer like Augustus Sala, in his visit to the Salt-market, speedily came to the conclusion that there were ample grounds for a charge of corporate neglect. At length the public outcry grew so great that the Glasgow people took in hand their own purification, and they went about the work with characteristic energy. It is just possible they may have been too energetic as a corporation, or, at least, too sweeping in their projected improvements. But there can be no doubt that they proceeded in the proper spirit and in the true direction. For what can be done with most of these hot-beds of disease and pauperism but to exterminate them? To try a piecemeal improvement is out of the question; not only would such a course have been unproductive of good result, but any result would have been inadequate to the cost. Accordingly, the Glasgow corporation resolved, in the most thorough-going and compendious manner, to pull down their slums and rookeries

and build new streets and improved dwelling-houses.

We believe that we are correct in awarding the principal praise for this bold and original conception to the former Lord Provost of Glasgow, Dr. W. G. Blackie, a member of the well-known publishing firm of Blackie & Sons. It is curious to observe that another publisher, who is also the Lord Provost of another celebrated Scottish city, has had the good fortune to be the recognized author of a similar Improvement Bill—we mean, of course, Mr. William Chambers, and we refer to Edinburgh. But the priority of publication, so to speak, of the rival Acts of Parliament undoubtedly rests with the Glasgow lord provost. May a worse rivalry than this occur between them? We ought to add, in connexion, that a large proportion of the labour, whatever we may say about the credit, of such measures falls on the shoulders of the city officials,—the town-clerk in particular, and the city architect; but as they are paid for their labour, and the lord provost is not (or at least, not more than nominally), it has grown into fashion that the chief magistrate gets the honour, whoever gets the profit. We will not stay to stir the arrangement, if the parties are at peace.

The specific result of the Glasgow corporate action, was the passing of a Bill, entitled, "An Act for the Improvement of the City of Glasgow and the Construction of New, and Widening, Altering, and Diverting of existing, Streets in the said City; and for other purposes."*

The preamble sets forth, in the first place, that various portions of the city of Glasgow are so built, and the buildings thereon are so densely inhabited, as to be highly injurious to the moral and physical welfare of the inhabitants; that many of the thoroughfares are narrow, circuitous, and inconvenient; that it would be of public and local advantage if such houses and buildings were taken down, and such portions of the city reconstituted, and new streets constructed; and that in connexion with the reconstitution of those portions of the city, provision were made for dwelling-houses to the labouring classes who may be displaced in consequence.

Secondly, that provision should also be made for the establishment and maintenance of a public park in the north-east quarter of the city.

And, lastly, that the Lord Provost, magistrates, and council should be appointed trustees, for the purpose of carrying the said works and improvements into execution, and that they should be authorised to raise money for the purpose by means of rates, and on money borrowed on the credit of such rates, and on the credit of the property acquired in virtue of the Act.

Anything more simple and straightforward in the shape of sanitary legislation than this it would be very difficult to conceive. The simplicity of the measure, indeed, was never, as far as we are aware, called in question; it was its magnitude and the conflicting interests which were involved that excited the inveterate opposition which we are sorry to hear is now offered to the carrying out of the Act. It must be admitted indeed that this Glasgow improvement Bill gave the corporation prodigious powers. They have power to take, in the first instance, enormous quantities of land, within the whole Parliamentary boundaries of Glasgow, and to construct no less than *thirty-nine* new streets; powers to alter, widen, and divert at least twelve existing streets, "the whole being situated in the city of Glasgow and county of Lanark;" and powers to stop up some thirty or forty back streets, wynds, lanes, and closes, the very names of which we can understand are indicative either of their antiquity or their infamy. Such soil and ground, it is also provided, as may be derived from closes and streets so stopped up and inclosed, shall be vested in the corporation as trustees, who are also empowered to make lateral and vertical deviations, and to construct minor works, such as drains, sewers, and watercourses, on such void ground. One section (the 22nd) gives powers to pull down buildings and lay out the lands "of new;" and the section following provides that "the trustees may, on any lands so acquired by them under this Act, erect and maintain such dwelling-houses for mechanics, labourers, and other persons of the working and poorer classes as the trustees from time to time think expedient; and

* Judging from a report of Town Council proceedings (March 5th, 1867), it would seem that the Glasgow corporation are extending their system to the small towns in the neighbourhood—such as Rutherglen, Shettleston, and Cathcart.

* The fine range of galleries in Sauchiehall-street, were at the time of our visit occupied by the annual exhibition of pictures of the west of Scotland Academy of the Fine Arts: a very creditable collection, we may state.

* It received the royal assent on the 11th of June, 1866. The solicitors were Simpson & Wakeford, of Abingdon-street, and Alexander Munro, S.S.C., town-clerk of Glasgow.

let the same when so erected and fitted up to such mechanics, labourers, and other persons of the working and poorer classes, at such weekly and other rents, and upon such terms and conditions as they from time to time think fit; or the trustees may sell and dispose of the same." As a highly necessary corollary to this clause, provision is made further on that the trustees shall not eject nor displace, within any period of six months, any number of the labouring classes exceeding 500 without a certificate from the Sheriff of Lanarkshire that other and suitable accommodation has been provided for them or already exists within the city or in its immediate neighbourhood. Furthermore, the trustees are bound, when they mean to pull down fifteen or more houses belonging to the labouring classes, to make known their intention to the parties most concerned by means of placards or handbills, not less than eight weeks previously. The borrowing powers authorised by the Bill amount to 1,250,000*l.*, a sum which will convey some idea of the magnitude of the contemplated operations. The final principle it contains is of course a power to defray the expenses by levying assessments; and this is done "upon the occupiers of all lands and heritages situated within the city." The assessment is annual, not exceeding sixpence per pound on the rental or annual value of such heritages for the first five years; and not exceeding threepence per pound for the next ten years after the expiring of the said five years. There are certain compounded or reduced assessments, such as land used as arable, meadow, or pasture ground; woodlands, market gardens, and nursery-ground; canals, railways, gas and water pipes underground,—which are assessed in the proportion of one-fourth only of their not annual value. Finally, there is one most important exemption, and that is, property of a less rental or annual value than 4*l.*

Our readers will probably recognise in this Bill certain principles which we advocated years ago, when these were not so fashionable, and which we have never ceased to support. We are not so sure that we ever recognised the policy or propriety of loading a whole community for the space of ten or fifteen years only, with the cost of that condition of things, which had been the result of centuries of previous error and neglect; and of which the improvement will be felt as a benefit, not only by the present but by many succeeding generations. If, indeed, sanitary reform could be carried by a *coup de main*, or if poverty and crime could be struck down like an ox by one blow, then Lord Provost Blackie would appear to posterity among the bailies of Glasgow, something in the same light as that which Samson occupies among the Judges of Israel! But, alas! the history of human progress contains but few illustrations of such royal roads to improvement! Our most summary legislation will neither destroy pauperism nor prostitution, any more than disease or crime; and because society tacitly recognises this indubitable truth, or at least instinctively acts upon it, it is the fate of all such measures, however well intentioned and honestly constructed, to fall short of their original purpose. Such was the fate of the Central Board of Health Act in England; such seems to be the fate of the last General Police Bill for Scotland; and such, we are afraid, is the fate which at this moment hangs over the Improvement Bill for Glasgow. So long as the Lord Provost was engaged in promoting his measure, if not absolutely cheered on and applauded by the community over which he so worthily presided, he was at least openly encouraged and supported. But when speculative principles began to assume a practical form, in the shape of an assessment, the same community rose like one man, and ignominiously turned out of the town council, not only the Lord Provost himself, but all his sanitary disciples! This occurred at the municipal elections in November last year. It was the old story, of course—another instance of the ignorant impatience of taxation.

Since an opportunity for improvement of such legal power and completeness has been provided in Glasgow, it would be a pity if the inhabitants did not avail themselves of it. For the truth is we are gradually getting alive to the fact that reforms of this character must be effected by the community itself if they are to be effected at all.

The removal of the University is a more satisfactory subject. We have already described the disgraceful condition of the locality in which it is at present situated, and the scanty accommodation afforded by the ancient buildings them-

selves. It happened fortunately that the Union Railway Company—a railway which will pass through the suburbs of the city, and which possesses the additional advantage, by crossing the Clyde, of connecting the different systems upon the north and south side of the river—sprang into being. It is highly probable, we think—but this is a mere conjecture—that the promoters of this Union Railway had been alumni of the Glasgow University. For they projected their line, in the first place, through the south-western angle of the far-famed College-green; and secondly, they projected an enormous goods-station on the very site of the ancient college itself! The result was that 100,000*l.* were offered to the trustees and the Crown in the shape of purchase-money; the bargain was struck; a clause was inserted in the Bill; the Bill passed, and the transaction was closed—we need scarcely add with great satisfaction to the subscribing parties and to the public.

By the sale we have mentioned, and from other sources, the University became possessed of 100,000*l.* The Glasgow merchants and manufacturers came forward and nobly subscribed 150,000*l.* by the end of the year 1855. Other contributions have since flowed in; and in the course of another year or so it is expected that the full sum required for the new University will be completed, that is, about 350,000*l.*

The University of Glasgow will be rebuilt on the eminence called Gilmore-hill, on the west bank of the river Kelvin, which forms the boundary between the College grounds and the West-end Park. Upon the opposite eminence, at the distance of half a mile, stands that stately range of crescents we have tried to describe. Mr. Gilbert Scott is the architect of the new buildings, and his plans, we believe, have been generally approved. The design is of course Gothic; and the plans indicate that the new College shall be in keeping with their scholastic character. In the centre of the pile of buildings there will be a tower 300 ft. high; and there will be a hall capable of containing 2,000 persons. A plot of ground hard by has been acquired for the site of a medical hospital; and, by the year 1870, it is expected that the professors and their students will remove to this new, more commodious, and certainly more respectable, seat of learning.

For some time, it is proper to mention, a cloud hung over even this enterprise. The Union Railway, it was discovered, might prove a bad speculation; the bargain might never be carried into effect. But we are glad to understand that the promoters are progressing steadily with their scheme; they are, in fact, in the active exercise of their powers of compulsory purchase; and we have been confidently assured that the improvements which will be effected by the operations of this railway alone will give a new and better character to many parts of the city. Danlop-street, for example, is to be opened up in a line with Millar-street on the southern side of Argyle-street, thus forming a direct communication south and north from the river to George-square. But the total destruction of the old university, we predict, will be the greatest improvement which it will effect.

We had something more to say, but we must draw our cursory remarks to a conclusion. If we have not stated all the efforts the Glasgow people have made in the cause of progress and reform, we have at least indicated their direction and described their spirit. It would be easy to find faults; and on some future occasion, perhaps, we may return to the subject, more with the view of pointing out blemishes on their social organism than our present purpose comprehends. At the same time it is not our way to inquire too curiously when we find a community so alive to their true position, and so earnest in their endeavours to amend it, as the Glasgow people unquestionably are. Our readers will doubtless agree with us in the opinion that this is a great city which is yet destined to achieve still greater things. Its rapid growth, as we have said, is one of the most remarkable phenomena in our history. Nor do we see the least indication of this growth being checked; for if we only look at its present rapid extension eastward and westward along the banks of the Clyde, where the roads are dotted with villas as thick as those of Hampstead or Highgate, it is difficult to resist the conclusion that the boundaries of Glasgow will soon spread from Barcherglen to Renfrew on the one hand, and from Bothwell to Dumbarton on the other.

EXCURSIONS OF WORKING MEN TO PARIS.

At the end of the ensuing week, many hundreds, or perhaps thousands, of English excursionists will cross the Channel, some of them under the leading of speculators, and others under that of individuals actuated by the thoroughly commendable desire of securing for their countrymen some of the benefits which may be derived from observation of what is new and curious in mechanism or science, or tasteful in art, or the no less commendable aim of improving the relations between the one nation and the other. During White-tide there will probably be more Englishmen in Paris than there have ever been before at one time; and weak by week, to the close of the Exhibition, visitors will be going over singly, and in batches, to swell for a while the numbers of what M. John Lemoine has chosen to call *la colonie Anglaise*, and to contribute by their demeanour,—in default of other evidence, which perhaps might be taken as largely in their favour,—to future pictures of the English painted by the French.

The bulk of these visitors will not remain long enough for appreciation of what is great and exemplary in the French people, or for the getting rid of that besetting conviction of John Bullism, which now imperils the position of this country as to manufactures even, to wit that to the Briton is vouchsafed a monopoly of power in whatever he may choose to undertake. Nay, more, the majority may return, like the greater number of English visitors in ordinary years, bewildered by what they have seen, not instructed, and having gained new prejudices rather than lost the old, whilst having helped to increase that misconception of our nation which is common in France.

A serious duty, therefore, devolves upon, or is undertaken by, those organizers of excursions who have been actuated by views not of personal benefit, or of the provision of some amount of mere relaxation for others. That duty is to point out the way in which benefits may be derived, and the least amount of the misconception be left in the minds of the people visited. There are to nations, worse consequences from isolation and from difference of language, than those comprised in the withdrawal (which is but temporary) of a branch of trade or manufacture. There may be prejudices, as between England and France, dating from half a century back, and coming to expression sometimes of ridicule, and sometimes of contempt, which are attributable to nothing but the difference of language, the existence of two-and-twenty miles of separating water, and to certain defects on our own side; and these may be of the nature of causes from which enmities arise.

To the Englishman who has never been on the Continent, and who speaks only English-French, there can be no sensation more remarkable than that of his first landing at Dieppe. The coast looks so little different from that which you left, that you are passing into harbour before you detect by the great crucifixes that look down upon you from the quays on each side, that you are arriving in a country where much will be new. From that moment you alternate between bewilderment at the difference from what you had been accustomed to, of things that you expected would be the same, and a similar feeling at the similarity of what you had thought must be different because foreign. The language, as learnt, helps very little; it even contributes to the embarrassment; whilst the politeness, and quickness of the people, together, prevent perception by the average Englishman that he is wrongly understood when he is so.

Should there be a serious misunderstanding presenting itself, as existent, to the mind of the Englishman, he, according to the united testimony of Frenchmen, drives his fist through it; which manner of proceeding, indeed, in his way through the world, is habitual with him, and which he is rather proud of. There is nothing that the French feel more certain of than this practice of pugilism, as national with us, unless it be what they equally ascribe to us, a taste for strong liquors, if not habitual drunkenness. We could multiply evidence in proof of the existence of these impressions. They are marked in the acted dramas, and in the romances of the feuilletons. Who that reads of special trains conveying some of the upper ten thousand to a fight, can wonder at the impressions? As regards the drinking-habit, this very week, in an exciting tale by M. Pouson du Terrail, the

catastrophe of the story is made to turn on the fact that the driver of a four-in-hand coach, being an Englishman, was drunk. It is of no use to argue with ourselves that these notions are absurdities. We should look into the foundation for them in facts as they were, and of which the record or recollection exists with the French, if not also in facts as they are, that is, as presented by many English visitors to the Continent.

What is most common and offensive, however, to the French, irrespective of a want of courtesy generally, is the habit of *pushing* through crowds. The Frenchman is the real observer of the English vulgar maxim, "First come: first served,"—as witness the regulations for getting seats in the omnibuses, at the stopping-places, and the arrangements to prevent crowding at the doors of the theatres. But it is in the demeanour when walking the streets, that the greatest contrast is to be observed between the Frenchman and the Englishman. With the former, the slightest obstruction accidentally offered to a passenger is followed by a "Pardon, Monsieur!" A similar courtesy is observed in passing you as you are seated in the pit of a theatre, or on the top of an omnibus, or even in passing on the stairs. One French writer, having described the throng of Fleet-street, says of the Englishman that if the latter knocks down some poor old woman, it is of no matter to him; has he not to get to his appointment in the City? Again, in France, supposing you to be stopped in your route by some one asking his way, the question would be put with an apology for stopping you, and the information received with many thanks. Here, in London, you may be arrested in the Strand, at a moment when you have not a minute to spare, and as if the inquirer had had the right to stop you; and when you reply, directing to Waterloo Bridge, he who made use of you, and to your cost, will depart without a word of thanks. It is this sort of rudeness that the French cannot understand, and that justifies the observation, which we quote from the *Pall Mall Gazette*, that "we are the least well-bred of all the great European nations." There is no particular difference between classes, in England, in the matter referred to: the well-dressed man and the workman will be equally un courteous; whilst in France there are no individuals more polite than the working-men. Surely, the consideration for others is no more than observance of the Christian principle.

The French find us so strangely wanting in what seems to them essential; and they have met with so many rebuffs when attempting to show kindness, that they give up effort to understand us.

The Frenchman is supposed to take off, or at least to touch, his hat on entering a shop, a restaurant or *café*, or an omnibus. Some two or three years ago, it was noticed in the Paris papers that frequenters of some of the very crowded *cafés* of the Boulevard Montmartre were omitting the courtesy, especially necessary to the lady of the *comptoir*. The observation, we recollect, was that English manners were being introduced. The Englishman in Paris will find himself none the less comfortable if he never omit taking off his hat to the presiding goddess, instead of merely touching the hat. Generally, a simple observance of deference to the feelings of others will help to make his stay in France more agreeable than otherwise it might be; and besides his avoidance of being disliked, or only tolerated, the compliment will be paid, usually in such cases with the French, of saying that he is not like an Englishman.

We would address these observations to no particular class. But we may mention that the writer of this, happening to be in Paris in 1861, when English working-men's excursions were commencing under the auspices of Mr. Layard, the late Sir Joseph Paxton, and others, saw enough to induce him to speak now as above. The march of a file of broad-shouldered working-men, perhaps hawking from the northern counties, or across the Tweed, along the boulevard or the Rue de Rivoli, is like to nothing but the passage of a sixty-pound shot through the crowd. If the young Englishman (and his sister) must walk at a quick pace, he must recollect that a Frenchman in the street does not expect to be even *troubled* by another pedestrian, at least without apology.

It would be so very easy to convert the contemplated visits of working-men into a means of cementing the relations between the two countries, that we trust the effort will be made, com-

mencing with next week. There are several organizations, including that of the Society of Arts, and that of the Committee which has its present quarters in the Strand, at the offices of the Working Men's Club and Institute Union. Of this latter organization, which is presided over by Mr. Layard, Mr. Hodgson Pratt has been the chief instrument; and though the French Government have come forward nobly, promising the same lodging-accommodation as is afforded to French workmen, Mr. Pratt is we believe at this moment, or pending the formation of a guarantee-fund, personally responsible for the cost of the accommodation, or for a total sum that would amount, should the expected number of 150 excursionists per week not present themselves, to many hundreds of pounds. It is to be regretted that the organization was not put more prominently forward as that of the Working Men's Club and Institute Union, of which it is really one of many useful offshoots. The best arrangements, however, otherwise, have been made.

The chief inducement with many, for the visit to Paris, will be mere relaxation, obtained at a cheap rate; but we look forward to more important results. Far from the truth being, according to Pope, that—

"Not to go back is something to advance,"

the line should rather be,—

"Not to advance is something to go back."

The world is everywhere advancing; and when we reported some two years ago that the agents of the works at Creusot, in France, were offering to English firms foreign manufactured iron and machinery at less than English prices, and castings that, in consequence of strikes and of some want of appliances, could not be supplied by our founders, we were not prepared for the testimony that has been given lately to the continuance of such a state of affairs. A country that isolates itself, and that rejects such educational systems as are bearing fruit in science and manufactures in France, and in Austria, as well as other chief countries of Europe, must be left in the rear; and all the dinning of the jargon that we "hold our own" will not alter the sequence of effects. We say nothing now of what is to be learned in the matter of decoration.

It imports both the "heads" and the "hands" of English manufacturing establishments to take note of what there is in Paris just now, and to be prepared with programmes of inquiry, as after the manner of one adopted by a society at Verriers, in Belgium, and quoted by the *Engineer* in an article entitled, "How to Extract the full Value from the Paris Exhibition." Mr. Pratt's committee propose offering prizes for reports; and we trust that in this particular, as every other, the efforts may meet with success.

ARCHITECTURE: ROYAL ACADEMY EXHIBITION.

THE place of honour, so to speak, is given to Mr. E. M. Barry's design for the National Gallery (897, 898), of which we published an engraving and particulars in our last. Other of the principal designs exhibited have also already appeared in our pages, and are known to our readers; such as the "Quadrangle of the New Exchange at Liverpool" (896), T. H. Wyatt; "Design for the Law Courts," W. Burges (899); "Design for International College, Spring College," Norton & Massey (875); "The Royal Albert Hall of Arts and Sciences" (905), H. Y. D. Scott; and others. Mr. Penrose exhibits a "View of his Design for the National Gallery," which places his intention in a better light than some of the drawings he sent in competition.

873, "Shephalbury, near Stevenage," recently erected for Mr. Urwin Heathcote, from the designs of T. R. Smith, is a red brick and stone house in Hampton Court style, suggesting comfort and respectability. Mr. T. R. Smith exhibits two other very good country houses, "Stancliffe, near Matlock" (907), of which he has views in the Architectural Exhibition, Conduit-street, as mentioned by us recently; and "Blythwood, near Taplow," now in course of erection for Mr. George Hanbury. This, also, is of red brick and stone.

881 is a "View of Longmead, Bishopstoke, Hants," the seat of Mr. A. Barton, G. E. Street, a substantial-looking building of red brick and stone. It has for chief features one handsome bow, the stone window-heads displaying tracery,

and string-courses with inscriptions in them. Mr. Street also exhibits his "Design for North Porch of the proposed new Nave of Bristol Cathedral," and which seems in the drawing a little mixed up with the battresses. It includes sculpture in a panel above the doorway, and a figure on each side of it.

883, "Interior of the new Church," now building at Sinton Veny, near Warminster, from Col. Everett, like all Mr. Pearson's designs, has a good serviceable common-sense look about it that satisfies the understanding. The interior stonework is shown as colored.

886, "Interior of the Church of St. Andrew, Camberwell," B. Keeling; and 887, "Interior of St. Lawrence, Norwich," as proposed to be restored by F. Wallen, both show a large amount of polychromy.

Dromore Castle, Co. Limerick, 888, to be built for the Earl of Limerick, E. Godwin & Crisp, is Irish-castellated in style, and well suited to its position on the hill-side, out of which it seems naturally to grow.

893, Drawing of "Mansion," proposed to be erected at Sidney, for Sir Daniel Cooper, H. M. Burton, is much injured by an outrageous sky.

The Junior Carlton Club-house, now erecting in Pall-mall, from the designs of D. Brandon (895), will add another Anglo-Italian palace to Pall-mall. It has a second front in St. James's-square.

900, "The Original Design for Holy Cross Church, Liverpool," E. W. Pugin, shows a handsome west window. The effect of the church is injured by the connected buildings, which are awkwardly crowded on to it. Mr. Pugin also exhibits a view of his fine Church of Notre Dame de Dadezele, near Courtrai, one of the best he has done.

"The Water Tower erected at Castle Ashby, Northamptonshire," for the Marquis of Northampton, from designs by M. D. Wyatt (901), has a parapet of letters, following the character of the well-known residence, and a circular panel filled in with a monogram. The tower exhibits a certain largeness of parts observable in other of Mr. M. D. Wyatt's designs.

903, "Warehouse proposed to be erected near Deptford," for Messrs. Wilkins, J. P. Jones, is an Italian-Gothic building of some pretensions, but scarcely suggests its purpose.

The design for the "Farrington-street Bridge," in the Holborn Valley, W. Haywood (906), includes iron arches on piers of vari-coloured granites. It promises to be a more successful structure of the kind than has yet been put up in London.

"The Grand Hotel, Scarborough" (913), C. Broderick, is nine stories in height on one side, and six on the other, where it adjoins the pier. The style is Italian; the roof-line somewhat confused.

OUR FUTURE ARCHITECTURE.

IT is now some twenty-two years since our esteemed friend Professor Kerr amused and delighted the greater part of the architectural profession by the publication of the "New-leaf Discourses."* You will observe that I confine myself to the greater part, for it must be confessed that one portion of the profession was neither amused nor delighted. The reason was very obvious. Professor, then Mr. Kerr, had the heresy to assert that Architecture was not mere construction, archaeology, or knowledge of Greek, Roman, or modern detail; but was emphatically a fine art, and a very fine art indeed. At the present day the learned professor would have been understood properly, but it was different in 1845. Then some people could by no means understand that a man might have all the modern construction of a house at his fingers' ends, and might take out quantities and do surveys and dilapidations, to say nothing of valuation, and with all this yet not be an architect. Accordingly, Mr. Kerr got some severe rubs, evidently from the elder members of the profession. The papers having been collected and published in a separate form; the subject appears to have dropped.

Yet no subject can be more important to us students, who are now fighting the uphill battle of Fine Art Architecture. To clothe Professor Kerr's thoughts in other words, the various styles are to really beautiful architecture very nearly what languages are to a poem. How seldom do we find a man who can write equally well in two languages. How often in

* Originally published in the *Builder*.

such a case do we not find that one tongue goes to the wall, that some of the words are badly chosen, some of the sentences ungraceful, and some of the expressions sin against the idiom peculiar to the language; and yet an architect is expected to design equally well in the mediæval and pagan styles, which have just as many differences between them as the two languages have. But go a step further, and suppose that we had no fixed vernacular, and we were obliged to express ourselves in broken French or broken German, what sort of things would our poem turn out, in spite of any really poetic thoughts we might possess? Still the comparison holds good. We have no real vernacular in architecture. Neither of the two great styles belongs to our own days. We have to learn them painfully and imperfectly as we should learn languages. At the present time, indeed, we are seeking for an architectural language suited to our times, and we ought not to be disappointed that we do not get it in a single year. But almost every language can be traced back to a parent stock, and so with our new architecture. We have taken many points of departure, and thrown them away, one after another, until it must be confessed that we have got a little confused, and are by no means so advanced in our task as we have a right to expect, considering the pains we have taken.

The last century was consistently working in the traditions of Sir Christopher Wren; when, lo! people took to measuring the Parthenon, and we had accordingly to begin almost anew, only this time with Greek art. Unfortunately, after a few years, people discovered, very unwillingly it is true, that the climate of England was not precisely identical with that of Greece; that the broad surfaces and flat shallow sculpture, however well they might look beneath the sky of Athens, were different things when executed in cement and put up in London. Then we tried our national style, beginning with the latest and worst phase of it. I need scarcely tell you how from Perpendicular we went to Early English, and then to Decorated, always beginning backwards, until at last we came to what is called the Geometrical Decorated, and we were going on, to all appearance very well indeed, until one day Mr. Ruskin published his "Stones of Venice," and then a rush was made for Italian Gothic architecture, the details of which, never very fine, were nearly as unsuitable for our purpose as those of Greek architecture itself. I do not for one moment wish to deny the wonderful massiveness, beauty, and strength of the larger Italian works; on the contrary, I think them deserving of the most careful study, although they are precisely the features most difficult to introduce in these days of leasehold tenures and large fenestration; but the details of Italian-Gothic are worse than useless. For the most part, they are executed in marble, which requires just as different a treatment to stone as stone does to brick; for what do we see? In marble-work the work is generally shallow, and on the surface; for the material is hard. A system of rectangular panels obtained, for marble is generally supplied in thin pieces, and panels are the readiest way of showing off the peculiar colours and veinings. In stone, on the contrary, the members rely on the mouldings, carvings are often deeply undercut, and the buttresses jut out like rocks. But in brick we found them very shallow, and iron tie-rods used to keep opposite walls in their places. The mouldings are also comparatively few, except we go to those countries where the clay, by the application of ornament and superior manipulation, becomes terra cotta. In speaking of brick construction, I have rather more in my mind the private houses in Belgium, than the wonderful churches at Milan.

But to return to my subject. Of late years we have actually taken to tamper with the old details of the styles we employ. We chamfer things that ought never to be chamfered. We try to get an appearance of strength by using forms which were known to our ancestors, but rejected by them as being ugly. Such is the Saxon straight-sided arch—such the foliage where the leaves are square at the end instead of pointed; or we cover our buildings with notches, an ornament most sparingly used in the thirteenth century, and even when employed generally placed at a height. We use marble in juxtaposition with stone, to the infinite injury of the latter. We cusp doorways which are exactly the features that ought not to be cusped and finally we cover our drawings with

such quantities of etchings that we finish by deceiving ourselves as well as our clients.

The last new invention is to use large sash windows, with of course the maximum of glass and the minimum of wood; then to put in a flat stone lintel, and over that a high pointed arch filled in with brickwork. Now a window opening demands some cutting up, if the scale of the building is to be preserved, and as far as I am enabled to judge, nothing is more destructive to the general effect of our modern buildings than those enormous sheets of plate-glass in the windows. A friend of mine once tried to deceive himself in this matter by saying that you have only to suppose all the lattices thrown back, but he was not sufficient of an artist to know that the sheen of the rain, or reflexions of the sky, which are sure more or less to appear in any large pane of glass were sufficient to dispel any illusion of this description.

Doubtless large sheets of glass are occasionally necessary, but why should we not try and diminish the artistic evil by putting the upper part of the window in smaller panes, either of wood, or iron, or of broadish lead.

If we go to Hampton Court, we cannot fail to be struck with the very noble appearance of the window sashes in that part of the palace built by Sir Christopher Wren.

It is, in fact, our modern windows which make our common houses so hideous. A house of Queen Anne's time, although it may not have a bit more ornament than one built twenty years ago, looks ten times more cheerful, for the window-boxings project nearly to the surface of the brickwork, and when painted white, as I said before, impart an air of comfort and cheerfulness to the whole building.

I know that this mode of construction is liable to communicate fire, and is therefore very properly forbidden. Still I think that we might attain a somewhat similar result by other means. What appears to me as most objectionable is the thin frame, surmounted by a segmental arch, and then another immense arch above it. This, in conjunction with a high-pitched roof, some of the gables entirely hipped, and others hipped at the point only, forms, I think, one of the most distressing specimens of modern art: it is both pretentious and ugly.

Now, the question arises, what form is our architecture of the future likely to take? I have, as far as I have been able, advocated two means for its advancement, viz.—a most careful study of early French art, and the study of the human figure.

As to early French art, I believe it to be more suited to the requirements of the present day than any other phase of Mediæval architecture. We live under different conditions to our ancestors. They delighted in small pretty buildings, with delicate details, which would be out of place in our smoky atmosphere. In French art everything is upon a larger scale, and it is usually suited for our large warehouses and for high houses, such as are being soon broadcast in old London. It is a curious thing, but there is little doubt of the London houses in the thirteenth century being very low as compared with those of Paris; for Matthew Paris, describing the visit of Henry III. to St. Louis, represents the English court being amazed at the loftiness of the houses of Paris as compared with those of the English capital.

It would be a work of supererogation for me at the present time to go deeply into the merits of the French architecture of the thirteenth century, and the various reasons for, to a certain degree, preferring it to that left us by our ancestors. I can only say that our whole habits of life and our external circumstances having altered from what they were in those ages, we should use our common sense, and adopt that style of architecture most suited to us, at the same time bringing into use all modern improvements which can actually be proved to be such, and decorating the building with sculpture and painting relating quite as much to our own times as to those gone by; for sculptured buildings are but stone books, and why should the last chapters be left out?

There is a window in Westminster Abbey which illustrates this; it is in the nave aisle, and to the memory of a civil engineer. I pass by its artistic merits or demerits, and come to the iconography; the series of stones begins with the Tower of Babel, and ends with the Menai Bridge. I should state that the latter was pointed out to me as a sort of practical joke on the part of the stained glass designer; but I confess I

see no joke at all in it, the designer only did what has been done in every age of the world, and who knows perhaps the fragile piece of glass may be destined to outlast the iron of the bridge? There are some people who view every application of Mediæval art to modern life as a joke, and, in nine cases out of ten, to be discouraged. They consider Mediæval art as eminently ecclesiastical, and therefore something profoundly serious and to be approached with caution, forgetting that mankind has been very much the same in every age, and that our ancestors joked and laughed just as much as we do. It is true that a very great part of our ancient domestic buildings have perished, and even of those which have been spared by time or man, none possess their original decorations. Consequently these people above mentioned almost refuse to believe in any scheme of secular painting and decoration of the thirteenth century, still less what they consider as the reprehensible interchange of secular and religious subjects; such as the series of Scripture history in the King's Chamber (probably answering to our drawing-room) at Westminster, or the secular series of the Zodiac in ecclesiastical buildings as at Salisbury, &c.

The fact is, that with our ancestors religion was not simply a mere matter of private devotion or of an attendance at church once in seven days: they said their prayers in their churches, and therefore had their churches made as beautiful as they could afford. A great cathedral must have been an encyclopædia of all the knowledge of the time: indeed Mr. Didron tries to prove that this was literally the case with regard to the sculptures of the cathedral of Chartres. It is only by acting in a similar manner that we shall ever progress and have an art of our own, and I am the more disposed to reiterate this upon the present occasion when I have the honour of addressing my younger fellow-students; for, alas! we are all students now, and there are no masters in Israel. Whether there ever will be, must depend upon the zeal and earnestness of purpose with which you take up that banner which is about to fall into your hands. If you do not draw the figure better, if you do not study more deeply, and if you do not take due advantage of the art-discoveries and labours of those who have been a little longer in the profession, it will indeed be a bad thing for our future art.

Some men may do more and some may do less, but every one can do something. Of course a great deal depends upon the circumstances in which you may be placed and over which you may have no control; but I very much doubt whether any circumstances ever hindered the ultimate advance of any one who had a real and lasting love of art.

Various circumstances may hinder various men: thus one may have to work for his living immediately after finishing his apprenticeship; another may marry early, and may have to go to quantities for his livelihood; a third, seeing how very hard is the struggle for an art man, with no connexion, may go into dilapidations, and light and air cases; a fourth may get into practice too early, either through his connexion or through accident; but all may do something to advance our future art and architecture. Of course it cannot be expected that they can do so much as the man who thoroughly devotes himself to it, and who is neither married nor obliged to work for his bare living; but they can do something; they can afford employment to good artists in their buildings; they have their annual holiday, during which they can study more or less, and their more lucrative practice enables them to purchase art for their own houses.

Now during this time the art man, as your President very truly said upon a former occasion, finds that he gets comparatively nothing to do, and indeed he may think himself comparatively lucky if he does when he is tolerably past the middle of his life. But these fellow years are exactly those which are the most valuable to him; it is in them that he applies the knowledge gained by wandering to and fro over the surface of the earth. That knowledge may have but a small area to work upon; it may, perhaps, be a piece of goldsmith's work or ivory carving, for which he is almost ashamed to charge a fee at all, but which, with the design and the constant superintendence of the workman, takes him as much time as would suffice to enable his late fellow-student, who does the light and air, to make much gold; but then, on his side, he will have added another

new and beautiful thing to the world, and he will have done something towards solving the problem of our future art.

I hope you will not suppose for one moment that I wish to detract from the merits of the gentleman who goes in for quantities, light and air, and dilapidations; on the contrary, the world could not do without him; and there is no doubt but that he does the most useful as well as the most lucrative part of the profession; and if he has not the opportunity of becoming an artist, it is simply an application of the great law of compensation, which ordains that one man shall not have everything.

I confess that the most, by far the most, interesting series of drawings in this room are those of the sketching class. I should have liked them to have been more numerous, and to have come down to a later date. When one is a pupil, one often marches quickly, so that the drawing of 1865 may give a very different idea of a man's progress to what a drawing a year later might give. The only want in the sketching class appears to me that, when done, the sketches should be sent to some competent person to give a written opinion upon them, in the same way that a barrister might be asked to give an opinion; that that opinion should be paid for in the same manner that a barrister's opinion would be paid for, for this is the only way by which advice is ever attended to. Before leaving these sketches I must not omit one of a design for the polychromy of a chancel arch, where the figures are very well done indeed, and where the colour is exceedingly good.

In conclusion, let me ask you to devote some time to the drawings of Mr. Thompson, of Glasgow. They represent buildings in Greek architecture, but certainly the best modern Greek architecture it has ever been my lot to see. Whether some of the edifices are exactly suited to the climate of Edinburgh is another question; but the most curious thing is that many of them, by a very few touches, could be most easily translated into thirteenth century French art. There is one little drawing of a villa that might almost be taken for a copy of some little fortalice in the south of France; in fact, there are actually two rows of these features, called machicolations, lately so rabidly proscribed by writers.

Gentlemen, I am sure that our art future will be safe in your hands; and although it is neither to be expected, or even desired, that all of you should devote yourselves exclusively to the fine art branch of the profession, as I said before, you can all do something towards our future architecture, and Mr. Thompson's excellent designs suggest to me a question which we might all ask ourselves whenever we turn out a design, viz., what would the Greeks have thought of it? If answered unsatisfactorily, or in the negative, would it not be better for us to try again?

W. BURGESS.

THE LATE EDWARD HODGES BAILY, R.A., SCULPTOR.

OUR English school of poetic sculpture has newly lost one of its most distinguished Academicians (Royal Academicians, if you will). The distinguished pupil of the greatest of English sculptors (John Flaxman), Baily, the sculptor of the twin half-recumbent figures of "Eve" (Milton's "Eve" at the fountain undefined), died on the 22nd ult., in his eightieth year.

Mr. Baily (Thomas Banks would have more than admired his "Eve") was born in the city of Bristol in the year 1788; worked under Messrs. Rundell & Bridge as a modeller for soup-tureens and teapots and claret-jugs, and such like Benvenuto Cellini and Flaxman work; and from a designer, modeller, worker in hot metal, and chaser, rose to the very head of his profession. Watson and Joseph Durham worked under his tuition as he had worked (how much to be envied!) under Flaxman.

It was the lot of Mr. Baily to be outdone by his master, and his worse lot to find a rival and outrunner in the race of successful sculpture in Francis Chantrey. Messrs. Rundell & Bridge wanted Cellini work for the white damask and bright mahogany and polished marble of George IV. Mr. Baily filled Flaxman's place with them, not up by any means to his master's mark, but ably. Some of Mr. Baily's work is more than poetic; witness his "Eve at the Fountain," his "Eve listening to her own Voice," both marble inspirations softened into life.

We have before us while we write a slightly-tinted fac-simile in plaster (very choice in its way) of Mr. Baily's first design for his "Eve at the Fountain," and very beautiful it is; to our thinking (and skilled judges in the art of Phidias and Flaxman are with us), less *lackadaisical* than the accepted "Eve" of Messrs. Rundell & Bridge, the great Ludgate goldsmiths and silversmiths, and patrons of John Flaxman, Mr. Baily's master. The story of Mr. Baily's "Eve" forms a pleasing episode in the history of English sculpture. Oddly enough, it was made for the handle of the lid or cover of a City soup-tureen,—perhaps for the Licensed Victuallers. Eve, in all her beauty, surmounting a tureen redolent with real turtle,—fit food for lips and mind.

A bas-relief to the memory of Mr. Draper, in Bristol Cathedral (more beautiful in point of execution with the chisel than in its design), called his attention to the art of sculpture, and made him irrevocably a sculptor. He had modelled previously in wax, but now took to clay and plaster, and with such success and belief in his own powers, that he set off for London, and sought, like others before and after him, the approbation of Flaxman. The great sculptor liked what he saw, and gave more than a word of encouragement to the young enthusiast from Bristol, for he found employment for him in his studio, No. 7, Buckingham-street, Fitzroy-square, London; a classic spot, though we, ah! strive to see over it, had to carry to it, in enthusiasm and associations, what the bricks and mortar on the ground could not, unassisted, awaken within us.

Mr. Baily was with Flaxman for seven years and a-half, and availed himself of many of the advantages of working with so great a man. Flaxman, it is said, foresaw his future excellence; and free, as he was, from the petty jealousies of genius, both aided and recommended the sculptor of "Eve."

Mr. Baily's admirers will like to know his London residences. In 1823 he was living at No. 75, Dean-street, Soho (Lawrence and Harlow had lived in the same street before him); thence he went to No. 8, Percy-street, Rathbone-place, Oxford-street (or rather Tottenham-court-road); from No. 8 he removed to No. 10 in the same street, where Dewint (the water-colour artist) and Hilton, his brother-in-law and historical painter, had lived before. Another London home,—or studio of Mr. Baily's,—was No. 11, York-place, Portman-square. Here, however, the world was not with him.

Mr. Baily exhibited at the Royal Academy, in 1839, a colossal statue of Thomas Telford, the engineer; and in 1840, a statue of that great encourager of art in England, the Earl of Egremont,—part of a monument to his lordship's memory in the church of Petworth, in Sussex.

His portrait-statues (luckily few in number) did not add to his reputation.

In 1841 his "Eve listening to her Voice" found him additional admirers; some, indeed,—and judges, too, from whom it were seldom safe to differ,—preferring it to his "Eve at the Fountain." This fine work, or a duplicate of it, was bought by the late Mr. Bicknell, of Hernehill, who always bought with taste and liberality. At Mr. Bicknell's sale, in 1863, it sold for 230 guineas—little enough.

Portrait-busts, such as Chantrey reigned unrivalled in, were little understood by Mr. Baily. We can call to mind but one of his really good, and that is very excellent,—the head of Douglas Jerrold. It is very fine in conception and execution, and true to the man and to the wit. The hair is excellently treated—in the antique manner—and true to the expressive character of Jerrold's head. Dr. Diamond has made some fine photographs from it.

In the year 1847 Mr. Baily exhibited at the Royal Academy of Arts a plaster statue of Chief Justice Tindal. The statue caused a great talk in the realms of art. It was an old patched-up model of the elder Bacon,—Sir William Blackstone's statue made to do new duty. Some of our readers may remember the circumstance, and the stir that the affair made in and out of sculptors' studios.

We may here catalogue, without classifying, some of Mr. Baily's other works. Lord Holland's large monument for the nave of Westminster Abbey—ambitions, with large, allegorical figures, and a bust of his lordship. The Nelson statue on the column in Trafalgar-square is by Mr. Baily; but who can say what it is like? Does distance lend enchantment to the view?

A statue (1843) of Dr. Wood, Master of St. John's College, Cambridge; a marble statue of Psyche; and a graceful little statue of Helena unveiling herself to Paris; the model (1844) of a colossal statue of Mr. Dawson, Dean of St. Patrick's, and the model of a small statue of Paris. The former work was executed in marble and erected in St. Patrick's, Dublin.

Mr. Baily was elected a Royal Academician on the 12th of February, 1820, in the room of Benjamin West, the President of the Academy.

In the *Art Journal* may be found a good likeness of Mr. Baily, "engraved by J. Smyth from a drawing by T. Bridgeford."

ON ENGLISH PORCELAIN.

THE course of lectures on "Pottery and Porcelain," by Mr. W. Chaffers, at the Society of Arts, was brought to a close last week.

The subject of Mr. Chaffers's concluding lecture was "English Porcelain." He began by observing that the invention of the manufacture of porcelain in this country was much earlier than had been generally supposed; for a patent was taken out by John Dwight, of Fulham, in 1671, while that of Chicaquean, of St. Cloud, in France, was not granted until 1702, nearly thirty years afterwards. The first discovery in that country was accorded to Louis Poterat, of Rouen, who obtained letters patent in 1673, but the ware never succeeded, and only a very imperfect description of china was produced: Dwight's porcelain was therefore made two years previously, and the title of his patent is this:—"For the mystery of transparent earthenware commonly known by the name of porcelain or China." The fact is corroborated by Dr. Plot, in his "History of Oxfordshire," written in 1677, who says,—"*He*" (Dwight) "hath found ways to make an earth white and transparent as porcellane, and not distinguishable from it by the eye, or by experiments that have been purposely made to try wherein they disagree." The principal test of porcelain being its transparency, there can be no doubt about the nature of the ware here spoken of. A specimen of his porcelain, of about 1735, has recently been discovered; it is a bust of George II., of small life-size, in porcelain, which, from the peculiar modelling and the similarity to Dwight's busts in stoneware, leaves no doubt of its origin. It is in the possession of Mr. Reynolds. The manufactory at Stratford-le-Bow was established about 1730. Thomas Frye, an eminent painter, appears to have been instrumental in bringing the china to that perfection for which it was celebrated. In 1763 the works passed into the hands of Messrs. Crowther & Weatherby. In an interesting document, accompanying a Bow china bowl, which was presented to the British Museum, by the painter himself, we are told that they employed 300 persons,—about 90 painters, and 200 turners, &c., all under one roof. In 1775 the Bow works were sold to Mr. Duesbury, and all the moulds and implements transferred to Derby. The celebrated manufactory at Chelsea was established about the same time as Bow, and the early productions are frequently mistaken the one for the other; but, fortunately, the finer pieces are usually marked with an anchor in red or gold. The period of its greatest excellence was from 1750 to 1765. It has been thought that Venetian workmen were first engaged here, from the great similarity of the two wares, both in painting and gilding, added to which the mark upon both is an anchor. This manufactory was set on foot by Mons. Spremont, a Frenchman, and he acquired a great fortune. The beautiful vases in the French style of gresbleu and morone, with beautiful paintings, are well known, and are at the present day much appreciated, the prices they command being as high as are paid for the Sevres porcelain. These works were also bought by Mr. Duesbury, of Derby, in 1769, who continued them at Chelsea until 1784. The china made by him was called Derby Chelsea, and is known by the mark of a D, crossed by an anchor. Although the Derby works originated as early as 1750, it does not appear that any china of a high character was produced, but principally services and small chimney ornaments; and it was not until 1769, on the purchase of the Chelsea works, and a few years after of those at Bow, that they rose to any importance. In fact, with the best workmen and painters of those great establishments, and all the moulds and models from them, the

Derby manufactory may be considered as the Bow and Chelsea manufactories continued in another locality. Some beautiful examples of porcelain in the Chinese style were produced, and they seem also to have copied their marks, as well as their style of decoration; but their ordinary trade mark was at first a D crossed by an anchor, called Derby-Chelsea, and after royal patronage was accorded, in 1760, it was changed to a D surmounted by a crown. This was called Crown Derby, and was used by the successor, Mr. Bloor, down to 1830. The works ceased in 1848. The next porcelain manufactory of importance was Worcester, established chiefly through the exertions of Dr. Wall, who formed a company in 1751. The services made here were held in much estimation, and, although produced at a cheaper rate than Bow or Chelsea china, were better for use, and not so subject to crack with hot water. An important means of decorating porcelain was introduced here in 1759, by transferring impressions from engraved copper plates on to the surface of the ware. It was adopted almost simultaneously with Liverpool, the invention being claimed by both, and specimens of these productions are found bearing the names of Sadler & Green, of Liverpool, and Richard Holdship, of Worcester, dated in the same year. Bat-printing succeeded the printing from copper plates on paper; the impression being taken from a copper plate by a piece of glue (called a glue-bat), which received the pattern on its surface in oil, and being pressed on to the surface of the ware, the design was transferred. It was then dusted with colour and baked. The porcelain made from 1760 to 1780 was of a superior quality, and the colours used on decorative pieces approached very closely to those of Chelsea. In 1783 the manufactory was purchased by Mr. Flight, afterwards Flight & Barr, and many clever artists were engaged. It remained with them and their successors until 1840, when the two principal manufactories of Worcester, Messrs. Flight & Barr, and the Messrs. Chamberlain, were amalgamated, the concern taking the name of the latter. Chamberlain's works were established in 1786, and acquired a great reputation, being especially patronized by the Prince Regent, for whom they made a service which cost 4,000l. Another full service, for the East India Company at Madras, was supplied at a still higher price. The taste for gilding and bright colours caused this great increase of price, for it appears that nearly 1,000l. per annum were paid by the firm for gold alone. Coughley, near Brossley, Shropshire, was celebrated for porcelain. Mr. Turner, an engraver, from Worcester porcelain manufactory, made great advances, especially in services for the table. He invented a beautiful blue, which was printed on the ware in Chinese designs. The well-known "willow pattern" was produced here in 1780, which, even at the present day, is in great demand. This was the first blue printed table service made in England. The porcelain manufactory of Nantgarw was established by a Mr. Billingsley, in 1813. He had some time before produced his beautiful transparent ware at Pinxton; but its expensive character prevented it from becoming successful, and it was abandoned; he, however, revived it at Nantgarw, and it was so much admired that Mr. Dillwyn, of Swansea, made arrangements with Billingsley to superintend the production of it there also. Nearly all the ware made at Nantgarw was purchased in the white by Mortlock, a china-seller of London, and decorated in the metropolis. The favourite patterns at both the above-named places were pink roses heightened with gold. Mr. Rose, of Coalport, was a celebrated potter, and he established himself there about 1780. He was not, however, contented with such limited operations, but as the Coughley, the Swansea, and the Nantgarw works were successively relinquished by their owners, he became the purchaser, and incorporated them with his own, retaining Billingsley as director of his manufactory. The patterns known as the "worm sprig," the "Tournay sprig," the old "willow pattern," and the "blue dragon," remained staple articles. His decorative porcelain he marked "Coalbrookdale," which was another branch of his Coalport works. William Cookworthy, the inventor of hard porcelain, commenced his experiments as early as 1758, but it was not until 1768 that he considered it fully developed, and in that year, in conjunction with Lord Camelford, he took out a patent and commenced operations at Plymouth. The materials employed were called grown stone and grown clay,

which answered to the ingredients of the Chinese porcelain, *kaolin* and *petuntse*. The difficulties found in proportioning them properly, so as to give exactly the necessary degree of vitrification and no more, and other niceties with regard to the manipulation, discouraged them in their proceeding in the concern, and after expending on it between two and three thousand pounds, they sold their interest in the patent to Mr. Champion, of Bristol. The works were, however, carried on for nearly six years, and a considerable amount of ware was produced. Cookworthy engaged the services of a clever French artist, who produced the articles modelled in the form of shells and rook work, which became great favourites for the table. In 1774, the patent was sold and transferred to Mr. Richard Champion, of Bristol. He made some beautiful ware, but the great outlay prevented it being remunerative, and in three or four years he was compelled to give up the manufacture, and sold the patent to a company of Staffordshire potters. Various other porcelain manufactories were described; among these the New Hall China Works at Shelton, the first of the kind in Staffordshire. They had purchased Champion's patent, intending to make hard porcelain, but in a short time this was abandoned, and they made the usual English soft paste china, in which a great proportion of bone-dust was mixed. The important china works at Stoke-upon-Trent originated with Josiah Spode in 1780. Great improvements were made by him and his sons in the composition of porcelain, and they introduced a fine and durable material called iron stone china, which was largely exported to France, to the great injury of the French trade. The Prince of Wales visited the works in 1806, and he appointed Spode potter to his Royal Highness. About 1827, Messrs. Copeland & Garrett succeeded, the works being still carried on by Mr. Alderman Copeland, and the choice pieces which emanate from this establishment vie with the famed *pâte tendre* of old Sèvres, while the jewels which glitter upon it remind us of the lines in Shakespeare about gilding refined gold or painting the lily. On others the exquisite paintings are veritable works of art, and the beautiful bisque figures are unapproachable. Mr. Thomas Minton established works at Stoke-upon-Trent in 1790. He made handsome fortune. He died in 1837, and was succeeded by his son, Mr. Herbert Minton, who attained great celebrity as a potter, and brought the ware generally to great perfection. He revived the manufacture of encaustic tiles, and by employing the most expert artists, the most skilful chemists, and sparing no expense in his numerous experiments to improve the colours, the body of the ware, and the decorations, he stood unrivalled in his art. His successors, Messrs. Michael Dainton Hollins and Colin Minton Campbell, have pursued the same course, and with untiring energy and zeal seconded all his efforts. Mr. Chaffers remarked that England has indeed reason to be proud of the rival potters, who have furnished forth their specimens of porcelain to the Paris Exhibition of 1867. Only two have exhibited, but the names of Minton & Copeland have added lustre to the English potters' art, and have borne away the palm of victory. Mr. Chaffers had on the table some fine specimens of the beautiful china produced at Rockingham by the Messrs. Bramell, from the year 1820, under the protection of Earl Fitzwilliam, the owner of the estate at Swinton. The china was of a superior description, and the painting and decoration generally of the highest order. The manufactory was discontinued in 1840. The important manufactory of porcelain at Lowestoft was established about 1756, and is remarkable that the recollection of its existence, and the productions which emanated from it, should have been lost sight of and gradually died away, although it was in active work for nearly fifty years, and only ceased in 1802. But although this is the case at a distance from the locality, it is well remembered by the older inhabitants of Lowestoft, and the houses in the vicinity are teeming with its china. In fact, it is to be found all over England, but is usually, for want of a truer name, called Oriental, being a sort of hybrid ware, which nobody who knew what real Chinese porcelain is could for a moment mistake. The painting on the ware, too, is undoubtedly English, and the very touches of the artists can be identified. Its greatest prosperity was from 1770 to 1800. The question about hard paste being made at Lowestoft is

placed beyond dispute; it was probably introduced about 1775, after Champion's failure. There are several persons now living who can testify to the fact that no Oriental porcelain ever came into the factory to be decorated; yet this is the opinion of many who have not duly considered the matter, and who imagine that what is now called Lowestoft was actually Oriental china, painted only at that place. Mr. Chaffers referred those of his hearers who wished to judge for themselves to a large collection of Lowestoft china, which he had obtained from the gentry of the vicinity, and which was now exhibited in the South Kensington Museum.

FROM MELBOURNE, VICTORIA.

At a meeting of gentlemen of the Melbourne press, held on the 23rd of March, it was decided to appropriate the Press Brooke Memorial Fund towards the purchase of a marble bust of the late tragedian, to be placed in the Public Library.

At a meeting of the Freemasons, held on the 15th, a committee was appointed to take immediate steps to erect the necessary buildings in connexion with the Freemasons' charitable institutions, on the site granted by the Government.

A tabulated return of the number of ratepayers in the city of Melbourne, the town of Geelong, and in all the boroughs, shires, and road districts in the colony of Victoria, together with the classification of electors for the provinces of the colony, has been laid on the table of the Assembly by the Chief Secretary. The number of ratepayers is 125,288, classified as follows:—Persons rated under 25l., 89,345; from 25l. and under 50l., 19,491; from 50l. and under 100l., 10,511; from 100l. and under 150l., 3,316; from 150l. and under 200l., 1,323; from 200l. and under 300l., 1,082; from 300l. and upwards, 1,327. The number of electors in the provinces are: Central, 3,276; South, 1,627; South-western, 2,064; Western, 842; North-western, 2,767; Eastern, 1,026; making a total of 11,602 electors.

ARCHITECTURAL MEDALS, PARIS EXHIBITION.

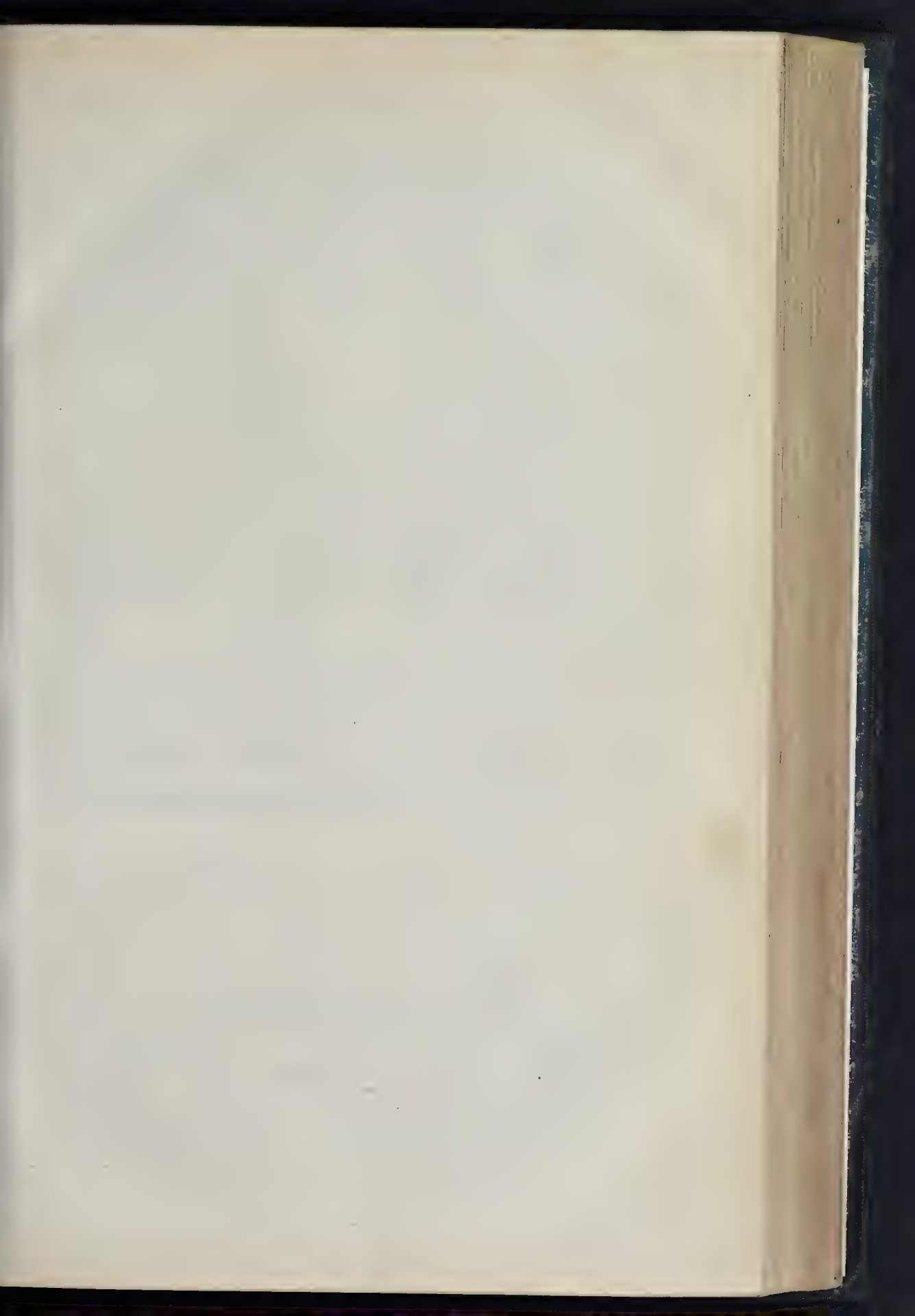
ALTHOUGH no official report has yet been made, it is currently stated that in architecture, a grand medal is awarded to Mr. Waterhouse; a medal of the first class to the late Captain Fowke; a second-class medal to Mr. Lynn; and one of the third class to Mr. Ed. Barry.

TOMB: MIDDLETON CHENEY, OXON.

THIS tomb, of which we give a plan and elevation, has recently been erected in the churchyard at Middleton Cheney, Oxon, by Miss Horton, the Lady of the Manor, in memory of her father (late Lord of the Manor) and her brothers and sisters. Beneath the tomb is the family vault, divided into five compartments, for the reception of coffins, and entered from the enclosure. The superstructure is of Portland stone, rising from a tooled red granite plinth. The pillars and angle shafts are of red granite polished. Beneath the canopy is a cooped stone, the sides and ends of which are filled with the inscription; panels of white marble, having in the centre a marble shield, bearing the family arms. The roof of the tomb is groined, and divided by ribs springing from a string course above the capitals of shafts. The roof is terminated at each end externally, by a floriated cross, of which the sides only are seen in this elevation.

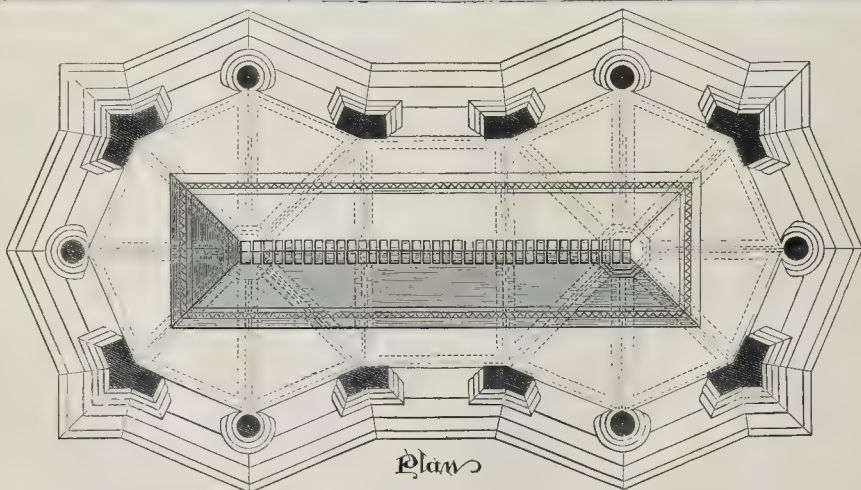
The length of the tomb at the base is 11 ft. 9 in.; the height to the top of ridge-cresting, 10 ft. The whole is surrounded by an ornamental wrought-iron railing upon a stone curb 3 ft. distant from the plinth, the space between this and the curb being laid with Portland slabs, slightly inclined outwards.

The work was carried out by Mr. Claridge, builder, of Banbury, with the assistance of Mr. Thomas Earpe, of Lambeth, who executed the ornamental stone and marble work, and Messrs. Thomason, of Birmingham, who supplied the wrought-iron railing, from the designs and under the direction of Mr. Wm. Wilkinson, architect.





J. W. H. & Co., Ltd.



Plan

TOMB, MIDDLETON CHENEY, OXON.—MR. W. WILKINSON, ARCHITECT.



THE TOOWOOMBA RAILWAY STATION, QUEENSLAND.—DESIGNED BY MESSRS. J. & R. FISHER.

STATION BUILDINGS OF QUEENSLAND RAILWAYS.

THESE buildings have been designed to meet the requirements of a country where materials are difficult to be obtained, and where facility of erection is of importance. Our engraving illustrates the Toowoomba Station. The entire building has been planned in cubes of 15 ft., having the columns, standards, girders, &c., 15 ft. apart, with a principal over each. The external walls consist of cast-iron H standards, vertical and horizontal wrought-iron girders, with horizontal wood transoms, to which are attached the outside corrugated iron and the inside wood lining, leaving a space between for a current of air.

Over all the doors and windows, and in the ceilings, are placed ventilating panels of perforated zinc. Around the entire building over the ground-floor is a wide verandah, with ornamental balcony-railling, and supported by a lattice-girder, carried on light cast-iron columns. On the upper floor the roof overhangs and forms a verandah, similar to that below, with lattice-girders on columns. These verandahs effectually protect the iron side enclosure from the heat of the sun. There is also a balcony round the inside of the building, giving access to the office and other rooms.

The ground-floor is covered with asphalt. Against the longitudinal girders run the transverse girders, supported by H standards in the centre, and which carry rolled iron joists for the wood flooring and ceiling joists. The roofs are constructed of wrought-iron principals, with cast-iron standards, supporting the louvres, the blades of which are of galvanised iron. In the ceilings of the upper floor are ventilating panels to enable the cool air to pass through the louvres into the rooms without creating a draught.

The roofs are covered with Braby's Vieille Montagne zinc. The side enclosure is of galvanised iron. Surmounting the building is an ornamental cast-iron cresting.

The inside partitions are framed of wood, lined both sides with matched and chamfered boarding. All the joiners' work, including doors, windows, "closets," counters, and fittings, is prepared in London, and similar to that of first-class stations in England. The woodwork is Burntized and to be stained and varnished when finished. The building is to be decorated some fifteen years after the manner of the Dublin Exhibition.

The whole is put together in England, so as to save trouble and expense in the colony. The total cost, including all fittings, was 6d. per cubic foot, equal to about 8d. when erected in the colony.

Three of these large terminal stations have been sent, besides second-class stations, workshops, &c., and were designed for Sir C. Fox & Son, as agents of the Queensland Government, by Messrs. J. & R. Fisher, Westminster.

NOTES FROM THE CHAMP DE MARS.*

THE United States' pictures occupy a small portion of space at one end of the Galerie Britannique. As if to show how little self-asserting we "Britishers" are, a large American eagle, with its concomitant of stars and stripes, lords it from above one of the principal portals of our gallery, just as if America were the proud host and England the protected guest; and a modest dark-coloured band, some six inches broad,—noticeable save to those who especially seek it out,—is all the demarcation that attests where the few American pictures terminate, and the many British works commence.

Of these American pictures, some few call for especial notice. Church's "Niagara" from above the falls, is a work that well renders its grandiose subject. If I remember rightly, there were exhibited in London some few years since, three or four larger pictures by the same artist, on this and cognate subjects; and in one, a rainbow was very truthfully and beautifully represented. I cannot say the same for the rainbow in "La Saison Pluvieuse sous les Tropiques;" it is too opaque and too sharply defined, and the whole of the bow should have been compressed into so small a portion of scenery; also, the form of it is shown as half of an ellipse, whereas whatever portion of a rainbow is seen

upon a raincloud, however small or large it may be, it is always a segment of a circle.

It is singular how constantly even the cleverest artists fail in reproducing this most beautiful of Nature's polychromy. It seems to be almost an impossibility to depict satisfactorily the definite yet impalpable "airy nothing" that glides from spot to spot as the gazer moves, but never obscuring the objects over which it casts its coloured rays.

Gifford's "Twilight on Mount Hunter" has a sweet, peaceful wooded valley for foreground, a calm and beautiful evening sky, a paling sunset, and delicate crescent with attendant planet. Kensett, in his "View of the Coast of Newport," has some admirably-painted water and cliffs; Duraud, "In the Woods," capital beech trees, winding stream, and grey squirrel on a log in the foreground (to the colour of which lively little quadruped some lookers-on objected, by the way, thereby showing their own ignorance, not the artist's). Richard's "Forest in June" is dull and cold; as is also the molten iron flowing from the seething caldron in Weir's "Cannon Foundry;" it looks pale and tamed, very different from the lively, crackling, impish substance I remember to have beheld at Stourbridge and another such-like Pandemonium. W. Home shows a group of capitably-drawn figures in his "Confederate Prisoners," against a background of fog-enveloped mortals, that reminds one of Landseer's charming "Children of the Mist," but without the same necessity.

Poor Abraham Lincoln looks out from a canvas of Hunt's, with the earnest, sad expression peculiar to his seamed and plain face, and which gave a charm to his homely features. G. Baker in his "Portrait of a Child," presents the sweet face and bust of a darling little loveable maiden most lovably rendered; and G. Lambdin (if that be the correct name; I quote from the French authorized catalogue, and therefore am not responsible) has a charming little bit called "The Consecration," in which a pretty, fair girl is kissing the sword of her young officer-lover, who kneels before her.

Here end my remarks on the American pictures. Of the diminutive collections of Turkey and Greece I have nothing to say, not having been attracted by a single work in either; but that of the Pontifical States shows, of course, some fine mosaics from the "Fabrique au Vatican," one large semi-circular picture, and three smaller ones on gold ground; and of the enamels, the "Children of Charles I.," after Van Dyck, is good. Among the oil paintings I have marked "A Peasant holding a Bunch of Grapes in her Hand," by Gustave Muller (not an Italian name, by the way); Zuccoli's "First Christian Martyrs," where the poor creatures are seen in a crypt-like dungeon awaiting in despair or apathy, according to the temperament of each, the summons which calls them, one by one, up the cold stone stairs out into the colder resting-place of death; and Norfui's Victor-Emmanuel being welcomed in some town: rather a curious subject for an artist of the Papal States to indulge in.

Of the Sculptures, "An Episode of the Deluge," by Professor Vincenzo Lucardi, is a fine group, with bas-reliefs on the sides of the pedestal; and Adam's bust of "Pharaoh's Daughter," is true to the Egyptian type and costume.

The gallery of the kingdom of Italy comes next in succession, and several of the works here are very interesting. Alessandro Focosi has a large forcible picture of Catherine de Medicis and Charles IX., very rich in colouring, and in which the strong wicked will of the queen-mother has entirely cowed and conquered her weak vacillating son. Tudmo has two stories of the war, "A Letter from the Camp," and "The Garibaldian's Story;" Lelli, a charming view on the lake of Orta; Hayez, a cloaked and bonneted youth embracing a sweet fresh-faced maiden in a wonderful blue satin dress; Giannetti, "The Meeting of Gaspard Stampa with Collatine de Collalto," large-sized figures, richly coloured, that have a dream of Paul Veronese about them; Molmenti, "Arrest of Philip Calendario," the frame of which also deserves mention, being black, with a delicate gilt pattern over it, that suggests a niello of gold on iron. Pastoi has a large canvas with a long winding procession of small figures, that seem almost lost in the expanse of sandy desert over which they are progressing; camels, elephants, and men stirring up the dust of the arid plain in clouds as they move along, while snow-capped mountain peaks tower in the distance: "Le Schah de Perse parcourant les Provinces de

son Royaume" is the title. Rol sends a bust of a charming creature in thin white bodice, with dark blue trimmings; Devers, the bust of a male figure in red, painting a majolica plate, not marked in the catalogue; as also are not two charming interiors by Castiglioni—one, "The Doctor's First Visit to his Patient," a sweet pale girl in white satin, whose sunless, listless face contrasts so forcibly with the rosy cheeks of her young sister who sits beside her, and the eager, wistful look on all the other countenances in the room, down to that of the grey-haired old servitor who is showing in the doctor. In the second picture, the illness has been endured and surmounted, and for the first time the convalescent is leaving her bedroom. The tender care of the father and mother, who support her on either side, and the happy love of the same old serving man, who draws aside the *portière* to let her pass through into the fresh air, are all charmingly told.

A fine large-sized water-colour drawing, by Guadagnini, "The Betrothal of Gualdrati de' Donati with Boondelmonte," is excellent in every way, as are Palizzi's animals in oil colour.

Dupré sends a fine life-size "Cain" in bronze, and Sacocchi a pretty marble group, "La Premiere Lecture," which reminds one of our English Durham's capital children. R. F. H.

THE PURIFICATION OF WATER: AND SUPPLY.

INSTITUTION OF CIVIL ENGINEERS.

ON May 21, Mr. John Fowler, president, in the chair, the paper read, in abstract, was "Experiments on the Removal of Organic and Inorganic Substances in Water," by Edward Byrne. The object of these experiments was to try how far the statements generally made, with regard to the action of charcoal in purifying water, might be depended on.

It was stated that many substances were spoken of as having a purifying effect on water, but of all, charcoal (especially animal charcoal) had been considered the most efficacious. Though in works which treated on spring and river waters, the assertion was constantly made, that both vegetable and animal charcoal (particularly the latter) removed the organic and inorganic substances found in waters, yet no experiments were given by which to judge to what extent these statements were true. With a view to ascertain whether water, uncontaminated by either decomposing animal or sewage matter, but containing dissolved vegetable matter, would contain any nitrogenous bodies, some bog water was procured from a locality that precluded the possibility of its containing any animal or sewage matter, the experiments on which served to prove that, in bog water at least, vegetable nitrogenous matter was present.

The details of four sets of experiments were given, the first on animal charcoal, of which nearly 5 lb., new, and freshly burned, and of the degree of fineness used in sugar refineries, were packed in an ordinary stoneware filter. The water employed (of which a complete analysis was given) contained, in the gallon, organic matter, 10.80 grains; inorganic matter, 88.90 grains. The hardness of the water, before boiling, was found to be 50.50°, and after boiling, 33°, and the oxygen required to oxidize the organic matter contained in one gallon, amounted to 0.0116 grain. Several gallons of the water were allowed to percolate slowly through this charcoal, and upon examination, afterwards, it was found that, of the inorganic matter which had originally existed, 52.60 grains were removed from the first gallon; but from each succeeding gallon less and less; so that, from the twelfth gallon of water that passed through the charcoal, only 8.80 grains of inorganic matter were removed. Of the organic matter 4.80 grains were removed from the first gallon; but, with a gradual decrease, the charcoal ceased to remove any organic matter after the sixth gallon. In fact, immediately afterwards, it commenced to give back a portion of the organic matter removed in the first instance, the quantity returned to the twelfth gallon amounting to 1.55 grain. Thus, of the 13.54 grains of organic matter removed by the charcoal from the first six gallons of water, as much as 4.98 grains were given back to the next six gallons; from which the author concluded that, had this set of experiments been carried a little farther, all the organic matter removed at first by the charcoal would have been given back again.

* See p. 379, ante.

The second and third series of experiments were with wood and peat charcoal, which, however, were still less satisfactory than those with animal charcoal. The fourth set of experiments was on animal charcoal, with water previously treated with permanganate of potash slightly in excess. After remarking that the water, in its passage through the charcoal, was found to contain organic matter, apparently in the same quantity as before treating it with the permanganate, attention was drawn to a comparison between the first and fourth sets of experiments, to show how closely they agreed to contradict the general statements made as to the removing power of charcoal, and to demonstrate how very little indeed could be done by this filtering material, even on a small scale, towards the purification of water.

The author then said that as the epidemic which had so recently left these shores might return again before the adoption of any scheme to supply the metropolis with an abundance of pure water, he thought it would be well, if only to check its ravages in ever so slight a degree, to experiment on various materials which were believed to possess the power of removing organic matter; but, to obviate false conclusions, and to render such experiments practically useful, they must be systematic.

In conclusion, he gave it as his opinion that, as by chemical agency had water could be purified to a very limited extent only, the public mind should more than ever be given to the great question of supply; and, as people valued their lives, they should above all things, in their choice of a source, not be too much influenced by distance, but be willing to undergo the necessary expense of securing the object of their search, not only in abundance, but in the greatest purity.

THE ARCHITECTURAL ASSOCIATION.

The usual meeting of members was held at the House, Conduit-street, on Friday evening, the 24th ult. Mr. R. W. Edis in the chair.

Mr. G. W. Herbert was elected a member of the Association.

A vote of thanks was passed to Mr. Gilbert Scott, R.A., for his kindness in permitting the members to inspect the new public offices in Downing-street.

After some preliminary business had been disposed of,

Mr. Burges read a paper on "Our Architectural Future," which we print in full.

At the conclusion, Mr. Blashill said he was not disposed to take quite so desponding a view of British architecture as Mr. Burges had done. On the contrary, he thought that we were making satisfactory progress in the direction of new designs; and this he was glad to perceive, because he did not think that the style of the thirteenth century ought to be practised or continued in the nineteenth. He regretted, however, to say that, so far as domestic architecture was concerned, the speculative builder was still in the ascendant; but he hoped that as the public taste continued to improve, its effect would be manifested in the whole tone of British architecture.

Mr. Seddon observed, that he also was at a loss to account for the desponding view which the lecturer had taken of the present state of architecture. Without attempting to follow the details of the paper, he might be allowed to observe that there were many difficulties in the way of the student who desired to make progress towards a new style of architecture, because it was the habit of people, when they saw new designs of that sort, to shrug their shoulders, and say it was not the Gothic of the Middle Ages. He did not see why this should be, because the style of the thirteenth century was now obsolete, and he thought there ought to be something peculiar to the age in which we lived, so that architects might not be copyists, but inventors. He had lately returned from the Continent, where he was surprised to find that many of the grand old buildings along the Rhine, which used to be almost household words among architects, were fast disappearing; he hoped, therefore, that those members of the Association who had time at their disposal for travelling would visit these places before it was too late, so as to bring back records of what remained of those buildings, and thus add to our store of knowledge on the subject.

Mr. Ridge agreed with the last speaker in the desirability of preserving records of the old Gothic buildings of the Continent; but he reminded the meeting that the Early French style of Gothic which Mr. Burges recommended students of architecture to copy, was very nearly similar to our own Early English. He did not see why a desponding view should be taken of the future of Gothic art, as he thought its interests would be cared for in the hands of the many Gothic architects of our own day. He confessed that he desired to see, if possible, a distinctive art for the age in which we lived.

Mr. Spiers had expected to hear the expression of a hope that the young members of the society would study Greek works, but as Mr. Burges had made some mention in his paper of Mr. Thompson of Glasgow, whose drawings represented buildings of Greek architecture, and of whom he spoke very highly, that circumstance might, perhaps, be considered to make amends for the omission. He would have been glad also to have heard some expression of opinion as to what should be the predominant style of architecture in the future. The recent exhibition of designs for

the new National Gallery had, he thought, shown that Classic architecture had almost died in England. No wonder that it should, because there were no models from which the study of the art might be practised. In France the case was different. There they had models to go by, and the land of Classic Italy was close at hand. The French style of architecture was classical, and the Government Schools of Art inculcated the study of that style, and assisted to encourage and develop it by numerous importations of art objects from Italy. In England, however, he was sorry to say matters were very different, and one could almost count on his fingers the number of architects who had been to Italy to study classic art.

The Chairman could not agree with all the conclusions to which Mr. Burges had arrived, when commenting upon our architectural future, so far as Gothic was concerned. The great opponent of Gothic architecture in the popular sense, was the speculative builder, who was always cropping up, and at whose command whole streets and suburban towns of the most fragile description sprang into existence. No one appreciated more than he (the Chairman) did the grand and mighty style of thirteenth century art, but it was now obsolete, and could not with advantage be revived; and he was persuaded that if the architects of the thirteenth century could have lived in our own day, they would not design for the present generation such buildings as they had left behind them. With regard to our architectural future generally, he feared that until the public became really interested in the subject of architecture, and until its professors and students laboured to make it shine above all the arts, neither the art itself nor its professors would obtain the position they were entitled to assume. He hoped that towards attaining that end the members of the Association would set themselves to do the work before them with enthusiasm, always bearing in mind that none could aspire to be the disciples of an art who did not prepare themselves by earnest and assiduous study.

FROM SCOTLAND.

Paisley.—The want of healthy dwellings for working men has long been a reproach to Paisley as well as to most other towns. A committee has just reported on the subject to a general meeting of those desirous of forming a co-operative building society. The report stated that ground for sites could be obtained in various parts of the town, at from 10l. to 15l. per acre. As to the class of houses, the committee, after careful consideration, approved of a plan—which was submitted for the inspection of the meeting—for buildings of two stories as being the most likely to suit the wants of a large portion of the community. These houses were intended to be divided into two, each dwelling having a front entrance, and consisting of a half of the lower and upper stories. Each of these half-cottages was estimated to cost 156l.; the fronts being of stone, and the back walls and gables of brick. The ground-floor would contain a kitchen, a room, and a scullery; and the second floor would have three apartments. The committee did not mean that this plan should be uniformly adhered to, but only that it might afford an illustration of the most economical, and at the same time most completely adapted of dwelling which the society could adopt. The report was approved, and ultimately it was unanimously agreed to form a local co-operative building society, and the committee were re-appointed, with power to add to their number, to frame a code of rules, and to take all the necessary steps to promote the objects of the association. The Provost (or Mayor) will do all in his power to promote the success of the scheme, and the assistance of other influential townsmen will also be given.

Aberdeen.—The Aberdeen Town and County Bank has now been removed from its old premises to the new building recently erected as their new offices in Bridge-street. Mr. D. Miller was the builder of this edifice. The Aberdeen Bank are erecting new premises for their Thurso agency on a correspondingly suitable scale.

Aboyne.—The foundation-stone of a monument to be erected in memory of Charles, tenth Marquis of Huntly, who died in 1863, has been laid with some ceremony. The proposal to erect the monument originated with the tenantry on the Aboyne estates. Mr. G. H. Smith, of London, was chosen architect, and a site erected on the hill of Mortlach, near Aboyne. It was felt by several of the mason lodges in the province that the laying the foundation-stone of a monument, commemorating one who held an honorable post in the Grand Lodge of Scotland, was a suitable occasion for showing respect for the memory of the late marquis. Arrangements were made accordingly. The procession, accompanied by a good many spectators, including several ladies, marched to the hill of Mortlach, about three miles to the north-east of Aboyne. The hill is the highest for many miles around, and is seen from a great distance. On its summit the monument is to be erected, and there the ceremony took place. The design is a plain obelisk, 16 ft. square at the base and 6 ft. at the

top, with a pedestal of 19 ft. It is to be built of rough blocks of granite, taken from the hill, and on the top is to be placed an iron ornament, facing north and south, very much resembling the Dagmar Cross of Denmark. The extreme height of the monument will be 60 ft., and it is to be built by Mr. R. Dinnie, Aboyne. The site is on the boundary line between the property of the Earl of Aberdeen and the Huntly estates.

THE RECENT COLLIERY EXPLOSIONS.

The long-promised special reports on the explosions at the Oaks and Talk-of-the-Hill collieries have been published, but they do not justify the eulogies which were passed upon them by the Government in the House of Commons. With regard to the South Staffordshire catastrophe, Mr. Wynne, the Government inspector, thinks that he cannot perform his "melancholy duty in a better way than by using the reports of the local press." We are of a different opinion. "Our reporter" on the occasion was, no doubt, a man of ability, and having been "promptly on the spot" was enabled to "glean full particulars." But his version of the affair, even when helped by "a narrative by an eye-witness," and "another account," hardly fulfils all the conditions of an impartial and careful report. The inquiry before the coroner appears to have been conducted in a very unseemly way. The proceedings were frequently interrupted by laughter, especially when a collier was admitting that he had frequently endangered the lives of the whole of his fellow-workmen by smoking and removing the top of his lamp. The coroner, too, forgot himself when he spoke of a certain hand-bill emanating from the Miners' Association as being "false as hell." As regards the cause of the accident, Mr. Wynne believes it to be due to the—

"Want of power to ventilate the lower workings, which should not have been pushed forward until the pit was sunk, and, above all, not until there was some means of ventilating it, which does not appear to have been the case."

The verdict of the jury was in effect one of "accidental death."

Mr. Dickinson's report on the Oaks Colliery explosion is of more value, and is moreover accompanied by a sketch of the workings. The inspector's opinion is decidedly that the accident was due to the system upon which the colliery was worked. The seam is 8 ft. thick, and is notoriously fiery. At the time of the explosion the working faces open amounted to about one mile in length. It will easily be understood that the quantity of gas given off from such an enormous area must be very great, and one of the advantages of the plan suggested by Mr. Dickinson is, that the working faces open at one time will be very much lessened, and the ventilation simplified. Mr. Dickinson states that this answers well in his own district (Manchester), and is found to be economical in the long run.

The exact manner in which these explosive gases are evolved is not known, but it is certain that larger quantities are given off when the atmospheric pressure is low. To adopt a simple illustration we may suppose the gas to be contained in vessels closed by valves opening outwards. Under ordinary circumstances these valves are kept closed by the pressure of the air, but when the barometer falls the gas opens the valves and escapes. In the case of the Oaks explosion the barometer had fallen half an inch during the preceding 12 hours, and the temperature was rising. The explosion took place at 20 minutes past 1 in the afternoon—a time when the evolution of gas is greatest, owing to the number of fresh "faces" exposed. The decrease in the pressure would also favour the evolution of gas, and the rise in temperature would render the ventilating furnace less efficacious.* Mr. Dickinson enters into some calculations to show the additional amount of gas which would be evolved under the altered atmospheric conditions, but his figures do not seem to us correct.

Mr. Dickinson's views on Government inspection are sound and well worthy of attention. He considers that the State should not interfere to such an extent as to relieve the owners and managers of the responsibility which now de-

* A valuable report on certain accidents which have occurred in Belgian coal mines in consequence of the sudden evolution of gas may be found in the *Revue Universelle des Mines* for March, 1866, p. 281. The author was the late M. A. De Vaux, inspector of mines, whose efforts were continually directed towards the amelioration of the condition of the workers in coal mines.

volves upon them. "If," he says, "the inspection becomes too frequent, the inspectors would be likely to become implicated in the management, and when an accident takes place their position would not be sufficiently disinterested to enable them to make an independent investigation, and it would require for that purpose some disinterested person to be called in to see that the provisions of the law were enforced, thereby tending to lower the standing of the inspector, and lessen his usefulness in his district. . . . The responsibility must rest somewhere. Hitherto it has been decided that it is best upon the owners and managers. But if it be intended that the Government should assume the responsibility, then the whole subject of the inspection will require reconsideration." He also suggests that all the statutes relating to mining should be consolidated, and some slight alterations made.

A good deal has been said about the danger of using gunpowder in firing mines. In the Oaks Colliery blasting was prohibited in getting the coal, although it was used for driving new levels. There is no doubt that the explosion took place when a shot was being fired, and that a much larger quantity of powder was used than usual for the purpose of blowing away the small portion of rock at the end of the drift. The shot, therefore, went into a part of the mine where none of the previous shots had been discharged, and whether the flame, lighted any firebrand in any of the old "alits" or "cut-throughs," or whether the concussion disturbed the gas accumulated in the "goaves" or abandoned workings, and forced it on to the allowed open lights, was now never be decided. It appears, however, clear that the explosion was caused either directly or indirectly by the firing of a shot. It is generally admitted that the use of gunpowder is exceedingly dangerous, and on this point the evidence given by Mr. Coe, during the inquiry into the cause of the South Staffordshire accident, is worthy of notice. When asked whether powder should be used indiscriminately in a fiery mine, where gas is constantly being given off, he said,—

"That question involves a good deal. It is a matter of pounds, shillings, and pence. . . . I hold the opinion that in all fiery pits, giving off gas in considerable quantities, the use of gunpowder ought to be prohibited entirely and for ever. . . . I have fiery pits under my charge, and I use gunpowder simply because I am compelled to do so by the usages of the country. . . . If I said we must not use powder, the colliery proprietors in this and other counties would put me down for a complete noodle. They would not think me *compos mentis*. On the other hand the men, if I were to make such a proposition, would look upon me as their greatest enemy."

At the South Kensington Museum there is a very interesting case showing the constituents of the human body,—a large quantity of water, so much lime, so much charcoal, albumen, fibrine, &c., a few sheets of glue, some sticks of phosphorus in a bottle, and a few bits of iron wire. According to the "pounds, shillings, and pence" view of the question, this is a human being, and it is upon these data that his value is estimated.

THE TRADES MOVEMENT.

Stockport.—The joiners, numbering about eighty, are out on strike. They require an advance of wages, from 28s. to 30s. per week, and a hour's less work on the Saturday. The employers agreed that they would concede the advance on the 1st July next, but are determined to resist any interference with their working hours.

Derby.—A strike has taken place against Messrs. Wood, builders. Because they refuse to discharge their foreman, who is a non-union man, or compel him to join the union, all their reasons have left them. Messrs. Wood declare that they will rather give up this branch of their business altogether than yield to the dictation of the men.

Wrexham.—A strike among the joiners and builders is threatened. Some months ago the operatives petitioned their employers for a holiday on Saturday afternoon. There are a number of operatives from Chester, and other neighbouring towns where the half-holiday is granted, employed here, and the privileges which they enjoyed in those towns are extended to them in us; whereas, the great majority here have to work the full time, namely, till four o'clock. Hitherto the employers have not given the application a favourable consideration.

Wolverhampton.—The builders here have exhibited outside their respective places of business

a code of "Rules to be observed between the master builders of Wolverhampton and the operative stonemasons, from May 1, 1867." The rules are prefaced by a statement, for the information of the public. The master builders have had various conferences with masons in their employment for the purpose of settling trade rules. As the operatives would not consent to leave such matters as could not be agreed upon to be settled by arbitration, these conferences have had no result, and the masons have struck work to enforce the acceptance of a code of rules which they had prepared by themselves.

Worcester.—The whole of the men who were on strike, except the masons, have gone in to work, pending the result of the arbitration which is to take place.

Birmingham.— "A decision given in the County Court," says *Aris's Gazette*, "shows the desirability, at all events in the building trade, of definite agreements between masters and men. A carpenter and joiner, who had been at work for a builder in the town, sued the latter for a quarter of a day's wages, on the ground that whilst by rule the claimant was entitled to a quarter of a day's notice of dismissal, the defendant had discharged him without any notice. The rule alluded to was one made by the trade society to which the workman belonged; and it was argued that in paying the price per hour fixed on by the society the defendant had practically agreed to the rules collectively, although he had expressly repudiated them. This extraordinary doctrine was not, however, adopted by the Court. The judge, having clearly ascertained that the man had been paid by the hour, that he had been paid for all the work he had done, and that no agreement or contract had been made, gave judgment for the defendant, with costs. Even the solicitor for the plaintiff could not help admitting that the proceeding was an attempt on the part of the trade society to 'make' laws, which, as his learned friend on the other side suggested, had better be left to Parliament—at least 'for the present.'"

RAILWAY MATTERS.

Liverpool.—The extension of the Lime-street railway station at Liverpool is in progress. The new platforms are now in course of formation, large numbers of workmen being engaged in their construction, and the first new arrival platform has been opened. The entrance to the new station will be nearly in the same position as the present one. The platform is 50 ft. wide, extending from the departure to the arrival side, with the proposed hotel on the right. This hotel, which has been designed by Mr. Waterhouse, of London, will have a frontage extending from Lord Nelson-street to New Gloucester-street, but our authority, the *Albion*, states, that it has been resolved to postpone its erection for some time to come, and for the present confine the Lime-street works to the extension of the station. The whole of the enlarged station will be covered in by an enormous iron and glass roof in one clear span. The present roof was the first application of iron on so large a scale. Favoured by the natural abutments of rock on either side to spring from, the new roof will be economically constructed. It has been designed by Mr. William Baker, C.E., chief engineer to the company, assisted by Mr. F. Stevenson, C.E. A scheme has been devised for working the whole of the signals, both in the station, and half a mile up the tunnel, from one central signal box, under the system of Messrs. Saxby & Farmer. The principle of this arrangement may be compared to a Chubb or a Bramah lock, in which the bolt cannot be moved unless a set of tumblers or discs is previously set to a certain relative position which allows the bolt to pass. In Messrs. Saxby's system, each lever working a point rod or signal, represents the bolt, and can be moved when free from the tumblers or stops connected with the other handles. The stops are so arranged that the moment a pair of points are set to enable a train to pass over a particular line, all the other levers which would give another train permission to run upon the same rails from an adjoining line, are locked. It is impossible, therefore, for the attendant to move these levers by mistake, or for a collision to occur between two trains if the signals are obeyed. The works are being carried out under the superintendence of Mr. Harry Footner, C.E., the company's resident engineer, Messrs. G. Thomson & Co. being the contractors.

Dartford.—The new station is rapidly approaching completion. The platforms will all be covered in; and there are waiting-rooms for those who are detained; while the dangerous practice of having to cross the railway will be avoided by an underground passage, which is well lighted.

Traffic Receipts.—The traffic returns of railways in the United Kingdom for the week ending May 11th amounted, on 12,792 miles, to 727,825 $\frac{1}{2}$, and for the corresponding week of 1866, on 12,512 miles, to 702,070 $\frac{1}{2}$, showing an increase of 280 miles and of 25,755 $\frac{1}{2}$.

Speed.—A comparison of a large number of examples has enabled the Railways Commission to make the following statement:—In England the express trains run generally, including stoppages, about 40 miles per hour; the average of all the examples of the quickest trains (omitting suburban) gives 36 $\frac{1}{2}$ miles per hour; the ordinary trains run generally from 18 to 30 miles per hour; the average of all the examples of the slowest trains gives 19 $\frac{1}{2}$ miles per hour. In France the express trains run, including stoppages, 25 to 35 miles per hour; the average of the quickest example is 31 miles; the ordinary trains run from 16 to 25 miles per hour; the average of all the examples of the slowest trains is 18 miles per hour. In Belgium the quickest trains run from 20 to 35 miles per hour; the slowest 18 to 23. In Prussia the quickest 29 miles; the slowest 17 to 21 miles. In Austria the quickest 20 to 29 miles; the slowest 14 to 21 miles. In Bavaria and along the Rhine the quickest 24 to 32 miles; the slowest 13 to 24 miles. In Italy the quickest 24 to 30 miles; the slowest 15 to 24 miles.

RESULTS OF SEWAGE IRRIGATION.

The Secretary of the Metropolitan Sewage and Essex Reclamation Company gives the following particulars as the results which have attended sewage irrigation upon the Lodge Farm, near Barking. He says,—Notwithstanding the previously severe weather, a crop of Italian ryegrass was cut in the early part of April, and weighed nine tons per acre. The same plot was cut a second time on the 15th of May, the crop weighing twelve tons per acre. On May 4th a crop was taken from an adjoining piece of land which weighed 18 tons per acre. There are some 70 acres of land under irrigation which it is expected will be cut six times during the year. Will it produce nothing but Italian ryegrass?

Some months ago a portion of land at Farnham was irrigated with the town sewage of Bury. A few days ago the crop raised from the land so manured was disposed of by auction with the following results. Lot 1, 4a. 2r. 20p. sainfoin, Mr. Newall, 20 $\frac{1}{2}$ l.; lot 2, 3a. 1r. ryegrass, Mr. Wing, 9 $\frac{1}{2}$ l. 10s.; lot 3, 6a. 1r. 10p. ryegrass, Mr. Newall, 14 $\frac{1}{2}$ l. 10s.; lot 4, 9a. 3r. ryegrass, Mr. Baker, 15 $\frac{1}{2}$ l. It will thus be seen that the first cutting of the crop on rather less than 24 acres of land realised 59 $\frac{1}{2}$ l., though sold under stringent conditions, requiring that it should be cut, made into hay, and stacked elsewhere within fourteen days. The results of the application of sewage to the lands in Essex lead to the supposition that at least four crops could be cut from the Farnham lands in the year.

BARRISTERS AND THEIR HABITATIONS.

In view of the probable alterations in the Temple and Lincoln's Inn, will you afford me space in the interests of the profession to which I belong to explain to the Benchers of the Inns and their architects what arrangement of chambers would be most adapted for barristers? When I have done so, any one conversant with the new buildings—viz., Dr. Johnson's, Goldsmith, and Crown Office-row, will see at once that the comfort and convenience of the inhabitants can never for a moment have entered the head of the builders or architects of those buildings. Two classes of chambers are required—one suitable for business purposes only, the other combining capacities for residence and business. In the former class there should be at least three fair sized rooms and a smaller one for a clerk. A barrister in good practice thus would have a room at the disposal of his pupils and another for a waiting-room. Barristers not in large

practice (how large a majority they are I need hardly say) would be able by letting off rooms to those circumstances as themselves to divide the expense, to too many of them a grievous burden. To residence-chambers these remarks do not exactly apply, though there is the same necessity for a larger number of rooms in each set than is usually at present accorded. The third floors are as a rule devoted to residence, but want of cupboards, light, arrangement, in fact, want of common sense and a knowledge of the requirements of the inmate on the part of the designer, have made residence in the Temple certainly more uncomfortable and even more expensive to bachelor barristers than living elsewhere, and sharing a room and clerk. I suppose the fault is in the greed of the Benchers in the matter of rents. If they were to have the proper number of rooms in each set of chambers, the number of sets would, of course, be slightly diminished, and the facility for acquiring a room or rooms greatly increased; this might diminish the enormous incomes which the Inns derive at the expense of those members of the profession whom the authorities ought to protect, but it would take away from them one stigma. I will not do more than allude to the hopeless ugliness of all the buildings throughout the Temple, new or old; but I would ask, is it utopian to hope that though beauty may be totally disregarded, some slight attention may be devoted in any buildings that may be erected hereafter to the comfort and convenience of those persons, the necessities of whose business compel them to reside or rent chambers here?

AN UTTER BARRISTER.

THE BRICKWORK AT THE NEW FOREIGN OFFICES.

SIR,—In the evidence given before the Trades Union Commission a great deal has been said relative to the loose and inefficient manner in which the brickwork at the New Foreign Offices has been executed.

In carrying out the various works with which we have been entrusted at the above-named building, an opportunity has almost accidentally occurred of proving or disproving these statements. We had occasion last week to cut chases 26 ft. in height, 18 in. wide, and 9 in. deep, in two of the main walls. We found the bricks very hard, well set, and the work throughout perfectly sound.

As these chases will not be covered up for a few days, we have no doubt that the clerk of works, Mr. Sheffield, will be happy to allow any interested persons to inspect them.

W. S. ADAMS & SON, Engineers.

THE LAW COURTS COMPETITION.

SIR,—I believe you are too narrow-minded and prejudiced to admit this letter to your pages when you discover what I have got to say. You opened your columns some time ago to several paltry scribblers who wanted to get up a pother about this competition, impudently demanding "fair play" for it. But of course you won't listen to anything on our side of the question. Which side "our side" is you will know presently.

My object in writing to you is twofold. First, to ask this simple question,—What right have you to interfere in the matter? I think you will find it difficult to give me a satisfactory reply. Probably you will say you are the representative of the architectural profession, and in architectural matters the representative of the public also. Well, and what of that? The architectural profession and the public are equally ignorant of, and incapable of dealing with, the subject in hand. Only a lawyer knows the mind of a lawyer, or can know it; and I tell you plainly we are not going to be dictated to by a parcel of builders and people who, I firmly believe, don't know a chief justice's wig from a registrar's.

But I have heard lately,—and this brings me to the second point on which I wish to address you,—that it is expected the competition will be decided upon questions of fact, and not upon mere whims and fancies. Now, I am not going to deprecate to argue with you, but I am going to ask you to understand once for all that the expectation is as false as the mental capacity of those who indulge it is contemptible. Facts indeed! There is an inspired axiom of which

you have probably never heard, but in which I and all my noble profession find the very breath of life. It is this—"There is nothing so false as facts except figures;" and yet it is upon these emanations of the devil that you would have this great competition settled! Never while I live! I have made up my mind as to which of the designs is the best, and I am proud to say that my opinion is not burdened with one single fact. It soars far above such miserable trammels; and I would advise you for your own peace and comfort to be guided by me, and take my choice without question.

TWISTER FIBBS, Q.C.

BUILDERS AND ARCHITECTS.

SIR,—There appeared a letter in your last impression under the above heading, of which I should not have thought it necessary to take notice but for the opportunity it affords me of making a short statement on behalf of the builders of this country; and I trust you will allow me a small space in your valued pages for that purpose. For two or three years there has existed what is known as the "General Builders' Association," representing eighty towns and over two thousand employers in the building trade, and of which I have had the honour to be President. The attention of the members of this association has for some time been directed to the desirability of an amended form of contract-agreement, believing as they do that the form which now prevails is one-sided, and, as advised by eminent counsel and solicitors, such as no other trade is called upon to sign. Entertaining these views, we have been endeavouring to get the various architectural societies in the country to modify and render the present form more equitable, but I am sorry to say with very small success. The architects have by custom obtained exceptional power over builders, and as a body they seem loath to give it up. The present form of agreement usually contains such a proviso as this,—"that in case of dispute in respect to the manner of carrying out the work, or from any cause whatever, the decision of the architect shall be final, conclusive, and without appeal." The clause in respect to carrying out the work is sometimes made oppressive to the builder by a capricious or whimsy architect; but I conceive such a power to be inevitable if good work must continue to be done, and personally I take no objection to that; but in common with the two thousand employers in the Builders' Association, I do object to the words, "any cause whatever." The respectable architect should not require such a clause. He does what is right; and, speaking from my own experience, the agreement is practically a dead letter. The unprincipled architect (for unhappily there are such) ought not to be entrusted with such a power. I could give many reasons in proof of this, but I will ask space for one only, and will refer you to Mr. Holden, president of the Manchester Society of Architects, for the truth of my statement. An architect, after having a large contract finished by a member of our association, made out a bill, showing the balance about 5,400l. due to his contractor. The contractor demurred, and employed Mr. Holden and others on his behalf, who, after repeated measurements, made the balance due over 3,000l. additional. The original architect refused to listen to any remonstrance, and fell back on his agreement, which said, amongst other things, that no money should be paid without his written certificate, and he refused to give it. The case went into court, and by the judge, after much parleying, was referred to an eminent counsel, who, fortunately for the builder, waiving the points of law, ordered the payment of the money, but not till the contractor was worn out and nearly ruined by the proceedings. I could go on with cases where builders have been fined for non-completion of their contracts when strikes and other unavoidable circumstances have arisen; where architects have furnished quantities grossly deficient, received payment for them, and sheltered themselves under their powers in the agreement, alleging (although they had received the money for doing the work) that it was the duty of the contractor to have satisfied himself it was done right,—in other words, that he ought to pay for having the work done wrong, and do it right at his own cost, or take the consequences. I am not aware that any other commercial transaction connected with trade is based upon such morality.

A number of cases of the before-mentioned sort have from time to time been brought before the association; some of them, I have no doubt if they came to be investigated, would turn out differently to what they are represented; but we are satisfied that there is much ground for complaint. Many men suffer in silence and have neither the means nor the spirit to put themselves right. It was about this I was talking and thinking when I made some such observations at the Bristol meeting as your correspondent quotes, and I believe I shall have sympathy of the respectable architects of this country, when I repeat, that when a good cause occurs which the association can take up, they will read the architects a lesson, and teach them to be honest and just. This was all it was intended to imply. Any such observation applied to architects generally would be so posterior and unjust, that it would neither hurt your while nor that of your correspondents to take any notice of them; but still, I must be allowed to say our association has made it apparent that acts of oppression under powers of an arbitrary agreement are sadly too common, and we conceive it to be our duty, as well as our interest, to find a remedy.

ROBERT NEILL.

Manchester.

CHRIST'S HOSPITAL,—ITS CHURCHES AND "WORTHIES."

THE interest of the noble "Blind Coast School" foundation and its accessories being certainly more than metropolitan—national, if not almost European,—a few special remarks may not be unfitted for the columns of the *Builder*.

Of the present Hospital "Buildings" the Hall, of such noble length, needs no remark except that its perfectly plain brick west termination, exposed, beyond calculation, by removal of the "Counter," would be much the better for a new "coat" of some kind or other; also the further extent of "covered" playground has been pronounced much to be wished. The new buildings (at least comparatively so) abutting on "Little Britain," may be termed very excellent. In passing, the gates there are still called the "Dish" gates,—alluding to the "Totten Ditch," round the Wall of London, which extended from this immediate quarter to the outworks of the "Tower."

Of the former church, might not some investigation, or attempt to trace, the actual position and limits be quite sufficient to interest? It is styled by Evelyn amongst foremost casualties of the "Fire" the "August fabric of Grey Friars" (having been formerly Conventual and Franciscan). No certain information appears to have descended; but it can hardly be doubted that it was, at the lowest, 300 ft. long,—about the same as that of the "Knights of Malta," whose chancel now forms "St. John's Church, Clerkenwell," but is said to have formerly reached quite to the western extremity of the present "Square." If the Grey Friars' Church extension was mainly westward, it probably reached to full the extremity of the present churchyard.

The present church, built by Sir Christopher Wren, is, without the tower, 114 ft. by 81 ft.;—largest of modern ones (except, no doubt in length, St. Sepulchre's) to Spitalfields, 111 by 89. Gazing on the assembled "700" boys and youths, the mind speculates with interest on their varied future careers; some of which may be "famed in story," and happy far their country. Happy themselves if they never wholly lose sight of what "shall bring a man peace at the last." A very handsome testimonial, with very honourable eulogium by an Hebrew ex-Lord Mayor, was lately presented to the Rev. Mr. Gibbs, above a quarter of a century Vicar. This gentleman, amongst other things, was an original secretary of the "Lancashire Relief Fund," has been of gratuitous service to the Church as Rural Dean and Proctor, being also an able "man of business," and it is perhaps regrettable that no emolument has yet reached him, beyond a moderate though very responsible living.

Of the famous "Spital" sermons at Easter, alone sufficient to render this one of the most noteworthy churches in England, the most celebrated on record was probably Dr. Parr's (an "old Whig"), against the principles, and horrible excesses, of the first French Revolution. The

* This is not the first occasion on which the subject has been handled, and at some length too, in our columns.—Ed.

mmense Organ has just been repaired by Messrs. Hill. It contains 68 stops; till lately the largest number in England (Spitalfields 44), and the same as in the renowned and lofty musical pile at Harlem; and, in justice, may be pronounced as good in the soft as powerful portion.

Of Christ's Hospital "worthies," one or two erroneous statements have lately appeared. Leigh Hunt certainly never took, nor was likely to take, "holy orders!" Coleridge's "Christabel" dated, before 1800, did not appear till about 1818, and was then considered a great absurdity; reading now, with some other of his effusions, a well of charity. To come, however, where there can be "no mistake," Camden was one of the richest fruits of "Blue-coat" School nurture.

Bishop Myddelton, "first Protestant" one "of India," has a monument in the south nave aisle of St. Paul's, a fine figure, with two natives kneeling, in the act of confirmation, which may have been too neglected. His "Life" was written, as Bishop Jeremy Taylor's before, by archdeacon Bonney, of Lincoln, formerly of Bedford, who well deserves a passing tribute, not least, perhaps, in the *Builder*. He was an able antiquary, also a draftsman, having made some very good drawings for his "History of Mithras;" was about the first "visiting" archdeacon in the present century; carefully inspecting every church, however inconveniently, giving an example to several others, and causing buildings to be better tended in general. Better still—he was not only a sincerely pious, whilst genial, but largely benevolent, man; leaving a name, not least at the living of King's-Chiffe, Northamptonshire, where he was much revered and lamented, as "Good Archdeacon Bonney, who gave away all his money" to the poor and needy. "Go and do likewise."

Lamb has given several "Blue-coat" reminiscences. Only, doubtless, the *cuisine* was not so well attended to just then, as he speaks of "fat" on boiled-beef days, as an abhorred, and certainly very insalubrious, edible.

Coleridge, son of a Devonshire clergyman, was, doubtless, the poet, at least in modern times, of the school; also one of the three "Lake" ones. He, it is said, was formerly an Unitarian, at speaks of the advancing influence of a devoted wife—

"My Sara!"

Mess daughter, of the family of Christ,"

who was, doubtless the heroine of the exquisitely beautiful ballad of "Genoivore," worthy of burial by all tender and romantic minds. There are some good lines at the end of his wild fancy of the "Ancient Mariner," as—

"His prayer-bead who loveth best,

All things both great and small;

which might be a suitable motto, amongst many more, for the excellent society against "Cruelty to Animals." His "Epitaph for himself," dating to several years of severe bodily pain, is perhaps much less known than it deserves to be.

A Poet lies, or that which once was he:
Oh! lift a thought in prayer for "B. T. C.;"
That, who for many a year, with anxious breath,
Fought Death in Life, may now find Life in Death!
Merry—few prunes—to be forgiven—for fame,
He asked and hoped through Christ: do thou the same!"

These well-intended, if "gossiping" remarks; not by a "Blue," though by one who has wandered on "Cam's smooth margin;" it is hoped may find favour with past and present members of a noble institution. D.

BEDFORD MIDDLE-CLASS SCHOOL COMPETITION.

Sir,—You will probably have heard that the directors of the above school have selected Mr. Peck's design. If you wish to employ Mr. Peck, neither I nor any one else would find the slightest fault with their doing so; but as they should persuade some thirty architects to compete, when they had already settled the matter, seems to come morally, if not legally, under the head of finding.
I write you this, because I hear from Bedford, from a gentleman entirely unprejudiced in the matter, as follows:—You were nearly were placed in the Assembly-room, and absently by the building committee, which was composed of Whitbread, Lord Copper, and other county swells. All the plans were never opened—years amongst the members. More than a month ago, Sharnum told Under, this town, who was awarded the 50L, that he need not trouble himself about it, as Peck, of London, who built the Essex school, would be the builder of this. The plans at the time were placed in the Assembly-room, on Tuesday, and were looked at only by the committee; but Peck's plans were placed in a side room by themselves.
I need not quote further. I send you this as a current report, which the directors ought to rebut if they can. No thing is certain, viz., that fair consideration was not given to the plans, as they were returned in a little over a week. A VICTIM.

PAYMENT OF GOVERNMENT ARCHITECTS.

Sir,—I am much surprised that the Government should seek to take away by a side wind a portion of the commission paid by them to their architects in the case of works carried on under a schedule of prices, while, in the case of works exactly similar, but carried on under a lump-sum contract, they pay the full commission of 5 per cent. without any deduction.

It is interesting, however, to note that this is not the first attempt of the Government in this direction; and architects may, perhaps, like to see how the question was met by Sir Jeffrey Wyattville as far back as 1826. I have extracted his letter from a book of parliamentary papers of that date.

I may add that my experience of many years agrees with that of Sir Jeffrey, and that apart from the special case of the New Palace at Westminster, I have never known an instance where the architect paid the expenses of measuring under a schedule of prices.

A SURVEYOR.

Sir Jeffrey Wyattville to S. R. Lubington, esq.

Windsor Castle, July 14, 1826.

Sir,—In answer to your letter, dated 6th of May last, by command of the Lords of the Treasury, I have to acknowledge the same, and to express my thanks for the works at Windsor Castle, has been regularly paid.

In regard to the observations respecting the charge for measuring, I conclude that it was made on the former part of the accounts by the Office of Works, and before their Lordships' minute was acted upon, by which the measurer was appointed by and under the orders of that office, and that it is hereby answered.

But I feel it necessary to declare that I have never paid for measuring out of my commission in the various magnificent concerns that have been intrusted to my care; nor can I learn that any one in a superior rank of the profession has done so: at the same time, it is not unlikely, nor improper, that a young man beginning business, or one who has employment for himself, or, perhaps, one clerk only, may engage in the measuring of works done under his direction; but it is much to be doubted whether or not it is advantageous to the employer.

Again, so far from charging anything not borne out by my practice in private business, I must repeat, for their Lordships' consideration, that I have omitted to charge a variety of extra matters, and all travelling expenses, and have rejected all the advantages that are to be obtained in private business; and I shall not have the least difficulty in proving, should it ever become necessary, that the extraordinary advantage of my employment at Windsor Castle is very trifling when compared with my previous private concerns.

Feeling that the eyes of the nation are on the works, I have considered the honour and glory of deserving the approbation of my King and country as my greatest reward. (Signed)

JEFFREY WYATTVILLE.

A CITY OF THE SEVERN REVISITED.

PERHAPS few cities have made more rapid strides in architectural progress than last three or four years than the quaint old "city upon the Severn," so noted for porcelain and pickles. A list of what has not been done would be very short indeed, whilst volumes almost could be written upon what has; and the city bids fair to become worthy its geographical and picturesque position, and it would be difficult to find a more pleasing sight than that which meets the prodigal's gaze after Rainbow-hill is scaled. Three years since our country was in extremity, now immigration has taken its place; and wages are rising as fast as hours of labour are shortening. Equally fast are tradesmen retiring, and luxury becoming the order of the day. To the east rises a mansion for the Alderman A., to the west another for Alderman B.; whilst to the north the sweet suburb of New Town crops out, where the cow is wont also used to chew; her more advanced sister suburb of California outgrows her clothes in the south. To fine, the inhabitants appear to believe in nothing but bricks and mortar; in them all are dabbling, rich and poor alike—if, indeed, freeholders and shareholders can be so named. So much so that even the Arboretum itself is turned red by the ruthless hands of the bricklayer; no one who remembers that lordly spot can think calmly of her ravisher. Build by all means, but save us our little garden. Let us have, at least, one lung. Oh, reason! do not let Mammon have it all his own way, prithee!

A LOVER OF PROGRESS.

RIGHTS OF WAY AND GEOMETRY.

Sir,—I have an inkling of a suspicion (one has very high authority just at present for being the reverse of positive or decided), that the legal status of persons using rights of way across open spaces has been laid down recently, namely, that they may have the way on their side, while the path described by the action of their feet is on the whole a right line; the zig-zag produced by the alternate right and left footings not being accounted an error; while on the other hand they are in the wrong box, and guilty of trespass, should the aberrations of their steps extend to the dancing a hornpipe, or the playing at cricket, or the hunting a butterfly, or the seeking the best point of view to sketch from.

So that an open common may be likened to the machine-ruled sky of an engraving, or the surface of a stone which a mason has touched over with a succession of straight lines, and in respect to which the "line of beauty" is a mere deformity, and angularity little less sinful than scroll-work. Turning from open spaces to inclosures, let us see how far the lawyers abide by their principles. Suppose that a dozen houses in a village stand along the base of a triangle, in respect to which the parish church occu-

pies the apex. A public road runs in front of the houses. The roadway used to be a hundred yards wide, ninety yards of green turf and ten yards of dusty gravel. Wayfarers used often to prefer the turf to the gravel, but this was an abuse and a trespass, for they had no right to swerve from the straight line, either to the right hand or to the left. So the lord of the manor (we will suppose), was pleased to "approve" the green turf, and to inclose some eighty yards of it out of the roadway, leaving in the next place the ten yards of gravel, and beyond this the remaining ten yards of space were given as a son to the householders for front gardens to their houses. Why the ten yards of gravel were not further reduced, like King Lear's attendants, till scarcely width for a single person to pass was left, is a mystery which I will leave for the lawyers to solve.

Now, the dozen householders had each a right of way to church; and they had been accustomed (so long as the weather was fine and the grass dry) to exercise it in a legal fashion, by proceeding in straight lines across the turf, swerving neither to the right nor to the left. Thus, a fan-shaped figure of twelve radiating lines was described by their footsteps. So, when the turf was enclosed, of course there ought to have been (on legal principles) twelve stile set up, one in a straight line drawn from the door of each house to the church porch, so that the household No. 1 might get over stile No. 1, household No. 2 over stile No. 2, and so on. Yet, as a matter of practice, in defiance of all principle, the church-way was confined to a single straight path, with a single stile at the end of it; so that only one householder, he who lived opposite the stile, could observe his legal straight line, and the other eleven were compelled to abandon their accustomed radiating lines, and to describe angles on their path to church, as they mount the one single stile.

Now I want to know why these angles are not as illegal as any angles, or curves, or circumvolutions, which way might have formerly described while dancing a hornpipe, or playing at cricket, in former days, on the grassy parts of the roadway from which they are now excluded? G. M.

SUN DIALS.

It would be found more convenient if on the wooden horizontal platform, at a few feet from and on each side of the stile, were temporarily fixed a perpendicular board due north and south; and the stile, and the north and south lines of division on the semicircle transferring to such boards by the straight edge, and a line inclined at the same angle that the stile is fixed at, brought down to the ground from each point, then the temporary boards removed and the hour-lines drawn from such points to the stile: if then equal angles, and similarly placed relatively each to each, be made on the other side of the line running due east and west, they will contain such other hour-lines as may be required.

If the dial be on a wall use perpendicular due north and south temporary boards, and transfer points of division to them as before described, but from these points draw lines upwards to wall, and at the angle of inclination of the stile: remove temporary boards, and through points of intersection draw hour-lines to the upper end of stile.

In a high latitude a horizontal stile will indicate more hours than a vertical one. In the tropics a semi-cylindrical dial at the same angle as stile would best show the hour-lines, if great accuracy were required. The refraction of the atmosphere should be allowed for, but this will not affect the twelve o'clock line.

In my letter of last week the angle of the earth's axis, which plane of revolution round the sun, should have been 66° 32' instead of 23° 3'. HENRY AMBROSE.

THE NEGLECTED BOROUGH ROAD.

Sir,—Probably many of your readers may know and have noticed the wretched aspect of the Borough-road. On one side (north) there are a number of sheds, shambles, fried-fish saloons, &c.; broken wheels and wrecks of vehicles have lain there many years, endangering persons and life. Wayfarers have many ups and downs if they do not fall for the pavement discoloured—holes, ridges, bridges, and stone terraces to tumble over; here and there a cart-load of rusty wares strewn on the pavement. This magnificent road used to be 120 ft. wide—wide and respectable, and adorned with fine structures. Why this eligible ground remains in this condition I know not: perhaps some of your readers may be able to assign a reason. St. James's street is St. Giles's is very unsightly, and, I presume, unprofitable. The railway station has brought the City within five minutes' ride of this grand road, which approximates and leads to all the London bridges. B. T.

ELECTION OF ASSISTANT SURVEYOR, POPULAR, AND COMPETITION FOR NEW OFFICE DESIGNS.

Sir,—I beg to enclose you a report from a local newspaper touching this election, which will speak for itself:—

"The Board pleasantly occupied more than two hours in the examination of plans, testimonials, &c., of the various candidates. This was a proceeding scarcely worth the time, considering that it had been resolved by a majority of the members to elect Mr. Chatterton, who has been assisting the assistant surveyor for some time past."

Perhaps you will allow me to ask the members of the Poplar Board, through your columns, whether the competition is to be decided in the same manner, as I hear that the present assistant surveyor, assisted by the past assistant surveyor, is likely to be a competitor, and now, probably enough we shall find the future assistant surveyor has a finger in the pie. If the members have determined to uphold at all risks their association of past, present, and future assistant surveyors, why ask for other designs? B.

TENDERING ARCHITECTS.

At the usual meeting of the Board of Guardians of the Burnley Union last week, the question of the appointment of an architect to superintend the erection of the new workhouse was again taken up, it having been adjourned from the previous meeting. The Building Committee had recommended the appointment of Mr. Blessley, whose plans had received the 100l. premium. The tender in his case was stated to be 4l. per cent. on the outlay, deducting the 100l., which left it at 3½ per cent., and it was understood that this included the clerk of the works. Mr. W. Waddington, of Burnley, tendered at 3½ per cent. for all, and Mr. Watson at 2½ per cent. for the architect, and 2 per cent. for the clerk of the works. A long discussion ensued, which was terminated by the carrying of an amendment on the motion for the confirmation of the minutes, that they be confirmed with the exception of the part respecting the appointment of an architect to carry out the works, and that this be referred back to the committee.

There is a very decent bricklayer's labourer we know of, who is willing to undertake anything the guardians like for 2l. a week, and to include the architect in it. Perhaps this is the sort of thing would suit them.

PERIODICAL CHIMES.

HAVING some time ago suggested that it appeared to be very desirable to introduce a set of superior chimes in many of our large church towers, and in the noble campaniles of some town-halls, &c., I think it should be made known that the expense of a machine to play appropriate melodies upon an ordinary peal of bells at certain intervals of time will be small in comparison with that of the undertaking for the tower of Boston Church, in which it is intended to place upwards of thirty new bells.

Allow me to add, that if any of our skillful countrymen can construct mechanism for periodical chimes, the performance of which shall be equal in point of precision to that of the best *carillons* in Belgium, the effect will be very satisfactory, and, in my opinion, leave nothing to be desired. Nevertheless, if any man in Europe should be able to produce a machine "which far surpasses any hitherto in use, one special feature of which is its power of rigging [sic] the chimes loudly or softly as the passage of the music may require," all I will say is, that when such a machine is in motion, may I be there to see and hear.

THOMAS WALSHBY.

ARBITRATION.

BADCOCK v. CLARK.

MR. BADCOCK complains that only part of the award was furnished to us. The remainder is as follows:—

"And I further award, order, and adjudge that the said Alexander Clark has no claim and is not entitled to his expenses against the said Robert Badcock, set forth in his invoice of the 18th day of March, 1866, amounting to the sum of 3l. 8s.

And I award that each of the said parties shall bear and pay his own costs incurred by him and about the said reference, and that the costs of this award be borne and paid by the said parties in equal moieties, and that if either of the said parties shall pay the whole thereof for the purpose of taking up this, my award, then I direct that the other of them shall repay one moiety of the said costs to the party so taking up this, my award, when and so soon as the costs of the said cause shall have been taxed.

And, lastly, I find that neither of the respective parties has any other demand, claim, or cause of action upon or against the other of them in respect of the matters referred to me, as aforesaid, than the matters aforesaid by me awarded upon, in witness whereof I have hereto set my hand, this seventh day of May, in the year of our Lord, 1867.

REPORT OF THE AMALGAMATED SOCIETY OF ENGINEERS, &c.

THE sixteenth annual report to the members has been issued. It extends to no less than 430 pages octavo, and exceeds by sixty-four pages that of 1865. Fifteen branches have been added during the past year—three in the United States. The number of members was 33,007, an increase of 2,029. The society possesses an accumulated fund of 133,113l. 8s. 3d., which is equal to 4l. 3s. 8½d. per member; showing a clear gain to the society on the year's income and expenditure of 22,755l. 14s. 4½d. During the year 22,782l. 8s. 2d., or 13s. 9½d. per member, have been paid to members out of employment, which is 8,712l. 3s. 5d., or 4s. 8½d. per member in excess of the previous year. For sick benefit the amount paid has been 13,712l. 17s. 11d., or 8s. 3½d. per member; being 72l. 16s. 10d., or 7½d. per member less than in 1865. The expenditure for superannuation has amounted to 5,232l. 14s. 4d., or 3s. 2d. per

member; being 37l. 17s. less than the previous year. In cases of accident the amount paid has been 1,600l., or 200l. less than in 1865. The funeral benefit amounted to 5,319l., or 3s. 2½d. per member, being 432l. more than the previous year. For the principal benefits the total amount expended was 48,647l. 0s. 5d., or 1l. 9s. 5½d. per member during the year. The number of deaths of members was 376; and of members' wives, 236. Consumption is the chief cause of death in both sexes.

MONUMENTAL.

A GROUP of statuary, by Mr. W. Theed, placed in the principal corridor of Windsor Castle, has been uncovered. The group consists of figures of her Majesty and the Prince Consort, the size of life in the Saxon costume of the ninth century. The position of the two figures readily tells the tale of deep affection and present earthly separation. The heads and hands are portraits. The details and ornaments of the costumes are very elaborate. The figures are of Carrara marble, the pedestals of the marble called "Marmo Africano," wrought from an antique fragment found in Rome. On the pedestal is the line from Goldsmith's "Deserted Village":—

"Allured to brighter worlds and led the way."

The High-Sheriff of Cornwall, Mr. T. S. Bolitho, has offered, in case the Davy Monument Committee resolve to place a statue of the Cornish philosopher in front of the Penzance Public Buildings, to provide a suitable polished granite pedestal for the statue at his own cost.

A committee, consisting of the Duke of Leeds, the Bishop of Oxford, Colonel Howard, and other gentlemen, has been formed for the purpose of erecting in the church of Stoke Poges, near Eton, a memorial of Thomas Gray, the poet, whose remains are interred in the "country churchyard" of Stoke, amid the scenes which he has made dear to all who read the English language. It is proposed that the memorial shall take the form of a window. The only record which at present indicates the spot of Gray's interment is a small stone inserted opposite to his grave, and beneath the east window of the Hastings Chapel.

ROMAN CATHOLIC CHURCH AND SCHOOL BUILDING NEWS.

Liverpool.—The new chapel in connexion with the convent of Notre Dame, Mount-pleasant, has been formally opened with the ceremonies customary on such occasions in the Roman Catholic Church. The sisters of the order of Notre Dame have, since their establishment in Liverpool, been engaged in the work of education, to which they exclusively devote themselves. The new chapel stands above the preaching school, and an exterior view of it may be obtained from Rodney-street. It is over 80 ft. in length, and terminates in an apse, the windows of which are filled with stained glass, the gifts of former pupils and other friends. The breadth is 30 ft., and the roof is high and vaulted. The black marble altar-steps were brought from Belgium, and the encaustic tiles from Shropshire. The design, which is a modification of the Early English, was furnished by Mr. Hadfield, of Sheffield.

Stourbridge.—A Gothic building has been erected here, in which a sisterhood of nuns have just taken up their residence; and connected with it are new schools, in which the education of the young will henceforth be conducted. The new buildings are from the designs of Mr. Pugin. The sisters who have taken up their home in the convent belong to the "Institute of the Blessed Virgin," a religious order which has five houses in England. In India there are some branches of the order. The convent at Stourbridge is not a new house proper, the inmates having been transferred from Kidderminster to this place. There are four school-rooms, each about 30 ft. by 17 ft. The separate rooms are designed for very young children, the children of a better station, and for the elder boys and girls. In the convent itself there is an ample amount of room. There are at present seven inmates in it, five religious and two lay sisters. The ground-floor consists of reception-room, parlour, refectory, and kitchen. On the next floor there is a novices' room, a community-room (where work, study, and recreation take place), an infirmary

for any who may fall sick, and a private chapel. This is about 30 ft. by 17 ft. There are cells or sleeping-rooms on this floor, and on the one above. There is no fireplace in cells, except the postulants'. They are in rooms. Ventilation is effected by holes in upper part of the doors. The new buildings are not yet free from debt. The sum of about 2½ has still to be paid.

Windsor.—An excellent site is secured for church of St. Edward the Confessor, and works are to be commenced immediately. Designs have been prepared by Mr. Charles Buckler. Mr. E. W. Kelly is the contractor.

Wolverhampton.—The Roman Catholic Wolverhampton have opened a third church in this town. The new edifice is situated in Little Lane, a street running out of Stafford-street, the east side, and has been erected for the accommodation of a class of people number about 4,000 persons, chiefly Irish. The structure has been designed by Mr. E. W. Pugin, and it has been put up by Mr. Geo. Heavenham, builder, Wolverhampton, at a cost with its fixtures, of 4,000l. The style is of Early Gothic period. It has a centre and side aisles, is 90 ft. by 45 ft., and will seat 600 persons. It has a clearstory and pillars of Cosl stone, intermixed with Bath stone. Taper for the altar and the reredos are also fitted up with Bath stone. There is a house attached to the church. About 2,000l. have been raised towards 4,000l.

Books Received.

Ur's Dictionary of Arts, Manufactures, and Mines, containing a clear Exposition of the Principles and Practice. Edited by ROBERT HUNT, F.R.S. London: Longmans, Green, Co. 1867.

THE sixth edition is now completed of this valuable and standard work, chiefly re-written and greatly enlarged by its well-known editor, Mr. W. Hunt, the Keeper of Mining Records, and formerly Professor of Physics, Royal School of Mines, &c., assisted by numerous contributors eminent in science and familiar with manufactures. The work is in three portly volumes illustrated with nearly 2,000 engravings of wood.

The public are much indebted to Messrs. Longmans & Green for the excellent dictionary which they have published, and especially for the one now under notice.

In selecting, as we shall do, a passage for quotation by way of specimen of the way in which the multifarious subjects are treated of, it is really a perplexing task to choose from amongst a host. Almost haphazard, therefore, we pick up of Bronzing Powders, which have been much used of late in the decorative painting of houses as one of interest to our readers.

Of Bronzing Powders, after alluding to their use in house decoration, &c., the writer says:—

"They are prepared of every shade, from that of bright gold to orange, dark copper, emerald green, &c. Pale gold is produced from an alloy of 1½ of copper and 2½ of zinc; crimson metallic lustre—from copper; ditto, paler, copper and a very little zinc; green bronze with a proportion of verdigris; another fine orange by 14-4 copper and 1½ zinc; another ditto, 13½ copper and 2-4 zinc; a beautiful pale gold from an alloy of the two metals in atomic proportions.

The alloy is laminated into very fine leaves with careful annealing, and these are levigated into impalpable powders along with a film of fine oil to prevent oxidisation, and to favour the levigation.

Mr. Brandeis, in his account of his articles of manufacture furnished to the New York Exhibition, says:—
"Bronzes, or, more correctly, metallic powders resembling gold dust, were invented in 1643, by a monk, at Furth, in Bavaria, named Theophrastus Allis Bomburgensis. He took the scraps or cuttings of the metallic leaves then known as "Dutch leaf," and ground them with honey. This roughly-made bronze powder was used for ornamenting parchments, capital letters in Bibles, choral books, &c."

At Furth bronze powders are largely made for Europe, and with little change or improvement. There are four sorts of Dutch leaf.

Common leaf, soft, and of reddish cast, composed of 25 or 30 per cent. of zinc to 75 or 70 per cent. of copper.

French leaf contains more zinc, is harder, less brittle, and has a purer yellow colour.

German leaf has a larger proportion of zinc, is of a greenish gold colour; and, lastly, is a white leaf, composed of tin.

The more zinc these alloys contain, the harder, the more brittle, and more difficult are they to work into perfect leaves. The manner of working is similar to the mode for producing lead leaves.

The scraps, cuttings, and fragments of these leaves are the materials for the German bronze makers. First brushed through a sieve and ground with gum water on marble slabs for six days, the gum washed out, the powders sorted, and, and a coating of grease given to make them appear more brilliant, and to protect them from oxidation. Varieties of colour, such as orange, &c., are produced by a film of sub-oxide on the surface of the particles. The price of bronze powders depends upon the demand, and the supply of the waste material of the metal leaves, and prices change accordingly.

Messrs. Brandeis patent their process; and in consequence of being dependent upon uncertain supplies of metal and unknown composition, they take the metals at once in a state of purity (say, copper by voltaic precipitation): it is alloyed with zinc, cast into ingots, rolled into ribbands, annealed, and rolled until the metal is thin and leaf-like; then it is taken to a steam-mill, and ground. The bronze powder is washed out and dried, then introduced into an air-tight box, with an arrangement of boxes; the air of the chamber is set in violent motion by bellows, and the powder diffused throughout; the bronze powders are deposited, the finest in the upper boxes, and the coarser powders below. When tinned, mineral varnish is introduced; the boxes are closed with tight lids are made to revolve, and the particles are thus rapidly coated, and the greatest metallic brilliancy imparted. Different shades of colour, pink, crimson, &c., are produced by submitting the powder to heat and oxidation before the rapid revolutions of the tinning boxes.

The quantity thus produced by one firm, with three steam-engines at work, enables the finished bronze powders to be produced at a rate about equal to the price the German manufacturer has to pay for his materials—the cuttings and scraps of leaves. Hence, for the purposes of trade and export, a large exportation of bronze powders takes place from America to Europe, South America, and China.

The bronze powders are largely used in Japan, for bronzing tin and iron goods, ornamental works of paper, wood, oil-cloth, leather, &c.; while sign-boards and the decoration of public buildings have effective metallic brilliant surfaces of beauty and durability. In fact, for ornamental decorations, the demand steadily increases.

In Holland and Germany the subject has been examined, with the view of ascertaining the effect of chemical composition.

De Heer E. R. König has lately given a table of the analyses of the best European samples of bronze powders and leaves (*Volkshygien*):—

	Copper.	Zinc.	Iron.	Tin.
	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Light yellow.....	82.38	16.69	0.16	0
Gold yellow.....	84.50	15.30	0.07	0
Messing yellow, or brass	90.0	9.61	0.20	0
Copper red-yellow colour	98.93	0.73	0.08	0
Copper red, high shade	99.90	0.00	trace.	0
of purple colour.....	98.22	0.5	0.30	trace.
Purple violet.....	94.32	15.02	0.03	trace.
Light green.....	94.32	15.02	0.03	trace.
Tin, white or leaden grey	0.00	2.39	0.58	97.46

Our importations, in 1864, of bronze powders, were valued at 5,637*l.*, according to the Custom House computation."

The book cannot be too strongly recommended.

VARIORUM.

"On the Utilization of Sewage by Filtration and Irrigation." By C. E. Austin, Mem. Inst. C. E. Mr. Austin here gives practical details, with plans, of a process of irrigation similar to that practised at Croydon, under the superintendence of Mr. Baldwin Latham, surveyor to the local Board of Health. These details cannot but be useful at the present juncture, when the question, What is to be done with the sewage? is pressing so urgently on the local authorities of towns throughout the country.—"The Telegraph

and its proposed Acquisition by the Government. By Robert W. Johnston, chief metropolitan post-office, W., late of the Telegraph service. Edinburgh: Nimmo. London: Simpkin, Marshall, & Co. 1867." The object of this paper is to point out some of the defects of the present system as they have occurred to the writer during a rather extensive experience of practical telegraphy, and to indicate the advantages which might be expected to result from a Government administration of the telegraphs in this country. The interest of the general public, and not hostility to existing companies, has been the chief object in view. Salaries ranging from 30*s.* downwards to 10*s.* for instrument clerks, we should think, are quite sufficient in themselves to account for defects in the telegraph service. Mr. Johnston does not think ladies very competent to apprehend readily the various commercial and other heterogeneous styles in which messages are sent to and fro, although they frequently make most expert manipulators of the telegraphic apparatus. The results achieved under the present system, as regards speed, are, he states, exceedingly variable, and on the whole not satisfactory. Telegrams and letters are so different in their nature, that the penny-postage system cannot well be the basis of calculation for a reduction of rates in telegraphy.

Miscellaneous.

ROYAL HORTICULTURAL SOCIETY.—The Royal Horticultural Society, following the example set by the International Horticultural exhibition of last year, announce that their great *fête*, commencing June 4, will remain open for five days, and we understand it is intended to admit the public on the Thursday and Friday for 1*s.*

NEW COURT HOUSE IN MANCHESTER.—We understand that the tender sent in by the executors of the late Mr. Samuel Bramall, contractor, Hulme, for erecting a magistrates' court-house adjoining the Manchester Assize Courts, in which to transact the magisterial and sessional business for the Manchester division of the Hundred of Salford, was on Wednesday accepted by the committee of magistrates appointed on the subject, the estimate being about 5,300*l.* Mr. Bramall, it will be remembered, was the contractor for the superstructure of the New Assize Courts, and has also had other large public contracts. Mr. A. Waterhouse is the architect.

THE CHELSEA VESTRY REPORT.—The tenth Report of the Chelsea Vestry has been printed. As usual, it is a voluminous record of vestry proceedings, containing no less than about 450 closely-printed octavo pages. It treats of every subject which has been before the vestry in course of the year (1865-6), such as lighting, gas, sewers, sewers, Thames embankment, sanitary matters, Sloane-square improvement, railway progression in the parish, Park-lane improvement, and a variety of others. Some attention has been paid to overcrowding, and the state of courts and alleys; and 109 private drains have been connected with the sewers upon the application of owners, 8 new gullies constructed, a new 12-in. pipe-sewer laid down in Regent-street, and numerous sewers flushed and gullies cleaned. These seem to have been the chief sanitary measures adopted in course of the year.

RUST REMOVED FROM METALS.—Plunge the blade in a bath of diluted hydrochloric (muriatic) acid; say one pint of the acid to one quart of water. Leave it there for twenty-four hours; then take it out and rub well with a scrubbing-brush. The oxide will come off like dirt under the action of soap. Should any still remain, as is likely, in the corroded parts, return the blade to the bath for a few hours more, and repeat the scrubbing. The blade will then present the appearance of dull lead. It must then be well washed in plain water several times, and thoroughly dried before a fire. Lastly, a little rubbing with oil and fine emery powder will restore the polish. Should oil or grease have mingled with the rust, as is usually the case, it will be necessary to remove it by a hot solution of soda before submitting the metal to the acid. This last attacks the rust alone, without injuring the steel; but the washing in plain water is all important, as, after the process, the metal will absorb oxygen from the atmosphere freely, if any trace of the acid be allowed to remain.

THE BRADFORD SURVEYOR'S SALARY.—The town council of Bradford have agreed, with a few dissentients, to raise Mr. Gott's salary from 400*l.* to 700*l.* a year.

THE INSTITUTION OF CIVIL ENGINEERS.—The annual *conversazione*, given by the president (Mr. John Fowler) of this institution, took place on Tuesday evening in Great George-street, Westminster. The rooms were, as usual, thronged with visitors.

AWFUL FEVER AT MAURITIUS.—Upwards of thirteen thousand persons have been carried off at the Mauritius by yellow fever. The official returns from the 10th of February to the 28th gave the deaths at 2,061; in March, 6,433, and from the 1st of April to the despatch of this notice, viz.—the 17th of April, 5,070; making a total number of 13,564. Since then there has been a decrease in the number of sick. Such a frightful mortality, it is to be hoped, will induce the Government and the public to unite in order to improve the sanitary condition of the island.

LIABILITY FOR NEGLIGENCE.—The case of *Thaermair v. Dames* was where the plaintiff, a gasfitter, had sustained injuries by falling down an unfenced shaft in the defendant's sugar refinery, while, by permission of the defendant, he was inspecting some gasfittings which he had put up a few days before, in order to see that they were working properly. The Court of Exchequer Chamber held (affirming the judgment of the Common Pleas) that the plaintiff was not a mere volunteer or licensee, but that he was on the defendant's premises for a purpose incidental to the contract, and that it was therefore the duty of the defendant to have put up some safeguard, or to have given reasonable notice that there was a dangerous place on the premises.

THE ALBERT MEMORIAL.—To the number of sculptors selected by Her Majesty and Mr. G. G. Scott, R.A., to be entrusted with the execution of the several groups, bas-reliefs, and figures for the embellishment of the memorial, has lately been added the name of Mr. J. F. Redfern, who has been commissioned to model eight figures to represent the Virtues—the four Christian and the four moral virtues—which will be electrotyped and placed in the metal-work of the canopy, now being wrought by Mr. Skidmore, of Coventry. Mr. Redfern is also engaged in designing and executing for the restoration of Salisbury Cathedral a number of figures, which, when completed, will fill upwards of forty of the numerous niches of the west front.

OZONE.—Another advance has been made in the utilization of ozone, as demonstrated by the "ozone-generator" exhibited at the *conversazione* given by the President of the Royal Society. It is described in *Chambers's Journal* as consisting of a number of flat sheets of glass, coated with tin-foil, and piled one on the other, but slightly separated. Each plate represents a Leyden jar, and when the whole number are electrified, a stream of air forced through from one end to the other becomes so strongly ozonized that breathing it is painful and dangerous. The stream of ozonized air thus produced can be used for bleaching and other chemical purposes; and this is the form of it that is already turned to account in the decolorising of sugar on a large scale at one of the refineries in the east of London.

ASHFORD CHURCH TOWER.—The tower of Ashford church has fallen into a bad condition, and is about to be repaired. The church is cruciform, and the tower is at the junction. The pinnacles have no other support than the walls of the tower, which stands on four pillars in the centre of the church, and which are of course greatly strengthened by the four extensions of nave, chancel, and transepts; the walls of the tower commence about 5 ft. in thickness, and reduce to 3 ft. 6 in. from the chime loft; and as the pinnacles are octagonal with a width of 6 ft. 9 in., half the pinnacles necessarily rest on an arch springing from the side walls, the expansion of which is supposed to be partly the cause of the present defective state of this pinnacle, accelerated by the agitation caused by the ringing and firing of the bells. Sir John Fogge, who erected the tower about 1470, left estates, the revenues of which were to be applied solely to the reparation of the church; these, together with other estates left for the same purpose, now produce a revenue of about 250*l.* per annum. The north-eastern pinnacle was rebuilt in 1845, and the north-western in 1811.

WATER SUPPLY.—Mr. Whalley has obtained leave to introduce a Bill into Parliament to make better provision for facilitating the supply of water to the metropolis and other towns and districts.

INSECURE STATE OF THE LICHFIELD MUSEUM.—We have received a letter from Dr. Rawdon, of Lichfield, reiterating statements as to the very insecure state of the museum of that city and the inadequacy of the works that are being carried on to remedy it. It would seem desirable that professional opinion should be obtained from outside the town.

PICTURE GALLERIES.—A correspondent suggests, as if new, the arrangement of a picture gallery in steps or stages, so as to make the wall-space available to the top. In our volume for 1860 (xviii.), p. 348, he will find a similar suggestion from Dr. Horace Dobell, with a diagram.

ARCHITECTURAL EXHIBITION SOCIETY.—A lecture was given in the Gallery, Conduit-street, on Tuesday evening last, "On the Ancient Cities of the Eastern Shores of the Adriatic," by the Rev. W. Denton. The lecturer urged that here new sketching ground might be found. At a previous meeting, May 14th, Mr. E. W. Godwin read a paper "On the Architectural Exhibition of 1867."

HYDE PARK.—The piece of park from Albert-gate to Apsley House-gate has been rapidly transformed from a stretch of rough ground to a charming garden, and shows what may be done even with trees by skill and money. The level has been varied, a brilliant turf flourish, and rhododendrons and other flowering shrubs are in full blossom. The spot can with difficulty be recognised. The poor man may here enjoy his pleasure-ground, without the inconvenience of having to pay gardeners.

DRAINAGE OF GEDDINGTON, NORTHANTS.—The southern and largest portion of this village is about to receive a complete system of sewerage, the mains being carried down to the lower part of the town, with a view to their extension and connexion with a filtering process at a future day. The plans have been prepared by Mr. R. W. Johnson, architect, of Melton and Leicester; and the contract for the first portion of the work has been taken by Mr. Patrick, builder, of Geddington. Glazed pipes are to be used for the new main sewers.

TOMB OF THE LATE BARONESS FERDINAND DE ROTHSCHILD.—For some time past the grave of the late Baroness Ferdinand de Rothschild, in the Jews' Cemetery, East Ham, has been tended by Messrs. Veitch, and plants and exotics of the rarest kind have been cultivated around it. Within the last few days workmen have been engaged in erecting scaffolding in the cemetery preparatory to building a mausoleum, which is also intended as the last resting-place of other members of the family. Mr. Digby Wyatt has prepared the designs, which have been approved, and the building is entrusted to Messrs. Myers, of Lambeth.

SOCIETY OF ARTS.—One of those *conversazioni* for which this society has become distinguished, took place last week, at the South Kensington Museum, under the most favourable circumstances. The company numbered upwards of 4,000. The duty of receiving the visitors was performed by Mr. William Hawes, Mr. Peter Le Neve Foster (the secretary), and other prominent members of the Society of Arts. The numerous halls and galleries were, as usual on these occasions, brilliantly illuminated, and the various objects of attraction were seen to the best possible advantage. As a promenade the building was found very satisfactory. The entertainment was enlivened by the music of two military bands.

ROYAL DRAMATIC COLLEGE.—The report read at the general meeting on Wednesday last showed that Mr. Angiolio B. Slous's prize drama, "True to the Core," as performed at the Surrey Theatre, realized for the College 527l. 6s. 6d. Good fortune has also attended this drama at Liverpool. It is intended to produce it at Nottingham, and the council have reason to hope its further performance in other metropolitan theatres. The financial statement for the year ending April 30th, 1867, showed that the total receipts amounted to 3,456l. 6s. 11d., 1,095l. 18s. 10d. of which was realised by the Crystal Palace *fête*. The total expenditure amounted to 1,773l. 2s. 4d., leaving a balance in favour of the institution of 1,683l. 4s. 7d.

THE HOLBORN VALLEY VIADUCT.—The "chief stone" of the viaduct will be placed *in situ* at the south corner of the bridge over Farringdon-street, by the chairman of the Improvement Committee, Mr. Thomas Henry Fry, on Monday afternoon next.

METROPOLITAN LOCAL GOVERNMENT.—The Local Government and Taxation Committee of the City of London, appointed in March, 1866, to watch the proceedings of the Select Committee of the House of Commons inquiring into the local government and local taxation of the metropolis, have recently sent in a report to the Court of Common Council, in which they express their opinion of the general scope and aim of the thirty-one resolutions of the Select Committee of the House of Commons on metropolitan local government, and conclude with some practical recommendations in relation thereto. With Metropolitan Municipal Association, referred to the City Municipal Association, referred to the objects of that association generally commend themselves to their judgment as sound, and calculated to produce beneficial results, as it regards the local government of London; and they are informed by parties connected with the said association that a bill or bills will be immediately introduced into Parliament on their behalf, which will embody their views. The City Committee recommend that they should be empowered to oppose any attempt to subvert the free municipal government of the City, and to assist the other districts of the metropolis to the attainment of their rights of self-government.

WASTE OF INFANT LIFE.—Why is the rate of increase of population decreasing in many countries? An answer to this question, so far as America is concerned, has been given by Professor Storor, of Boston, in the *American Journal of Science and Arts* for March, 1867. The paper was prepared some time since, but it was thought best to confine its discussion, at first, to the medical profession, so that any error either in the statistics, or the reasoning, might be detected. To determine the increase of the English race, the emigrants must be taken into account. The rate of increase in the population of England was highest in the years following the peace, before emigration was developed; it reached its maximum, 1,533 per cent. per annum, in 1811-21, and fell successively to 1,41 per cent. per annum in 1851-61; but if the emigrants who have left our shores had remained in the country, the rate of increase of population would have been considerably augmented. Professor Storor states that the conclusions at which he has arrived do not rest alone on the statistics which he has collected, but that the experience of American courts of justice, and the body of physicians throughout the land, tend to corroborate the fact that the decrease in the rate of increase of population, is owing in a great measure to infanticide and feticide, which prevail to an alarming extent in many of the American States.

COMPENSATION: THE HOLBORN VIADUCT.—At the Lord Mayor's Court a compensation case, "Walton v. The Corporation of London," was heard before the Common Serjeant and a special jury. The claim, as appeared from the precept, was just over 42,000l., and was made up of various items. The jury went to view the property, and on their return the case was opened by the Solicitor-General, who called witnesses in support of the claim, and afterwards summed up the evidence. Mr. Hawkins addressed the jury on behalf of the corporation, suggesting that about 21,000l. would satisfy the justice of the case. The Common Serjeant went through the evidence, and left the question of compensation to the jury. After an absence of half an hour, they gave a verdict for 28,060l. On a previous day was heard the case "The Governors of Bridewell and Bethlehem Hospital v. The Metropolitan Railway Company." The question was in respect to some freehold property in Liverpool-street and its adjacent parts, required by the railway for their Tower-hill extension line. Mr. Hawkins, Q.C., Mr. Garth, Q.C., and Mr. Findar appeared for the hospital; Mr. Lloyd and Mr. Holloway for the Railway. The jury went to make a personal inspection of the property, and soon afterwards the counsel and other parties consulted together. A little time was craved in order to save a long inquiry, and eventually an arrangement was made. Mr. Hawkins informed the jury they had settled the matter, and they would only have to give a verdict for 40,000l.

DECORATION OF WALL-SURFACES.—In things the walls of Pompeii read us which we should be the better for to heart. The sight of any house which is allowed to go out of repair in an English pitiable enough. The crumbling mortar, everything, and the walls exhibit wreaths of paper with the colours faded and the blotting out. After centuries have passed on centuries, the walls of Pompeian have scarcely less firm and beautiful than when owners lived and moved within them, conscious of the mischief about to be done long-slumbering fires of Vesuvius. It would take many a year yet to convince the men that the paper-tanger is not the person to make a home seemly or beautiful that a genuine artistic ornamentation may be within the reach of other than the wealthiest classes. The Pompeians, however, were not wealthy; and some examples of purest taste are found in the houses of whose means were manifestly not great. A beautiful effect produced by the treatment of wall-surfaces is disputed by none; this should still have but an imperfect knowledge of the means employed to obtain it is much regretted. The receipt for making the stucco used by the masons of Pompeii would be a to thousands in this country, who long to escape from the dominance of fashions which are the less abhorred because they are old. Al. Dr. Dyer can say is that "it seems to have been made of calcined gypsum, or plaster of Paris mixed with pulverized, but not calcined, sand, and in the more expensive sort, with powdered marble" (268). This stucco was spread, presently, with an instrument like that which is used by our plasterers; and Dr. Dyer adds "a difference in quality, and an economy in use of it, are observable, which make it probable that the expense varied greatly, according to the fineness of the material." Vitruvius, too, says that the stucco should be always thickly laid on; but he is probably mistaken for "on the columns of the oldest temple, Pompeii, the Greek temple, we see a stucco of extreme beauty, harder than stone, and more than a line in thickness," while the temple of Paestum have received a coat still thinner. *The Chronicle*.

TENDERS

For alterations and additions to 4 and 5, Cromwell-place, for Sir Coutts Lindsay, bart.—
WILKIN (accepted) £2,105 0 0

For studio, conservatory, &c., for Mr. E. Dunlop, Upper Park-road, Hampstead. Mr. W. Wright, architect. Quantities supplied:—

Bricks	.....	£1,198 0 0
Myers	.....	1,144 0 0
Beaves	.....	1,130 0 0
Wardle & Baker	.....	1,090 0 0

For two houses, at Leytonstone, Essex, for Mr. Payne. Mr. G. R. Noble, architect.

Piper & Wheeler	.....	£2,173 0 0
Perry	.....	2,141 0 0
Kilby	.....	1,995 0 0
Hedges	.....	1,861 0 0
Hill & Keddell	.....	1,855 0 0
Arder	.....	1,900 0 0
Rivett (accepted)	.....	1,867 0 0

For new chrome wards at St. Marylebone Workhouse. Mr. H. Saxon Snell, architect. Quantities supplied:—

Stephens & Watson	.....	£8,450 0 0
Heale	.....	6,287 0 0
Martin	.....	6,254 0 0
Kelly, Brothers	.....	6,085 0 0
Slaw	.....	6,072 0 0
Rugby	.....	6,072 0 0
King & Sons	.....	6,172 0 0
Goddard & Webb	.....	6,000 0 0
Brown	.....	6,000 0 0
Nightingale	.....	5,900 0 0
Crabb & Vaughan	.....	5,751 0 0
Henshaw	.....	5,716 0 0
Chappell	.....	5,698 0 0
Wills	.....	5,587 0 0
Munn	.....	5,390 0 0
Nutt & Co.	.....	5,346 0 0
Manley & Rogers (accepted)	.....	5,313 0 0
	.....	5,120 0 0

For entrance lodge, Edmundthorpe Park. Mr. E. W. Johnson, architect.

Hallday & Carr	.....	£604 10 0
Frost	.....	646 10 0

For alterations to premises in Kettering. Mr. R. W. Johnson, architect:—

Margate	.....	£238 0 0
Henson	.....	389 0 0
Wilson	.....	379 10 0
Sharmar	.....	374 10 0

For farm premises, Glendon Estate:—

Watkin	£285 0 0
Brown	690 0 0
Henson	698 0 0
Wilson & Barlow	613 0 0

The Builder.

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Architectural Aspects at Genoa and Turin.



N three, or, with the greatest ease and the slightest possible fatigue, in four days, the traveller now finds himself in succession at London, Paris, Turin, Genoa. The aspects of the two first of these cities are not more strikingly in contrast than those of the two latter, which

are separated by still fewer hours. In both the Italian cities we find the same sun, and more or less of the same Alpine horizon gleaming with the snows of the wintry wilderness between Burgundy and Piedmont; but for the Po that hurries by the side of Turin we have the harbour—nay, the very sea embraced by the curving shore of Genoa; for the city of the level plain we have a city built on the slopes of a circle of hills that descend with every variety of secondary bills and undulations towards the port. The Piedmontese capital is regularity itself in plan, so far as regularity consists in streets arranged at strict right-angles, and of even and constantly of most liberal amplitude, and not without widening centres and open squares and long continued uniform arcades. Genoa is not without open places, but they are come upon at all manner of angles with the streets that lead into them: the streets themselves are widening insensibly, even when they seem at their straightest; are on a level never, and usually steep; at their widest a footway on either side of moderate modern width would go far to obliterate any intermediate roadway, and usually there is none at all; carriages and omnibuses are scarcely available out of one leading artery through the city, and these can move but slowly over the passenger-obstructed pavement; elsewhere there are but few streets where conversation might not easily go on between opposite windows; and indeed the newly-arrived visitor can scarcely but be struck by the frequency and audibleness of the human voice about a town where no rolling wheels and only rarely clattering hoofs and jingling bells of the mules come into competition. Narrow streets in Italy give shade without gloom, and it is only occasionally in some very unfavourable position that we see a daylight reflector—that in London is required in a street as broad as Lombard-street—in the simple form of a banner of white calico pendent in front of a window. Otherwise the ordinary streets are veritable defiles—clefts they seem between immense and lofty masses of building, where ten stories, including mezzanines, are as frequent as eight, and seven are exceptions. And still architecturally, as justly as in any other sense, is Genoa entitled *la Superba*.

The architects of the sixteenth century effected here a transformation as complete and of much the same nature as we have been witnessing in new Cannon-street and about the Bank of

England; and nobly succeeded in reconciling grandeur, amplitude, dignity, with the conditions of the narrowness of a lane. Leading streets and by-streets are occupied by successions of palaces, each of which afforded accommodation for a family in that larger continental sense that allowed of the grouping under a common roof of the head of the family, of married and unmarried children, of uncles and cousins. There go many virtues to the possibility of such arrangements, and good faith, and so mutual confidence within the walls, made head against treachery and violence without.

It is with the aspect of the city and its special characteristics that we concern ourselves now,—with no detailed monography. The façades are frequently—usually—immense square elevations; five or even more of the stories are of noble height; the windows, well-proportioned, and reaching within as near the top of the room as the cornice will admit, are of such liberal width, that sometimes the opened Venetian shutters exactly cover the intervals, that in other cases equal the width of a window with its dressings.

By wise deliberateness or happy instinct the architects have uniformly restrained their mouldings and window-dressings and balconies within limits of most moderate and but slightly varied projection. Hence a general air of repose and self-control, and, if it is not abusing metaphor to say it, of self-respect. There is none of that motiveless competition of story with story which is apt to be suggested by diversities under no apparent norm, and none of the insolent repudiation of conditions that, after all, will have their way in the adoption of a salient treatment, that challenges regard to a distant station point, such as is utterly out of the question. True dignity is shown to be not the less available, and it is obtained by substituting boldness in height and breadth of mouldings, and of distributions in place of exaggerated projection. One feature that is applied with masterly effect, is a deep flat band continued under the window-cills of the first story, and often repeated under those of every successive story, with gradually-diminished dimensions. The height of this band, sometimes 1 ft. or 1½ ft., is very great relatively to its projection, which is little more than that of a proportionate ogree-moulding beneath it. In many cases its profile exhibits the drip and corona of a Greek cornice, with the bed-moulding advanced to its lower edge.

The moderation of projection of these bands, and of the dressings and window pediments of the tiers of stories they divide, assists the emphasis of the projection of the general roof cornice, which is really bold, and yet does not in truth encroach on the interval of houses to an extent that would seem implied by its effect. The uniting effect of it is assisted by its response to the special treatment of the other extremity,—the bold rustication of the base with very large masses of stone. These, no doubt, are often only mimetic; but they are so often, and to such an extent real, that the imitations pass unquestioned, or, if recognised, we are thankful for at least the conception of grandeur they imply. But it is in the treatment of entrance and entrance-halls and vistas from the open street that they who built for the Genoese noble citizens found opportunity and used it worthily. The sentiment of interest and importance on occasion of arrivals and departures has here its full expression. Through the free and culminated portal of grand opening we look into a vaulted hall to ascents of ample marble steps, single or meeting from either side on balustraded landing; beyond again we see the court of the house with vaulted peristyle and loggia above, and often the verdure of a garden in the centre or beyond. The slope of ground upon which so many of these palaces are built gives opportunity for some beautiful combinations of entrances from the two levels; as

where in one fine example a central flight of stairs from a lower pillared hall has its landing in the upper between the flights conducting to a balcony above.

As we look in or enter from the narrow streets of the cooped-up city, we are conscious of a magnificent generosity in the space afforded to these halls. We see the homes of citizen nobles at once wealthy, powerful, and popular. Luxury here is neither hiding nor fortifying itself, nor parading itself. There is a largeness and a freedom combined with artistic effect that quite explain how the architecture of Genoa commended itself so far to the imagination of Rubens as to induce him to bring it before his wealthy countrymen in the architectural publication for which he obtained drawings and supplied a preface.

Here, as in other parts of Italy, we are pleased with the facile resort to vaulting for halls of any size, for chambers, for arcades, and loggias; and here, less often than elsewhere, are we offended by the humiliating metallic bow-string to the arch.

The remarkable flatness of these vaults save our sensitiveness as to economy of space, and gives feeling of reality to interior construction that threatens many an hour of discontent at a flat ceiling. Much fancy is constantly displayed in combining the intersection of the groins even in the simplest plans, and thus deriving novel lines of distributed ornament.

The vertical opening of the windows, in place of the English guillotine sash, is an advantage in favour of grandeur for which climate has in the first place to be thanked; and the same may be said of the comparative rarity and unobtrusiveness of chimneys—chimneys which it is impossible for a lover of architecture to speak of with patience. Treat them how we may they will still vomit smoke, and until invention shall contrive to divert the products of combustion towards the earth they should belong to, and not to the sky that they pollute, we must bear as we may exclusion from our purest air, and such a crowning with the chimney doctor's fool's cap of every triumph of design as we witness at Paris not less abundantly than in London.

From another difficulty, there is even in Italy, and even at Genoa, not so happy an escape. Palace fronts stand flush with the line of the confined streets, and ground-floor windows are, therefore, liable to inlook and overlook. This floor, therefore, becomes only ignobly available; and here, as at Rome, the lowest range of openings too conspicuously and inevitably betray how magnificence rises above cellars of dirt and darkness and evil ventilation. The area of an English club-house meets this difficulty; and the balustraded wall, as managed in the best examples, effectively supplies the requisite union of superstructure with proper base. Even so we do but mask our difficulty, but the difference is of great value still. Palladio's best designs are constantly marred by meanness in this important position; and the façade of Burlington House may be referred to as exemplifying an unfortunate incongruity between the importance of the rusticated basement, and the mean effect of the office-like openings with which it is pierced.

The architectural works now proceeding at Genoa are not very inviting of comment. Materials at hand favour the columnar design, but the sentiment of the column has yet to be recovered here, and, no doubt, will be. In this clear air and unstinted light we learn to appreciate the value, the necessity, of fluting in giving a sharp edge at the outline of the shaft, and precluding the indecision of varying shades and reflections on the smooth, if not polished, round.

But what now of the intimated contrast of the architecture of Turin. This is in every respect of subordinate interest, and we may more willingly comply with the urgency of space to assign to it but a scanty paragraph.

It would be hard to complain of Gnarini and Inarra in the seventeenth century on the same ground of taking liberties with an established style on which we are accustomed to enlarge the never-resting Medieval designers. But all the difference lies in success. It is hard to be displeased with an innovation in Gothic, when the novelty, though inferior to what it supplants, has still a merit of its own, and in itself is not only original, but good. But the propagation of monsters is not legitimate under any theory of the development of species. The general predilection of the architecture of Turin might have been a reaction from the monotony of the right-lined streets; for it is to substitute curved lines for right lines, to adopt elliptical in preference to circular, and even a wave line rather than an ellipse. Thus an important line of front follows the windings of the bow of Apollo; entablatures follow of necessity, curving and recurring; pediments are curved both in plan and elevation, and are as frequently broken as complete; the plan of an apse or a cupola is often taken from the ellipse, and cove and vault are in sympathy. The vertical lines of the classic profiles are treated as unceremoniously; and when the distortion of old details reaches its limit, new are introduced which are fantastic, yet inelegant, wild, and yet clumsy after all.

A certain feeling for general proportions and a certain inventiveness in composition are not to be gainsaid; but the dignity appropriate to all structures of large size and usually challenged by magnitude, even apart from destination, is sadly sacrificed by changes of contour and direction, that savour infallibly of wriggle—be the word allowed and of caprice.

It is the architecture of the age of warriors who went into the field in cuirasses shadowed by full flaxen wigs; it is treated in a style that at best would become interior decoration,—of a drawing-room rather than a hall, and of a boudoir than either. The moulded framings of windows in grand structures at Turin supply motives at least for the ornamentation of picture, or better of looking-glass frames; but even so would require enrichment and refinement. But, as we have said, the oppressive tameness of the city may persuade us to condone vagaries that seem like a caper indulged in for relief after the wearisome inaction of parade or the goose-step of drill.

The architectural lessons, then, that are to be learned at Turin will be for the benefit of chiefly those students who have the art commended by Shakespeare, and it is no slight one,—

"To gather honey from the weed,
And make a moral of the devil himself."

The lover of architecture wanders from city to city, and prepared for many a disappointment, has often to welcome a pleasing surprise; is rewarded for contentions *returanti* and maritime nanses, the worries of the most accomplished of travellers that are coupled in this expressive first paragraph of the *Odyssey*. When a work of consummate beauty and perfected purpose is denied him he may still have his eyes unsealed to a danger of ugliness unsuspected; sometimes he recognizes a happy germ only half developed, and sometimes where all is either decadence or erudity he finds a welcome link in the parted chain of history; finds, perchance, how ignorance at least broke through obstinate tradition at the same time that it defied instruction, and so set free at once and stimulated invention to original contrivances in reparation of the lapse.

RECLAMATION OF LAND AT NORTH WOOTTON. The Norfolk Estuary Company have just completed another embankment of two miles in length at North Wootton, adjoining the lands of the Prince of Wales and the Hon. Mrs. Mary Greville Howard. It was commenced in February last, and has added about 700 acres to that already reclaimed by this Company in the Wash. This now makes a total of about 4,000 acres of the 32,000 to be recovered from the sea for which the necessary funds were raised by the authority of an amended Act of Parliament in 1849. The cost of enclosure is about 10*l.* per acre, and the estimated value of the lands enclosed was, at a late arbitration between the owners of the adjoining land and the Company, considered to be 50*l.* per acre; when it was also stated "that the land would make bricks; there was a good site for buildings, good water, gravel to make roads, and houses might be built on the high land, and corn would grow there."

ROYAL COMMISSION ON RAILWAYS.

The Report of the Commissioners appointed in March, 1865, "for inquiry into the charges now and heretofore made for conveyance on the several railways of Great Britain and Ireland, and whether it would be practicable to effect any considerable reduction in such charges with a due regard to safety, punctuality, and expedition," has just been presented to both Houses of Parliament by command of her Majesty. It would be difficult to characterize this confused and bulky document otherwise than as a signal disappointment to those who have expected valuable assistance in dealing with one of the most pressing questions of the day from the tardy utterance of the commissioners. The disappointment is tacitly admitted by the whole public press. Even scientific and special journals find nothing better to do than to reproduce, without comment, some of the many feeble and uncertain recommendations which the Royal commissioners have printed in large letters here and there in the body of what they call a Report, and have repeated verbatim *en suite*, as part 7, in thirty-two paragraphs. The writers of the report appear to have fallen into the error common to the authors of ponderous volumes that are doomed to the dust of the bookshelf,—they have ceased to write when they should have begun to write for publication. In all literary labour worth the name the pen plays a conspicuous part. The investigator of any important subject must read, listen, look, with pen and paper in hand. Down goes at once every impression, and down with it, very often, an indication of the inference that it suggests, of the train of thought or line of argument that it originates. Very often such impressions are modified, explained, or altogether removed by subsequent information. The note-book should contain all this, and when the whole case is exhausted comes the time to review the voluminous materials, to reduce to clear and logical sequence the crude inferences and partial arguments, and to place before the world a clear, brief, intelligible result of much labour undertaken in the cause of truth. But people are too apt, and we have had signal proof of the fact, to shirk this last and most important part of their duty. A very large book almost always has this upshot—"Judge for yourself!—here is what we have collected." This is far easier than to say—"This is my opinion on the case referred to me, and annexed are the reasons for forming that opinion." But in a time of pressure like the present there can be no doubt as to which mode of dealing with a subject is the true one.

It must, however, in justice to the commissioners, be borne in mind, that for much of the inaptitude of their report to the wants of the day the express terms of the commission are to blame. It is singular to reflect that when, in a debate in the House of Commons on the subject of Railway Finance, not long since, the general assent of the members was expressed in favour of waiting for the report of the Railway Commission, there was not one of those gentlemen who were responsible for the restricted limits within which the labours of the commissioners had been hedged, who had the practical good sense to rise and say that the report would not deal with the question then before the House. The stability of a great national property, of a magnitude approaching that of the national debt itself, the definition of principles of legislation for its protection and development, the discouragement of wanton conflict and ruinous waste, the establishment of a searching and upright system of audit,—these are the points on which the public require both information and protection; but none of these points are included in the instructions given to the commissioners. If the commission had been expressly designed not to enlighten the public, but merely to collect a mass of statistics on which some measures for dealing with railway property at large might be, if not based, at least supported, while at the same time neither the commissioners themselves nor witnesses called before them were informed as to the use intended to be made of their labours, it could not have been more cunningly framed for the purpose. That two years should have been consumed in the inquiry as to the means of securing economy in the working of railways by legislation, the sole apparent aim of the commission, is incredible. About and around this subject, indeed, the report wanders, commencing with the very history of railways, and generally throwing everything on

the never-failing wisdom of Parliament; but of practical, definite, statesman-like dealing with so vast an economical question we see little trace.

The report proper of the commissioners, taking the commission itself as a guide, is contained in the following words:—"We do not consider that any direct legislative enactments would cause greater economy in the working of railways." That is the discharge of the commission. All the rest of the ninety-two pages is beside the mark. It is of course possible to present in a report much that is of real practical value, although not within the strict limits of the instructions. In such a case, however, a reporter fit for his post will know how to distinguish between the opinion for which he was called on, and the extra information which he volunteers. Nothing of the kind is even hinted at in the present report. The thirty-two twice-printed clauses in which the opinions, considerations, and views of the commissioners culminate, are all "humbly submitted" together to her "Majesty's gracious consideration," without any reference to the expression of "our will and pleasure," which called forth the inquiry. Had not the commission itself, dated 11th March, 1865, and the second commission which superseded it, dated 19th December, 1865, been printed with the report, it would have been impossible for any one to guess from that document itself what were the "various matters connected with the railways of Great Britain and Ireland," for the purpose of inquiring into which the commissioners were appointed. Alongside of this brief report,—perhaps lest it should seem too bald if offered to the Crown in its true and proper form,—we find such profound suggestions as the following:—"We consider it desirable that railway companies should avail themselves of every opportunity for obtaining possession of the railway plant used on their lines." "We are of opinion that a sound principle to act on in the matter of working and traffic agreements between railway companies, is to allow any companies to enter into them without reference to any tribunal." "We are unable to see any method of ensuring punctuality in passenger trains by means of legislative enactments."

The report, such as it is, does not even carry with it the weight of the unanimous opinion of the commissioners. Of the sixteen names to which the commission of December, 1865, was directed, only eleven are appended to the report. Next follows a special report from the Right Hon. W. Monsell, M.P., who ventures humbly to dissent from the opinions of the majority of his brother commissioners. Mr. Monsell's report, of thirteen pages, refers to Irish railways alone; and we cannot now afford the space to enter into this distinct branch of the subject. Mr. Monsell urges that the Irish railways should be purchased by the Government. The commission considered, "that when Parliament thinks fit to make advances to Irish railway companies, the money should be lent for a fixed period of considerable length." We have nothing for the moment to remark upon the subject, except that the former proposal appears to be far the most thrifty as regards the expenditure of the public money. But of this, again, as of the greater part of their suggestions, the commissioners carefully shift the onus on Parliament.

A second appendix, however, presents a very different claim on the attention of the public. We cannot, indeed, admit that, in point of style, the author has been more successful than his colleagues, and the idea of commencing a state paper with the words, "when the railway system is observed as a whole every one must be struck," is more novel than admirable. But apart from the absence of clear incisive diction and lucidity of arrangement there is very much to read with serious attention in the report of Sir Rowland Hill. The signature alone is evidence that such must be the case. If there be one institution in England to which we can look with almost unmingled pride and satisfaction it is the one which owes its present form mainly to the exertions of this distinguished man. Comparisons are sometimes made with foreign arrangements to the disadvantage of this country. If we except the causes of certain want of punctuality and safety which are directly traceable to railway legislation, as in the tangle of lines at London Bridge, we think experience of foreign railways shows that any greater regularity which they may claim as to working, results altogether from the fact that they have less traffic to conduct. Under any

pressure the continental lines show far less elasticity than our own. But if we refer to postal service we may safely challenge competition in any quarter. Nothing in England, and nothing out of England, as a means of affording convenience to the public, and at the same time of affording a sensible contribution to the public expenditure, is to be compared to the post-office. To call it perfect would, of course, be absurd, but its errors and short-comings seem to be within the limit of the average of even the best class of individual action. A letter, duly directed, stamped, and deposited in the post-office, will go to its destination with a far greater amount of certainty than that with which it can be ascertained that a person who posts a money-letter shall have taken the necessary precaution of directing it at all!

When, therefore, a man of the justly acquired weight and authority of Sir Rowland Hill, expresses a deliberate opinion that railways should belong to Government, it is entitled to the most respectful attention. Sir Rowland has alluded to the fact that the monopoly of traffic enjoyed by the railway companies, and which the action of Parliament has tended to aggravate rather than to check by encouraging reckless and unprincipled competition, has taken the Legislature by surprise. The powers first conceded to the projectors of railways were given on the understanding that the iron roads should be as free for private traffic as was the king's highway. Very soon, indeed, it became obvious that the regard to public safety which the increase of speed rendered necessary practically repealed all those provisions; and it is to this circumstance that Sir Rowland Hill, with a great stretch of Christian charity, ascribes the subsequent freedom given to speculative competition. That the public must ultimately pay the penalty of the wasteful construction of duplicate lines needs hardly the experience of Sir Rowland Hill to point out; but it is a main and important element in the consideration of the whole question.

Sir Rowland Hill's recommendation is to the effect that a Government department should be created or adapted for the supervision of railways, and "should act as lessor, not only in granting leases, but also in fixing suitable terms and enforcing the observance of contract." The plan contemplates the creation of a new industry, the origination of an entirely new class of men, namely, the lessees of railways. It is contemplated that bodies of contractors should be formed, who shall work the several lines, paying a fixed rate of dividend to the Government, which, from time to time, is supposed to buy up the whole existing railway property. The current payments on account are to be made so frequently,—monthly or even weekly,—as to avoid the necessity of the heavy caution which it would be otherwise necessary for the lessees to pay, and thus to place competition within the reach of a comparatively large number of individuals. The interests of the public are to be protected by making the reduction of fares proposed by the competitors for taking leases as essential an element in the comparison of tenders as the actual amount of rent. The idea, in fact, is a reproduction of that most ancient and, in some countries, still existing scheme, the farming of sources of public revenue. But in a case as novel as the transformation of the entire system of internal communication, the proposal must be viewed on its own merits alone. We are not prepared to offer a definite opinion without further consideration, but there seems almost as much in the form of the suggestion as in the name of the author to pre-dispose practical men in its favour. It certainly seems as if Sir R. Hill had been the only commissioner who at all appreciated the gravity of the situation, and the propriety of recommending something more than a helpless reference to the wisdom of the Legislature.

Sir Rowland Hill has further dwelt, at some length, on a subject to which we have lately called the attention of our readers, that of the extension of railways and of what he calls rail-road bye-ways. The importance of this completion of our internal communication, and the proof of the economy with which it can be effected furnished by the Indian, Norwegian, and Queensland lines, are regarded in this supplementary report precisely as they were in our own pages. The only point raised by Sir Rowland, which is one that we have perhaps hardly brought into sufficient relief, is that a narrow 3 ft. 6 in. gauge is by no means a *sine qua non* of economy. Light and cheap railways can be

constructed on our national gauge, so as to allow the unimpeded circulation of the same trucks, an indispensable requisite for a cheap and thorough system of internal communication. On this point, indeed, the Royal Commission have found breath to offer a distinct and unqualified opinion: "We are of opinion," they say, "that the continued existence of the double gauge is a national evil." In that opinion most practical men will concur. It must not be lost sight of with reference to those branches which will be the occupation of our engineers and contractors so soon as the return of public confidence allows industrial expenditure to resume its natural channels. Uniformity of gauge is as requisite for the branch lines of the future as for the trunk lines of the day.

THE LATE JAMES WATT, LINE ENGRAVER.

ENGLAND has lost since our last publication a very eminent man in the noble art of line engraving on copper,—remember, reader, not on steel, for on that material and surface he did not care to work, feeling that all the skill and cunning of preparation and laying of grounds,—all the dexterity of man's hand,—could not incis on steel in lines with like results to what Sir Robert Strange, Abraham Raimbach, the father of the Landseers, John Burnet, and others have produced on copper. Mezzotint is much to be admired; so is stipple when in the hands of a Bartolozzi; but a great line-engraver is a very great man.

Mr. "J. H. Watt" (he is best known to collectors and dealers by his initials) is dead. Charles Heath was his master,—and a worthy one. Many connoisseurs prefer Mr. Heath's little line keepsake Lady Peel, after Sir Thomas Lawrence, to the large mezzotint (excellent as it is) of the same picture by our happily still living master in mezzotint, Mr. Samuel Cousins.

Much, indeed, has Mr. James H. Watt done for art, and for the extended reputations of Stothard and Leslie, of Sir Charles Eastlake and Sir Edwin Landseer. Print publishers and collectors delight to dilate on the rare, unsurpassed qualities of his exquisite engraving, of Stothard's "Procession of the Fitch of Bacon" (the Dumfrow and Harrison Ainsworth Fitch); while others, with equal enthusiasm, dwell with well-considered gusto and well-placed technical phraseology, over the careful, and feeling, spider-like lines of his translation from Sir Charles Eastlake's "Christ Blessing Little Children," and his large felicitous rendering of Sir Edwin Landseer's "Highland Drovers"—the Sheepshanks picture. The skilled translator translated with the same feeling and dexterity with which the skilled painter painted.

It is only of late years that engravers have been admitted to the full ranks of the Royal Academy of Arts in England. That Mr. Watt might have had—had he chosen—his full Trafalgar-square honours there cannot be a doubt; but he was content, like John Burnet and others, with the gilded fame of an educated man, a place in the portfolio of the taught collector, and the lingering admiration of the thousands who pass the well-lighted windows of the Boydells and Sir Francis Moore, of Pall-mall and Cornhill.

Mr. Watt's works are rather large in point of size than large in number. Let us recall public attention to some of the best of them.

Who does not admire "The Procession of the Fitch of Bacon," after Stothard? In size—12 in. high by 30 in. long—it ranks with the Schiavonetti and Heath engraving, after Stothard, of the famous "Canterbury Pilgrimage." As a whole, we have heard the engraving of the Dumfrow Procession preferred by skilled judges to the engraving of the Canterbury Pilgrimage; while the unfinished Pilgrimage plate (left by Schiavonetti unfinished at his death*) exhibits greater dexterity in the laying of the lines than Watt, with all his consultations with friends and unwearying labours, succeeded in producing.†

When Mr. Watt published this fine engraving, after Stothard, he was living at "No. 26, George-street, New-road, London," near to clever copper-plate printers like Hawkins, M'Queen, and

* June 14th, 1810, aged 45.

† James Heath, the engraver, was the apprentice of Joseph Collyer; John Henry Robinson (happily still alive) was the pupil of James Heath; Charles Heath was the pupil of his father; and George T. Doo (still alive) and James H. Watt were pupils of Charles Heath. The names of the masters of great men deserve to be remembered.

others. Proofs on India-paper were supplied to subscribers at 5s. 6s. a piece, and proofs on India-paper before letters at 7s. 7s. A signed artist's proof of "The Fitch" will, now that the skilled hand is "torpid,"* bring a far higher price under the hammer of Messrs. Christie, Manson, & Woods, or of Messrs. Sotheby, Wilkinson, & Hodge, or of Messrs. Puttick & Simpson.

Fine impressions from Mr. Watt's now "destroyed" plate" (as advertisements assure us) of "Christ Blessing Little Children," after Sir Charles Eastlake, will be sought for still more eagerly than ever. What is cold and chalky under Eastlake's lifeless eye for colour, rendered by James Watt's steel pencil, turns animated, though black and white alone, into flesh such as Sir Robert Strange has alone excelled; but then Strange's opportunities in translating "Thy loved Guido's air,"† were infinitely greater than fall to the lot of the able engraver of Sir Edwin Landseer's "Highland Drovers."

An art memorandum will not be out of place here. "Artist's proofs—India," of the Eastlake and Watt engravings, were priced by its publisher, Alderman Sir Francis Graham Moon, bart., at 15s. 15s. "Prints, plain," at 4l. 4s. It was by these high charges that our modern Alderman Boydell was enabled not to "chaffer" about prices with skilled engravers.

This too imperfect note of the engravings Mr. Watt gave to art and the world must here conclude with a word about his great work, dated some thirty years back, when his eyes were young, and the hand that held the graver was dexterous and unerring. Sir Edwin Landseer (though he missed an Abraham Raimbach) has been most fortunate in obtaining the best services of real masters over copper and steel. In no case, however, has he been more favoured or better represented than by J. H. Watt, who has handed to posterity in black and white, and many impressions, the far-famed "Highland Drovers," the Sheepshanks gift to the National Gallery of Great Britain.

Of this masterpiece on steel (lines not gaping as in some popular prints possessing many merits), there is an etching by Mr. Watt himself, before the "descriptive key" to the engraving, published in the season of 1838 by Messrs. Hodgson & Graves, of Pall-mall, and written at Sir Edwin's and the publishers' request by Allan Cunningham. The opening sentence is picturesque and appropriate to the picture:—

"This fine picture will to many realise scenes which live but in memory, for it is as true to northern character and manners as heather is to a Highland hill. It is of a national as much as of a rural kind; nor have the romantic or the domestic refused to lend it the hues of poetry, and the truth of actual life."

The final sentence is equally to the point, and was liked both by Landseer and by Watt. It is short:—

"The beauty and sentiment of this fine national picture cannot be exhibited in a more description; the writer feels that true Painting can no more be reached by words than true Poetry can be reached by shape and colour; forms, got words, must bring, like this picture, the Highlands to London."

What is here said of Landseer's art deserves to be said as well of the late Mr. James Watt's spirited and faithful rendering of it in simple black and white. The name of James Watt, "line engraver," deserves a niche in that still needed work, a Biographia Britannica.

PIERRE DE MONTEREAU, THE ARCHITECT OF THE SAINTE CHAPELLE, AND HIS WORKS.

It is only a select few among the crowd of tourists who visit the beautifully restored Sainte Chapelle as one of the most exquisite monuments of ancient Paris, who ever dream of asking whether the name of the original contriver of so fair a work has been preserved to the annals of art. But one need not regret this indifference of ordinary spectators to the authorship of that work of marvellous beauty, since the name of Peter of Montereau has been sought out and preserved by the pious care of more earnest appreciators of artistic genius. Not only has the artist's name been disinterred from long neglected records, but fragmental glimpses of his artistic career have been gleaned, and his claim to the creation of many other works ascertained, all of which present special features, arising out of his peculiar and well marked architectural treatment. The works of his over

* Dr. Johnson's fine epitaph on Hogarth. † Pope.

graceful genius have been sought for in every likely, and, it might be added, in every unlikely place; and the search has not been vain, for several monuments of Gothic art of the finest and most interesting epoch of its development are now securely attributed to the great artist-mason of the thirteenth century, in addition to those with which his name was already associated. Peter the Mason was born at Montreux towards the close of the twelfth or the beginning of the thirteenth century, and took his distinctive name of Montreux from that of his native place. The precise date of his birth is unknown, but his tomb affords evidence that he died in the year 1268; so that most of his works belong to the first half of the thirteenth century. The monuments generally cited as the production of Peter of Montreux are,—the Sainte Chapelle of Paris, the Chapel of the Castle of Vincennes, and the Refectory Chapel of Our Lady in the monastery of St. Germain-des-Prés; in the church of which he was buried, and where a monument was erected to his memory, which is still in existence, though no longer *in situ*. It was one of those fortunately preserved from the fury of the destructive epoch of the revolution, and is now in the collection known as the *Musée des Monuments Français*. A recumbent figure, holding a rule and a compass, forms the principal feature of this interesting sepulchral monument; the figure being, doubtless, a portrait—a positive portrait of one of the artistic worthies of the thirteenth century, which seems to have been an epoch when art was more genuinely honoured than in modern times; at all events, till quite recently.

The architectural student visiting Paris during the Great Exhibition should on no account omit to make a pilgrimage to the tomb of Peter of Montreux, nor fail to pay a visit to a recently-restored work of the elegant Medieval architect, which is not generally mentioned among those commonly attributed to him. The work alluded to is the refectory of the ancient Priory of Saint Martin des Champs, now transformed into the library of the Conservatoire des Arts et Métiers. This most elegant structure having been restored much more recently than La Sainte Chapelle, is consequently, in many respects, more satisfactory, though much less has been attempted than in that most gorgeous of modern restorations. The truly elegant and somewhat lofty proportions of the refectory of the Monks of St. Martin at once impress the spectator, whether he be an artist or merely an ordinary sight-seer, with an instinctive feeling of admiration; and the chaste elegance of the original work has not been surcharged with that profusion of gaudy colours and gilding which often, under the pretence of accurate restoration, proves very injurious to the severely chaste beauty of the works of the thirteenth century. That epoch was indeed the "Classical" era, so to speak, of Gothic art, in which the slender elegance of the lofty column and the corresponding form of the graceful lancet window, combined with the sharply-pointed vaulting of the interior of the roof, created a general style of architectural composition which was above all things characterized by exceeding elegance. The central row of columns supporting the roof of the structure under description are of black marble, with white bases and capitals, and serve to divide the apartment into two equal spaces. This disposition is common in refectories in our own country, and may have been adopted in order to secure space for two distinct ranges of tables, a condition that the arrangement of the central line of columns provides for in the happiest manner, as gracefully meeting the requirements of the occasion, and with, if possible, still better results in the direction of the artistic effect, which is strikingly agreeable, and, as regards the ordinary effect of Gothic interiors, novel. The springing of the arches and vaultings from the side walls is from responds of similar character and material to the great central columns: they are three quarters detached, and based on corbels placed about half way up the wall. This arrangement produces a most satisfactory effect of completeness of design, which at once satisfies the most critical observer. The spaces between these lateral colonettes are necessarily occupied by the windows, which are formed of a pair of graceful lancet-shaped openings of great simplicity, while above each pair is a circular opening, enriched with very sober tracery, forming a series of upper lights that cast most beautiful effects of chiaroscuro upon the vaultings of the roof. Another charming

feature of this most graceful apartment is the usual refectory pulpit, from which the benediction, or grace before meat, was pronounced. This structure is formed by a recess in the thickness of the wall, in front of which is a projecting stage or balcony, surrounded by an exquisite balustrade, which rests upon a massive corbel-like support, the sculptured mouldings of which display foliage patterns of three kinds. The spiral columns, arched mouldings, and cuspings which form the dressings of the niche itself, are of great beauty, and their complete and delicately studied restoration has been most successful. The painted decoration of the vaulted roof has also been completely restored, with the feeling for tender harmonies of colour which distinguishes works of the thirteenth century, and of which such delightfully beautiful examples are found in the illuminated manuscripts of that period of Gothic art. The whole of the library fittings of this work are the result of careful study, even to the locks and hinges of the doors, and, as a whole, it is perhaps the most successful restoration of a Gothic interior of that period in France. The earlier French restorations, effected fifteen or twenty years ago, though most excellent efforts for the time, and which served to point the way to still better things, are most of them left far behind in their appreciation of the delicate beauties of Gothic art by this, and other later works,—even the celebrated restoration of the Sainte Chapelle failing now to satisfy the exigencies created by a still more full and appreciative study of Gothic art. Every architectural student who visits Paris during the brilliant period of the International Exhibition, should see and carefully examine this monument of Medieval art; and should not omit a pilgrimage to the tomb of Peter of Montreux, the great artist-mason, to whose genius for architectural design we are indebted for the charming saloon which now forms the library of the Conservatoire des Arts et Métiers.

THE HOLBORN VIADUCT.

On Monday last, the chief stone of the viaduct over Farringdon-street, a main feature in the proposed filling up of the too-long permitted Holborn valley, was laid by Mr. Thomas Henry Fry, deputy-chairman of the City of London Improvements Committee. The pier to which the chief stone belongs is the southernmost of the row on the eastern side of Farringdon-street. It is of considerable size and weight. In the course of an able address, Mr. Fry referred to the length of time that had elapsed since the improvement was first mooted, and said it was now to be carried out by the reversion of the 4d. coal duty.

Mr. W. Haywood, the architect of the improvement, gave a concise account of the contemplated works which we may usefully record:—

"The Holborn Valley Improvement consists of a viaduct, supporting a roadway between Hatton Garden and the western end of Newgate-street, and two side streets connecting the upper with the lower or Farringdon-street level.

The line of roadway on the viaduct will be 80 ft. in width, and will commence at the western end of Newgate-street; from that point it will be carried in a straight line to the western side of Farringdon-street, occupying nearly the whole of the space which now or recently formed Skinner-street, as well as a large portion of the sites of houses on that line of thoroughfare; it will include also a portion of the churchyard of St. Sepulchre. From Farringdon-street westward it will be carried by a gentle curve to the end of Hatton Garden, occupying the sites of the houses which formerly stood on the southern side of Holborn-hill, and the largest portion of the present roadway at that spot; it will also occupy part of the churchyard of St. Andrew's, Holborn.

From Newgate-street to the entrance to St. Sepulchre's church the gradient will be about 1 in 68, and at that point the eastern approach street, from Farringdon-road will join the viaduct on its northern side; from St. Sepulchre's church to Farringdon-street the gradient will be 1 in 183, and from Farringdon-street to Hatton Garden 1 in 143; for all the purposes of traffic, therefore the viaduct may be said to be level.

The viaduct in its formation will include vaultage beneath each footway, for the accommodation of the future houses on either side of the roadway; outside these vaults will be a subway for the gas and water pipes, and between each subway, and forming the centre of the viaduct, the roadway will be carried on a series of arches.

The footway vaults at the point next to Farringdon-street will be three tiers in height on each side of the road, and they will gradually diminish, both eastwards and westwards, until at Hatton Garden and at Newgate-street they will be but one tier in height.

The general height of the subways will be about 11 ft. 6 in., and their width 7 ft., they will be constructed of brickwork, excepting where they are carried over the London, Chatham, and Dover railway, and at that point they will be altered in form, and be constructed of iron; the tops of the subways will be but a small depth beneath the footway pavement, and at Farringdon-street and Shoe-lane vertical shafts will be formed, to enable connections

to be made between the pipes in the subways and those in the streets named.

In each subway a provision is made for water, gas, and telegraph pipes, all of which will be placed such that their joints can be inspected, and repairs made without difficulty; the subways will be well ventilated, and tubes will be left between the subways and the vaults of the houses for the introduction of the service-pipes to the various premises. At each of the subways, as well as beneath the bridges at Farringdon-street and Shoe-lane, there will be entrances for the purpose of admitting workpeople, and taking in any materials that may be needed.

Immediately beneath the subways are sewers. Drain from every alternate house vault will be constructed to these sewers at the time the viaduct is built; and the mode of construction of sewers, drains, and street gullies is such that it is believed it will never be necessary to break up the surface of the viaduct when it is once formed to repair or cleanse them.

The central vaults beneath the carriage-ways will be formed by arches springing from east to west; they will be ventilated into the carriage-way; the level of their floorings will be such as to enable carts and trucks to be easily drawn along them; they will be commodious, dry, and have a uniform temperature, and, it is anticipated, will be valuable for many purposes of trade and commerce. The entrance to these vaults will be in the abutments of the bridges over Shoe-lane and Farringdon-street.

On the top of the footway vaults and the subways the footway pavements will be laid, and the carriage-way will be principally laid over the large central vaults.

Farringdon-street will be crossed by a cast-iron bridge of an ornamental character; it will be in three spans, supported by piers, one row being on the outer edge of each footway; these piers, as well as the outer abutment piers, are to be formed of polished granite; the height of the bridge next to the curb stones will be 16 ft., and in the centre the minimum height will be 21 ft., which is considerably more than sufficient for the traffic.

At each corner of this bridge flights of steps will be constructed to enable pedestrians to pass between the upper and lower levels; these will be enclosed in stone structures, ample light and ventilation being given to them; these structures will be carried up some stories above the level of the viaduct, beneath the steps the space will be appropriated as shops or warehouses, and above the steps, the floors will be eligible for offices, or for general commercial purposes.

Shoe-lane, which at its northern end is now but 14 ft. wide at one spot, is to be made 30 ft. wide; the viaduct will be carried over it by a girder bridge. This lane is to be continued northwards with a 30 ft. width to its junction with the new street, which is to be formed from the corner of Hatton-garden to Farringdon-road, and which will presently be described.

The western approach street will start by a junction with the viaduct at Hatton-garden, and be carried in a north-easterly direction to Farringdon-road; opposite to it the new street leading to Smithfield-market will commence, the two streets will therefore together form one straight line of thoroughfare 60 ft. in width, giving direct access to the market and to the north-east of London.

The eastern approach street will begin at Farringdon-road, about the point where that thoroughfare will be crossed by the viaduct; it will be carried nearly parallel to the viaduct for some distance eastwards, and will join on to it with a gentle curve by the side of St. Sepulchre's Church; this street will form a junction with King-street, and will, therefore, give another line of access to the new market. The lower end of this street will take the place of the thoroughfare which is now known as Snow-hill, the whole of which will be absorbed by its formation, or by the buildings to be erected on either side of it.

Farringdon-street or road, at a short distance southwards of the bridge, will have its levels altered, and will be carried with a gradient of 1 in 45 as far as to West-street, and from that point northwards with a very slight incline, until it again falls into the present level of the road. This alteration in gradient will enable the side streets to be formed with gradients of about 1 in 45.

In the approach street sewers will run throughout their entire length, and above the sewer in the western street a subway is to be constructed, which will connect with the subways on the viaduct.

In the year 1853 the Corporation of the City of London prepared and deposited in Parliament plans for this improvement, and in 1854 the Act was passed authorising the works which are the subject of this paper. They are the property of the Corporation, and the Corporation has under the superintendence of Mr. William Haywood, Messrs. Hill & Keddell are the contractors.

The foundations for the viaduct already put in reach from St. Andrew's, Holborn, on one side of Farringdon-street, to Angel-court, not far from St. Sepulchre's church on the other. We do not know of any reason now why the works should not be proceeded with rapidly.

SOME RELICS OF VERY OLD LONDON.

In connexion with the various accounts that have appeared in the *Builder* regarding the remains of ancient lake habitations in different parts of the globe, the following additional particulars of some very ancient remains found in London late last autumn have interest. During the excavation for the foundations of a wool warehouse on the south side of London-wall during last October and November, and 17 ft. below the surface of the earth, a number of charcoals of ancient bones were discovered. They consisted principally of the bones of an extinct ox, wild boar, wild goat, red deer, dog, and roebuck. When the excavations were carried deeper—viz. 22 ft.—many other objects were found, and amongst them eighteen human skulls, some human jaws, and four other human bones, including a shoulder-bone; no other portions of the skeleton being present.

But the most remarkable part of the discovery consisted of more than a hundred very ancient decayed unshod piles, driven into what appeared to be part of the ancient bed or shore of the Thames, or the bottom of a marsh, which bed had never been disturbed; the piles were from 6 in. to 8 in. square, and connected with transverse pieces measuring 2 in. in thickness, rotten, and roughly cut. In the upper part of the *débris* were a number of iron and bronze pins, knives, &c., large quantities of Samian pottery, and coins of Nerva, Vespasian, Trajan, Adrian, and Antoninus Pius. In one part, at a slight distance above the gravel, a kitchen-midden, 18 in. thick and 14 ft. long, was found, consisting of the shells of the oyster, mussel, cockle, and periwinkle; on this there were 18 in. of peat, and then a similar kitchen-midden above.

The Roman remains were at the top, and the piles and kitchen-middens below. Many of the bones of the animals were split lengthwise, and nearly all the skulls were split longitudinally (including the human skulls, which were all broken except three), and the horns of the oxen were cut off. A number of roughly-pointed and squared bones were picked up, including the usual collection of singular objects of unknown use.

During November similar piles were discovered on the other side of the Thames, in New Southwark-street, as was stated in our pages at the time, and everywhere on the north side where the excavations were extended, these pile-structures were discovered consisting of oaken piles, driven about 3 ft. into the primitive gravel, and connected with transverse pieces. The builder's men said exactly similar piles were constantly brought to light in deep excavations, notably in the neighbourhood of the Bank, Mansion House, New Auction Mart, &c. Some think that these are the most ancient remains of London ever brought to light, and date anterior to the Roman invasion, when London was built upon a marsh as described by Caesar. For our own part, we must confess to doubts.

TAMWORTH CASTLE.

TAMWORTH CASTLE stands at the confluence of the Anker with the Tame, on the right bank of either between the town and the latter river, and close above St. Mary's Bridge. It occupies a position near the east end of the south, or river front, of the old town, the outlines of which are still indicated by a bank and ditch, showing it to have been in plan a parallelogram, with one side resting upon the Tame, and the east end defended by the Anker. The low ground about the junction of the rivers, the broad meadows on the left bank of the Tame opposite to, and on both banks below, the town, in their natural condition a deep morass, must have rendered the place nearly inaccessible upon its east, south, and west fronts; and, no doubt, led to its conversion into a safe residence at a very early period.

As the ground rises from the river, the town and its grand old church occupy positions rather higher than the castle, and which must always have been dry and airy, and, in consequence, salubrious.

The line of the town defence upon the east side is known as the King's Ditch; in reference, it is supposed, to the Mercian Offa. Though without anything like sharpness of outline, and occupied as a nursery garden, the work is by no means obliterated, and may be traced nearly from the Anker below Bolebridge for about 300 yards northwards. It is composed of a raised bank, which formed a terrace behind the wall or palisade, a ditch more or less filled up, and beyond this a slope representing a glacis, or space outside the works, which it was the custom from a very early period to keep clear of cover. Bank and ditch are about 45 ft. broad. The Market-street intersects the line of defence, and, being old, probably was crossed by a gate-house. There are some slight and uncertain traces of masonry upon its north side. Further north, a modern road affords a good section of the bank.

This side joins the north front at right angle, within which is a sort of tower, remembered as somewhat larger, and which looks as if it marked the site of a mural tower, or perhaps a cavalier or small mound.

The defences of the north front skirt the Lichfield and Polesworth road, and are traceable nearly to the cross-road from Seckington. Beyond

this, the line, now built over or enclosed in walled gardens, was traced by Dugdale along a front altogether of 400 paces, to a mound marking the north-west corner, from which the line passed at right angles southwards to the river. This would give a space of about 300 yards by 400 yards as the enclosure of the town. Outside the west front the ground sinks rapidly into the meadows, among which, on the river-bank, and just outside the town, is the Moat House, an old seat of the Comberfords, still standing in all its dampness, although the moat has been filled up.

The principal bridge, that across the Tame, close below the castle, known as St. Mary's or Lady Bridge, is of modern construction. It succeeded a mediæval structure, shown in Shaw's plate of 1780, the precursor of which was probably a bridge, or perhaps a ford, of Saxon times. In Ieland's day, a stone upon it bore the arms of Lord Basset, of Drayton.

Bow, or Bolebridge, crosses the Anker, and leads to the hamlet of Bolehill and to Nuneaton.

The church is a large structure of considerable merit, containing some Norman work, apparently once connected with a central tower, and in which may be seen traces of herringbone masonry. East of it are some ruins, known as the Deanery, part of which seems also to be Norman. The Market-place, though much altered, represents an early space set aside for trading purposes.

Tamworth has no historical pretensions to either British or Roman origin. The Britons would have designated it from the smaller stream. The earliest mention of it is in the records of the people in whose tongue it is named. Offa, King of Mercia, in a charter of A.D. 781, announces himself as "Ego Offa rex, sedens in regali palatio in Tamworthige," an evidence of its distinction at that time, and one which renders it probable that it had an earlier history. Cenwulf dates a charter of A.D. 816, "In vico celeberrimo qui vocatur Tamworthig," and other royal charters are dated from it in 841 and 854. So that in the eighth and ninth centuries it was already a royal residence and a place of celebrity.

The Danes ravaged it in common with much of Mercia early in the tenth century, and in A.D. 913-14, it was restored by Æthelred, "Elfreda potens! O terror virgo vicorum!"

daughter of Alfred, sister of Edward the Elder, and the foundress of Tutbury, Warwick, and many other well-known Saxon places of strength. She is reputed to have cast up the mound and to have placed her residence on the summit. She died here A.D. 918-22.

The castle and half the town are in the shire of Warwick; the other half and the church in Stafford. There is no mention of the castle in "Domesday."

At the Conquest Tamworth became the property of Robert Marmion, who seems to have fortified it as such earthworks were fortified in Normandy, and to have made it strong enough to be obnoxious, some time later, to King John, who, in 1215-16, ordered it to be razed. Under Henry III. another Robert was its Lord, and Philip Marmion died seized of it in 1291-2. From Marmion it descended to Freville, thence to Ferrers, thence with Ann Ferrers at the end of the seventeenth century it came in marriage to the house of Shirley, from whom, through Compton, it passed to the Townshends, whose representative, Marquis Townshend, is 16th Baron Ferrers by writ of 1299, and owner of Tamworth Castle, while Earl Ferrers, the male heir of the Shirleys, is Viscount Tamworth, by creation in 1711.

From the Norman Conquest to 20 Edward I., the castle descended through five generations of Marmions; from thence to 7 Henry V. through six of the house of Freville, and from thence to 1680 through eleven descents of the name of Ferrers; being twenty-two lords from the Conquest to 1680. King James and Prince Charles lodged here in 1619.

The CASTLE is composed of a mound, a platform, buildings upon the mound, a curtain-wall ascending it, and the remains of a gatehouse.

The mound is wholly artificial, about 50 ft. high, circular, and about 100 ft. diameter at its flat summit. Its sides stand at the natural slope of mixed dry earth and gravel, the *débris* of the new red sandstone of the district; and its base may be about 12 ft. above the river.

South-east of the mound is a triangular platform, also more or less artificial, and raised about 15 ft. above the river. One side is straight, and fronts the water. That to the east is at present a hollow curve, and has evidently been retained by a wall against which it

formed a terrace. This side extends northwards to the ruined gate-house, indications upon which seem to show that part of the platform has been removed, and that it originally extended a few yards eastwards into the present brewery; so that this front was, no doubt, straight, and not, as now, concave.

The third side, or hypotheneuse of the platform, lies towards and partly encircles the mound; and is therefore concave; and between the two is a ditch. Excepting this "valley of elevation," there is no present trace of a ditch at the foot of the mound.

Below the south front, between it and the Tame, and close above St. Mary's Bridge, is the castle mill, rebuilt in modern times. It is worked by the Anker, which, sweeping round the south-east front of the castle, serves as a mill leat.

Above the mill and between the leat and the line of wall, is a narrow strip of land, now a garden, and probably once a pasture beneath the castle wall.

North of the platform a curtain wall runs from the gatehouse up the mound, with the summit of which its top is level. This wall in plan is angular, or slightly convex, towards the exterior or town side. It is 10 ft. thick, and has a rampart wall of 7 ft., a parapet of 2 ft., and a rere wall of 1 ft.; and the rampart was the regular, and probably the only, way from the gatehouse to the top of the mound. It rises gently, but has no steps. It is about 20 ft. high at the central part, ending and commencing at nothing. It is of herringbone masonry, of flat stones laid obliquely on edge, each course being separated by a horizontal bed, sometimes single, sometimes double, of small stones, resembling flat pebbles. At the deepest there are twenty-one courses. Here and there the surface has been clouted, but on the whole the wall is in its original state, very rough, but perfect. The joints are very open. The exterior face is less perfect, and is, besides, concealed by clumsy buttresses, perhaps of Tudor or earlier date. The herringbone structure is not seen in the rere wall, which is probably a restoration, but it appears in the parapet, for a foot or two above the rampart walk. This is a very remarkable wall, and should be photographed in detail.

The wall from hence to the gatehouse is in part old, but of later date than the curtain. The gatehouse itself, called the upper lodge, is chiefly modern, but part is old; and connected with it are the remains of an arch jamb and portcullis groove, probably remains of the main entrance to the castle. This gate leads by a short lane into the market-place. The lower lodge, or entrance from the bridge side, was built in 1810, and with its adjacent wall, is wholly of that date.

The mound is crested by a many-sided shell of wall, about 7 ft. thick, and from 30 to 40 ft. high. This wall is in part very old. The base has been supported by a modern facing, which batters considerably, and is about 2 ft. high; but above this for 6 ft. or 8 ft. the workmanship is open-jointed rubble, with stones of large but irregular size and shape. The quoins are, however, of ashlar, rude but sound. Above this to the rampart height, the wall seems to have been rebuilt in early times in a better manner, but as though the old work had been left where sound, so that the two run much into one another.

The upper 10 ft. of the wall, all parapet, seems of still later date. It is crenellated, and occasionally looped at the rampart level. At the S.W. quarter is a loop about 6 ft. from the ground, and two others higher up, all which are apparently of the age of the wall, and being near the well probably lighted the offices. This wall is much obscured by ivy. It has been materially altered at two points; on the south side entirely rebuilt for several yards to form the outer wall of the southern private apartments; and on the opposite side by the insertion at the same time of several large late Tudor windows, to light the northern apartments. Under these latter are three heavy masses of stone-work to support balconies. One is of somewhat earlier date and of better design.

In the circuit of the wall, to the south, and commanding the way up the curtain, is a tower 24 ft. square, and having 5 ft. projection from the wall. Its angles within are plain, but those without are flanked by two narrow pilaster strips, leaving a free angle between them. These strips rise about 20 ft., and clumsily pass into a sort of octagon, which at the top of the tower becomes a cylinder, and is so seen on the battlements,

These, however, may be an alteration. The tower is about 40 ft. high, and the walls are 7 ft. thick. It somewhat batters. On its exterior face are two Tudor windows; and about half-way up a string-course, stopped by the pilasters, which in the centre rises as a half round drip, probably overhauding a Norman window. This tower is of rubble, of the date of the wall, with ashlar pilasters.

A few feet south of the tower, and, therefore, close to the curtain wall, is the doorway into the shell. This is of small size, with an equilateral arch, plain square jambs continued up through the arch moulding, which is very plain, the angle only being rounded off. The drip, if one there was, has mouldered away. This doorway traverses the wall rather obliquely. The inner front has a ribbed head, and two faces carved upon it near the springing. There is neither portcullis groove nor large bar hole. The defence was a single door.

Between the door and the tower a sort of oriel has been corbelled out at an early period, possibly to defend the approach. At present it has a loop in its basement, and two Tudor windows above, and is surmounted by a small gable of the same date.

Round the base of the wall is a terrace, about 10 feet wide and 8 ft. high, above the slope of the mound. The retaining wall is in part old, and is supported by short stout buttresses, apparently of Decorated date. This wall has been patched, and in places rebuilt, in Tudor and later times, and its low circumscribing parapet is mostly modern. What it was, or when constructed, is uncertain. It may have carried a low parapet, a sort of chemisette, defending the base of the wall, and intended to supply the place of a ditch, or other defence, at the foot of the mound. In the last century it was crossed on the south side by a wall, with a gate in it, but this probably was not original.

The buildings within the shell are next to be described. The entrance lies beneath a sort of gatehouse, of the date of the other buildings, having on the right the tower court, and in front a rather elaborate doorway, of the style of James I. This opens into a passage or lobby, having on the right the great hall, on the left a buttery, or modern louskeeper's room, and in front the way to the kitchen.

The hall lies north and south, and occupies nearly the centre of the enclosure. At each end of it are distinct suites of apartments, having no direct communication save through the hall. On its east side is the tower and the tower-court; on its west side the kitchen and kitchen-court.

The hall is 40 ft. by 20 ft., the end of honour being the north. The entrance-door is on the middle of the south end. The north end is blank. Of the east side, about the south half is occupied by a large oak frame, with square apertures, glazed, reaching from about 5 ft. high to the eaves of the roof, and looking into the tower-court. In the same side at the north end a door leads by a stair to the northern apartments and the tower. On the west side, in the centre, is a large fireplace; to its north a window similar to the other, but rather smaller; and to its south a door, opening on a stair, leading to the southern apartments.

The roof of the hall is of open-work, supported by two detached and two engaged principals, one against each gable. The stone floor has lately been replaced by boarding. The three doorways are roundheaded, of the age of James I. The aspect of the hall is gloomy, the roof heavy and unskillful, the windows unpleasant, and the walls thin and of brick. There are here four good wrought-iron candlesticks, about 6 ft. high.

The southern apartments upon the basement are, with the exception mentioned, private. On the first floor are the library and drawing-room, and one or two private rooms. The library is panelled with oak to the cornice, and along the upper tier of panels are painted Ferrers and his matches. The fireplace is very handsome, and above it is a large achievement, carved in black oak, of Ferrers and his quarterings, crest, supporters, and motto. The drawing-room, also panelled and larger, has a good fireplace. Each room has a large Tudor window to the south, and is exceedingly cheerful. The second floor is not shown.

The northern apartments lie between the hall and the north wall, in which the windows are pierced. The basement is composed of cellars, on the ground-level, opening from the tower and kitchen courts. The first-floor contains a large drawing-room and two smaller

lateral rooms. All are dismantled, stripped of the panelling, and in a state of decay. The second-floor contains bedrooms, also disused. From this floor a door opens upon the rampart of the enceinte wall, where it is seen to be 7 ft. thick, and to have a parapet about 10 ft. high. Below is the kitchen court, and against the wall may be seen a sloping water-table marking a roof, probably of an early kitchen. At the other end these rooms communicate with the tower, the floors of which are ruinous. The tower basement is entered from the court. The stairs throughout are in rectangular staircases, and each step is a heavy log of oak.

Between the hall and the west wall is the kitchen, fitted up with a modern roof and appliances, but, no doubt, on an old site. At one end of it is the well, about 5 ft. diameter, lined with ashlar, and descending to the level of the river. At the other end is the kitchen court, in which is seen a closed doorway leading into the basement of the northern apartments. It may be of Decorated or Early Perpendicular date.

Looking to the rectangular and oblong outline of the defences, the cross-roads, and the position with one open side upon a river, it is difficult not to regard Tamworth as of Roman origin, or as modelled by Roman occupation. The Icknield street, in its course from Birmingham towards Lichfield, passes, it is true, no nearer to Tamworth than Wall, the ancient Eboracum, six miles distant, where it is crossed by the Watling street; but this latter, in its course to Atherton or Mancetter, passes through Fazeley, only a mile south of Tamworth; and had it not been for its considerable angle at Wall, it would have passed directly through the town. Nevertheless, Roman towns are generally indicated by history or tradition, or the remains of Roman masonry, or articles of domestic use, and these evidences appear here to be entirely wanting.

But whatever may be the origin of the rectangular bank and ditch, there can be very little doubt but that the mound and platform of the castle were the works of Æthelred or her Saxon predecessors, the one to support the usual timber stronghold of the Saxon thames, the other for the huts and sheds of their retainers and their cattle. Probably a ditch included both mound and platform on the three landward sides, and both these and the river front were strengthened by a palisade. As no mention is made of the town walls, no doubt a similar defence crested the bank all round. This is the arrangement well known to have been centuries preceding the Conquest, and a good and much earlier local example of it was given by the Romans at Wall, where a few years since the palisades were discovered preserved in a morass which formed their defence in front.

The Normans seem to have begun here, as elsewhere, by building a strong place, perhaps a rectangular keep, on the level, that is the platform, where was for many centuries the castle-house, which thus stood near the foot of the mound, as at Cardiff and Warwick, and towards the Market-place. The entrance to this castle was evidently at the spot marked by the ruins of a somewhat later gatehouse, from the town, and upon the market-place.

The curtain-wall cannot be much later than the Conquest. It is clear that it never was prolonged across the top of the mound, as the slope of its rampart wall only points to the level of the top; probably, therefore, when it was built there was a structure of some sort upon the mound. It is also uncertain whether the curtain recommenced on the opposite slope of the mound, and was continued down by the present lodge towards the mill, in which case the area of the castle would have been about 100 yards square.

The present shell, upon the mound, cannot be much later than the curtain, though scarcely of the same date. The entrance door and the middle band of the wall seem additions of one age, perhaps of the reign of John or Henry III. The terrace and the oldest parts of the interior are probably later, perhaps of the time of Edward I. or II.

Leland, writing in the reign of Henry VIII., says, "The castle of Tamworth standeth on a most high ground, at the south part of the town, hard upon the ripe of Anker, at the mouth of it. The base court and great ward of the castle is clean decayed, and the wall fallen down, and therein be now but houses of office of no notable building. The Dungeon hall yet standeth, and a great round tower of stone, wherein Mr. Ferrers dwelleth and now repaireth

it. . . . The town of Tamworth is all builded of timber." [itin. iv. 122.]

The base court evidently was the platform, and the great ward no doubt included all the ground south of the present curtain, and between the mound and the mill.

In the east window of the church was a painting, of which a copy is preserved by Dugdale. It represents the Conqueror enfeoffing Robert Marmion with the castle. The king stands in front of a considerable building, fronted by two drum towers of two stories with conical roofs, and connected by a curtain. In one tower is a gateway, and behind the two are seen, in perspective, the stepped gable of a hall, and the chisel-pointed roof of a rectangular tower.

On the proper right of the king and of the building, in the distance, is the mound, crowned with a wall. This is no doubt a representation, rather exaggerated, of the castle, as it stood in the later Plantagenet times.

Dugdale, writing after the civil wars, says, "the Norman castle stood below, towards the mercate-place, where the stables now are." The mercate-house, rebuilt in Queen Anne's days, remains: the stables are removed to the other side, towards the bridge.

13 Ed. I. Philip Marmion had made a certain "pour preasure," or encroachment, to the injury of the king's market, on either side of Tamworth Castle, containing a width of 8 ft. and a length of 40 ft.

The Mr. Ferrers whom Leland mentions was probably Sir John Ferrers (died 1576), who married Barbara Cockaigne; and the domestic buildings now standing were his work, and, perhaps, the work of his son and grandson.

What originally stood within the shell is unknown, probably some lean-to houses of Early English and Decorated date, which were removed, or nearly so, for the present structures. These latest works are mainly of brick, with freestone dressings and doorcasings. C.

NEWS FROM IRELAND.

NOTWITHSTANDING the disturbed state of the country, there are many works in progress through Ireland, and not a few projected which will no doubt be prosecuted after a short time. In the south considerable progress is made with the dockworks at Haulboline. A foot-bridge is at present erecting to connect the historic-political Spike with Haulboline. Convict labour is engaged to a large extent on these works. Free labour, however, to a greater extent than hitherto has been found necessary, as skilled artisans are indispensable to the proper and practical execution of the works. When the bridge is finished the basin will be commenced, but its prosecution will be dependent on an adequate grant from Parliament. A quarry which has been discovered in Haulboline by the superintendent of the works has been found to yield a good supply of stone, and has answered its purpose remarkably well. The working of the quarry will be solely done by convict labour, and this will naturally effect a great saving.

Gasworks are in progress in the town of Skibbereen. The design consists of a dwelling-house for the manager, with large buildings for the storage of coals and manufacture of gas. The works will have a frontage upon the river for the supply of coals. The architect is Mr. Richard Lee, of Skibbereen, and the contractor is Mr. Murphy.

In the town of Bantry a new pier has been commenced, from plans by Mr. William Forester, C.E. The pier will be 200 ft. long by 35 ft. wide at the top, inclusive of banquet and parapet on the weather side. Flights of steps will be provided for access from small boats and mooring requirements. The Government have given a grant of 3,000l. and a loan of 1,600l. towards these works on the condition of repayment within six years, without interest. The pier will be an important addition to the commercial character of the town, and it will be amply sufficient to meet all its requirements at present in the matter of shelter and loading and unloading of the variety of small vessels that frequent the harbour.

Many of the harbour boards in the south, as elsewhere, are at present crying out to Government for grants to prosecute improvements, but without success. Mr. J. A. Blake, M.P., of Waterford, made an appeal for aid towards deepening the bar of the harbour of Waterford, but was reminded by a letter from the Secretary

of the Treasury of the example in the case of the Carlingford Lough, where a similar appeal was made; the Government refusing to make a grant, and referring to the Act of 1861, 24 & 25 Vict., cap. 47. The Government thinks that the works necessary should be carried out by the means therein specified. The only aid given by the Government in the Carlingford case being a loan from the Public Works Loan Commissioners advanced on the credit of local tolls. The Waterford Commissioners are advised to adopt the same course as was pursued in the case of Carlingford Lough.

In Waterford city some fresh sanitary precautions are taken. The main sewer passing through King-street and George's-street, has been renewed, it having been in a very bad condition. Many of the lanes and bye-streets of the city, with the property, are in a ruinous state, and require immediate looking after. The park is assuming an attractive appearance, and will have a most beautiful influence on the sanitary aspect of the city. A number of new trees and laurels have been recently planted. During the Fenian panic, the Russian trophy guns were removed from here for fear of seizure to the Artillery Barrack. After a short time the Waterford Park will be one of the handsomest of its size in the south of Ireland. Flagging operations are also in progress, outside the railway in the manor, and in Mary-street. In 1870 a considerable amount of old property falls into the hands of the corporation. There is still a considerable amount of flagging required on the sidewalks of several streets and lanes, before the city of Waterford assumes an appearance commensurate with its old reputation as an important commercial seaport and manufacturing city. The steamships plying between Waterford and Milford Haven have proved very satisfactory: they have not yet had a single accident or delay to record. The route is apparently a safe one, though somewhat longer than the Holyhead one.

At Clonmel, in Limerick, a handsome altar has been erected in the Catholic Church of St. Mary. It was executed by Mr. Paul Ross, of London. It is of Caen stone, with Scottish granite columns. The figures are all of Caen stone. Derbyshire alabaster, inlaid with foreign, composes the altar-front. The tabernacle is also composed of Caen stone, in addition to Carrara, Belgian, and Irish marbles. The doors are of wood, carved and gilt. The height of the whole altar is 36 ft. by 28 ft. in width, and the entire weight about 170 tons. The door of the throne is also of wood, richly carved and gilt. The contract price was \$700; but it is said, in consequence of a strike among the sculptors, that the artist has lost considerably by it at that sum.

The Kilkenny Junction line has just been opened for passengers and goods, and between the Marble City and Maryborough it has afforded great facilities, and confers many advantages on the inhabitants. The Government inspector, who was ordered to report on the new branch between Maryborough and Abbeyfeigh, has spoken of it most favourably, and in a manner that redounds to the credit of the directors and the contractor. Through traffic arrangements are yet wanting, and must be effected between the Great Southern and Western before these new lines can be thoroughly serviceable and useful.

At Callan, in Kilkenny, the first stone is laid for new schools of the Christian Brothers. Callan is a town of some antiquity and historical interest. In 1217, this town received privileges from the Earl Marshal. In 1660 Oliver Cromwell battered down its walls. The old parish church, dating from the twelfth century, is a fine old ruin, with nave and aisles complete. The designs of the new schools comprise two separate houses. The trustees of Lord Clifden have given the use of a quarry.

On Sunday last, at Talbotstown, in Carlow, the new church was dedicated. The church is oblong in shape, has no transepts, but is provided on either side of the altar with vestries, the painting and decoration of which are executed in the Medieval style. A life-size representation of the Crucifixion surmounts the altar, surrounded by a group of figures above a collection of stonework symbolical of Calvary. An organ gallery is at the lower end of the church. The building will accommodate about 600 persons. A school house is also in contemplation.

In Wexford a new free bridge is in contemplation over the River Barrow; in relation to which a bill is at present before Parliament. The old toll bridge, which was the property of the commissioners, was carried away in part last January. Memorials have been presented to

the Lord Lieutenant, and the grand juries of Wexford and Kilkenny have consented to the purchase of the property under the provisions of the new Act. The want of a proper bridge has resulted in great public inconvenience and loss. The river which it is to span is the boundary between the counties Wexford and Kilkenny.

For some considerable time works for the improvement of Wexford Harbour have been going on. Last week in Parliament Mr. Dunne moved for copies of Mr. Goode's report on the harbour previously to the commencement of these improvements, and for the reports of Mr. B. J. Farrell, C.E. to the Admiralty, on the state of the harbour previous to the time when advances of money were made for those works.

Appropos of harbour, Lord Naas, Mr. Dodson, and Mr. Hunt have prepared and brought into Parliament a Bill authorising the Commissioners of Her Majesty's Treasury to compound the public debt and interest due by the Limerick Harbour Commissioners, and to make arrangements for the payment of the amount compounded for; also for the transfer of Wellesley Bridge in the city to the Commissioners of Public Works.

In Galway, the new Convent of Ballina is nearly finished. The building is in the Gothic style. The ceiling is of stained oak: that of the apse looks very handsome. All the furniture and fixtures in the chapel will be of oak. The hall is spacious. The refectory is 40 ft. in length by 25 ft. in width. The ground floor has sitting-rooms, with marble and slate chimney-pieces. An oak stair, highly carved, leads to the second story, from the landing of which runs a corridor the entire length of the building; on either side of which are the dormitories. On both sides of the building are wings, in which are drawing- and sitting-rooms, bath-rooms, hospital, closets, &c. Gas will be supplied to every portion of the building; and a plentiful supply of water will be provided for on the top of the building. Thorough ventilation is secured for all parts of the edifice. Earthen pipes have been wholly used in the drainage attached, and are sunk to a considerable depth, and are made to communicate with an air-tight reservoir placed at some distance from the building, below the ground. The site is a beautiful one, in view of the wood of Bealeek and Lough Con.

Amalgamated Railways. The majority of the corporate Boards in the country are agitating and petitioning in favour of the Government taking the entire railway system, in view to its better management, into its hands. With the exception of two or three branches, the Irish lines do not pay. There is one blessing in connexion with them, accidents on them are not frequent, and this is something worth considering by those who wish to have a tour through Ireland.

THE HALIFAX AND HUDDERSFIELD UNION BANK.

The Directors of the Halifax and Huddersfield Banking Company have opened for business the new premises erected for them at the north side of Westgate and along Chancery-lane, Huddersfield, from the designs of the late firm of Messrs. Pannell & Ayliffe, now Pannell & Robinson, architects, Manchester.

The style of the building is called Venetian Gothic. The four elevations of the building are each of a different design. The principal front is in Westgate, and forms an oblique angle with each side elevation. There is also a front facing Chancery-lane. The other side faces Booth's passage; and the back elevation is in a line with the gateway called Lancoashire-yard, opening direct into the Market-place and Chancery-lane. The Westgate front is five stories high, including basement. The frontage is in a line with the street. At the east corner of the facade is a large apse, or chamfer, out from the building. Here is erected the principal entrance to the bank. The line of entrance is several feet within the line of the street causeway. At the upper corner of the Westgate front is the entrance-door to the news-room and exchange-rooms. Three windows in the Westgate front light what is to be used as an exchange-room; and two windows in Chancery-lane light the staircase leading to the news-room above.

Between the ground and first-floor stories there is a moulded and carved string-course, 15 in. deep. This is succeeded by a dado course, capped by an upper moulded string, of less projection than that below.

The four windows opening to the main front and the two-light windows in Chancery-lane and Booth's passage, on the first-floor, light the news-room. They have square heads with angle mouldings.

The main building has a moulded cornice, supported by numerous moulded and shaped corbels, placed 18 in. apart. Above the cornice is a parapet, 3 ft. 6 in. high. In the centre of the parapet and above the cornice is a large two-light dormer window. The main building is covered with a mansard-shaped roof, 15 ft. high from the square, with a flat on the top, covered with strong lead, and having crenellated ornaments below the ridge-roll. This flat is crowned with a wrought-iron ornamental cresting.

The campanile, or tower is at the east side corner of the building, and stands back from the front about 12 ft. It is 29 ft. high to the top of the iron flue. The upper portion of the campanile contains a room which may be used as a smoking-room; and through an iron casement access may also be had to the lead flat of the roof.

The whole of the Westgate front, the tower portion in Booth's passage, and the portion constituting the main building in Chancery-lane, are built of fine-tooled white ashlar stone, from the Bobbiner Wood quarries. The remainder of the frontage to Chancery-lane, Booth's passage, and the south end of the building, is built of local brown ashlar stone, from the Nethermoor quarries. In Chancery-lane is placed the entrance to the cashier's residence.

The ground covered by the building proper is a parallelogram of 76 ft. by 43 ft. Entering the building by the bank door entrance, at the east corner of the Westgate front, we ascend three steps to the corridor, or vestibule. The vestibule doors open into the public area of the banking-room,—a space of flooring 26 ft. by 7 ft. The banking-room proper, which is semi-octagonal on plan, is 26 ft. by 26 ft., with a recess at the south end 11 ft. by 12 ft., and with ceiling and enriched cornice 13 ft. high. The plafond of the ceiling of the public area is supported upon enriched and sculptured corbels. The banking-room is wholly lighted from the top, by means of a lantern light, glazed with rough plate-glass, and prepared for ventilation. Within this is an inner coved domical light, springing from an octagonal curb 9 ft. diameter. In the centre is a femoral, which can be raised and lowered by means of cords and pulleys, and used as a means of ventilation. The glazing of the domical light is of ornamental coloured glass, from a design by the architects. The height from the floor to the springing of the inner light is 25 ft. The ceiling of the banking-room is octagonal and coved, with moulded ribs at each angle. Polished Dalbeattie granite columns are placed at each angle of the room. The walls have been floated and finished in Keen's cement.

The bank manager's room is on the west side, and is entered from a door in the public area, and also from the side-entrance passage. A small window, with casement-slide, communicates with the cashier in the banking-room. The bank directors' room is at the south-west corner of the building. Marble chimney-pieces are fixed in these rooms. Each room is lighted by a two-light window, looking into Chancery-lane, and fitted with Bunnett's patent shutters. The strong-room is in the south-east corner, on the ground-floor. It is built of solid through ashlar stone, with a segmental arched top. It is fitted with perforated galvanised cast-iron shelving. The strong-room door is 3 in. thick, made by Harris, of Bristol.

The two principal rooms to the Westgate front are to be occupied by the Chamber of Commerce. That on the ground-floor will be used as an exchange-room. It measures 24 ft. by 20 ft., and is 14 ft. high. The upper room, intended for the news-room, measures 39 ft. by 23 ft.—including an ambulatory at the east end, which is divided from the large room by coupled iron columns, with plaster capitals, segmental arched heads, and beaded angles. The cradling to the iron beams divides the news-room into a trabecated ceiling, having four panels. This and the other principal rooms in the building are furnished with geometrical centre-pieces, modelled to the architects' designs. The exchange-room has an ordinary plaster ceiling and cornice. The exchange and news-room walls have wainscoting, plinth, and capping fixed to the height of the window bottom. The windows have 8-in. architraves fixed to the sash-frames. Ventilation is provided through the external walls. The whole

of the gasfittings, bell-pulls, and other ornamental brasswork, have been made to the architect's designs, by Mr. John W. Dovey, of Manchester.

In July, 1864, the works were let to the following local contractors:—Messrs. Abraham Graham and Sons, masons; Wm. Fawcett & Sons, joiners; Isaac Jowitz, plasterer; Lidster & Armitage, plumbers; George S. Scholefield, smith and bellhanger; Webster & Depledge, painters. The architect's surveyor was Mr. H. Beary, and Mr. John Gill was clerk of works. The wood carving in the bank and the whole of the stone carving throughout the building have been executed by Mr. John Green, of Manchester.

WALL PAINTINGS, PARIS.

VISITORS to Paris interested in artistic matters should go to the court-yard of the "Invalides," even if they know the building and Napoleon's tomb, and they will find on the wall of the eastern arcade a painting, say 170 ft. in length, illustrating the history of France, commencing A.D. 113,—the Druids: and passage of the Rhine by the Franks; and coming up to A.D. 1070,—Establishment of the communes. This work, which is unequal in merit, and can scarcely be regarded as other than a remarkable piece of scene painting, was finished by the artist, M. Benedict Masson, in 1865. Quite recently he has illustrated Peace and War over the central entrance, on a gold ground, and it may be that he proposes to continue the history on the wall beyond. The Crowning of Charlemagne makes an effective centre in the large portion already done.

Amongst the ecclesiastical decorations those of the church of St. Germain des Prés, one of the most ancient buildings in Paris, are especially noteworthy. The interior is painted and gilded from bottom to top, and includes numerous figures-sculpture. Much of the work here was done by Hippolyte Flandrin, the painter, to whom a monument has been set up in the north aisle of nave. This is of white marble, and includes a bust of the artist between two columns and *arabesques*, which carry a canopy, a not inelegant mixture of classic and Gothic forms. The canopy, or pediment, encloses a trefoil arch, and has a sort of crocketing running up the two outside lines, but the mouldings are classical, and the whole is supported on four Roman cantilevers. The monument is inscribed,—*A Hippolyte Flandrin, ses amis, ses élèves, ses admirateurs, Lyon, XXIII. Mars, MDCCCLXXI. Rome, XXI. Mars, MDCCCLXXIV.*

THE HOSIERY MANUFACTURE.*

THE stocking-frame, which was also the basis of the lace machinery, was invented in Queen Elizabeth's time. The name of the inventor seems to have been Lee, but very little is known about him. That he was a man of respectability in worldly position would appear from the varied accounts of him,—that he was at one time a student of Oxford; that he belonged to St. John's College, Cambridge; that he was made a B.A. in 1582-3, and became a clergyman in his native parish of Woodborough, Notts, or Calverton, or a curate in some obscure part of Sussex; that his name was Leigh, not Lee,—in short, as a Scotsman would say, there have been a good many "lees" told of him, and it is hard now to get at the truth. Lee is said to have originated his machine under the influence of love and marital pity; yet we are also led to believe that he never had either wife or child; that he invented it moved by hatred to a knitting-needle woman, who would not marry him. Nice romantic stories have been told of both the married Lee and the bachelor Lee: perhaps the bachelor of arts fell away from his bachelorhood and became a benedict, so that he retained a sort of title to be both a married man and a quasi bachelor.

Queen Elizabeth, when his invention was recommended to "her highness" by Lord Hunsdon, who wished her to give the Notts clergyman a patent for it, replied, she should be very sorry to grant a monopoly that would ruin many poor knitting-needle women; but that, if his invention had been one that would have knit silk stockings, which it could not do, she might

have granted the request. Whether this both sagacious and short-sighted reply led Lee to modify his worsted-stocking machine so as to form one for knitting silk stockings, may be uncertain, like all else; but it is probable, as indeed is the story altogether. Nevertheless, Lee had to take himself and his inventions to France, where he was well received by Sully and others; but, at the time of the assassination of the French king by Ravallac, Lee's affairs fell into disorder, so that he died of a broken heart; on which his brother, James Lee, and seven out of nine workmen, returned to England with their stocking-frames, and established themselves in Old-street-square, where they founded the manufacture which still retains a place in the occupations of East Londoners.

Jedediah Strutt, the inventor of the rib-hosiery frame, which was just Lee's frame, so adapted to the formation of ribbed-stockings that the frame might be used either with or without the ribbing mechanism, was far more fortunate than the obscure and almost apocryphal original inventor. While poor Lee perished little else but poverty, premature death, and utter family extinction, Strutt became a wealthy man, and his grandson is Lord Belper—a peer of the realm. This sort of issue appears to be the stereotyped order of events amongst inventors: yet there are remarkable exceptions to the rule.

The lace-machine was an out-birth or offshoot from the stocking-frame; and we cannot here enter further into that interesting subject, and must restrict ourselves to a condensed extract on the subject of its ancient equivalents from Mr. Felkin's interesting but diffuse work on an intricate network of inventions, as a specimen of the style of the volume.

"Dr. Johnson defines network to be 'anything reticulated or decussated at equal distances, with interstices between the intersections.' The varieties of network are almost infinite: the methods of production must be equally diversified. For many ornamental purposes the simple method of making nets, such as were used in every-day life, would be employed in producing fringes and other large objects. The idea was so natural as to occur to any mind, above all a female one.

Making nets by the hand for fowling, hunting, and fishing, had been, without doubt, practised from the most ancient times. Such nets are represented on the monuments of Babylon, Nineveh, and Egypt. So universal was their use, that, literally or metaphorically, they are found as illustrations in the most ancient writings of every nation. The pages of the Old Testament furnish examples. Job says—'He is cast into a net by his own feet,' 'God hath compassed me with His net.' There does not seem to have been any material alteration in the instrument used to produce these common articles, during the long intervening series of ages, or in the way in which the mesh was formed, knotted, and fastened.

The needle or shuttle, upon or in which the netmaker placed his supply of corded string or line, was passed just as it ever has been through the loop he had opened, and the thread was tied into a firm knot, incapable of slipping, at the exactly measured distance from the last formed one. Almost as soon as these nets are named by any of these old authors, lace is mentioned; not only as a cord, but also as an ornamental part of dress. Lace may be described as plain or ornamented network, consisting of a thread or threads of flax, cotton, silk, gold, or silver; interwoven, drawn, plaited, looped, or twisted so as to form a beautiful texture. Aretius, in his female attire, depicted in paintings on the walls of Egyptian and Arabian temples and tombs, are believed to represent such networks in looped or darned crochet, on patterned hems of garments. On one of the Egyptian pictures, the great temple of Ombo, the goddess Athos wears a head-dress resembling lace. Rossini, in plate 41 of his great work on Egypt, shows two figures who appear to be twisting two threads, and forming what seems to be a reticulated open work. At p. 79, neck coverings are seen, but whether of twisted or drawn open network cannot be ascertained. But at p. 96 the ends of musical instruments are ornamented with netted tassels, each mesh having a knob or knot suspended from it. At pp. 98 and 99 are figured transparent dresses of females, ornamented seemingly with beads, but whether on needle-work lace is uncertain. At p. 133 is a female figure whose shoulders are covered by a worked tippet of handsome appearance, the pattern of which might have been of drawn needle-work. Fringed borders were certainly applied to Egyptian articles of dress.

A lace of blue is thrice mentioned in Exodus, and was probably a fringed narrow lace or braid. Fringes are expressly named in Numbers and Deuteronomy; and knotted fringes became amongst all people through many ages of significant religious import."

The author might have here adduced a curious example of this religious import amongst Christians. The hat of the Roman Catholic cardinal has cords ending in tassels of net-work radiating as it were from a single knot, first into two, then into four, then into sixteen, exactly on the principle of a symbol which is said to occur at the entrance into the "Sorcery Hall" of New Grange in Ireland, and which is referred to in a letter on "Geometrical and other Symbols" in the *Builder* of 11th July, 1863.

Mr. Felkin ranks in Nottingham as one of the best authorities on the subject of machine-wrought hosiery and lace manufactures. He is now in his seventy-second year, and the work under notice is a remarkable product at such

an age: it is only a pity it is so diffuse. The intricacy or complexity of the subject, however, in some measure necessitated such a style of treatment in any work not liable to be regarded as a mere sketch or abridged history of the inventions connected with machine-wrought hosiery and lace manufactures; whereas this book professes to be a full and authentic history, and for which it must be accepted. Of the prolixity which was deemed unavoidable he himself says, referring to his work:—

"It has been a laborious one from the necessity of giving an account of many inventions, patents for which, in any other manufacture, have had to be investigated. The short notices of these in the patent list issued from the office in London since this work was written form a volume of 1,070 pages. The present author has form a volume of 388 English patents in hosiery and 331 in lace—719 altogether—many of them of immense length. The study of these mechanical descriptions is not favourable to elegance of composition, which may account for some defects in the volume. Such an intricate mass of details must also, after employing the utmost care, produce errors in narration."

Nevertheless, Mr. Felkin has added an important and interesting volume to the history of inventions.

THE LATE MR. JOHN HARDMAN.

THE revival of the art of metal-working and glass-painting owes much to Mr. John Hardman, who died at his residence, Clifton-park, Bristol, on the 29th ult., at the early age of 55. An accidental interview, in the year 1837, with the late Mr. A. W. Pugin, at that time Professor of Architecture at Oscott College, resulted in Mr. Hardman's taking up the views entertained by the architect, and a friendship began, which terminated only with the life of Mr. Pugin. Mr. Hardman entered thoroughly into the views of Pugin, and was the medium by which the conceptions of the latter were realised. He thus gave Birmingham a new industry. Mr. Hardman was a liberal supporter of the local institutions, and was known for a most charitable disposition.

DUCAL FÊTES AT ALNWICK.

A SERIES of magnificent entertainments was given at Alnwick Castle last week, in honour of the coming of age of the eldest grandson of the Duke of Northumberland, Lord Warkworth. *Fête after fête* succeeded each other for four days, commencing on the 29th ultimo. The stately repast at which two thousand guests were seated in one hall; the excellent regales, full of hopeful, earnest acknowledgements of the responsibilities of wealth and rank, and weighted with good words, that the young lord made to the numerous addresses of the tenantry of his grandfather; the grand banquet to the volunteers, of whom Lord Warkworth is colonel; the draping of the town with flags and banners; the dinner of dainty dishes in the greatest profusion and most startling forms, to which every child attending either of the schools in the town was invited; the fireworks, the salutes, the bell-ringing, in which the silver-toned old Norman and Early English bells of St. Michael's Church seemed actually to rejoice; the ball to which the Duke invited two thousand of his friends and neighbours; and the concluding feast to the army of workmen and helpers, have been ably and duly chronicled with Froissart-like minuteness by the local press. We are about, only to notice the structural features of the accommodation provided for the reception of this very numerous company. The state apartments, we must premise, built by the late duke, and so sumptuously finished in the Cinque-Cento style, as formerly described in these columns, were occupied by the Earl and Countess Percy and a circle of friends. Within, however, the circumference of the castle, there is a vast hall, 135 ft. long, built in the recent remodelling of the edifice, known as Hotspur's Hall, as well as by the name of the Guest-hall; but even this was not adequate for the well-ordered and stately entertainment of two thousand guests. It was cleverly enlarged by the following means:—A large portion of the façade looking upon one of the courtyards was removed, and the yard in question was used as the site of a temporary booth, which was built up to the permanent building, so as to form a very spacious T-shaped hall. The roof of the Guest-hall was supported at the gap formed by the removal of the frontage by four arches, upheld in their turn

* "A History of the Machine-wrought Hosiery and Lace Manufactures." By William Felkin, F.L.S., F.S.S. London: Longmans, Green, & Co. 1867.

by four square pillars. The ingenuity of this contrivance is enhanced by the economical adaptation of a piece of construction that has already done service on the banks of the Tweed as well as on those of the Tyne. The booth in question is the property of Mr. J. Richardson, builder, Alnwick, to whom was confided the task of erecting it as an extension of the Guest-hall. It consists of a centre and two aisles. The central portion is 50 ft. wide, and has a row of pillars 20 ft. high and 10 ft. apart. Over this a high-pitched roof rises 16 ft. above the wall plates, formed of rafters 30 ft. long, though but 4½ in. by 3 in., to which sufficient strength is given by the introduction of light iron ties and small struts. This light though strong framework is covered with canvas rendered waterproof by oil and other materials. The aisles have lean-to roofs stretching from the pillars upholding the central roof to the sides of the yard. It is 130 ft. long by 90 ft. in width. These dimensions, added to those of the guest-hall, gave a covered space of 225 ft. in length, and 135 ft. in width at one end, and 90 ft. at the other, in which, for four days, banquets and a ball succeeded each other till every tenant, and nearly every neighbour of the duke—man, woman, and child—was feasted and entertained in honour of the auspicious event. The Earl and Countess Percy most happily represented his Grace, whose advanced age rendered the journey from Torquay, where he is at present residing, inadvisable.

"IRISH ARCHITECTURE."

UNDER a sketch showing the tenant of an Irish hut digging away the floor of it, Punch thus records a conversation—"Angler (in Ireland). 'Hullo, Pat, what are you about now?'—'Pat. 'Shure, I'm raisin' me roof a bit, yer honour-r!'" Our merry and wise contemporary would scarcely suppose that this mode of raising the ceiling is not more Irish than English, and is constantly being pursued in basements in the metropolis, under circumstances much more dangerous than occur in the poor bog-trotter's hut, where the weight of the cabin walls is as nothing. Of course, when the district surveyor is informed, as the law requires, proper steps are insisted on to ensure stability; but the operation is constantly performed without the knowledge of that officer, and the walls are left standing on a bank of earth, to the great danger of the tenants on both sides. In shooting at what might be thought an Irish bull, our Mentor has hit a London danger.

THE NEW DISTRICT BANK, STAFFORD.

The principal street of Stafford has within the last few years undergone great improvements, but the new Manchester and Liverpool District Bank, which is now almost completed, is the most elaborate piece of street architecture in the town, according to the local *Advertiser*. This new building, says our authority, is of red brick with Hollington stone dressings, and the shafts which support the capitals in the windows and doorways are of red Mansfield stone. The style is Gothic, treated with considerable freedom, and an almost profuse employment of carving and other ornamentation. The front is divided into three gables, terminating with finials. The whole width is 44 ft. In each gable there is an ornamental opening, and a moulded string-course crosses the front in a line with the corbels or gable knees. The first floor is lighted with three windows, the centre one containing two, and each of the others three lights. There are balconies with ornamental wrought-iron railings at the front of these windows, which are supported by brackets projecting from a deep string-course. Below there are two three-light windows on each side the entrance. All the door and window openings inside and outside have shafts of red Mansfield stone, supporting carved capitals. The upper portions of the windows are of solid stonework, pierced with circular openings of various sizes. The main entrance doorway in the centre is lofty, wide, and deeply recessed. Double shafts, surmounted by carved capitals, support the arch, which is moulded. An inner arch, forming half a quatrefoil, is filled with floriated ironwork. The bank itself is 40 ft. 6 in. long, by 23 ft. wide. It is entirely lighted from the top by a

large lantern with side lights all round it, and which is also partially roofed with glass, an intervening ceiling of ornamental glass in panels serving to soften the effect of the vertical light. The lantern is supported by stained principals springing from corbelled shafts, which terminate below a stone string-course. The glass ceiling is 29 ft. above the floor. The strong room is fireproof, and is fitted with one of Chubb's patent fireproof doors. There also is a ballion safe opening out of it, encased with case-hardened steel, and also fitted with a Chubb's door. The architect is Mr. Robert Griffiths, county surveyor; and the work has been carried out by Mr. H. Lovatt, of Wolverhampton.

SURVEYORSHIP, FISHMONGERS' COMPANY.

THIS appointment was decided on Monday last. There were thirty-eight candidates, amongst whom were Mr. C. Barry and Mr. Gardner. Six were selected, namely, Messrs. Clark, Knightley, Marrable, Parkinson, Ritchie, and Sanders. The contest eventually lay between Mr. Clark and Mr. Knightley, and ended in the election of the former.

NOTES FROM THE CHAMP DE MARS.*

IN commenting on the Russian pictures I must depend upon the French translation of the un-readable and unpronounceable Russian names of the artists; and, therefore, if I am guilty of any egregious solecisms, I take this method of deprecating your and their anger.

JOSE AYASOVSKY has a lovely "Vue prise sur la Côte Méridionale de Crimée," and a delicious moonlight on the water, somewhat yellow methinks for moonlight, but so peaceful and calm, and the ripple of the wavelets charmingly portrayed. The distant town on the rocky cliff to the left, with its spires and roofs bathed in the same quiet splendor, is admirable. This picture is outside, and to the left of the entrance to the gallery; while on the right is seen Swerthkoff's "Caar Alexis Michaelowitch reviewing his Troops." The field of the review is snow and ice, so well represented that it achieves one to look at it; and, contrasting with the bluey whiteness, a large crimson banner, bearing a giant-sized head of Christ, floats languidly above the troops. The horses of the three principal figures wear strangely barbaric-looking anklets on their forelegs. Horawsky shows a wonderfully painted "Portrait d'une vieille Lithuanienne," with Denner-esque skin, and veins in the hands; but, if there had been a shade less redness in the flesh, the old-age effect would have been more successful.

Here, as in most of the foreign galleries, distressing subjects predominate, and vex while they sadden an English spectator; but of all the painful pictures, I think the one that attains to the acme of horror is, "Mort légendaire de la Princesse Tarakanoff." She is represented robed in faded crimson velvet and white satin, both most admirably painted; she is in a dungeon that lies partly below the level of the sea, which—excited by a now spent storm—has risen above its bounds, and is rushing in at the barred window, flooding and filling the dank, slimy dungeon. The princess is standing on her poor pallet, her feet resting on the fur coverlet, her back pressed against the damp green stones of her prison-wall, at which her thin white hands convulsively clutch; and the rats are creeping up, wet and dripping, out of the rising water, which has already attained to the level of the bed. The moonlight that streams over the Princess's upturned face, swollen eyelids, and convulsed bosom, make of them a horrible nightmare, not soon to be forgotten. Of course, the picture is clever and forcible, or it could not affect the beholder so deeply; but it would be an awful companion to have in a lone midnight watch, especially if that watch chanced to be held in a solitary country-house, on a stormy night, with the wind howling mournfully outside, and the rain beating furiously against the window-panes.

On a stand in the centre of the Russian gallery are several admirable bronze groups and small figures similar to those which deservedly attracted attention in the 1862 Exhibition.

* See pp. 374, 389, ante.

Nicholas Lieberich is the principal contributor; while in the marble, jewelry, and precious stones department a statuette, with "Sokoloff" on the base—whether the name of artist or subject I know not—is very beautiful from its simplicity and quiet dignity. It is merely a young man standing in an easy attitude, with crossed arms, and wearing the Russian costume. The price is 200 roubles.

Being in this court, I must pay a just tribute of admiration to the fine mosaic, intended doubtless for church-decoration, executed after Professor Neff's picture by Michel Chmieboski, although already mentioned in the *Builder*. There are twenty-two heads rather larger than life-size, the variety and expression of which are very remarkable; and the rich colouring upon the gold ground is extremely beautiful.

In the gallery of the kingdom of Norway and Sweden, the king, Charles XV., occupies an honourable position as a landscape-painter. Each division of his kingdom exhibits a large work taken from its own especial scenery; and each is an admirable production. The "Lake of Brunneviiken, near Stockholm," is a charming bit of land and water; and the "Norwegian Landscape" very beautiful to look upon. Baade has a lovely "Night-scene on the Coast of Norway;" Bøe, "Norwegian Sea-birds—Grouse—lighted by the midnight sun;" some "Flowers," among which the roses are very good; and "Shells and Jewels" on a red cloth, with a candle burning, in which, if the flame had been the least trifle brighter, the effect would have been magical. Hans Gude has a very fine water-piece on a large canvas, "Return of Whale-fishers: dead Calm;" and Madame Johanna Möller, "A Trio," of which the good-natured old paterfamilias, sleeping in his arm-chair, evidently makes up with his snoring the "third" part. Mamma is trying to rouse him, unobserved by the musicians: verily human nature is the same in all countries.

Soederman, of Stockholm, has a very pretty small hunting-group, price 500 francs, with a capital likeness of our Prince of Wales, and—good, we may, therefore, suppose also—of King Christian, Prince Oscar, and another, with a dead stag lying before them.

E. Berg has a lovely evening effect in a Swedish landscape, and a capital "Waterfall;" Boklund, "Un Savant;" Fagerlin, three clever pictures—the lace cap in one of which ("Jalousie") is a marvel of stereoscopic effect; Hoeckert, a noticeable large picture, "Incendie dans le Palais Royal de Stockholm, le 1er Mai, 1697," with many good points, but marred by the dwarfish woman carrying a dog, and the legs of the man descending the lower flight of stairs, which are perfect deformities. The same artist's "Intérieur d'une Tente Laponne" is much more satisfactory, with its good-looking young couple—the husband making a net, and the wife caressing her bundled-up baby, slung to the roof. Lindgren, in "Le Dénûter," shows a pleasant cottage interior, with a pretty English-looking barefooted youngster, seated on the floor feeding itself, basin and spoon in hand; Mlle. O. de Post has a clever portrait of M. Frolich, which (to indulge in a German pun) must be a happy likeness; and Wirgin shows a pretty Dalcarnian peasant, that reminds one of Miss Osborne's pleasant pictures, and speaks well for their truthfulness.

Denmark seems to group in naturally with Russia, Norway and Sweden, and here we find a charming picture by Gertner, "Les deux Amis," in which a darling child, half dressed, has its arm round the neck of a beautiful Landseer-like noble old dog, in a richly-furnished room that makes a fine background to the pleasant subject; and a portrait, by the same artist, of "Comte Fys de Frysenberg," is admirably executed. Clever Madame E. Jerichau has eight excellent works, of which the most noticeable are "The Wounded Soldier," remembered from the '62 Exhibition; "Un Matelot Danois," forcible as Hook, and wonderfully like him in colouring; and "Le Racommodage des Filets," where the net hangs across the picture, with a handsome dark-haired woman and a child standing before it, and a pretty little thing on the other side, its bright face showing through the meshes. Rasmussen has a delicious "Beech Wood in Early Spring;" Rump a beautiful bit of the Wood of Frederiksberg, with a broad river or lake showing through the boles of beech-trees, and a group of Danish gamins frisking on its pleasant bosom; and Soerenen has two fine pictures of large size, "Matinée d'été sur la Rade d'Elseleur," and "Lever du Soleil à Skagen: Tempête," which is a lovely



NORMANHURST, BATTLE, SUSSEX.—MESSRS. HARESHAW, BROOK, & WEBB, ARCHITECTS.

THE SOCIETY OF ARTS' PRIZES.

The Prince Consort's prize of twenty-five guineas has been awarded to William Meadows, aged 19, of the City of London College, clerk, who, in this and the three preceding years, has obtained the following first-class certificates:—1864. Chemistry—first-class certificate, with first prize; animal physiology—first-class certificate, with first prize; geometry—first-class certificate, with first prize. 1865. Book-keeping—first-class certificate. 1866. Navigation and nautical astronomy—first-class certificate, with first prize; principles of mechanics—first-class certificate, with first prize; algebra—first-class certificate. 1867. Arithmetic—first-class certificate, with second prize; domestic economy—first-class certificate, with first prize; English literature—first-class certificate, with first prize; mensuration—first-class certificate, with first prize. Free hand drawing—Joseph Harris, 22, Royal Polytechnic Institution, draughtsman, first prize, 5*l*.; Henry Edward Gilbert, 22, Rugby Institute, solicitor's clerk, second prize, 3*l*. Geometrical drawing, John Coulson Nicol, 19, Aberdeen Mechanics' Institution, architect, first prize, 5*l*.; William Carter, 18, Manchester Mechanics' Institute, engineer, second prize, 3*l*. The Company of Coach and Coach-harness Makers' prize of 3*l*. is awarded to Henry Potter, 17, Chelmsford Literary and Mechanics' Institution, coach-painter; second class certificate in free-hand drawing, with the highest number of marks obtained, in that subject, by a candidate employed in the coach-making trade. The Company of Goldsmiths' prizes are awarded as follows:—First prize, 5*l*., to James Rowan, 16, Belfast Academy, goldsmith and jeweller—first-class certificate in arithmetic, with highest number of marks obtained by a worker in the precious metals; second prize, 3*l*., Thomas George Johnson, 17, Royal Polytechnic Institution, silversmith—third-class certificate in arithmetic, with the second highest number of marks obtained by a worker in the precious metals.

STOTTESDON CHURCH, SHROPSHIRE.

This church is now being restored and is in part rebuilt. It is a large and ancient structure, having a curious early doorway with rudely sculptured lintel. The nave is Norman, with a large fourteenth-century south aisle or chapel, a north aisle, and a fourteenth-century chancel. The roof of the nave seems to have thrust the north arcade considerably out of the perpendicular soon after its erection, for in 1688 four stone arches or flying buttresses were constructed in the roof of the north aisle to support the piers and arches, and strong timber shoring was afterwards added. The works include new roofs, floors, and fittings throughout, and the restoration of the ancient piers and walling at a cost of 2,100*l*., contributed by the patron, the Duke of Cleveland, and other subscribers. Messrs. Nevett, of Ironbridge, are executing the work under the direction of the architect, Mr. Blashill.

MEMORIAL OF "SIDNEY HERBERT."

The Memorial of the late admirable Lord Herbert of Lea has been set up in the Courtyard of the War Office, Pall Mall. It consists of a bronze statue 9 ft. in height, on a carved granite pedestal, the lower grey and the upper portion a beautiful specimen of red granite. Let into the granite on three of its sides are three bas-reliefs, also in bronze, illustrative of subjects to which Lord Herbert chiefly devoted his attention whilst filling the office of Secretary of State for War. On the face of the pedestal, beneath the words "Sidney Herbert" cut deeply into the granite, are the armorial bearings of the family in bronze (with the old French motto, "*Un je servai*"), and on the sides are the date of his birth and death—viz., "Born 16th Sept., 1810," on the east side, and "On the west," "Died August 2, 1861." On the southern side is a bronze tablet, inscribed, "Erected by public subscription, 1867." The tablet in front of the statue or northern side, facing Pall Mall, represents an incident in the "Herbert Hospital," Woolwich, Miss Nightingale instructing nurses in their duties of tending wounded and sick soldiers—very good. On the east side is a bas-relief, representing the volunteer movement, in which a battalion of volunteers are seen marching; whilst that on the west side

(the meaning of which is not very clear to the ordinary observer) exhibits the process of casting and testing the first Armstrong gun at Woolwich, which event occurred during the administration of Lord Herbert in the post of War Minister. With regard to the statue itself, it portrays Lord Herbert, robed as a peer, standing with his head bent rather too much downward in a position expressive of deep thought, and supported by the right hand, the elbow resting on the left, which holds a roll of papers. At the feet of the statue are some books. The likeness is satisfactory, the drapery well disposed, and the whole creditable to the sculptor, Mr. J. H. Foley, R.A. Messrs. H. Prince & Co. were the founders.

THE CLOISTERS.

SIR,—I confess I looked forward with some interest for Mr. Burges's promised lecture on the "Future of Architecture." I feel not a little disappointed, for Mr. Burges seems to me to have left out the very pith and marrow of what such a lecture on the future should, in my opinion, have contained, viz., a distinct statement of present *foundational* evils and shortcomings. Mr. Burges has forgotten them. What, then, are they?

It seems to me that there are two things before all others to be aimed at;—the preservation of the little that is left of past art in its *integrity and truthfulness*, i.e., the old handwriting as it is; and then, the distinct recognition of the actual art-handwriting of living and working artists, as distinguished most distinctly from the unfounded claims of those who merely employ them. If thirteenth-century French Gothic is better than any other style of architecture, then is it the duty of all to study it, and certainly to preserve it; and more especially any specimen of it to be found in this country, or indeed anything that looks like it remaining to us from the past. If to draw the figure, whatever that may mean, be the one thing needful, and if the chief glory of the future of art is to be the capability in the artist or architect, whether young or old, of drawing the human form, then the main thing in the whole business is, first and foremost, that we should single out and appreciate, and honestly own, the personality of the draughtsman himself, and not consent to take what he produces from the hands of another man who has merely bought such result. Sir, what are we now doing? I say, two things, directly antagonistic to those foundational principles,—destroying systematically and purposely the works of the old artists; and refusing, as systematically and purposely, to recognize the work of the living artists. No man can possibly deny the truth of these four primitive propositions, and how any one could come to read a lecture on the future of architecture without noticing either one of them, may be a fair matter of wonder, if not of regret. Mr. Burges has missed them, so perhaps you will allow me to add a few sentences to his otherwise capital paper.

First, then, one or two rough statements of art principles and facts. That the power and influence of capital in these days is all-absorbing this is so; but in fine-art matters things have now arrived at such a pass that art itself has been and is completely crushed out of all real the art energy of the time, sells it again to the public, and at the same time appropriates to itself, unacknowledged, the whole of the credit properly and fairly due only to the executive and working artist himself, the real producer of the art. Art action is now nothing more than a sort of socially legalised system of pillage and wholesale robbery, rendered possible by the ignorance of the public mind as to the real reason of the nothingness of modern art. Art and architecture are both, as Mr. Scott said truly, starved; and for this one simple reason, the art capitalist eats up all the working artist does, and so leaves him simply minus and empty of everything. It has reduced him from an artist, with both mind and hand, into a simple labourer with hands only; but still, starved as in the work, the art capitalist appropriates the final results, and lives on them. This, sir, is the present of art; and how Mr. Burges could have brought himself to talk of the future, without first saying something of the present, I say I cannot imagine. If anybody doubts this, let

him look at the present year's Academy catalogue, and on the wall filled with what the public are given to believe to be architects' architectural drawings! The one or two exceptions are truly comforting to see, but they are rare exceptions, and it is to be feared hardly at all noticed; for when evil is at a climax, and the cup all poison, a drop or two of wholesome and clear fluid can hardly at first be expected to be even recognised. Strange that all this should have been missed. *The future of art is not to amend the present, but to reverse it.* Those who now, as art capitalists, pass with the world as artists, will in the future be no artists at all, but tradesmen and employers of labour merely; and any one in that future making the attempt to take so false a position, will most certainly earn the well-known name given to advertising medical charlatans, and treated by society as they sometimes so deservedly are. If any one be still incredulous, and feel inclined to say this is too hard a statement, then I would ask him to reflect for a moment on the results of the Paris Architectural Prize Show, and cogitate on the tremendous fact that it is now possible to exhibit the drawings of a set of architectural clerks, at the wages of common mechanics, to hand them in to a Royal Commission sitting round a table, and to have awarded to you Imperial medals and European fame, and, may be, Imperial smiles, for work which for all that is in it you may never have even seen, much less done anything to or touched, much less again drawn yourself. Is the reader, with these things in view, at all satisfied with Mr. Burges's lecture, or with this comment on it? No. It is, sir, with the utmost sorrow and heart-felt regret,—and truth compels me to make the confession as a matter of hopefulness,—that in Paris, at this moment, neither architectural models nor architectural photographs in the place of *bonâ fide* architectural drawings are of any avail. There would seem to be no magic mill in which out of plaster, or cardboard, or photographic fluid, gold in the form of medals can be ground. I know Mr. Burges is not convinced. Once more. To watch that wonderful movement now going on in the House of Commons, called the Reform Bill, it is necessary to walk over and on some encaustic tiles, and while waiting for a turn sometimes, it is interesting to pass from the frescoes to the floor, and it always strikes me as something wonderful how poor Pugin could at that time have designed and drawn this very pavement so well and cleverly as he did. It is Pugin's pavement, for he did it; but if, at all puzzled, you should happen to ask "Who did the pavement?" from the Chancellor of the Exchequer downwards to the boy who runs about with the telegrams, you will get the same answer,—"*Minton's tiles*." Sir Charles Barry himself, though his statue is close by, so his name is at least familiar, does not come in for this pavement any more than poor Pugin. "*Minton*" is triumphant here, and fairly a household word. Surely the future of architecture will comprehend the floor of a room as well as the roof. Before, therefore, we can possibly write on the future of architecture, the present must be looked at; for out of it, as a flower out of dung, the future must spring.

I fear I must not trespass on your space; but there are so many noteworthy sentences and omissions in this lecture that one feels at a loss which to take as most to the present purpose. Early French-Gothic architecture is for the future, we are told, and the best possible; be it so for the moment, at least. Mr. Burges is, then, in a position to appreciate the extreme beauty and surpassing value of the north cloister of Westminster Abbey. It is now unhappily in course of being sawn and hacked to pieces, or, according to architectural modernism, "*restored*." The whole of the tracery of one bay is already gone. Clerks, starved as they are, foremen, and labourers soon make short work of Early Gothic tracery; but to really and artistically reproduce, or even copy, the worthless rubbish, requires the hand of a master and an artist architect. Sir, of course I know what all this is being done for. It is just as easy to play a tin trumpet in the cloisters as in the Abbey: why not blow a note of real triumph over the preservation of this glorious bit of Early Gothic, instead of waiting three months for its worse than total destruction—a modern falsehood in its place? While we are about it, why not have put in the cusps without further destruction. Mr. Scott fancies Gothic to consist in ornament, cusps, finials, spikes, and so on. Of the real nature and foundation of Gothic, Mr. Scott has not the re-

mostest idea.* I have headed this short notice the "Cloisters," in the humble hope that Mr. Burgess's love of Gothic will lead him to help to induce Mr. Scott to spare one of these bays of real Gothic, not modern Puseyite cheap church-building called Gothic, but the real work. This is of the present of architecture. Up to the present hour the part of modern architecture has been simply restoration, i. e., destruction and falsehood, but the future will be preservation. Will Mr. Scott begin with the Cloisters, by the simple process of leaving them to tell their own art-story in their own antique language? Let Mr. Scott bear in mind that all is gone in London but this little, the Temple Church, the Smithfield Church, the Southwark Church; and the Abbey itself is disappearing fast day by day, its colour all scraped off, and the honest light of day shut out by forgeries. The little that was left of the Gothic writing has all disappeared from it and from them. Of your charity, then, spare the Cloister.

Mr. Burgess lectured before a very remarkable society, and said that what most interested him in this year's architectural display was the sketches by the clerks and students which compose it,—the art handwriting, however feeble it may be of those who are to succeed our present race of capitalist architects and employers of art talent and energy. All this is very significant, and seems to me to indicate a very great fact indeed, i. e. the utter inadequacy of all our present art societies, and academies, and institutes, and departments to meet the real want of the age artistically. What is really wanted now is an art society at once preservative and appreciative,—to preserve the remnants of the great artistic past, and to recognise the art power of the present—the *bona fide* artistic power of architect or student or workman, however great or however humble. Compared with this, style is nothing. Manufactured sham mosaic is as bad, though "Early Venetian Gothic" in style, as "Bernasconi plaster." Eighteenth Century Gothic, and to my mind far, far worse. Such needed society would see in style itself only a means towards an end, and that end the *bona fide* work of the workman, and its fair recognition as such by artists and the public. Burgess says let us get written criticisms on these art signatures. I say, Nonsense: every autograph best speaks for itself and tells its own tale; the further problem is not to criticise these specimens of artistic writing, but to demand them of every man who now moves about society as an artist. Well may we now say with the old prophet, "Woe unto you who despise the dwelling and inheritance of your fathers!" and "Woe unto you who build up palaces with the sweat of others!"

C. BRUCE ALLEN.

GREY FRIARS' CHURCH.

We are informed in Stow's "History of London" that this church was 300 ft. in length, and consisted of fifteen bays, with a corresponding number of windows at each side and three large windows at each end, one of those windows being the gift of the Skinners' Company, and another of Queen Isabella, the church having been built in the time of that public-spirited and unjustly maligned queen. The church, probably, was almost a *fac-simile* of Austin Friars, built a few years later. The bays of the present building, called Christ Church, are equal to those of Austin Friars, and its external width exactly the same, as well as the heights of the nave and aisles. It is not known to whom Grey Friars' Church was dedicated. "Christ's Church" was its first title, to distinguish it from "Trinity Church," the first title of St. Paul's; that being the nearest church of equal importance. Its second title was most likely "Our Lady of Seven Dolours." Christ Church is most likely part of the old building, being built of rough coarse-jointed stone, with modern Portland stone dressings and a coating of cement; and it is also probable that, if the wooden pedestals supporting the gallery were removed, we should discover the remains of the old eight-staffed piers which formerly supported the nave roof. There were no transepts or central tower, but an octagonal turret at the north-west angle, similar to that at Austin Friars. The internal width is equal to that of the cell of the Temple of Jupiter Olympius, at

Athens, and had a west tower been added equal in width to the nave, its length would have corresponded with the extreme length of that temple. The depth of the cloister equals that of the peristyle, and the whole extent of the cloister court from north to south equals that of either side of inclosure around the above temple. It was by no means uncommon for Medieval architects to copy Greek temples as far as written descriptions, without drawings, would enable them to do so. Bath Abbey, St. Mary Redcliff, and many others are Gothic Parthenons, to say nothing of innumerable village temples of Theodosius, with steeples and bells added to them.

WALTER SCARBILL.

THE LAW COURTS COMPETITION.

Sir,—It is generally reported that the decision in this most important matter has at last been virtually given. The boasted minute examination of the designs is said to have been set aside, and the question narrowed to the single point of hall or no hall; or, according to another report, narrowed still further to the point of position of hall. It is confidently asserted that the Law Courts Commission has determined that a great hall is indispensable; and further, that the legal business of the country cannot be carried on unless the hall is placed one story lower than the floor of the courts. I am only repeating that which is currently reported; but supposing the statement to be accurate, I presume this so narrows the question that the thing is settled, and that I shall not be premature in congratulating the fortunate winner on his splendid victory.

LEX.

PREVENTION OF FIRES.

ALLOW me to point out to you a reason which I firmly believe to be the cause of many of the fires which take place in the metropolis. And this may be done by comparing them with those of Paris.

How, may be asked, does that city, which has nearly all its houses six or seven stories high, suffer less from fire than London, with its small buildings? This may be very easily answered in considering that, although London possesses the finest of engines and a most choice and well-trained fire brigade, yet people shrink from incurring the expense through calling them in, and very naturally try at the beginning to extinguish fires themselves until it is too late; and then the men are called, but, alas! only to see the building reduced to ashes.

Now, in Paris this is quite different; for as the pompiers will extinguish any fire for nothing, therefore at the least signs they are called, and, of course, they very soon succeed in extinguishing it while it is in its infancy.

I do not pretend to say the London brigade should render their services for nothing, but only introduce the question, so that wiser men than I may take the matter into consideration.

G. T. JUN.

RESPONSIBILITY OF BUILDERS.

SERVANTS OR SUB-CONTRACTORS.

THIS case, *Normill v. Brady*, was an action recently decided in the Vice-Chancellor's Court. It was brought by the legal representative of a workman who had been killed by the fall of a beam, alleged, through the negligence of the defendant's servants. The accident occurred at the new railway-station at Cannon-street, City. The defendants, Messrs. Brady, had contracted to roof the station with zinc, and they had underlet the contract to one Musgrove, who was to do the work, they supplying the zinc. Their foreman measured the work weekly, with a view to weekly payments to the sub-contractor; but the workmen were not under his direction or management. On the day in question there was a very strong wind, and one of the men employed by the sub-contractor, Musgrove, let a board slip, which fell upon the deceased, and killed him. The case was tried at the last Summer Assizes at Guildford, before Mr. Justice Willes, who was of opinion that there was no case against the defendants, as the man who caused the accident was not in their employ, and he therefore directed a verdict, reserving the point whether there was any evidence of liability.

The Lord Chief Justice, at an early period of the argument, observed that, no doubt, if it could be made out that Musgrove was Brady's servant, then the man who caused the accident would be so too. But the difficulty the Court felt was in finding any evidence that Musgrove was Brady's servant. It appeared, rather, that he was in the position of a sub-contractor, and, if so, then the man was his servant, not Brady's. At the close of the argument his lordship briefly conferred with his learned brethren, and pronounced judgment, in accordance with this view, in favour of the defendants.

MONOLITHIC COLUMNS, LIVERPOOL.

Sir,—In the old Liverpool Exchange news-room, now built upon new foundations, are twenty pillars, each about 24 ft. high and 2 ft. diameter; the shaft of each being a single block of the finest white freestone, without speck or flaw. Eight similar pillars stood on the exterior centre of the building; these, after being carefully lowered, have been out in two to be re-used.

The quarry from which these fine pillars were taken was long since closed and built over; and such fine and perfect pieces of stone are seldom now obtained. It is a pity that no use can be found for them in any other building, if they be not required for the New Exchange, without destroying or mutilating them. Unless arranged by this early to save them they may be treated like those already spoiled.

E. W. G.

"CLOCKING" CHURCH BELLS.

With reference to the letter of "G. H.," printed in the *Builder* of the 25th ult. will you permit me to say that although certain times are sometimes played on the bells at two or three metropolitan churches by respected chimers (which may be aided in achievement), such music is a miserable apology for that of the improved periodical chimes. Moreover, in the cases alluded to, the bells are "clocked," or clappered; and that this is a dangerous practice, Mr. Walsby showed in a communication published in the 1st of December last, in which he intimated that both Mr. E. B. Denison and the Rev. H. T. Elacombe had concurred in the most unequivocal manner.

Further, then, when it is stated that more bells have been cracked by hitching a rope to the flight of the clapper, i. e., by "clocking," than by all other means together, such a practice ought to be discontinued.

A CAMPANOLOGIST.

REDFORD MIDDLE-CLASS SCHOOL COMPETITION.

Sir,—My attention has been directed to a letter signed "Victor," published in your paper of the 1st inst. At the next meeting of the Directors this letter will be brought before them.

Being personally alluded to in the statement, "that more than a month ago, Sherman told Usher, of this town, who was awarded the oil, that he need not trouble himself about it, as Peck, of London, who built the Essex School, would be the author of any committee of selection," I did not know the author of any design, except one, whose name was written on his design. I do not know this gentleman.

Some designs were reserved for the decision of the directors at their next meeting, which, however, was not then, and has not yet been, given. Those reserved were removed into another room.

MARSH SHARMAN.

* We have also received a letter from Mr. Usher, denying the correctness of the letter in question. We must at once upon the writer of that letter to justify his statement.

BUILDERS' BENEVOLENT INSTITUTION.

A GENERAL MEETING of the friends and subscribers to this charitable institution was held on the 20th ult. at Willis's Rooms, King-street, St. James's. The object of the meeting was for the election of three pensioners on the funds, two males and one female. Mr. Benjamin Hannen, president, took the chair.

The Chairman, in opening the proceedings, said it would be unnecessary for him to detain the meeting long, as he had but little to communicate. He found that the list contained the names of nine candidates, four men and five women, and he thought it a matter of congratulation that the state of the funds and present circumstances permitted them to elect one-third of the number who had put themselves forward for election, instead of having a very long list from which only a few could be successful. It was always a matter of regret to have to send away, but of course it was far greater when the number was large. They were anxious on all occasions to elect as many as possible; and at the present time he could say that, if the funds continued in the same position of prosperity, there would be another election in November next, when those who were unsuccessful that day might have the gratification of obtaining a successful result.

The poll was then proceeded with, and at its close Mr. Thorn, Mr. Cozens, and Mr. Stirling officiated as scrutineers. On their return with the respective numbers, they announced the successful candidates.

Mr. Bird said that, in looking over the lists, he believed that 300 of their supporters had not been canvassed or asked for their votes, and im-

* This is a hard saying, but what is Gothic? Natural material usefully employed and written on by the architect, artist, or workman, each one by himself with his own hand—the antipodes of art manufacture.—C. B. A.

pressed upon the unsuccessful candidates the necessity for increased exertions. He concluded by proposing a vote of thanks to the scrutineers for the performance of their arduous tasks.

The motion, having been seconded, was duly carried, and

Mr. Thorne acknowledged the compliment. After some few observations by other speakers,

The usual vote of thanks to the Chairman concluded the proceedings.

PROPOSED COURT-HOUSE, MANCHESTER.

At the last meeting of the Manchester General Purposes Committee, the principal business related to the new Court-house for the city which it has been determined to erect. The building in Bridge-street is very inconvenient; and for the courts of record and quarter sessions the Corporation use the Assize Courts, and pay 900*l.* a year for the accommodation. Two sites for the new building had been selected, in Lower King-street and in Minshall-street, Portland street. The latter was preferred, and the names of six architects were chosen from whom the final choice was to be made. A majority of the Committee was in favour of Messrs. Mangnall & Littlewood, who will therefore prepare the designs, and under their superintendence the Court-house will be erected. The cost is not to exceed 25,000*l.*, and the building will contain four court-rooms, besides other necessary offices.

PAYMENT FOR A MODEL OF A FLOWER STAND.

In the case Whittaker v. Wright, judgment has been given at the Rotherham County Court. Refusal to pay for the model in question was supported on the ground that it had been too late in being sent, that it was too heavy, and too expensive. Defendants, therefore, insisted on their right to have the contract rescinded. The judge, after hearing, said that, whether the defendants had a right to do this was the first question he had to try. The defendants said they had the right on the ground that the contract was a special one, containing three conditions, which had been broken by the plaintiff. These conditions, which the plaintiff denied, were that the model was to be delivered by the end of January; that it was to be "inexpensive," and that it was to be only one-third the weight of another stand then in defendants' possession; whereas, the plaintiff's stand, which he contended that the model was not delivered until March 5th, the price was "enormous," and the weight of the stand was two-thirds more than that of the old stand. As to the condition referring to the time of delivery, the plaintiff thought that the defendants had been too late in insisting upon it, and he considered the word "inexpensive," was too vague a word for him to decide upon, and that a maximum sum should have been fixed. In reference to weight, he thought there had been no definite agreement on that point; but even if there was, the defendants would not be entitled to rescind the contract, but would only be entitled to sue for the price as was clearly laid down in "Chitty on Contracts." He therefore came to the conclusion that, on March 13th, the defendants were in default in rescinding the contract, nor to claim any reduction from the price. After a few other observations, his honour gave judgment for the plaintiff for the full amount claimed.

RECOVERY OF CHARGE FOR DESIGNS SENT IN COMPETITION.

HOPKINS v. THOMPSON: SUPERIOR COURT, MONTREAL.

This action, tried before the Hon. Justice Monk, was brought by plaintiff against the defendant for the recovery of 1*l.* per cent. on the estimated cost of a certain church, being as and for the price and compensation and value of his services in making certain drawings and designs for the same. The judgment was given in his favour, after being in court two years. It appears that in the month of April, 1865, the defendant, on behalf of a certain congregation, to which he belonged, and of which the Rev. Dr. Taylor was the spiritual director, asked the plaintiff to prepare a plan for the erection of a church for the congregation. At the same time, the letter stated in a very minute and precise manner the kind of plans and drawings required; the designation and dimensions of the building; the material of which it was to be made, and also that the total cost should not exceed 32,000 dollars. It was also mentioned in this letter, that the architect's remuneration of the building would be awarded, should he receive 5 per cent. on the estimated cost of the work; and the architect whose plans would not suit the congregation, would be required to return the plans, and he did so in an implied way, inasmuch as he prepared plans in accordance with the letter, and sent them to the defendant. Other architects were at the same time requested to compete. Among them was Mr. Thomas. This gentleman furnished plans and designs; and the congregation voted in his favour. According to the plans the building would cost 36,000 dollars, which exceeded the price laid down by 4,000 dollars. Mr. Thomas's plans varied in many respects from the conditions of the defendant's letter. In consequence of this Mr. Thomas's plans were returned to him. The letter then changed the plans, to have them correspond with the views of the defendant, as contained in the letter

above mentioned; however, even after changing them, they did not correspond in all points. Nevertheless, Mr. Thomas's plans were accepted. The plaintiff's plans were rejected and returned, together with 50 dollars, which sum the plaintiff refused to accept. He now sued upon a quantum meruit for his services in drawing up the plans and designs submitted to the defendant.

The Court said that the question at issue was whether the plaintiff should have accepted the 50 dollars, or whether he is entitled to remuneration upon a quantum meruit. After having carefully examined the whole of the evidence, the Court said that the plaintiff had accepted the 50 dollars, and had laboured under considerable difficulties. He had to restrict his designs within a certain estimated figure, and this was a matter which entailed a great deal of calculation and thought. The Court gave as a reason of its judgment, that plans had been required to be made in conformity with certain precise conditions; that the plaintiff had complied with these conditions; that, however, the defendant derogated from these conditions by accepting Mr. Thomas's plans, which were not in conformity with them, and their acceptance by the defendant and others was a clear violation of the conditions proposed. All honest competition was thus set aside, and without competition there was no contract. The plaintiff's quantum meruit is therefore good, and the action is maintained with costs.

ARCHITECTS' ACTIONS.

REES v. POTTER AND ANOTHER.

This was an action (Bail Court, June 3) to recover the amount of an architect's bill. The plaintiff was an architect at Dover. The defendants were desirous of erecting a music-hall and four residences at Dover, and they consulted the plaintiff, and according to his case he was to have a per centage of 5 per cent. on the minimum tender, and that was 3,000*l.* for the residences and a surplus sum for the music-hall, or 8,000*l.* for the whole. He had prepared plans, &c., in accordance with the directions of the defendants, and some tenders having been sent in, the defendants offered him 20*l.* for his remuneration.

The defence was that there was a special contract between the parties, and that the plaintiff was only to have 12 per cent. if the scheme went off.

The real question was this, whether the plaintiff was restricted to the preparation of plans for buildings which would amount to 5,000*l.* The lowest tender was 8,000*l.* upon the plaintiff's plans.

The evidence was contradictory in every respect. The jury returned a verdict for the plaintiff for 300*l.*

CHURCH-BUILDING NEWS.

York.—The church of All Saints, North-street, has recently been restored and altered. The south aisle wall has been taken down and rebuilt, a new vestry and porch erected on the south side, about one-half of the roof re-erected, the entire church supplied with open seats, the pillars and walls scraped and cleaned, a new organ provided, and the old fittings replaced by new ones. The restoration has been carried out under the superintendence of Messrs. Atkinson, of this city, architects, and as far as possible the new works have been a restoration only of the old work. The masonry, &c., has been executed by Mr. Brumby, the carpenter's work by Mr. Dennison, the plumbing and glazing by Messrs. Hodgson, the painting by Mr. Lee, and the re-decoration of the chancel ceiling by Mr. Knowles, by whom also the reredos has been decorated. The hot-water apparatus for heating the church has been supplied by Mr. Fryer. Accommodation is now provided for 456, being an addition of 142. The cost of the restoration and a new organ amounted to about 1,500*l.*

Clifton (near York).—The new church here has been opened for divine service. The architect was Mr. George Fowler Jones, of York. The church is Early English, of a very plain and simple character. The nave is 71 ft. long by 28 ft. 6 in. wide, and 35 ft. high, including the roof. The transepts are each 27 ft. wide by 13 ft. deep, and the chancel is 34 ft. by 21 ft. wide, and 25 ft. high. The tower is 16 ft. 6 in. square, and 94 ft. to the apex of the pyramidal roof, which is terminated by an iron vane 9 ft. high. The church is built of brick, faced with Bradford stone, and Ancaster stone dressings. The tower arch, the transept arches, and that of the chancel, and the organ-chamber are of the same stone. The walls are plastered, and the windows glazed with cathedral glass and coloured margins, and in the west window of the tower there is coloured glass in grisaille, presented by Mr. Jones, the architect. The contractors were Messrs. Discombe & Hebdon for the brick and stone work; Mr. Bellerby, carpenter and joiner; Mr. Croft, the plasterer; Mr. Hartley, the plumber and glazier; Mr. Ellis, the slater; Mr. Worthington, the painter; Messrs. Fryer & Ayres, the smiths; Mr. Cole, the stone carver; and Mr. Jones, the wood carver. Mr. George Harrison was the clerk of the works. The names given to the church are those of St. Philip and St. James, and its total cost has been about 3,800*l.*

Godalming.—The chancel of the parish church is to be entirely restored, at an expense of about 300*l.*, to come from the Ecclesiastical Commissioners. There will be a new encaustic tile pavement, a new communion-rail and open stalls, an open timber roof, the arcade arches restored, as well as the Westbrook Chapel and there will be erected a new south window. Mr. Ewan Christian is the architect, and the restoration will be executed by Messrs. Moon & Son, of Godalming.

Croydon.—The Archbishop of Canterbury has appointed Tuesday, June 18, for the consecration of St. Saviour's Church. Since the opening of the building for divine worship, about three months since, the church has been enriched by the completion of the east window in stained glass, from the design of a townsman, Mr. Barrand, of Lavers & Barrand, Bloomsbury; and workmen are now engaged in erecting the lateral screens of marble and stone, presented by Mrs. Newman Smith. These will separate the chancel from the organ chamber and the children's chapel, and with the reredos, which with the exception of the altar-piece, also the gift of Mrs. Newman Smith, is still in the hands of Mr. Theed, the sculptor, will, it is hoped, be finished prior to the consecration. The whole of the stained glass, marble, and carving, are special gifts from persons who had previously contributed liberally to the building fund.

Newport.—St. Andrew's Church, Church Aston, has been rebuilt and re-opened. The design was by Mr. G. E. Street, of London, and the contract was carried out by Mr. Treasure, of Shrewsbury. The building is Gothic of the Decorated period. It is rectangular in form, and consists of a nave, north aisle, a chancel, and a chancel aisle. It is constructed of red stone, from the quarry of Mr. R. M. Leake, with Grinshill dressings. The nave is 60 ft. long and 29 ft. wide, and the chancel 25 ft. long and 20 ft. wide. The height of the building to the ridge is 36 ft. The floor is paved with tiles, those in the chancel being glazed. The ceiling of the body of the church is plastered between the rafters, that of the chancel being entirely of wood, in the form of an arch; and it is said, that at the west end of the church each word of the minister is as audible as in the chancel, while the improvement to the singing is still more evident. The glazing was done by Messrs. Dore & Davies, of Shrewsbury. The glass is semi-transparent, and of two colours, a sort of pale green and cream-colour. The paises are square and diamond-shaped, and are arranged in various shaped figures, so as to suit the windows. The church is estimated to seat about 350 persons.

Liverpool.—The memorial stone of the North Shore Church has been laid. It is dedicated to St. Paul. As the locality indicates, the church will be essentially a working man's church, and will be built on land given by the Earl of Derby, lying to the left of Bankhall-street, Derby-road. The plan consists of a nave about 70 ft. by 50 ft. having side galleries, with a wide open chancel 20 ft. deep, separated by the chancel arch, supported upon detached stone shafts, having arched caps. The total cost, with the exception of boundary walls and land, will not exceed 4,500*l.* The organ and gallery for the choir will be at the west end. The nave will seat about 600, and the galleries about 250. The architects are Messrs. Culshaw & Sumners, and the builder Mr. George Rome. The Earl of Derby, besides having given 2,300 square yards of land, has promised 1,000*l.* for the endowment. The contract for the building is 4,500*l.*, and it is to contain 850 sittings, half of them free.

Croston (Manchester).—The ancient parish church of Croston, which has been in a sad state for some time past, has just been restored, and re-opened for Divine service. The work has been carried out under the direction of Mr. Gordon M. Hill, of London, architect, and nearly the whole of the cost of the restoration has been defrayed by private contributions and gifts.

Shottesbrook.—For some years past the weather-vane of the spire of Shottesbrook Church has been observed to be far from perpendicular, and some twelve months ago it was thought desirable to put up a new one. This led to the examination of the spire by Mr. Street, architect, who condemned it as unsafe to stand. It was, therefore, decided to pull it down and rebuild it. This work has been carried out by Messrs. Silver, builders, Maidenhead, and was brought to a conclusion by Mr. Richard Silver laying the top stone on the 17th ult., after which a special service was held in the church, at which the

builders and workmen returned thanks for their preservation from accident during their perilous work. Other works connected with this church will have to be abandoned or delayed, for want of funds. It is to be hoped that the delay will be but of short duration. This is the second spire in this neighbourhood which has been recently constructed by the same firm.

Lynmouth (North Devon).—A new church is to be built here. The design consists of nave, chancel, organ-chamber and vestry, and one aisle. There will be a stone bell-gable at the west end to contain two bells. The chancel will be terminated by a circular apse, and will be vaulted with red brick, having stone ribs, moulded corbels, and stone bands. The benches are to be of English oak, and movable. The walls are to be of local stone, having Bath (Box ground) stone dressings. The funds are being raised by subscription. The design was selected in a limited competition, and the author of it is Mr. Edwin Dolby, of Abingdon, Berks.

Slindon.—The parish church, recently restored, has been re-opened, although the works have not been entirely completed, owing to unforeseen delays. This church, founded by Archbishop Anselm, dates back to the twelfth century. Fortunately, enough has survived the effects of time to enable the architect (Mr. T. Graham Jackson, of London), to restore it to nearly its original design. The north transept contains a chapel, dedicated to Thomas à Becket; and the bones of St. Ledger are interred here. The north and south aisles were added about two centuries later. These were covered with fresco paintings, similar to those that adorned the original structure. Many of them were discovered during the restoration; the effect of the air caused them soon to fade, so that only a few—outside the chancel arch and in the south aisle—were preserved. The contractor for the works of restoration was Mr. Robert Busby, of Littlehampton. The total cost of the building has been 2,170*l.*; but the funds raised amounted only to 1,759*l.*

STAINED GLASS.

St. Mary's, Ealing.—Two new windows, designed by Mr. Boddington, and executed by Messrs. Heaton & Co., have been added to his series in the chancel of this church. The subjects already executed now run as follows:—John baptizing Jesus, Angels ministering to Jesus after the Temptation, the Call of Peter and Andrew, Jesus at the Well of Samaria, the Entry into Jerusalem, the Last Supper;—the Agony in the Garden, the Betrayal by Judas, the Foot of the Cross, the Descent from the Cross, the Three Marys going to the Sepulchre, the Three Marys at the Sepulchre;—the Angel sitting at the Entrance, Jesus appearing to the Magdalen, Jesus with the Disciples going to Emmaus, Jesus appearing to the Holy Women, Jesus showing his Wounds to St. Thomas, Jesus saying to St. Peter, "Lovest thou me." The other remaining windows, it is said, will be shortly added.

DISSENTING CHURCH-BUILDING NEWS.

Malmesbury (Wilts).—On Thursday, the 16th ult., the memorial stone of a new Congregational church and schools was laid by Mr. H. O. Wills, of Bristol. The design is in the Early English style, by Mr. Stent, of Warminster, and the contractors are Messrs. Light & Smith, Chippenham.

Sheffield.—Montgomery Wesleyan Chapel, at Cherry-hill, has been opened. It is in the Decorated Gothic style of architecture, and is capable of accommodating about 450 persons. Over the entrance there is a small gallery, which is intended for the use of the school children and as free sittings. The seats in the body of the chapel are approached by two side aisles, the pulpit being at the extreme right, and the communion-table in the centre. The pews, pulpit, communion-table, and hassocks are of stained pitch pine, and are all in keeping with the general style of the building. The communion-rails are also Gothic. The roof of the chapel is an open one with tracery, hammer-beams, and carried purlins, and from it are suspended two large gaseliers. The windows are of ground-glass, with stained edges. Underneath the building there is a large school-room, which is capable of accommodating between 400 and 500 children. The entire cost of the erection is about 3,200*l.*,

towards which, at the time of the opening service, only 1,600*l.* had been raised. The architects were Messrs. Wilson & Crossland, of Sheffield.

Bristol.—The chief stone of Clifton-down new Congregational Church has been laid. It is to occupy the site of Down House, and will consist of nave, chancel, north and south transepts, with vestries and lecture-room beyond. The principal front will face the Down. The centre portion will be occupied by the tower, 22 ft. square, and 180 ft. high, finished by a light turret, supported on niches springing from the four corner pinnacles. At the west end will be an open porch of three arches, moulded and carved, which will be of stone, and groined and laid with encaustic tiles. On the right side of the tower will be a house for the minister; and on the left-hand corner there will be placed an octagonal staircase, finished by a high conical roof. The sides of the building will be ornamented with a parapet and pinnacles surmounting a range of traceried windows; and at each end of the transept will be a rose window. The designs for the building are by Mr. Hanson.

Newcastle-on-Tyne.—The foundation-stone of a Methodist New Connexion chapel has been laid here. The building will be 58 ft. 8 in. by 26 ft. 3 in., and 23 ft. in height internally, and will accommodate about 350 persons. Mr. S. Oswald is the architect, and the contracts for the erection have been undertaken by Mr. Robert Ridley (mason) and Mr. Robert Mattison (carpenter). The cost of the erection of the chapel, with vestry and keeper's room attached, will be about 700*l.* The walls are to be of stone. The roof timbers are intended to be partly visible, and, with the seats, stained and varnished. The style is Early English.

Great Totham.—A new Wesleyan chapel has been opened at Great Totham, near Witham. The new edifice has been erected by Mr. Gardiner, of Coggeshall, from designs prepared by Messrs. Pocock, Corfe, & Parker, of London, at a cost of about 1,000*l.* The style is Gothic, and the material red bricks and ornamental stonework. There will be a gallery across the end, and instead of a pulpit, a platform with desk. The seats consist of open benches. The chapel will seat 350, and there is a school-room attached, with small vestry or class-room.

SCHOOL-BUILDING NEWS.

Liverpool.—The foundation-stone of the new Holy Trinity schools, Wilton-street, has been laid by Miss Catherine Wright, at whose sole cost the building is being erected. The schools are intended for three classes of pupils, an infant school on the ground-floor, a girls' school on the first-floor, and a boys' school on the second-floor, and will accommodate altogether about 500 children. The materials used are local grey stock bricks, faced with pressed red bricks from St. Helens, and bands of Bolton bricks, and with Stourton stone sills and dressings. The steps and staircases are of York stone and Baltic pine. The building is being erected by Mr. John Westmoreland, contractor; from the design, and under the superintendence, of Mr. J. F. Doyle, architect; and the trustees are Messrs. James Denton and William Emery.

Boroughbridge.—The new national school at Kirby Hill has been completed and opened. The building is in the Gothic style, and consists of a large room and a class-room, together with a master's house. The architects were Messrs. Healey, of Bradford; and the several works have been executed under the superintendence of Mr. Alexander Wallace, clerk of the works. The contractors for the building were Mr. W. Leaf, for joiner's work; Mr. Taylor, for mason's work; Mr. Swift, for plumber's work; and Mr. Bramley, for painter's work; all of Boroughbridge. Cost of the whole, 750*l.*

Leeds.—The foundation-stone of a Wesleyan College has been laid at Headingley, near Leeds, by Mr. I. Holden, M.P. The institution is to accommodate forty students at first, but will be ultimately enlarged so as to receive sixty. The style of the design is Gothic of the twelfth century. The building is to cost 12,000*l.*, and the fittings and furnishing 3,000*l.* more. It is to be called the "Wesleyan Theological Institute."

Brecon.—The condition of the building in which the Brecon Independent College is now held, with the increased number of students, has led to the providing of a new and more suitable

building. Plans prepared by the Rev. T. Thomas, of Landore, have been finally adopted by the committee, and tenders having been sought for, that of Messrs. Thomas, Watkins, & Jenkins, of this town, builders, has been accepted. The committee have obtained from the Marquis of Camden a site, consisting of about six acres of ground, immediately under Slooth Tump, and just behind the Brecon station, and within half a mile of the centre of the town. The building will accommodate about thirty resident students, and two or three times that number of non-residents, and contains class-rooms, halls, library, separate dormitories, and studies for thirty students, &c., with two professors' residences, and will cost, when completed, about 10,000*l.*,—the contract of the Messrs. Watkins & Co. being 8,200*l.* Mr. Samuel Morley contributes 1,000*l.*

Books Received.

Treatise on Architecture; including the Arts of Construction, Building, Stonemasonry, Arch, Carpentry, Roof, Joinery, and Strength of Materials. Edited by Mr. ARTHUR ASHPITEL, F.S.A. Edinburgh: Adam & Charles Black, 1867.

UNDER this title we find, and are glad to find, a reprint of various treatises originally published as part of the "Encyclopædia Britannica," and already more or less well known and esteemed. First amongst them are the essays on Architecture, Building, and Construction, written by the late Professor Hosking, and which he himself published separately in 1846. Joinery and Stone-Masonry, which follow, were written by Thos. Tredgold; and to these are added Carpentry, the work of the great master of Egyptian hieroglyphics, Thos. Young (a man of universal knowledge), and treatises on Roof, Arch, and Strength of Materials, contributed by the late Professor John Robinson. The volume, a pretty quarto of 311 pages and 65 sheets of plates, is edited by Mr. Arthur Ashpitel, F.S.A., who has supplemented the articles on Egyptian, Jewish, and Assyrian architecture, and added a chapter on Indian and Chinese architecture. He has also introduced some illustrations of modern French architecture, scarcely sufficient, however, to give a complete idea of the costly buildings now ordinarily put up in Paris; and has added, amongst other things, some observations on that very little understood subject, Acoustics, and supplementary observations on Stone-masonry. Mr. Ashpitel is a little behind-hand in his information where in this chapter, speaking of artificial stone, he describes the objects made by Ransome's process as being submitted to a strong heat in a kiln like that of a potter: this system has been long given up. Nor can we go with him in expecting extraordinary results from Mr. Szerelmey's process for the preservation of the surface of stone used in buildings. The evidence taken by the Government Committee appointed to inquire as to the condition and best mode of preserving the exterior of the Houses of Parliament, gave no such promise.

A quotation from the accomplished editor's observations on French architecture will serve to show his style and proclivities:—

"The modern French, as employed at the Tuilleries and other important public buildings is purely Chamois. The character of the detail is rather that of Viollet than of Palladio or Scamozzi. The mouldings are in general carefully studied and pure, and, as a general rule, the whole arrangement is remarkable for lightness and grace. Proportion seems to have been carefully studied. To those whose eyes have been accustomed to the cumbrous, ponderous style of some of our later works, that of the modern French appears to be too light. But it should be remembered that weight and lightness are qualities to be employed as the use, requirement, or sentiment of the building may dictate. Our earlier churches are all massive, with very small windows, having broad splay inside, where archers or spear-men might stand. The church was often then by necessity the fortress of the place. As these necessities grew less, the style of building became lighter and more elegant. A large window filled with slight tracery would have been easily dashed in, and the place taken, while the little narrow Norman arrow-slit was a formidable means of defence. We admire the massiveness of Newgate, which seems to suggest the means of safely securing the malefactor inside, and of aving the would-be-malefactor outside. Surely a nineteenth-century house ought to have an air of lightness and cheerfulness."

We must take leave here to say a few words as to what is called sentiment in design—a feeling which depends much on the history or antecedents of similar structures. Thus it was in consequence of the existence of old Westminster Hall, that the new Houses of Parliament were designed in the same style. Under its roof our laws, based on those of our Anglo-Saxon ancestors, had grown their present state, and had been administered by Littleton, Gascoyne, More, Hale, Somers, and a crowd of other great names. In chambers of similar architecture the feudal system had gradually given way to free society, and the petition of right and Act of Habeas Corpus had

passed. But however excellent in other respects, it seems very incongruous to design the palace where English law sits in her majesty in the Venetian style. What is there in common between the recollections of the cold cruel tyranny of the ten, their spies, their secret accusations, their mock trials, their tortures, the secret death of the victim, his grave in the sea with a sack for his shroud, and the open, good-fide, even-handed justice of our British courts? Let us always study congruity. And in this way we should consider our dwellings; and we think the French have chosen rightly. Whatever faults they may have had, the Greeks and Romans were a highly intellectual, polished, and literary people. Everything they touched in the way of art, whether oratory, poetry, music, painting, sculpture, or architecture, had that refinement and elevation of thought and finish of execution that we call classicality. And classic architecture seems a necessary adjunct to refined manners and customs."

The most valuable addition, however, made by the editor is a Glossary of the terms in Mediaeval architecture, and sixteen new plates illustrating nearly 300 subjects, many of them never published before. This glossary fills thirty-nine pages, and shows much care, research, and learning.

The volume will make an excellent prize-book for architectural societies and colleges.

Miscellaneous.

ADOPTION OF THE FREE LIBRARIES ACT AT NOTTINGHAM.—At a meeting of ratepayers, to consider the proposed extension of the Free Libraries Act to the borough of Nottingham, there was a large attendance, and the Act was adopted with the greatest enthusiasm, and with only one dissentient vote.

FALL OF TWO HOUSES IN CLEMENT'S-LANE, STRAND.—In this somewhat ancient locality on Wednesday afternoon two houses suddenly gave way and fell across the street. Partly owing to the shock, and partly to the fall of materials, the interior of two of the houses in Clement's-lane, passage, Clare Market, gave way. No lives were lost.

A TESTIMONIAL.—The men in the employ of the Messrs. Poole, builders, Westminster, assembled on the 29th of last month, for the purpose of presenting Mr. Greenham (late foreman of that firm) with a case of mathematical instruments, a token of their respect for his integrity, and gratitude for his amiable bearing towards those who have worked under him.

THE DATE OF FLOWING WIGS.—A correspondent inquires at what time the flowing wigs common during the reign of King Charles II. were introduced at court. It happens that we are able, on the authority of Pepys, to give the exact date. The Duke of York, afterwards James II., first put on a perriwig, February 15, 1663-4, and King Charles II. on the 18th of April following. The fashion was introduced on the court of Versailles.

WATER FOR PESTH.—A correspondent states that Pesth is at last to be supplied with water. In Englishman, Mr. G. E. Peters, has come to terms with the municipality for the construction of waterworks. The new works will be erected on a piece of ground abutting on the Danube, near New Pesth, about a mile and a half from the city. Here the water will be pumped up on the river, filtered, and conveyed to a rising round behind the largest suburb, whence it will supply the whole town, a pressure of 100 ft. being obtained for that purpose. The scheme, then carried into effect, will cost about 250,000*l.* Mr. G. E. Peters's concession extends over a period of nearly ninety years, at the expiration of which the works will become the absolute property of the municipality.

BRISTOL ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY.—At a meeting of this society, held the Fine Arts Academy last week, Mr. C. F. Anson, vice-president, in the chair, the report of council was read, from which it appeared that the close of the year the society consisted seventy-four subscribing members, six honorary members, and the artist members of the Academy of Fine Arts. The following officers were elected for the present year:—The Earl of Derby, president; Mr. Hansom and Mr. Anson, vice-presidents; Mr. C. J. Phipps, honorary secretary and treasurer; Messrs. Underwood, E. Godwin, Frispi, Masters, W. H. Willis, and the Rev. W. Barclay, council. Mr. R. P. Peters then read a paper on "Egyptian Architecture," illustrated by the series of sketches made during his tour in the East, to which we refer before now referred.

WHITLEY ABBEY, NEAR COVENTRY.—At the Auction Mart, on Friday, 31st ult., this interesting old place, the family seat of Viscount Hood, was knocked down to Mr. Edward Petre for 30,000*l.*

THE BISHOP OF LONDON'S CHURCH-BUILDING FUND.—Since the formation of the Bishop of London's Fund 500,000*l.* have been subscribed by the Ecclesiastical Commissioners and 850,000*l.* by private benevolence for church work in the diocese of London.

CONDITION OF THE LICHFIELD MUSEUM.—With reference to a letter referred to in our last, we are requested by one of the city authorities to say, that Dr. Rawson's letter, and the reply of the architect, having been read, the town council at their last meeting passed a resolution "that the works had been carried on in a satisfactory manner."

FIRE NEAR PICCADILLY.—Early on Saturday morning last a fire was discovered on the premises of Mr. Falkner, builder, in Duke-street, Piccadilly. The inmates succeeded in effecting their escape on the first alarm, and a strong force of fire-engines quickly arrived and set to work; but, in spite of the exertions of the brigade, the flames continued to spread, and eventually seized upon the next door, occupied by a bookseller and news-vendor.

THE PROPOSED MEMORIAL OF THE LATE DEAN OF HEREFORD.—At a public meeting of the subscribers to the fund for the erection of some lasting and suitable memorial of the Very Rev. Richard Dawes, to consider whether a memorial tomb in the cathedral, or a gateway into the cathedral close, should be decided on, it was resolved, "That a gateway leading from Broad-street into the cathedral close is the most suitable form of memorial to the late dean, providing sufficient funds be forthcoming to carry out such design." The meeting then adjourned for a month, when it is expected, estimates and designs having been received from Mr. Scott, the matter will be finally settled.

A WINDFALL FOR THE VICEROY OF EGYPT.—A search in the garden of an ancient Coptic convent is said to have brought to light a treasure consisting partly of ingots and partly of very ancient gold pieces rather larger than Napoleons, of a total value represented as about 50 millions of francs. The discovery having been telegraphed to Ras-el-Tin, the Viceroy left to investigate the matter in person. Can it be the cash-box of Amenopolis XXXVII., which that monarch is said to have lost on a journey, according to inscriptions on the obelisk of Luxor? As curious and unlikely a discovery of a lost and advertised valuable of ancient times, as our readers know, occurred in England not long ago.

ILLUSTRATIONS OF "THE IDYLLS."—Editions of "Vivien" and "Guinevere," with illustrations by M. Gustave Doré, uniform with "Elaïne," published last year, are announced. We mention this merely to express a hope that Mr. Doré will be allowed time to read what he has to illustrate before making his drawings. This he could scarcely have done in the case of "Elaïne." In more than one of the illustrations the author's meaning is wholly misrepresented;—as, for example, in the drawing supposed to illustrate that passage which says that Arthur, who "labouring up the pass" had trodden on the crowned skeleton, and sent the skull rolling, plunged down the shingly scarp.

"And caught
And set it on his head,"—
Arthur is shown on horseback!

OXFORD ARCHITECTURAL AND HISTORICAL SOCIETY.—At the second meeting of this term, the committee submitted to the Society suggestions with regard to some important changes in the rules which were to be voted for at the next meeting. The junior secretary gave a lecture upon the Antiquarian and Historical Questions connected with St. Valery-sur-Somme. He concluded by asserting St. Valery-sur-Somme the port from which William the Conqueror sailed, there being no evidence whatever that St. Valery-en-Caux could claim the honour, though this has been sometimes maintained. The walls of the Mediaeval city, which are very perfect, date only from the thirteenth century, and the church was rebuilt at that time, but probably on the same spot where the church stood in which it is distinctly recorded William offered up prayers for the success of his enterprise.

ENGLISH CHURCH IN LYONS.—A new church is about to be erected at Lyons. The first stone was to be laid by Mr. W. L. Leaf, of London, on the 5th instant.

NEW METROPOLITAN MEAT MARKET, SMITH-FIELD.—The chief stone was formally laid on Wednesday last. Illustrations of the proposed building will be found in our pages.

FATAL FIGHT.—At a place near Normanton where some new houses are being built, a brick-layer, named Whiston, objected to an Irish labourer, named Sladen, using a trowel. The result was a fight, in which Whiston was killed.

RELICS OF A. LINCOLN.—A case has been placed in the Patent-office at Washington containing relics of the late President, the most interesting of which is a little model of his own invention, whittled from the wood of a cigar-box, for floating steam-boats over the bars and snags of western rivers.

IRON FROM NEW ZEALAND.—The company formed last year for the utilisation of the iron-sand of New Zealand has delayed its operations for the report of Dr. Noad on the success of the process of smelting patented by the company: the report being highly satisfactory, operations are to be at once commenced.

OPENING OF NEW WING OF LOCK HOSPITAL.—The new wing of the London Female Lock Hospital, in the Harrow-road, has been formally opened in the presence of the Duke of Cambridge. The total number of beds in the old building was 76, and in the new wing 76, making a total of 152. The new wing has been erected from the designs of Mr. Porter, architect.

DEATH OF MR. ALEX. BRODIE, SCULPTOR.—Mr. Alex. Brodie, sculptor, Aberdeen, has died very suddenly. Although not so widely known as his brother in Edinburgh, Mr. Brodie was fast rising into celebrity as an artist. His Queen's statue in Aberdeen; the late Duke of Richmond on the square of Huntly; the Motherless Lassie; Highland Mary; Cupid and Mask; and a figure in the Aberdeen churchyard representing Grief strewing flowers on a grave, are evidence of a degree of attainment in the profession which have called forth more than local notice. Mr. Brodie, who began life as a brass-finisher, was only in his thirty-seventh year.

THE THAMES EMBANKMENT.—On Friday in last week the question as to the further extension of the approaches of the Thames Embankment, on the north side of the river (to the east of Westminster Bridge), and also the embankment which extends along Chelsea Reach, came before the Referees on Private Bills for consideration, as to the interests of a very large number of holders of property (real, copy, and leasehold), in the districts through which they would ultimately pass. The different parties appeared, and statements were made to the effect that arrangements had been entered into which would completely satisfy the interests of all concerned. It was ultimately arranged that all opposition to the Bill should be withdrawn.

PARTIAL FALL OF A NEW CHURCH AT WEL-LINGBOROUGH.—The new church now in course of erection in the Midland-road, Wellingborough, has fallen down. The whole of the completed arches on the south side, together with the clear-story windows and wall, and part of the roof, which had begun to be laid, has come to the ground and other parts have been taken down. The builder, Mr. John Burkill, had taken steps to remove the framework of the arches, and scarcely had the wedges been eased when the whole, four in number, and the clear-story, fell down with a noise like thunder, alarming the whole neighbourhood. A telegram was at once despatched to Oxford to Mr. Buckridge, the architect, who arrived during the day. Mr. Scott, the architect, was also telegraphed to in London, and at once sent down a gentleman from his establishment with a view to report on the cause of the accident. In the meantime it was deemed advisable to remove the corresponding arches and clear-story on the north side, and this work is now in progress, together with the removal of the debris of the fallen arches. Opinion is at present divided as to where the blame rests. The piers were constructed of the soft red sandstone of the neighbourhood, the material specified in the contract. The estimated damage, together with the cost of the removal of the arches on the north side, is about 8000*l.*

A NEW THEATRE FOR LONGTON.—Mr. Ward, the proprietor of the Alma Theatre, Longton, has commenced the erection of a new brick and stone building to supersede the present wood erection. The new building is situated at the rear of the Flint Tavern, in Stafford-street. Mr. Spicer is the contractor.

VICTORIA PARK.—In reply to a question put in the Commons by Viscount Enfield as to a portion of the 290 acres which formed the area of Victoria Park having been devoted to building purposes, Lord J. Manners replied that the area of the park was only 265 acres, and of that one-sixth was reserved by Act of Parliament for building purposes. That plan of recouping the public to some extent for the expense of forming the park had always been intended.

CITY OF LONDON HOSPITAL.—Sermons by the Lord Bishop of Worcester, and the Rural Dean and Vicar of West Lynn, Essex (the Rev. A. Ram), were preached on Sunday last to large congregations assembled within the walls of the chapel, and on behalf of the City of London Hospital for diseases of the chest, on the occasion of the seventh anniversary of the opening of the chapel, which has been recently much improved by various additions in the shape of cornice, choir stalls, convenient sittings, and the like.

LEICESTER ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY.—A bi-monthly meeting of this Society was held at Leicester on Monday, 27th ult. After the transaction of business in Committee, Mr. North (honorary secretary) announced that the general summer meeting of the members of the Society would be held (in conjunction with the Northamptonshire and Bedfordshire Societies) at Kettering, on the 4th and 5th of June. Various antiquities were exhibited. The Rev. John Fisher communicated some notes upon the destruction of Herald's College in the Great Fire of London, and the preservation of its contents.

NATIONAL MONUMENT TO LORD BYRON.—A meeting of influential persons has been held in the Mayor's Parlour, Nottingham, to take steps for the purpose of erecting a monument to Lord Byron. The meeting being rather small, no chairman was appointed. A letter was submitted from Mr. T. A. Murray, president of the Legislative Council of Sydney, who wrote:—"The movement ought to bear an Imperial character. The whole empire should contribute. The Austrian colonies, I am sure, will do so, and I shall be happy to act for you in forming a sub-committee, and collecting subscriptions in New South Wales, as well as to give my mite." The meeting was adjourned.

NOVELTIES IN MARINE CONSTRUCTION.—A steel steamer, as thin as card-board, has been built at Chatham, to be used by the exploring party in search of Dr. Livingstone. The boat is 30 ft. in length, and from gunwale to gunwale 8 ft. in breadth, the weight being rather more than one ton. The boat can be taken to pieces in a very short time, and taken across country by negroes. The plates, being of steel, possess a maximum amount of strength with a minimum of weight; they are 1-14th of an inch thick, and may be bent to almost any shape, without injury. Steel plates for ships and boats have been largely used by other Governments, but this is said to be the first instance in which our Admiralty have constructed a boat of steel.—The Atlantic, according to the *Scientific American*, is about to be crossed on one of Perry's rafts, now on exhibition in New York. This raft is constructed of three air-tight cylinders encased in heavy Russia duck cloth, each over 25 ft. in length by 12½ ft. wide. When blown up these bags are connected by a light framework, which also forms the deck. The raft is schooner-rigged, with a lug-sail forward, main-sail aft, and jib. There is no cabin, the only protection for the passengers being a small waterproof tent rigged amidships. Captain Mikes and two companions constitute the complement of men, and the expedition is to start about the middle of the present month, bound for Paris and the Exposition. The raft draws but 7 in. of water, and with a fair wind the inventor states that its speed will be from twenty to thirty knots an hour. Its buoyant capacity is estimated at 14,000lb., or it will float 585 people on deck and clinging to its sides. The raft can be stored, wrapped in a tarpaulin, in a space 13 ft. by 20 in., and can be inflated and launched ready for use in six minutes.

DIAMOND.—In the *Comptes Rendus*, M. Dumas has recently described some very remarkable forms of diamond anthracite of the following composition:—Carbon, 97.6; hydrogen, 0.7; oxygen, 1.7; density, 1.66. The anthracite was in extremely hard polished concreted nodules capable of scratching glass and other remarkably hard and polished substances, after the manner of the diamond. The nodules were sold by a dealer to Count Donhet, who transferred them to M. Dumas for scientific examination.

MARKET HALL FOR NANTWICH.—The sanction of the Secretary of State to borrow the money requisite for carrying out the new set of plans adopted by the Local Board of Health for a market-hall, has been received, as also his approval of the plan of proposed increased water supply. The first-named work is estimated to cost 2,600l., and the last 1,500l. A proposition is also on foot for substituting blue brick foot-paths for the existing stone pavements which formed so marked a peculiarity of this and many other ancient towns.

THE JUDGES' NEW LODGINGS AT LIVERPOOL.—The mansion on the Newsham Park estate, which until recently was occupied by Mr. Alderman Gardener, has within the last few months been undergoing very extensive alterations and additions under the superintendence of Mr. Robson, the borough architect, with the view of adapting it to the purposes of a residence for her Majesty's judges during the assizes. These alterations and extensions have now been fully completed. In addition to the apartments, including drawing and dining rooms, &c., especially for the use of judges, there are also several marshals' and clerks' rooms, besides reception-rooms for attorneys, and other apartments for similar requirements. The whole of the interior has been decorated. The cabinet and upholstery work is being executed by Mr. Dutton, of Liverpool. The grounds in front of the house, which are extensive, are being ornamentally laid out.

THE LEA VALLEY DRAINAGE.—“Minutes of the committee, formed in pursuance of a circular issued by the Tottenham Board of Health, representing the parishes of Tottenham, Hornsey, East Barnet, and the Colney Hatch Lunatic Asylum, upon the drainage of the Lea Valley, and the purification of the river Lea, with a report by J. W. Bazalgette, C.E.,” have been printed by Smith & Co., of Longacre, for the Tottenham Board of Health. They are accompanied with a plan by Mr. Bazalgette, who recommends the formation of a main sewer from Hertford to Barking by St. Margaret's, Bromsbourne, Wormley, Waltham, Tottenham, &c., with branches from Barnet and Hornsey, and a reservoir at Barking; that Parliamentary powers be obtained to form this area into a sewerage district, with a commission or Board representing the whole, and also the East London Waterworks Company, the river Lea trustees, and the New River Water Company, for the execution of the said drainage works, with power to levy a sewerage rate over the district. The list of places to be drained comprises Hertford, Ware, Amwell, Hoddesdon, Bromsbourne, Wormley, Cheshunt, Waltham, Enfield, Edmonton, Tottenham, Hornsey, East Barnet, Colney Hatch, Walthamstow, including Woodford, Leytonstone, Low Leyton, Wanstead, West Ham, East Ham, and Little Ilford, to all of which the Lea forms the natural outfall.

TENDERS

For a lifeboat-house, about to be erected on the beach at Brighton, for the National Life Boat Institution. Mr. Cook, of London, honorary architect:—

Annicole & Newbham	2,680 0 0
Lockyer	637 0 0
Cheesman & Co.	617 0 0
Kirk (accepted)	455 0 0

For the erection of stables, in Duke-street, Portland-place. Mr. W. A. Baker, architect. Quantities supplied by Messrs. Richardson & Waghorn:—

Colls & Co.	2,680 0 0
I'Anson	668 0 0
Eaton & Chapman	657 0 0
Manly & Rogers	623 0 0
Cooper	584 0 0

For the erection of a hay warehouse, Regent's Canal Augustus-street, Camden-town. Mr. W. A. Baker, architect. Quantities supplied:—

Holland & Lister (accepted)	21,200 0 0
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For a pair of villa residences, including boundary-wall, &c., at Watford, for Messrs. Margetts & Wallis. Mr. Frank Thicke, architect:—

Waterman (accepted)	2,875 0 0
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For the erection of a House, at St. Ann's-hill, Wandsworth. Mr. W. A. Baker, architect. Quantities supplied:—

Ademson	21,155 0 0
Kelly	1,115 0 0
Stoddart	1,580 0 0
Cooper	880 0 0

For the Royal Albert Orphan Asylum, Collingwood Court, Bagshot, Surrey. Mr. E. Ellis, architect:—

Ashby & Horner	23,270 0 0
Perry & Co.	3,401 0 0
Wheeler	3,008 0 0
Higgs	2,843 0 0

For Lecture-hall, Dalston. Mr. J. Lovegrove, architect. Quantities supplied:—

Scrivenor & White	2,764 0 0
Maers	750 0 0
Blackmore & Morley	742 0 0
Webb & Son	731 0 0
Crockett	728 0 0
Shurmer	718 0 0
Heston & Chapman	710 0 0
Wood, Brothers	698 0 0
Nutt & Co.	698 0 0
Garrard	695 0 0
Grover	694 0 0
Stanes & Son	685 0 0
Nightingale	687 0 0
Crabb & Vaughan	647 0 0
High (accepted)	645 10 0

For the erection of a detached residence, Maize Hill, Blackheath. Mr. J. H. Rowley, architect:—

Hart	22,372 0 0
Webb & Son	2,343 0 0
Brass	2,297 0 0
Kilby	2,238 0 0
Penny	2,188 0 0
Kenshaw	2,077 0 0
Kelley, Brothers	2,077 0 0
Piper & Wheeler	2,044 0 0
Hedges	1,994 0 0
Perry & Co.	1,979 0 0
King & Sons	1,888 0 0
Hill & Keddall	1,880 0 0
Crabb & Vaughan	1,812 0 0
Brass	1,774 0 0

For the erection of a villa residence, at Ravenscourt Park, Hammer-smith, for Mr. Edward Lacey, exclusive of painting, paper, stoves, and chimney-pieces. Mr. D. G. Gibby, architect:—

Palmer (two lots)	21,850 0 0
Lawrence & Baugh	1,669 0 0
Balston & King	1,647 0 0
I'Anson	1,533 0 0
Manley & Rogers	1,490 0 0
Ennor	1,486 0 0

For new house, Farset Ken, Hunts, for Mr. John Bird, jun. Mr. E. Browning, architect:—

Tyers, Ireson, & Richardson	22,314 0 0
Law & Son	2,350 0 0
Hinson, Brothers	2,060 0 0
Patinson, Brothers	1,980 0 0
Hobson & Taylor (accepted)	1,878 0 0

Repairs, &c., to St. Mary's Hospital, Paddington, W. Mr. W. Wigington, architect:—

Highly	29,411 5 0
Watson	2,974 12 0
Roper	2,941 0 0
Steel & Leggett	1,937 0 0
Weich	1,495 0 0
Norton	1,691 0 0
Johnson	1,645 0 0
Nightingale	1,641 0 0

For erecting malt-house, also stores, and barley and malt stores, at Windsor, for Messrs. Burge & Co. Mr. H. Walker, architect. Quantities supplied by Mr. H. W. Broubridge:—

Kyles	23,647 0 0
Whittle	1,880 0 0
Hollis	1,850 0 0
Flab	1,910 0 0
Sykes	1,760 0 0
Willis	1,786 0 0
Reavell	1,775 10 0
Sawyer	1,763 0 0
Jarrett	1,746 0 0
Myers & Son (accepted)	1,679 0 0

For the erection of a residence on the Westlands Estate, Bawett, Southampton, exclusive of office, stables, and lodges. Messrs. Guillaume, Parmentier, & Guillaume, architects:—

Richardson	24,250 0 0
Richards	8,611 0 0
Lewis	8,102 0 0
Sanders	3,025 0 0
Gambing	2,800 0 0
Philips	2,373 0 0
Bull & Sons	2,472 0 0

For erecting eight houses, in Palace-road, Bromley, Kent, for Mr. G. Gordon. Mr. Samuel H. Hooper, architect. Quantities supplied:—

Krys	23,615 0 0
Stanes & Son	3,404 0 0
Walsh	3,053 0 0
Walker	2,960 0 0
Deards	2,768 0 0
Lawrence	2,585 0 0
Farthing	2,624 0 0
Harrison & Edwards	2,515 0 0
Hazell	2,500 0 0
Lamerton	1,920 0 0

For alterations, at the Exeter Arms, Exeter-street, Lisson-grove, for Mr. Greaves. Messrs. Lynes & Rivatt, architects:—

Lawrence & Baugh	2,414 0 0
Godden & Webb	410 0 0
Gillett & Wisbey	310 0 0

Feuster's Work.

Richards	294 0 0
Bowen	88 0 0
Herring	59 2 6

The Builder.

VOL. XXV.—No. 1271.

Architectural Drawings in the Paris Exhibition.



MONG all the ten groups and ninety-five classes into which the contents of the Paris Exhibition are divided, perhaps that which will be of the greatest interest to the bulk of our readers is "Class 4. Group 1. Architectural Designs and Models." And not to professional readers alone, for in the revival of art that has been witnessed in England during the last quarter of a century there is hardly an educated man or woman who has not taken some little part, either in the general question of taste, the parent art of archaeology and architecture, or in one of the many subdivisions and details into which the subject may be arranged. The majority of us are either Goths or Greeks, consciously or unconsciously; and if knowledge and education do not lead to so general a survey of the whole question of architecture, we yet have our favourite periods of art or varieties of style in that Gothic or Classic school which has our sympathies; and when even these do not keenly interest us, we agree to hold different opinions as to the comparative beauty of the square or round houses, split ourselves into parties about vestments or mural decoration, or disagree in our views concerning the method in which the "five orders," or any portion of them, may be employed in designing the façade of a building. This, if it show nothing else, proves that the progress and development of architecture and its subordinate arts is becoming, however slowly, a question of some interest among educated people in England.

Apart from the historical interest and value architectural remains, which make their study attractive to the scholar or antiquary, there is so great an amount of information on subjects correlative to be obtained by archaeological inquiries, that we cannot become well informed in the past history of our country without absorbing in the process enough knowledge of architecture to make us latent if not active archaeologists. It has fallen to the lot also of this century to have both the task of restoring a large number of the architectural monuments of the past, and of supplementing them by new actions required for the present and the future. As a large proportion of the great cathedrals and parish churches of England have been and will be restored in this century, and all those important public and civil buildings required either by the national administration in the metropolis, or by municipal bodies in the large vicinal cities, will also be the work of the nineteenth century in which we live. The only all-pervading period to this in this respect in English history is the fifteenth century, as the union of perpendicular with Norman architecture displays in so many of our cathedrals; but not in the fifteenth century, nor any other epoch in our history can vie with the present age in number or extent of the public buildings erected, nor exhibit so rapid an elevation of art. At no previous era to that which

has been aptly called the Georgian, had architecture sunk to so low an ebb, or public taste so nearly approached extinction; and this makes our own period appear all the more satisfactory in contrast with the gloomiest phase of our art-history. But, without comparing the present with the more immediate past, and grieving for many opportunities missed, we may regard our own days as peculiarly the age of the Renaissance of art generally, and of architecture especially.

This alone would confer upon an international exhibition of architectural designs an absorbing amount of interest; for it is only by such opportunities for comparison as are thus given to us that we can as readily compare ourselves with other nations, as we can annually contrast the works of individuals with each other among ourselves at home. There are, however, limits to the opportunity now given in Paris, since it is no easy task to place side by side in competition works which have been designed for dissimilar purposes, and required to comply with very varying conditions. The only features in which, as it appears to us it is both possible and may be profitable to institute a comparison of the architectural designs of different nations, are the essentially fine-art elements of design and composition, the use of enrichments to develop the arrangement of masses and of effect, and the manner in which the designs themselves have been placed before us by the instrumentality of drawing.

Of the English drawings it is hardly necessary to speak in detail, so many of them being works already criticised by us, and already known by many of our readers. Nor is the collection itself of so inviting a character, that with the charm of novelty gone, we should be tempted to go very fully into a consideration of its excellence. It might have been hoped that even if private picture collectors retained possession of the greatest masterpieces of painting produced by our artists, preventing thereby a full and fair representation of the British school in the exhibition, we should retrieve our position to some extent by the display it was in our power to make in the department of architecture. Though it is only by permission of the purchasers of a painter's works, that he can hope to be efficiently represented in an international competition, the architect is under no such difficulty. By his own wish he can either display the evidences of skill in design, or withhold them; and considering the paucity in the collection of really good architectural designs which have been produced by living men comparatively recently, and are known to be now in existence, it would seem to be undeniable that our English architects have not cared to be represented in the exhibition, either as a school or as individuals. This is the more to be regretted, because we are accustomed to suppose we have the best grounds for believing that in architecture we hold no secondary position in Europe. The work of restoration has been an archaeological school for our architects, and the numerous competitions for important public buildings have tested their powers of design and drawing. The condition of architectural design in England is a sufficient proof that both of these influences have been felt and have borne fruit. Our display of works in the Paris Exhibition, as we said before the collection was sent off, gives but a very indifferent impression of the actual practice of architecture, and conveys a very false one of its study as a fine art. Of large works either completed or in process of erection our architects have but a scant show, the principal of these being Mr. Waterhouse's "Assize Courts at Manchester," Mr. Scott's "Albert Memorial," "Designs for the Houses of Parliament at Sydney," by Mr. Lynn, Mr. E. M. Barry's "Restoration of St. Stephen's Crypt," and Mr. C. Brodick's "Town-hall at Leeds." Of designs not carried out, there are the "Albert Memorial" drawings of Messrs. Donaldson,

Fergusson, Pennethorne, and C. Barry; "The Manchester Assize Courts," by Banks & Barry; and a "National Institute of Art and Science," by J. B. Waring. There are also many works of minor importance, both executed and designed, such as churches and private houses, but that we have named the most important drawings exhibited is equivalent to saying that English architectural design is rather indicated than represented. The architects named display, for the most part, only one design each; other architects of note exhibit but their lesser works; and many do not exhibit at all. It is true that in the exhibition of photographs of architectural works, this poverty of representation is in some degree apologised for; but this is only an indifferent apology.

It is comforting, however, that Mr. Scott should have so far remembered his status as an Architectural Academician, as to send his "Albert Memorial," and that one of the best modern adaptations of Gothic, the "Manchester Assize Courts," is exhibited. Both are good drawings, and the same may be said of the excellent design, well and artistically displayed by Mr. Lynn, of the "Sydney Houses of Parliament." Mr. Brodick's "Leeds Town-hall" says as much for classic study of architecture as we could well say, so long as Mr. Tite withholds his "Royal Exchange," Mr. Scott his Whitehall Government Offices, and the Liverpool Hall of St. George by Mr. Elmes, is out of the competition. There is not, however, one of the architects named, whose works appear in this collection, who could not if he chose have sent half a dozen of his own designs far superior to the one he has sent; and if the architects who have sent nothing except small photographs perhaps, had a mind to form an exhibition of their own designs in London, there would be displayed a better collection of works than is at present exhibited in the Champs Elysées.

Turning from the English to the French drawings, we cannot help being impressed with the same difference in scale as is to be seen in the oil paintings of the two nations. After the French paintings the English seem miniatures; and when we have examined the pretty-looking drawings of our own countrymen, the immense and powerful works in the French Architectural Gallery are the more striking. We cannot be prevented from admiring the pleasant water-colour drawings with their bright foliage and clear skies, rustic figures or prancing horsewomen in the foreground, with which our countrymen appeal to us when they bring forward perspectives of their designs; but as a style of conveying to us the actual architecture and composition of a building, the geometric drawings on a large scale adopted by the French architects seem to us preferable. The English, however, were not allowed space for such a display. It is somewhat instructive, also, to see how the disposition to draw the figure, and indulge in pleasant bits of colour which our architects exhibit in the landscape accessories of their designs, the French architects, who evidently have the same desire, apply to the enrichment of their composition by sculpture and its decoration polychromatically. The thought rather forces itself upon us that in the interpretation of a design and in its composition, the figure-drawing should be the architect's own work, and not that of the colourist, who undertakes to present the perspective in a charming manner to the public eye; and that it would be somewhat the better for architecture as a fine art if the figures formed a permanent part of the composition, designed, therefore, with becoming seriousness, and not be representations of passing spectators on the road in front of the building, or groups of picturesque figures surveying the interior.

Let us take, as an example of French composition, the design for "*une salle des fêtes*,"—

No. 880, by M. H. P. Picq, which is a longitudinal section of Renaissance interior, showing the composition in form and colour. As a picture, it is not to be compared to many drawings in the English department; but then examine it as an architectural composition, and see how the artist who designed the buildings revels in the decoration of it by his powerful figure-drawing and his love of chaste and harmonious colouring. Such a building as this is a design for, does not exist in England at the present time, the only approach to it being the interior of St. George's Hall, Liverpool, which, however, is far beneath it in general composition, in richness of effect, and in sculptured and coloured decoration. Here all the artist's love for colour and the enrichment obtained by introducing the human figure, finds vent in his elaboration of this design, and is not thrown away, architecturally speaking, upon purple skies or charming equestrians. The drawings under the number 870, by Lamerie, of the Church of St. John, are also examples of a thoroughly conscientious study of architecture, betraying a mastery of all elements of art, arrangement of masses, contrast of form, grouping in pleasing harmony of the various modes of enrichment; and, taken together, they form a perfect example of design, in which the architect assumes and maintains his true position of the master-mind, equal to the task of not only providing the framework of a building, but of clothing it with its ministering subordinate arts. Especially among the numerous drawings exhibited by this architect are the two large perspectives and one large section, to illustrate this design for the Church of St. John. They are worthy to be made standards to convey to students an idea of what design is capable, and to show to what perfection architectural drawing may be brought, by a thorough mastery of its elements.

M. Héard exhibits three designs, two of which, Nos. 863 and 864, appear to us as remarkable for purity of taste as they are excellent in draughtsmanship. The latter, a monument to commemorate the friendship of all nations, is particularly worthy of the student's careful examination, on account of its quiet power in design and its masterly qualities of drawing. It is to be regretted that so apocryphal a subject should be identified with this excellent design; and we do hope that before the lion and the lamb lie down together, this monument may be adopted to commemorate a less abstract idea, in a concrete form. The former of these drawings, No. 863, is a large detail, some 12 ft. high, of a single bay in the façade of a Parisian house, and the large scale upon which it is drawn enables us to obtain a very accurate idea of the effect of the design. It is both refined and bold, well composed, and, remembering the limitations, very original. How few of the designs which appear good and characteristic in the pretty perspectives of our English school would bear the severe anatomisation of their features to which this large geometric drawing would subject them! And yet how valuable is the test thus applied, both to the architect and the public. From such a detail as this, drawn and coloured like it, we can see the effect of every detail in the whole building, and many an error which becomes evident for the first time in the completed building would be detected in the large-scaled drawing before it became irrevocable.

Another French architect, of whose works the nation may well be proud, is M. Questel. His designs for the library and the mansion-house (as we should say), at Grenoble, seem to unite those usually divorced characteristics of skilful planning and pleasing *tout ensemble*, whilst the same universality of powers in artistic design and enrichment of parts, noticed of other architects, is eminently noticeable in his works. We confess to liking his interiors better than his exteriors, and his large geometric drawings show his great skill in composition better than the somewhat hastily executed perspective views which accompany them.

The collection of French architectural designs includes also, among others worthy of study, the complete drawings for Prince Napoleon's Pompeian House, by M. Normand; the Chateau of Liencourt, by the same; a design for a school of art, by M. Huot (and what the French do in the way of art schools may be worthy of inquiry in England), and many extensive essays in the restoration of ancient works, apparently studies, or diploma drawings by students. Among the latter the restoration of the Temple

Hercules, at Tivoli, by M. Thierry, seems a

carefully thought-out production, showing the actual condition of the temple, and its restoration, in an excellent series of drawings. As a monument of labour, the immense pen-and-ink drawing, by M. Fruchy, of the Abbaye Royale of St. John Desbiques, at Soissons, is worthy of a passing glance; and if the English architectural student wishes to leave the French Court with a little less keen sense of his own deficiency than he otherwise ought to, he should wind up by examining the Engineers' Cathedral of M. Boileau. This triangular iron house of cards will bring back to his memory some of the ecclesiastical architecture of his own country, and his final conviction will be that, however weak and powerless his art-education may have been, and how proved it is to be so may be seen by these French drawings, there is one thing which his countrymen can do now, as they did in the thirteenth and fourteenth centuries, and that is to build a Christian church, or cathedral, better than the Frenchmen, over whose other works he has lost his patriotism in admiration.

It is a curious phase in the architecture of two nations that, although for many centuries the French were as great believers in Gothic art as the English, yet, from a certain time, which we cannot exactly fix, the one drifted as steadily in a classic direction as the other did Gothically. How far asunder this drifting has taken them may be indicated by the two collections of architectural designs in this exhibition. There is scarcely a design in the English department worthy of long scrutiny where its author has attempted Italian or Renaissance treatment; on the other hand, we may say exactly the same of pointed architecture in the French department. Moreover, just as we seem in England to have settled the question of the adaptability of Gothic to large public buildings, the French appear to have given up thinking of it, except as a defunct style. Even where they attempt it, the composition is essentially Italian in general effect, and the details very Moorish in treatment.

Next to the French drawings, the architectural designs of the little kingdom of Belgium stand foremost in merit. Curiously enough, also, the classic spirit is not so observable here as in her French neighbour's works. There appears to be about an equal devotion to both styles in the Belgian drawings, with a preference as in England, for Gothic in ecclesiastical buildings. The drawings are neither upon so large a scale as the French, nor are they so excellent as compositions, and, in addition, there are very few of them. But the designs for the churches of SS. John and SS. Nicholas at Brussels, and SS. Peter and Paul at Chatelet, by M. E. Carpentier, are very creditable productions. The former, in a style of Gothic which, had it been the work of an Englishman, would have been developed into geometric Gothic, and the latter would have become in like manner First Pointed. There is, however, something about modern Continental Gothic which refuses to be classified in our own terms, and is as unlike also the Medieval style of France or Belgium. The Chatelet church is the more refined and effective of these two designs, the tracery of the other being scant and not graceful,—too much like windows cut from pasteboard. Something about both of these works suggests practice in a foreign style, to which the architect has not yet become accustomed. We saw the same kind of feeling in our own Gothic, thirty years ago, only that with us our designs were the productions of men learning to become artists, whilst M. Carpentier starts on his revivalism with finished power as an artist. The design for a cathedral or church, by M. Leon Sieyes, is another effort in Pointed architecture, which has many excellent features also. The new Bourse, for Brussels, which is simply a Classic temple, portico and all, better represents the powers of M. Sieyes, and his drawings of the national monument to King Leopold I. afford illustrations of a powerful mastery of drawing and colouring, as well as skill in composition.

"The Chateau," by Vanhoolen, a coloured perspective drawing, is perhaps the most picturesque of the Belgian buildings, and may be well compared with similar drawings in the English department, such as "Orchard Leigh, Somersetshire," by Mr. T. H. Wyatt, with "Hamstead House," "Chilham Castle," and "Tavernham Hall," by Mr. D. Brandon. In domestic architecture of castles and halls we might have shown greater felicity than we have done, though, as we have before remarked,

England could have placed herself in the first position in architectural design generally, had she been so minded, however painfully inferior she must have been in the mere technical practice of architectural drawing, as compared with the French.

How comes it that these Belgian architectural drawings are ignored in all the catalogues? Of the drawings exhibited by other nations, perhaps the most important are those which illustrate the design for the Hôtel de Ville at Berlin, by M. H. Waeseman. The design itself is a comparatively plain and meagre composition, having semicircular and segmental windows and doors, its good points being the skilful use of constructional ornament, especially in the cornice. Eight very large drawings and a model also, do perhaps more than justice to the composition, which can be thoroughly well understood from them, and in this respect the group of both drawings and model are deserving of attention. The very elaborate "Zion's Church, at Berlin," by M. Orth, a sort of Romanesque design, having semicircular windows, enriched with tracery, the latter feature showing very comically, is also well illustrated by four large drawings and a model. The grouping of this church is both skilful in construction, and very tasteful in ornamentation, though the purely architectural or sculptured ornament in other parts of the construction is scanty and poor.

The Netherlands are not badly represented by M. Cuypers, who exhibits designs for three churches, as well as one for the King William Museum at Amsterdam; the latter profusely illustrated by many large drawings. One design for a church, by a Netherland architect, M. Van Soeden, is interesting as showing the use of coloured brick internally, instead of polychromatic decoration,—a custom much affected by one class of architects of the English school.

Of the many other architectural works scattered about in various parts of the building it is not our intention more fully to speak, than to say that those from Spain and Portugal are interesting, as displaying a peculiarly distinct national type.

Many other countries besides England have shown an apathy on the subject of architectural design in this department of their display; though whether they have as little cause for it as we have, it is impossible for us to say.

We cannot say much for the elliptical plan of the building for the Exhibition, so far as the arrangement of the architectural drawings is concerned. The English drawings are in a miserable little place, away from the great gallery, whilst of other nations, some have to be content with the vestibules and passages between one gallery and another; and many drawings are in the open air, under cover of the piazza round the central garden. In contrast with this the majority of the French works have the same sort of accommodation as is given to their paintings and sculpture, in the same broad well-lighted gallery range.

The verdict on the art display of our country is already being given against us, and with some show of reason. However much the Exhibition, as far as we are concerned, is a success as a trade advertisement, and in displaying the several branches of industrial manufacture we have before noticed, it is not a complete representation of the position of the fine arts architecture, painting, and sculpture amongst us, and for all this, either the management or the several professions are responsible, jointly or separately. Whichever it may be, the position we achieved in 1862 as a nation not wholly of shopkeepers, but with a taste for art as well, is sadly jeopardised. What have the painters, sculptors, and architects of England to say to the position of the English artistic name now? Is there no explanation for our deficiency? and, if not, have we no cause for regret?

Be this as it may, knowing what we do know of English art, we are as little disposed to be discouraged by our want of success in the competitions as we should be warranted in describing the Exhibition, in the painting, architectural, and sculpture department of the British section, as a fair representation of English art, admirable as many of the individual specimens are.

NEW DRINKING FOUNTAIN.—A fountain has been erected in Broad-street, St. Giles's, by the Drinking Fountain Association. It is composed of red granite, and has a dog-trough attached.

ARCHÆOLOGIC ITEMS FROM ROME.

The excavations begun some three years ago by an enterprising proprietor in a garden to the south of the Antonine Therma have lately claimed special attention, thanks to the most interesting of the discoveries here realised. It soon became evident that the ruins here brought to light, at considerable depth below the cultivated soil, must be those of an extensive and splendid palace, no doubt more ancient than Caracalla's Therma, and apparently sacrificed so as to form a mere substruction to those later buildings of such vast extent. Reference to history soon established the fact that this patrician residence belonged to a well-known personage, of whom both poets and historians speak, namely, Asinius Pollio, an orator and author, the friend of Augustus, of Virgil and Horace, Proconsul in Spain, and in the year of Rome, 714, raised to the Consulate, not the least of whose merits, certainly, was this, that he founded near the Atrium of Liberty, restored also by his means, the first Greek and Latin library open to the public in Rome. The first treasure brought to light among the ruins of this palace was a Mosaic pavement, that covers a spacious area, representing, in black and white, figures of Tritons, Nereids, and other mythologic creatures of the deep, the adornment, it seems, of an hypæthral court, for there is no trace of roofing above. Of this open different chambers, all found filled with soil or debris; and above extends another story more ruinous, with other mosaic pavements in a fragmentary state, geometric in designs, northward of that open court, and immediately under the stupendous Antonine buildings. But all previously discovered was surpassed in interest by the chamber, scarce ruinous, opened near one angle of the mosaic-paved area, and recognised as the chapel of the domestic Lares, still covered by its high-hung vault, and still retaining its altar in the midst, with a kind of semi-circular predella, no doubt for supporting the little images of those household gods. Around the walls we here see a series of paintings, figures of various size, that apparently belong to different periods, in part effaced, but, in what remains, are so beautiful, so distinguished by grace and vivacity, as to deserve place among the very best among known examples of antique Roman art in this walk,—superior, indeed, to all others yet included in this range as known to us moderns, with sole exception of the exquisite mythologic paintings combined with stucco reliefs, in the subterranean tomb-chambers on the Latin Way. Beside the doorway we recognise Harpocrates, laying one finger on his lips, and the dog-headed Amphis—proof of the fashionable prevalence of which these pictures belong; on one side, an impressive scene that seems intended for Ceres before the throne of Pluto in search of her lost Proserpine; the majestic goddess, with a torch, or, rather, candelabrum in her hand, approaching the throne, on which is seated a female, in a commanding attitude, probably deprived of the companion-figure, Pluto, once by her side; opposite, three figures, the central evidently Mercury, the others not easily to be recognised, but all graceful in so far as time has spared them to our gaze. On the side facing the entrance is a more important group of several figures, unfortunately still less complete, among which we perceive one in Phrygian cap, and tunic (perhaps Paris); one pouring from a vase into a goblet held by a female; two youthful riders on steeds that seem ascending at a gallop up steep declivities, at the opposite sides, and whom we may suppose to be Castor and Pollux; also, near one of those riders, a head, evidently severed from its body, no doubt intended for that of Orpheus, borne along the stream of the Hebrus, after the poet's hapless fate at the hands of the Thracian Bacchantes. On a frieze below these are animals—two stags, and the wolf giving suck to Romulus and Remus, alone remaining of a series perhaps more varied than we now see. Other successful figures in separate panels,—females carrying patera, caskets, or other sacred objects; above this, on another pile, fruits and flowers, and a pretty design, more than once repeated, of a flute wreathed with flowers, &c., are evidently of earlier date than the rest, being painted on a stucco surface, over which is laid the stucco on which we see those larger groups, and which seems to have been peeled away from a lower compartment adorned with the single figures, &c. On the pavement, which is of plain black and white mosaic, without designs, lie

strewn fragments of the vaulted roof, that has apparently been broken in by violence, in order to fill this interior, when the buildings of the Therma were erected above; and these debris show us that the vault also was outwardly painted over, a few figures of animals being still seen on its stuccoed surface. A roofless vestibule, leading into the Lararium, has its walls also painted, with figures on panels, Bacchantes, sacrificial ministers, animals, &c., so inferior to those in the chapel that we must refer them to a much later period, and need not give much time to consider their claims. The unique importance attaching to this discovery is, that it shows us, and for the first time, the Roman domestic chapel for the genial worship of those guardian deities, retaining all its art-decoration and its altar, scarcely ruinous, for the bloodless sacrifice offered to them.

But as to the altar, we observe that it is obviously a later adjunct, not entering into the original plan of this interior; and therefore are we led to conclude that the dedication as a Lararium was subsequent to some other uses for which the same site once served.

The manner in which the possessions of Pollio were made to yield to the purposes of Caracalla, appears from the fact that the celebrated "Toro Farnese" (the group of Dirce tied to the horns of the bull), removed from the Therma to Naples, is among the many sculptures mentioned by Pliny as seen in the villa of that patrician before its transfer to the imperial buildings.

The vast adjacent Therma have been, for many years, left an unexplored field, save by the tourists who are daily wandering about in the endeavour to distinguish Tepidarium, Frigidarium, and Sudatorium among these greatest of Roman ruins. But of late we have heard, not without surprise, of works initiated by Government to excavate near one end of the immense central hall (the Tepidarium); and the other day was reported a treasure-trove here also, namely, a torso, in Greek marble, of a male figure, conjectured by some to be a Hercules; by others, a Discobolus: the anatomic development indeed fine, indicative of extraordinary strength, but characterised by manly grace, and giving the idea of youth; and as yet this precious fragment is left standing near the spot where it was dug up, awaiting the decision of authorities as to its future place. For the rest, these works in the Therma have only brought to light some pavement of large tiles laid along two levels, and which, being bounded by a brick wall not correspondent to that of the Tepidarium itself, that rises above, we might suppose belonged to the area of a bath for several persons, into which would have been descent by steps.

Among items of news in this walk, we have to report the continuance of the diggings at the Station of the Vigiles in Trastevere, and henceforth at the charge of Government, which has taken them from the private hands first engaged, and ordered the demolishing of some paltry houses, in order to extend them over a wider area. The works, also carried on by Government, on the Palatine (beyond the estate purchased by the French Emperor for the well-known undertaking in French interest) had been long suspended, but are now, though not very vigorously, again in progress. We are glad to find that Mr. J. H. Parker has, at last, obtained the permission, first half-granted, then refused outright, to have photographs taken in the Catacombs from the more curious Christian paintings and other details for the work he is preparing on Roman antiquities; his assistant-artist, Mr. Smeaton, a Canadian, having already begun, and very well, to execute this series.

The monument to Mr. Gibson has been just erected in the Protestant cemetery, consisting of a plain erect slab, with a classic frieze and antefixes at the summit (a detail taken from a sketch left by the great sculptor), and the relief bust in a circle, as to which we must correct our former report, having since learnt that, though the late Mr. Spence did indeed begin a likeness he had intended to present to the executors for this monument, he destroyed his first attempt, because dissatisfied, and unfortunately did not live to complete another; and that the portrait actually in its place, which is at once recognisable, was made by an Italian named Minghini. The epitaph, obligingly supplied by Lord Bulwer Lytton at the request of Mr. Penry Williams, is as follows:—"To the memory of John Gibson, sculptor, R.A., born at Conway, 17th June, 1778, died at Rome, where he had resided forty-eight years, 27th January, 1866. His native genius

strengthened by careful study, he infused the spirit of Greek art into masterpieces all his own. His character as a man was in unison with his attributes as an artist,—beautiful in its simplicity and truthfulness, noble in its dignity and elevation."

PUBLIC MORTUARY HOUSES.

SOMETHING is again being said as to the urgent necessity that exists for the establishment of places for the reception of the dead previously to burial—a want you have long urged and illustrated in the *Builder*. You have shown in your admirable papers on the subject the miserable condition in which many thousands are living around us,—families confined to a single room, and, in many cases, but one room for several families, amidst squalor and every other evil condition. This sad state of things culminates when death takes place, more especially death from infectious disease, the dead bodies lying for days in immediate contact with the living; a battle of life with death distressing to the last degree.* Here certainly is something which requires amendment. With respect, also, to the bodies of suicides, or persons meeting accidental or violent deaths. If in respectable houses, keeping the body and holding the inquest there, is a distressing nuisance; in the dwellings of the poor, besides the before-mentioned objection, it is often no small trial for coroner and jury to penetrate the filthy slums they are required to visit, whilst the deposit of the body at a tavern is unseemly, and open to many grave objections; this is a thing, too, requiring attention and alteration. In the Sanitary Act something is intended to amend this state of things, but it is not sufficiently comprehensive. Clause 27 states,—

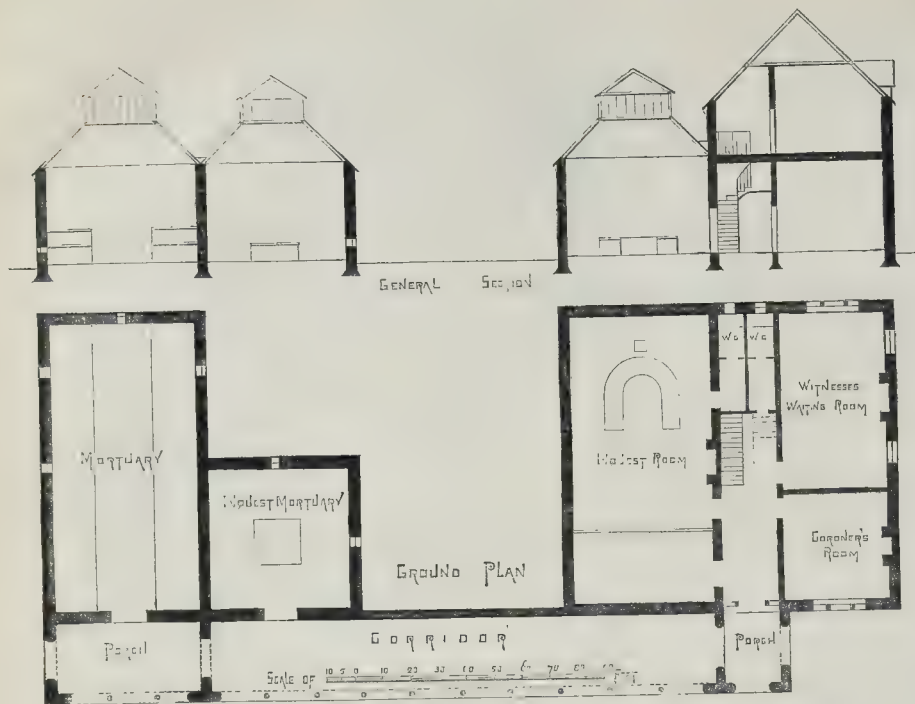
"Any nuisance authority may provide a proper place for the reception of dead bodies, and where any such place has been provided, and any dead body of one who has died of any infectious disease is retained in a room in which persons live or sleep, or any dead body, which is in such a state as to endanger the health of the inmates of the said house or room, is retained in such house or room, any justice may, on a certificate signed by a legally qualified medical practitioner, order the body to be removed to such proper place of reception at the cost of the friends or relations of the deceased undertake to bury the body within the time so limited, and do bury the same, it shall be the duty of the relieving officer to bury such body at the expense of the poor-rate, but any expense so incurred may be recovered by the relieving officer in a summary manner from any person legally liable to pay the expense of such burial."

Clause 28 says,— "Any nuisance authority may provide a proper place (otherwise than at a workhouse or at a mortuary house as lastly hereinbefore provided for) for the reception of dead bodies for and during the time required to conduct any post-mortem examination ordered by the coroner of the district or other constituted authority, and may make such regulations as they may deem fit for the maintenance, support, and management of such place; and where any such place has been provided, any coroner or other constituted authority may order the removal of the body for carrying out such post-mortem examination and the removal of such body, such costs of removal to be paid in the same manner and out of the same fund as the cost and fees for post-mortem examinations when ordered by the coroner." It appears to me that it should be made compulsory on the parish officers to provide mortuary houses not only (as appears to be contemplated in the Act) for the bodies of those dying from infectious disease, but upon a doctor's certificate, of all bodies which otherwise would lie in crowded rooms amongst the living. The removal, of course, to be conducted with decent solemnity. In conjunction with the before-mentioned mortuary house there should be another for bodies awaiting post-mortem examination and inquiry, and a fitting building annexed for holding the coroner's court and for the residence of attendants.

There can be no doubt but that the removal of the dead from the stifling atmosphere of the dens where so many of our poor reside would in its tendency to stay disease be a great public benefit.

The necessity, too, of fitting places for holding post-mortem examinations, and the requisite accommodation in connexion with the mortuary building for holding the inquest, is very plain; but from the supineness of many, and the direct opposition to alteration and improvement in

* See sketch, &c., "The Dead and the Living," vol. xiii., p. 825, and others previously.



DESIGN FOR PARISH MORTUARY HOUSE AND INQUEST HOUSE. — Ground Plan.

others holding parish authority, unless there is higher and more direct influence exercised than that of a "nuisance board," no improvement is likely to take place: the law will remain a dead letter.

One hopeful sign is at least visible. At Liverpool the subject of the mortuary chamber has attracted attention, and Mr. Robert Hutchinson has generously offered to defray the expense of such a building.

I beg to submit to you a plan and section of what I think is required. I propose that the mortuaries and inquest-room be lighted and ventilated from above. Over the rooms for witnesses and coroner would be apartments for the attendants. The now disused churchyards might profitably and properly be turned to account as the site of such buildings.

By bringing together such bodies as require inquest, the coroner's duties will be much lightened. He will not have to go to different parts of the parish for individual cases, summoning so many different juries. One jury will be able to dispose of a number of cases.

PHILIP E. MASEY.

AN ARCHITECTURAL NOTICE OF ST. JOHN'S PRIORY, CLERKENWELL.*

THE story of the religious knights of St. John of Jerusalem (as well as that of the Knights Templars) has been so often told, and is so well known, as to render a repetition unnecessary. Some authors have entered so enthusiastically into the exploits of the knights as to lose sight of the buildings belonging to the Priory, and allude to them in a very cursory manner. Beyond the mention of the church by old John Stow, the tailor, in 1598, who naturally raises curiosity by his statement that "the great bell-tower was a most curious piece of work-

manship, graven, gilt, and enamelled, to the great beautifying of the city," there is not much reliable information on the subject. The object of the present paper is to place on record certain facts and data connected with the Priory buildings, the result of discoveries and observations made during a residence of many years on the site of the Priory.

The Priory was founded about A.D. 1100 by Jordan Bristet and Muriel his wife, near "unto Clarke's Well" (now Clerkenwell), in the reign of Henry I. Ten acres of land were purchased for the above purpose, of the adjoining Priory of St. Mary; and for those ten acres twenty acres were given in his lordship of Willingham, in the county of Kent.

The two principal objects of interest connected with this once important religious military institution are the southern entrance, known as St. John's Gate, and the church: these are both situated in St. John's-square, which latter, in old maps, is called St. John's Priory. St. John's-square was the Priory-court, and bounded by the ancient buildings. In Robert Seymour's Survey, 1735, it is named "St. John's-court, vulg. St. Jones's, St. John's-square." The enclosure walls can still be traced on the north, south, east, and west sides; and the modern dwellings in St. John's-square are mostly built upon the old rubble walls of the hospital: fragments of the ancient buildings are frequently discovered.

The north boundary comprised the north postern and the Priory buildings and walls, extending from the north postern westward towards Red Lion-street; and from the north postern eastward towards St. John's-street. The foundations of the Priory buildings and walls form the foundations of the cellars under No. 19, and the basements of Nos. 21 and 22 on the north side of St. John's-square. An opening was made in the basement-wall between Nos. 19 and 20, St. John's-square, on September 12th, 1851, and the wall was found to be 7 ft. thick, and formed of squared stone on the outer or north side, and chalk rubble within. Some of the stones had

been used for windows, &c. One stone was exactly similar in nature to the mantel stone found in the cellar by St. John's Gate, and was covered with black shining flinty particles, as if it had been subjected to fire. This wall was close by the northern postern. There are still in existence beneath the houses on the east side of the above postern, walls 7 ft. in thickness, and containing splayed openings.

In tunnelling beneath No. 46, St. John's-square, for the main drainage, in August, 1863, solid concrete foundations of priory buildings had to be cut through. The distance from the surface of St. John's-square to the bottom of the concrete was 25 ft.

We are informed from the minute-book of the Commissioners for Paving, &c., the parish of St. John, Clerkenwell,* that permission was granted on May 19th, 1780, to Mr. Gabriel Gregory, the proprietor of the house adjoining (then about to be rebuilt, at the south-west corner of Jerusalem-passage, to take down the north postern and thereby leave the south entrance to the above passage "open from the ground to the sky." The north postern was therefore covered, and, by the plan in the commissioners' book, it appears to have been 17 ft. 10 in. long (inside measure), and 10 ft. 1 in. wide at the south end, and 10 ft. 9 in. at the north end, and enclosed next St. John's-square by a light enclosure with a gate 10 ft. 7 in. high, and at the other (north) end by a gate 5 ft. 5 in. wide and 8 ft. high. This was an outer gate in the north boundary-wall, which latter was 3 ft. 6 in. in thickness at this part.

The Priory was enclosed on the south side from St. John's-street (eastward) towards Red Lion-street (westward), with St. John's-gate in the centre. Of the southern boundary there are St. John's-gate and 67 ft. of wall extending westward from the gate remaining.

Of the eastern boundary, Hollar has given a view as it appeared in 1661. It portrays the

* By Mr. W. Pettit Griffith, F.S.A., read at the Charterhouse, before the London and Middlesex Archaeological Society.

* The first meeting of this Commission was held on May 13th, 1771. Sir George Booth, bart., in the chair.

east end of St. John's Church, with the Hospital gardens and boundary-wall; all of which faced St. John's-street.

Regarding the westward boundary, there are remains of the old Priory-wall in Ledbury-place, being also the west garden-wall of Bishop Burnett's house, and in the west-garden-wall of Dr. Adam Clarke's house, which adjoins Burnett's house southward, and in Red Lion Mews or Yard; all these portions remaining formed a continuous wall, and was the western boundary.

Cromwell mentions a circumstance which occurred in November, 1826, which seems to establish the probability that, previously to 1381, when the hospital was destroyed by Wat Tyler, its buildings extended southward beyond the present gate.

In excavating the ground on the east side of John's-lane, for the purpose of making a new opening into the sewer beneath, the workmen came to a wall between 4 ft. and 5 ft. thick, which crossed the lane from east to west, and, there can be little doubt, both from its situation and strength, formed part of the original erection of the Hospitalers. This idea receives confirmation also from the discovery of a similar wall in digging out the ground for the foundation of the houses in Albion-place (formerly George-court), the direction of which appeared to be north and south.

Of the early buildings which were of the semi-Norman and Early English style, there are, besides the crypt, a few remains in the south wall of the present church next Jerusalem-court, and fragments have been found built in the basement walls of St. John's Gate. The latter is exhibited to the Society of Antiquaries in 1856.

St. John's Gate.

St. John's Gate was originally built at the foundation of the Priory, about the year 1100, and was rebuilt by Prior Docwra in 1504. This prior was the immediate predecessor of the last superior of the house, Sir William Weston, and retained his office from 1502 to 1523.

In Hollar's view of the gate, the effect produced by the battlements, then complete, is shown to advantage. In some respects Hollar is not correct: the windows on each side of the large central arch and window in both fronts are in one light, while in the view they are shown in two lights. In alluding to the great multitude of prints of St. John's Gate which have been issued on the exterior of the *Gentleman's Magazine* during the last 115 years, the editor of that publication remarked in 1845, that they probably in all exceeded ten millions of copies, and presented in succession a considerable variety, arising from the respective taste or talent of the draughtsmen employed, whenever a fresh engraving became requisite. Hollar's view of the gate is the earliest extant, and is the most picturesque, but not the most accurate. It gives an undue altitude of proportions to the whole structure, and to its parts. In 1856 a view of the gate as restored superseded the old one.

I must now concisely allude to a few well-known events which have rendered St. John's Gate immortal, and will then return to the more immediate subject of the paper.

In the reign of James I., 1604, the gate was inhabited by Sir Roger Wilbraham, and afterwards it was the residence of Edward Cave, the printer, who, in January, 1731, first published one of the oldest and most respectable of our monthly periodicals, the *Gentleman's Magazine*. Among the numerous visitors at that time were Goldsmith and Dr. Samuel Johnson (Cave being his friend and early patron). Dr. Johnson's pen was continually at work; and his pamphlets, prefaces, epitaphs, essays, and biographical memoirs were continually published in the old style, either by themselves or in the *Gentleman's Magazine*. In 1740, and for more than two years afterwards, he wrote the parliamentary speeches in the same magazine; and these were followed by his "Life of Savage," "English Dictionary," "The Vanity of Human Wishes," "The Rambler," and many other literary productions.

The debates penned by Johnson were distinguished from the reports which had preceded them by a greater energy of language, a more finished style of expression, and a closer attention to the relative bearing of the arguments advanced by the speakers on either side. They were written with great rapidity, and at times when he was able to raise his imagination to such a pitch of fervour as bordered upon enthusiasm; to indulge which without interrup-

tion his practice was to shut himself up in a room assigned to him at St. John's Gate. Here, no one was suffered to approach, except a compositor or Cave's boy for the manuscript copy, which, as fast as he wrote it, he put forth at the door.

Boswell says that, "when Dr. Johnson first saw St. John's Gate he beheld it with reverence," no doubt referring to the edifice itself, with its chivalrous memories, and not, as has been supposed, in allusion to the magazine. Johnson himself was oftener to be found at St. John's Gate, where the *Gentleman's Magazine* was published, than in his own lodgings.

Cave died in 1754. The *Gentleman's Magazine* was continued by David Henry,* his brother-in-law, and Richard Cave, his nephew. The latter died in 1766, when Henry relinquished his business of a printer; and employed, as his agent at St. John's Gate, David Bond, who was so continued until the end of 1778. At that date a considerable share of the proprietorship of the magazine having been purchased by Mr. Nichols, it was for the next two years printed partly at St. John's Gate and partly in Red Lion-passage, Fleet-street. In 1781 (just fifty years from its commencement), the magazine entirely left its native spot. It was printed for nearly forty years in Red Lion-passage, and afterwards for thirty-six years in Parliament-street. In 1856, the magazine was published by John Henry and James Parker; and now Bradbury & Evans have undertaken the care of it.

The walls of the present St. John's Gate are about 3 ft. thick, of brick, faced with stone 9 in. thick, brought from Ryegate. This stone was also used in building Henry VII.'s Chapel in 1502.

Rickman considers the style of architecture of the gate to be Perpendicular work of pretty good character. On the ground-floor is a central arched entrance, with rooms on the east and west sides. On the north front, next St. John's-square, is a projecting tower on each side, and on the south front is also a projecting tower on each side, and as the rooms above mentioned project beyond the centre, they form, in appearance, double towers, which give an imposing aspect to the south front, and constitute the front by which the hospital was approached from the city.

In Hollar's view of the gate is shown an inner wooden erection, for carriages and foot-passengers, which was succeeded by a billiard-room, which filled all the upper part of the gateway from the springing of the arch.

This was purchased by St. John's Paving Commissioners for 62l., and cleared away in 1771, and the arch repaired and restored to its original dimensions. Sir William Staines restored the masonry for 25l.

In 1856, Mr. B. Foster, the occupant of the gate at that time, discovered one of the original stone chimney-pieces, and a singular secret communication from the groined archway to the large room above. The chimney-piece is neatly moulded with spandrels, containing cruciform gilt ornaments; the opening of the fireplace is 4 ft. 6 in. by 4 ft. 2 in., and the stone is the same as that of which the gate is constructed. Over the chimney-piece is a relieving arch. The chimney-piece is restored and preserved, and also the chamber. The secret chamber or communication, occurs in the inner side wall, the latter is 3 ft. 4 in. thick, and the former is 1 ft. 11 in. wide, and 2 ft. 9 in. in length. At the base of the chamber or shaft, is an arched opening (now filled up), communicating with the open archway beneath the gate, and the top of the shaft is immediately under the floor of the hall. This communication may have been formed for the purpose of entering the billiard-room, although its appearance is not modern.

In the room over the bar of the tavern, on the east side of the gate, another original chimney-piece similar to the one above described, has been laid open.

In the interior of the gatehouse remain several stone arched doorways, recesses, &c., with ancient hook-and-eye hinges. The ceilings are mostly divided into compartments, by large and boldly carved oak rib mouldings.

On the south front of St. John's Gate are sculptured five shields in foliated panels; the central panel contains the arms of France and England surmounted by a crown. The panels on each side of the above have the cross, the ensign of the Priory. On the next adjoining

panels are a chevron engrailed, between three roundels, and the cross in chief (Docwra's arms). And the next or outer panels have the chevron and three roundels; cross in chief, impaling a bugle-horn stringed between three goats' heads erased. Beneath the above panels was the following inscription:—"Tomas x Docwra x Prior. Anno Dni 1504. Sans x oro."

The north front has three shields in cinque-folied headed panels. The central one has the cross; on the left-hand side are the chevron, roundels, and cross-in-chief; and on the right-hand side the same, but with the cross moline as an impalement. Beneath the shield was "Anno Dni 1504." In the groining beneath the gateway are sculptured bosses (and moulded ribs) ornamented with shields. On two are the Priory cross, and on two are the chevron, roundels, and cross. Upon the central boss or key-stone is the Paschal Lamb.

The arms of the Priory were gules, a cross argent. The arms of Docwra were sable, a chevron, engrailed argent between three plates, each charged with a pallet or. In each angle of the gateway is a slender attached column, with moulded capital and base, from which the groined ribs spring.

In the spandrels of the doorway to the north-west tower are the Priory cross, with a cock and a hawk; and Docwra's arms, with a hen and a lion.

Shields with the arms of the Priory and of Docwra are also very sharply carved in an oak doorway formerly on the south side of the north-west tower, in the ground-story of the gate. It was discovered in 1813, when this part was converted into a watchhouse, and then used in a partition, which was taken down in 1866, and the room restored to its original proportion. The doorway is preserved in the gate.

The staircases were constructed in the towers on the north side next St. John's-square. They were spiral, of solid stone from the ground story up to the first story, and of solid oak from thence to the top. The stone staircase in the north-west tower was removed in 1814. The solid oak steps still remain; also the inner stone Tudor-headed doorways leading to the floors.

Numerous discoveries have been brought to light during the last thirty years, through excavating for drains, foundations to new houses, &c.; among these may be cited the original pavement beneath the gate, which was 3 ft. 1 in. below the present level.

St. John's Gate had a narrow escape in 1845; the new Metropolitan Building Act then came into operation, and the old gate was condemned as being dangerous, and it was proposed to demolish it; and had I not formed a committee to restore it to its present condition, the gate would have been destroyed. In 1846-7 the stonework was reinstated, the embattlements were added to the north front and partly to the south front, and the angular turrets partly rebuilt, with new windows, &c., under my superintendence, by public subscription.

St. John's Gate has been at various periods spoiled and modernised to serve the requirements of a tavern. The projecting tower in St. John's-lane, on the east side, was cut through and supported by a cast-iron column, which has disfigured the south front. The original stone mullions of the windows in the large room over the gateway have been removed, and miserable deal mullions substituted. All these alterations were effected many years prior to the restorations of 1846. In 1865 the freehold was purchased by Mr. Wickens, the present occupier, in whom the old gate has found another friend anxious to retain the fabric as far as possible in all its integrity. With this view, in 1866, 350l. were expended upon its further restoration; the modern staircase on the west side was cleared away, and the oak staircase in the north-west tower (this staircase winds from top to bottom with solid oak steps, and an oak newel) was restored; also the old stone doorway, formerly the entrance to Cave's printing-office, in the same tower, was raised 3 ft. in height; the continued raising of the street paving having shorn this doorway of its fair proportions.

Although not one of the City gates, the Court of Common Council responded to the public appeals made for its restoration, and more recently in a stained-glass window in Guildhall, portraying Edward IV. making four citizens of London Knights of the Bath, is a representation of St. John's Gate. At the base is a label, bearing the following inscription:—"Presented, 1866, by Samuel Wilson, Esq., Alderman of the Ward of Bridge Without, Alderman of the

* He possessed the freehold of St. John's Gate at his death, in 1792; he married Carr's (the architect's) sister, in 1793.

Ward of Castle Baynard from 1831 to 1853. Sheriff of London and Middlesex, 1833, Lord Mayor of London, 1839." The tracery surmounting the whole contains, in two separate compartments, the arms of the City of London and those of the donor.

St. John's Priory Church.

The dedication of the original church, by Heraclius, Patriarch of Jerusalem, is recorded to have been in the year in which the Temple Church was also dedicated, and by the same Patriarch. "In ye yere of Christ 1185, ye vij. Ides of Merche, ye domical lettre being F, ye Chyrcche of ye Hospitall of St. John's, Jerusalem, was dedicatyd to ye honor of S. John Baptiste, by ye worshipfull fader Araclius, Patriarke of ye yresurrection of Christie; ye sam dey was dedycatyd to ye high Altre, and ye Altre of S. John Evangelist by ye sam Patriarke."*

The Norman or circular portion of the present Temple Church formed the building alluded to above, and there is no doubt that the masons engaged in sculpturing the arcade in the aisle of the circular portion of the Temple Church were also employed on the ornamental capitals, &c., of St. John's Priory Church.

The erection of the first buildings of the Priory occupied some years. It has been stated that between the years 1274 and 1280, Joseph de Channey, prior, built a chapel, and that William de Benley, prior, erected a cloister between 1280 and 1281. In 1338 it appears that some repairs were effected.

The original church, of which part of the crypt remains, was semi-Norman and Early English. Some of the bases remain *in situ* beneath the present modern floor, and part of the south wall remains, in which can be traced narrow window openings, and a doorway also beneath floor, formerly facing Jerusalem-court. In one of the houses in the court built against this wall can be seen a Norman capital in the wall.

With the exception of the crypt, all the Priory (including St. John's Gate) was destroyed in 1381 by the rebels of Essex and Kent, who set fire to the buildings, causing them to burn seven days.

After this calamity the Priory was rebuilt, Prior Docwra completing it in 1504. Docwra's church was in the Perpendicular style, and grafted upon the Early English crypt, and consisted of nave, aisles, a great bell-tower, graven, gilt, and enamelled; a choir, with side chapels, &c., and the remains of the Early English crypt. The present church is a part only of the ancient choir, and beneath it is the crypt.

The crypt comprises a central avenue, 16 ft. 3 in. in width and 12 ft. in height, with an aisle on each side extending from east to west, and is, with the aisles, of the same extent and length as the present church above. The west end of the crypt is bricked up. It originally extended westward, which has been proved from time to time when excavating for drains, &c.

The most interesting remaining portions of the crypt comprise the central avenue and a small compartment on each side of it by the entrance at the east end. The compartment on the south side is bricked up, and forms a private vault, in which are deposited the remains of Simon Michell. It is 13 ft. by 10 ft., and was inclosed in 1793.

This system of allotting portions of the crypt to other families as well as Michell's, injured its fair proportions and lessened its original size.

The entrance to the crypt is at the east end by a flight of stone steps beneath a modern vestry. The crypt appears to have been originally above ground, and not subterranean. An entrance to it may be seen in Hollar's view of the east end as it appeared in 1661 from St. John-street, with the hospital gardens and boundary wall.

The central portion of the crypt consists of four severe or bays; two are simple and plain, being semi-Norman, and two (towards the east) are Early English, and very perfect, the details and mouldings being worthy of a careful examination. The vousoirs of the arch ribs are wrought in a similar manner to the vousoirs of the former nave, chancel, and aisle; these are often dug up in the vicinity of the priory. The vousoirs are worked with great precision about 5 in. long, are not arched, their shortness enabled them to be set to the proper curvature with apparent exactness; while the frequent occurrence of the mortar joints between them

has preserved them from fracture by settlement.

The ribs of the Early English bays spring from triple-clustered columns, 3 ft. 9½ in. high, in each angle of the bays, with moulded capitals and bases. An excavation was made in 1854, exposing the bases to view: the upper moulding is horizontally fluted, similar to some Grecian Ionic bases.

The central shafts of the clustered columns are pointed, and the diagonal ribs have three mouldings: the centre one is pointed, and the outer are rolls. This pointed bowtell occurs frequently in semi-Norman and Early English work, and is coeval with the introduction of the pointed arch. Suspended from the keystone of each arch is an iron ring.

On each side of the two western bays of the central aisle is a deeply-recessed pointed window: the opening was long and narrow, 3 ft. 9 in. high, and 9 in. wide, and the inner splay is 7 ft. 7 in. by 4 ft. 2 in. wide; the wall is 4 ft. thick. The trefoil-headed doorway, on the west side of the north compartment, has the large iron eyes of the door-hinges still remaining. The original pavement of the crypt is 1 ft. 5½ in. below the present level. Clay, introduced in modern times to prevent the damp from rising, lies over the original pavement, and conceals the bases and part of the shafts of the columns.

On January 23, 1860, an Order in Council was made relating to the coffins in the crypt, viz.—"That the coffins contained in the public vaults be laid down on the floor, and covered with powdered charcoal and fresh earth." Instead of the coffins being laid on the floor (in March, 1862), they were piled up from the floor to the ceiling or arch in the aisles of the crypt, and the doorways bricked up. In this manner the Early English trefoil-headed doorway, engraved in the *Builder*, vol. xii., p. 519, was obliterated. The crypt has been thus shorn of its proportions and almost reduced to a central avenue, which might have been avoided if the coffins had been laid on the floor as directed by the Order in Council.

This crypt in 1762 was rendered notorious by the detection of the imposture known as the Cook-lane Ghost. This was discovered in the crypt upon removing the coffins; her remains were turned quite black, and have been placed in the north aisle and bricked up with the rest of the coffins.

The vaults existing beneath the house No. 19, St. John's-square, abutted on the crypt (formerly under the nave) on the north side next Jerusalem-passage. The walls are of considerable thickness, composed of brick and stone, and stand upon rubble-work, and were no doubt appendages to the ancient Priory. In a division-wall in these vaults was a doorway of the Perpendicular period, in a perfect state in January, 1861, and at that time the walls were converted into "Turkish baths," the floors paved with tiles, and the whole of the vaults rendered with cement, including the old doorway, and thus ignorantly destroyed. The baths were open only for a few months, and then abandoned.

A bird's-eye view of St. John's Priory, Clerkenwell, restored with its boundary-walls, St. John's-gate, and the Church, having its nave, aisles, transepts, tower, chancel, and chapels complete, may be seen in W. Newton's "London in the Olden Time, with a Pictorial Map of London, temp. Henry VIII.," folio. 1855.

In the 3rd of King Edward VI., in 1549, the church for the most part, the body and side aisles, with the great bell-tower (a most curious piece of workmanship), were undermined and destroyed with gunpowder, and the stone was employed for the building the Lord Protector's (Somerset) House in the Strand, and the porch of Allhallows Church, Gracechurch-street. Part of the choir which remained with some side chapels, was closed up at the west end (next St. John's-square), and otherwise repaired by Cardinal Pole, in the reign of Queen Mary; and Sir Thomas Tresham, knight, was made prior, with restitution of some lands; but it was again suppressed in the first year of Queen Elizabeth. Five years subsequently to the Dissolution, Henry granted to John Dudley, Lord Viscount Lisle, and Lord High Admiral of England, "as well in consideration of his service, as for the sum of 1,000*l.* sterling, the site, circuit, and precinct of this Hospital or Priory of St. John of Jerusalem: only the lead, bells, timber, stone, glass, iron, and other things of the church were specially reserved to the king's majesty."

James I. granted by letters patent, dated the 9th of May, 1607, "the site, or house, of the

late Hospital of St. John of Jerusalem in England, in the county of Middlesex, and all the site, circuit, and precinct of the same house, having thereon one great mansion-house and one great chapel, and containing by estimation five acres, to Ralph Freeman and his heirs in free and common socage."

The choir passed by various deeds to as many persons:—10th James I., to Sir William Cecil, Lord Burleigh, son and heir apparent to Thomas, Earl of Exeter, by marriage with whose daughter, Lady Diana, it became (5th Charles I.) the property of Robert Bruce, afterwards Earl of Elgin, whose son Robert was created Earl of Aylesbury. It was now used as the earl's private chapel, and for many years was called Aylesbury Chapel. In this noble family the estate continued till 1706, when it was sold by them, and being finally bought by Simon Michell, in 1721, the chapel was by his instrumentality converted into a church for the intended parish of St. John.

When Michell converted the remains of the ancient building into the present church, the north aisle was used for part of a dwelling-house, and the upper part of the south aisle as a library.

In a newspaper of March 26th, 1716, the following advertisement appeared:—

"The remains of the once famous Abbey of Clerkenwell, called late Aylesbury Chapel, to be sold by lot; where (besides the adjoining house, furnished with all conveniences for a Boarding School), is a gallery, as fit as any whatsoever for a School Room, that will hold above two hundred Scholars."

In 1721 Simon Michell purchased the ancient structure of the Aylesbury family, and converted the remains into the present church (St. John's Church), and in 1723, having enlarged and repaired it, built the present west front of brick, with stone quoins, which has been since composed, and re-roofed the whole, he, and a Mr. Hutton, his trustee, disposed of the church, vault, vestry-room, and adjoining grounds, together with two messuages fronting St. John-street, for 2,950*l.*, to the commissioners for building fifty new churches. Friday, December 27th, being St. John's Day, the consecration of the church took place, being performed by Edmund (Gibson), Lord Bishop of London, when the edifice was formally styled "The Church of St. John, Clerkenwell, in the county of Middlesex," and was the second of the churches usually called Queen Anne's, in order of the time of consecration.

The turret was added in 1813, and the clock originally belonged to St. James's Old Church. The head of the beadle's staff also belonged to that establishment, and was used in James I.'s time. It has the following inscription,—"Anne Dom. 1685. Annæ of Regni Regis Jacobi." It is silver-headed, and was made at "ye charge of ye inhabitants of ye east liberty of St. John of Jerusalem." A portable baptismal bowl formerly supplied the place of the font now in use: it has a Scriptural quotation round its rim, with the name of the parish and "Duo et Sacris."

The font is a white marble pedestal, with basin (not capacious enough for total immersion), its date being probably coeval with Michell's alterations and additions in 1723.

On April 29th, 1724, Michell sold to Queen Anne's Commissioners a dwelling-house in Red Lion-street (now No. 59), 20 ft. wide and 96 ft. (including the garden) in length, for 650*l.*, as rectory-house for the incumbent.

The church, thus altered, was repaired in 1800, principally at the expense of Philip Booth, of Red Lion-street, who contributed about 145*l.* towards the painting, &c.; and in 1812-13 further repairs were effected, and again 1825. The external porches to aisles, next St. John's-square, were added in 1825, and the central porch was built in 1845.

In 1838 the badly-constructed wall, erected about 130 years ago, partly enclosing the north side of the church, was rebuilt. Several fragments of the priory were found in the wall used as rubble.

In 1845 this church was repaired under my direction, and I took care to note the following:—

Upon removing the plaster from the inside of the east wall and central window, it was discovered that (Docwra's) masonry still existed from the ground to the middle of the said window-arch, in altitude 27 ft., all of the wall above that having been rebuilt in brickwork (by Michell). This window remains in the same state as shown in Hollar's view next St. John's-street. It has still its stone mullions, but the foils are gone. In the south aisle the pews

* Cotton MS.

against the south wall were removed; and it was found that Simon Michell, when he partly rebuilt the church, used portions of the former church to support the pews,—these consisted of ribbed mouldings, parts of shafts, portions of the groining, capitals of clustered columns, coloured and gilt, and other remains of the former church. The pew front, No. 82, opposite window recess in south wall by west end, stands upon eight large clustered capitals; upon these capitals was marked the geometrical system employed by the Mediaeval architects in designing their edifices, and which has been propounded by myself during the last thirty years. The bulk of the shafts, the capitals, the centres for producing the large and small columns, are all accurately defined. There is no guess-work, the diameter of the pier being determined; the whole of the parts produced bear a proportion to each other, and to the original unit.

The floor of the original church was 1 ft. 2½ in. below the present floor. The south wall I found to have been built by Docwra on the remains of the Early English wall, which latter now remains some few feet above the floor, and contains the narrow arched openings of the original windows, and a doorway that opened into Jerusalem-court. These are not visible without removing the pews. Docwra's windows are large Perpendicular windows. The upper part of the south wall was rebuilt by Michell. The north wall has been partly rebuilt, but still contains some of Docwra's windows. Upon taking down this wall, built by Docwra on the wall of the crypt, an angular capital was discovered built in the wall.

This capital belonged to the original church, and by referring to the plates of ornamental capitals in Billings's account of the Temple Church, it will be observed that the resemblance is striking. As the Priory and Temple Church are of the same date, 1185, the same masons may have been employed on both buildings. A small gilt capital was also found in the wall.

In the central east window is a coat of arms (a cleveron between three combs), in painted glass, stated to be the coat armour of Tunstall, of Tunstall, in Lancashire. They are, however, the arms of Prior Botlyer. The east windows of north and south aisles have lost their stone mullions. In 1812, in enlarging the east window of the south wall, the skeleton of a child was found in the masonry. It was left undisturbed.

The church was considerably injured and interfered with by the erection of houses on the south side, next Jerusalem-court, between 1600 and 1700. These contain the oak wainscoting of the period. The south entrance and windows of the church were unfortunately blocked up by these buildings, and many of our cathedrals and churches were formerly wantonly disfigured in this manner.

In conclusion, any further comments upon St. John's Church, as spoliated by Simon Michell, will be misapplied, as all real interest to the architect and antiquary ceased the moment Michell put his Classic extinguisher upon the Gothic edifice. The day may arrive when this Classic fungus will be removed, and Docwra's Perpendicular church reinstated upon the ancient crypt.

In 1677 the principal inhabitants of Clerkenwell were, Sir James Edwards, Lady Percy, Sir William Bowles, knt., Sir Richard Chiverton, Lady Wright, Sir John North, Sir William Palmer, the Earl of Aylesbury, and others. Bishop Burnet's residence is still to be seen on the west side of St. John's square; it adjoins the late Dr. Adam Clarke's house. John Weaver, the celebrated antiquary, also resided in Clerkenwell; and John Britton, the author of the "Cathedral Antiquities of Great Britain."

The residence of James Carr, architect of St. James's church, was on the north side of Albemarle-street (No. 12), set back from the houses contiguous. It was here that two noted architects, Samuel Ware, author of "Tracts on Vaults and Bridges;" and Edmund Aikin, author of several works, passed their articulated clerkships. During which, moreover, as regards Ware, I began, I have no doubt, to study "Archææ and Abutment Piers," subsequently published.

It was natural for the nobility to reside in Clerkenwell at an early period, when, according to Fitz Stephen, in A.D. 1190, the monk of Canterbury (but native of London), the fields and open meadows were very pleasant, and among which the river waters did flow, and the wheels of the mills were turned about "with a delightful noise." But Clerkenwell has been rendered more deeply interesting and remarkable by the

numerous celebrated literary characters, either resident in, or connected with, the locality; men not born great, but who have by their own indefatigable industry, created their own greatness.

NOTES FROM THE CHAMP DE MARS.*

PORTUGAL exhibits but a small collection of pictures and drawings, and of these only a very few possess interest for the general spectator. Miguel-Angelo Lupi, professor at the Royal Academy of Fine Arts at Lisbon, has four pictures: three of them are portraits, but the fourth—of large size—is an attractive though mournful subject,—"Tintoretto, while painting the portrait of his dead daughter, interrupts his work to contemplate her corpse."

A miniature, by whom I know not, of a pretty little child in black frock, with a large blue sash, who, with the help of "doggie" is watching baby in the cradle, is a charming thing, both as to colouring and manipulation; while amongst the sculpture, Antonio Concoiro's "Study of a Head," in plaster, an old man with monach's beard and nearly covering the face, is forcibly and cleverly rendered. The bust of "Louis de Camões" is interesting to see, for it looks like a good portrait, carefully studied from a faithful likeness. The right eyelid is shrunk down, and the eye is missing, owing to the misfortune which happened to the warrior-poet in Gibraltar Straits, where he was the first to board a Moorish vessel, and, in the conflict, lost his right eye. The date of Camões's birth is given in Portuguese, on the foot of the bust, as 1524—some make it 1517, and also of his death, "Morren em 1580." About this latter date there is likewise a difference of opinion, some writers putting it a year earlier, namely, in 1579; but, unfortunately, no one can dispute the fact that Portugal allowed her finest poet to die on a poor hospital pallet, worn out with penury and neglect.

On entering that portion of the Champ de Mars Picture-gallery appropriated to Spain, a feeling of rest and satisfaction pervades the visitor who has been journeying through the other ugly galleries, all hideously "got up" after the frightful French pattern, of brickdust-coloured walls, and ragged beggarly ceiling. But here, though the tint of the walls is not much better, being of a dusty-blue lilac, that reminds one of the alicampagne of one's childhood, there is an evident striving after better things, which is consoling, and the result also is tolerably satisfactory. The entrance to the apartment is exceedingly good, being decorated with delicate raised ornamental work in plaster; and the high black dado to the alicampagne walls is effective; while under the ceiling a broad fringe runs round the room, formed of short coupled columns, with between each pair a large oval of sage-green, on which the artists' names are painted in bold gilt letters. The ceiling is formed of white muslin stretched tightly across, and decorated by blue lines, that edge it on all sides, and are repeated about 2 ft. in; thus cutting off a wide frame, as it were, from the large centre portion, and being joined diagonally at the corners, these blue lines give exactly the appearance of a deeply coffered ceiling, which seems to add to the height of the room. On each side of the said blue lines a delicate ornament of red tracery winds along, and the effect of the whole is cool and pleasant, like ground glass or frosted window-panes.

When I went through the Spanish pictures no numbers nor titles had appeared on any of them; nor yet the artists' names, beyond their own hieroglyphical scratchings on some corner of the canvas, from which it was not always an easy matter to dig out the required information. Fortunately, the subject of each work is a safer guide; and with the help of this clue, and the perverse French catalogue—which seems to pride itself in omitting just the particular item of information one most desires to obtain—I proceeded with my inspection. Alta has a life-sized fresh young face, lying turned half-downwards on a pillow; with red hair, and a sort of feminine blue blouse on the bust and arms, that in richness of colouring would delight our P. R. B.s. Antonio Gisbert has five works, two of them portraits, and two others, with small-sized figures, most charmingly painted: in one, a youth is seated outside a window on the wide sill, playing a guitar. He is dressed in black velvet tunic, with red tight-fitting leggings and

red cap; and beside him is the green damask curtain of the window. And in the other is seen a flute-player, in slashed doublet and grey hose: both these are pictures to be coveted. Pablo Gonsalvo has an "Intérieur" of some council-chamber, very carefully painted, even to the dust that has lodged on the interlaced carving of the tall dark wooden shutters; Heraldez Acosta, "Daphnis and Chloë"—he a young peasant with a bird's nest in his hand,—very effective at a little distance, but indistinct and confused near; as is also a sleeping goat-girl, by Agrasot, which hangs next to it. Léon y Escasura has three *tableaux de genre*, one of which is a "Studio," and another, the interior of a cabaret—*posada*, as I believe, the proper word—in which a musician is seated on the end of the table, and is evidently exorcising his hearers, who are seen stopping their ears, and endeavouring, in vain, to become deaf to the torment inflicted on them. Maureta has a touching picture, "Le Tasse se retire au Couvent de Saint-Onofre, sur le Janicule;" Palmarioli, "Sermon à la Chapelle Sistine," where the red and puce dresses of the numerous audience (of clerics grouped around, and some of them reclining on the pavement), and which are relieved by only one grey and a few white robes, have a singular, but rich, appearance. The Pope sits enthroned to the left; and he alone appears to take the slightest interest in the preacher's words, for all the others look dreadfully weary and sleepy. It is curious to see what pleasure the followers of St. Peter seem to take in "showing up" the follies and vices of their "pastors and masters," the while they bow so servilely to their spiritual sway.

Ruiperez sends two excellent pictures—small size. In one a man is seen sitting outside a cabaret playing on a guitar; and in the other—which was exhibited not long since in London—a priest, two women, and a man, are turning out, and throwing from the window, books from a bookcase, in the absence of the owner. In Domingo Valdivieso's "Première Communion" the girls are all so ugly that, aesthetically considered, it would be little to be regretted if it were their last instead of their first communion. The white cloth held across by the two acolytes, lest a sacred crumb should fall to the ground, and supported by one hand of the girl who is kneeling, has a novel appearance to Protestant eyes. Francisco Sans, in "La Mort de Thurruc," shows a spirited sea-fight, in which the spectator seems to stand on the deck of the vessel where Thurruc lies. The foreboding of the sailor, in shirt-sleeves and turned-up brown trousers, who is running up to him and away from the gaze, is very clever, and the colouring excellent.

"Kingly and Imperial" Austria indulges in the same ugly walls, frightful ceiling, and gritty, sloppy floor, as do almost all the other nationalities; but many of its pictures are extremely interesting. The late Fritz Allemand has two battle-scenes, one a combat at Oversee,—which is also over snow,—is very truthful; Dell'Acqua (called Dell'Acqua in the French catalogue) has a terrible "Episode de la Guerre civile de Bologne," in which Imelda de Lambertazzi finds her lover, husband, or brother, murdered outside her door. Eybl has an exceedingly clever picture of an old woman, with a singular masculine-looking fur cap on her head, praying, with the help of Bible and rosary. Friedlander "Les Stratégistes," that recalls Wilkie's "Village Politicians," and where some men are seated round a table, on which lies a map, in a small cabaret; or, perhaps, as we are in Austria, I ought to say "Gasthaus." Guermann has some clever animals—small size, with a stormy sky; Hansch, four charming little landscapes, two, in particular, called "Site dans les Montagnes," price 800 fr.; Raab, "Une Vierge," the bust of a young girl, in a jewel-bordered violet-coloured cloak, against a tender "daffodil-sky," which is charming; by the late Professor Rahl, "Frisques pour l'Université d'Athènes," on a gold ground, very bold and effective; Schön, "La Nuit et le Matin," price 4,000 fr., which reminds of Hogarth, and shows the clear, calm sunrise looking in through the just-opened windows of a richly-furnished room, on the *débris* of a night of drinking and rioting. Of Schrotzberg's portraits, the catalogue says No. 72 is "the Archduke Charles-Louis," and if that's true, he is a very pretty girl. Maurice Than has a witching, bewildering picture, "L'Amour de Fata Morgana," in which a lovely female figure floats beside and embraces a handsome rider on a winged horse; the price of this is 2,500 fr., and the size medium. Otto Thoren has a life-size

* See pp. 349, 374, 393, 419, ante.

portrait of the Emperor Francis-Joseph (on a large canvas), in which he is pretty good, but his horse is a perfect brute, the like of which is never seen in a modern picture-gallery; and talking of large canvases, here is the *champion* of the whole Exhibition, "Victoire du Prince Eugène sur les Turcs à Zenta," which stretches over about 24 ft. by 18 ft., inside the huge frame. Some "Bohémiens," by Raffalt, camping out in a dusty plain, are good; as is also a "Tête d'Etude," by Wertheimstein.

Several statuettes in bronze, of a light copper colour, by Fernkor, are extremely spirited. They seem to be sketches for large statues. The price put beside some of them in the catalogue is 1,750 fr.

In Wirttemberg's tiny collection, Bauerle's two pictures, "Les Orphelins," and "Dans la Chambre des Enfants"—the latter especially—are very satisfactory. Upon Haerlin's extremely clever "Ejectment of the Monks from the Cloister of Alpbensbach" the verdict pronounced cannot fail to be "Serve them right;" for a more sneaking-looking set of men (varied by the wicked determination to be avenged some day, on the visage of him who looks from under his brows at the gibing soldier) it would be difficult to find. Not even the women-folk, who usually side with the clergy, seem to have a regret or a kindly word to spare for the mean-spirited crew, who go forth, taking with them as much of their worldly goods as they can possibly carry in their arms and well-filled sacks.

Theodore Schütz's "Family of Snabian Peasants preparing their Repast in the Harvest-field," suggests Millais's "Apple-blossom," though here a beautiful view is seen from under the shading trees; the corn and the figures are admirably done, down to the baby in its wooden cradle; but the gigantic crows in the foreground are out of all proportion, and are sad blots.

Hans Gude, in the Baden collection, has two beautiful landscapes, one "Montagnards Norvégiens se rendant au Printemps à leurs Chalets," in which the effect of the figures going up the winding footpath carrying their simple household requisites, half seen against, half blending with the slightly misty mountain atmosphere, is charming, and nature itself. In the other a fisherman and maidens are in a boat crossing a still piece of water; and this also is a lovely work. Mlle. Hermine de Rech has a clever picture on coarse twilled canvas, "Retour d'une Faucheuse," of which the price is 15,000 francs; and L. Kachel has a very P.R.B. landscape, in which are two figures, a youth and a girl, he putting a betrothal ring on her finger. The frame to this picture is exceedingly agreeable, being trelliswork and birds, in natural colours, on a flat gold band; and at the top sits a little Cupid playing a violin. Why don't we have some novelty in our frames in England? This is the second example of this style I have noticed in these foreign galleries, and the effect is very pleasing and a great relief after the redundancy of gilt and plaster ornamentation in which our frame-makers too often run riot.

"Ein Sturm," by F. Sturm (called, though, *Tempête sur Mer*), is good; and Werner's picture of "Conradin de Hohenstaufen et Frédéric de Bade en Prison à Naples, attendant leur Condamnation à Mort, Août 1268," in which the two poor young men are interrupted in a game of chess, showing how little they anticipated the event, makes one reflect "what pleasant times those must have been."

The picture of the Grand duchy of Hesse—and actually one of its two oil-paintings, but cleverly arranged and carefully painted—is Schloesser's "Fruit défendu," in which a school of peasant-boys are learning to smoke during the absence of the master. One boy, evidently the captain of the school, and an experienced hand at the "forbidden fruit," is seated on the table, with arms crossed, and puffing away leisurely. Several beginners are looking awfully pale and sick. One poor little fellow is leaning against the wall with head drooped on to his folded arms. Another stands screening himself in a corner from the sight of the happier few who are adepts; and, as a climax, the rough-and-ready schoolmaster, with a look that means mischief, is peeping round the door he has noiselessly opened, preparing, like a cat, for the spring in his prey.

R. F. H.

SOUTH WEALD.—It has been resolved to restore the parish church, on plans by Mr. Teulon, of London, and at an estimated cost of 6,000l.

THE WATER SUPPLY FROM THE THAMES.

A PAPER "On the Water Supply of the Metropolis, in relation to the Conservancy of the Thames and its Tributaries, and the Demands of the Water Companies," by Mr. J. Bailey Denton, has been read by that gentleman at the Society of Arts. Mr. Denton entered at some length into various questions, such as the amount and variation of the rainfall, storage, pollution and purification, quality and quantity, the companies and the Thames conservators, application of sewage to the soil, &c.

As to the powers of the Board of Conservators, Mr. Denton said:—Though they have authority to prevent the continued abuse of the river by pollution, they cannot prevent a legitimate use of its waters as population and trades increase, and agriculture may require it; and though they would successfully resist the water companies taking out of the river more than they have parliamentary powers to take, the Conservators have no power to force compensation from storage, let the effect be what it may. With powers of so little practical advantage as respects water supply, it is difficult to understand for what purpose the water companies are paying the additional 5,000l. a year, which, by the Act of 1866, they are collectively bound to pay. The first contribution of 1,400l. a year may be taken as payments incident to, though not directly for, the abstractions at Hampton, which in some degree affected the navigation below; but with respect to the last payment of 5,000l. a year, there exists no similar reason, inasmuch as the companies have no additional powers given to them, either to take more water, or to abstract it higher up, where it would affect the navigation above Staines. The payment could be understood if, by any actual expenditure on the part of the Conservancy Board, the additional quantities of water the several companies have yet the power to take were positively secured to them, without raising any objection on the part of the public interested in the river. If, on the contrary, the 5,000l. a year is, as I have supposed, required to maintain the river banks and works for the upper navigation, it would only appear right that those interested in, and to benefit by, that navigation should find the money, particularly as the Act recites that "if the duties of the conservancy of the upper part of the Thames were efficiently performed, the traffic on the navigation, and the income derivable therefrom, would considerably increase." With this expectation, there could have been no difficulty in raising any required amount of money by a loan, repayable by instalments, extending over a sufficient length of time to realise the assumption. As it is, however, the interests of the public have been sacrificed, and a prejudicial compromise effected. The water companies doubtless consider that they are paying their 1,000l. each for the privilege of drawing their water from the Thames as it passes by Hampton in whatever condition it may be secured to them by the proceedings of the conservators of the river, and that they are exonerated by the payments they make from compensating the river for any quantity they may in future take out of it, within the limits of twenty millions of gallons each, even though the flow of the Thames may from other causes be materially reduced. No doubt the companies are justified in so regarding the arrangement, but it remains with the public to say whether some modification must not take place.

The quantity of water yet to be taken from the Thames under existing Acts is forty millions of gallons daily, and this is likely to be increased by the ten millions required by the East London Water Company. This company, with the New River Company, have absorbed the entire dry weather volume of the Lea, after the navigation has taken its prescribed quantity, and the company is obliged to come to the Thames for its immediate wants, no effort having been made in the valley of the Lea to store its surplus waters.

So great is the increase of demand for water in the metropolis, that it may be but a very few years before the maximum quantity which the companies are empowered to take may be reached. In the meantime winters may succeed, like the last, in which the valleys of the Thames and its tributaries may be in a state of inundation, involving local losses of an immense aggregate amount; and it may be fairly asked whether a compact such as the Legislature has sanctioned shall continue to have effect without an

effort being made so to balance excesses that the evil of one season may be turned to the benefit of another.

It is only in this way that we may satisfy the question of quantity; and, having placed before you in earnest terms the difficulties resulting from the Parliamentary compact I have referred to, I leave it in your hands for consideration.

As to the question of quality. It may be found that the towns called upon by the conservators to discontinue the discharge of their sewage into the river, may evade purification by the adoption of imperfect works. Some may have recourse to irrigation on river-side meadows without drainage, whereby, as I have already stated, the effluent water may flow into the river clear to the eye, though almost as foul as before. Others will adopt different expedients, but all will abstain as long as they can from incurring the extra expense of lifting the sewage on to high grounds, or even of under-draining the irrigated lands (which, as I have said, should always be insisted upon where natural drainage does not exist), to secure the necessary absorption which is essential to that degree of purification required by water-drinkers.

We may view the application of sewage to land in three ways:—

1. That sewage run over a surface of land which has neither natural nor artificial drainage to assist vegetation in retaining the deleterious elements, altogether fails to secure that degree of purity which will allow of its being discharged into rivers, from whence may be taken water for drinking purposes, though the operation may serve to clarify and improve its character sufficiently to allow of its being utilized in rivers for navigation, and for many other riparian uses.

2. That land artificially drained to a depth of a few feet affords, if irrigated, only an imperfect means, in conjunction with vegetation, of separating from sewage its objectionable elements.

3. That where sewage can be lifted to high and fertile grounds with a free and porous subsoil, which will admit of its penetration to a considerable depth after it has fed vegetation on the surface, a perfect means of purification may be attained.

HOW TRADE LAWS ACT AGAINST THE POOR.

To help a poor boy up the ladder of life has been esteemed a worthy act. Many a man now an eminent citizen of London has swept out the shop as a boy, or run of errands. We may learn what assistance is given by union laws to a poor man's child, from the evidence of Mr. Manly before the Commission on Trades' Unions. There is a rule insisted on by the men at Manchester, "That no employer shall be permitted to have more than one apprentice at one time except in cases where an apprentice is in the last year of his servitude, then such an employer may have a second apprentice." Now, of course, in a town like Manchester, where many of the larger masters employ 70, 80, or 100 bricklayers, the operation of a rule which enables them to have only one apprentice at a time would be, he said, that in the course of ten or twenty years, when the present generation of bricklayers died out, there would not be a quarter of the number to take their place. In reply to an inquiry by the Earl of Lichfield, if he knew of any instance in which a dispute had arisen in consequence of the masters not abiding by the rule as to apprentices, the witness said,—

"Yes. Here is a case from Lancaster:—William Waterhouse, son of the late W. T. Waterhouse, who was a near relative to me, was taken from school at the age of twelve and a-half years, and was engaged as an office-boy at 5s. per week wages. His father was out of work two or three years, and died about eighteen months ago, leaving a widow and eight young children totally unprovided for. At the request of Mr. Alderman Brockbank, of Lancaster, I consented to take William Waterhouse as an apprentice to the trade of a plasterer. He came to me on the 10th of September, 1866, and I kept him in the office the first week. At the end of the week, on the 16th, I got the inclosed notice from the men who struck work on the 18th, and the question still remains as they left it. Some of the men have left the town, and the remainder are in the receipt of 10s. per week. For the first two months they received 15s. per week from

the club. This was the notice:—"Sir: This is to give you notice, that the boy Waterhouse will not be allowed to be bound apprentice to the trade of a plasterer by the rules of this society. If bound contrary to the rules you hold, the men will be obliged to cease work on Tuesday morning, the 18th of September, 1866; and if kept to assist plasterers in their work, it will be contrary to rules also. By order." And it is signed by a cross. I can only, of course, attribute that to the union, by the fact that the Union of Plasterers acted according to that notice."

ARCHITECTS AND DIOCESAN CHURCH ARCHITECTS.

THE plans for the proposed church at Tything having been objected to by the Diocesan Church Extension Society, have been withdrawn, and Mr. Gilbert Scott has been selected as the architect for the new building; Mr. Allsop, whose plans were not approved of by the above society, having declined to alter them or to send in new ones, on the ground that "to satisfy the architect who generally provides plans for the works which are assisted by the Diocesan Church Extension Society, and who then sits in judgment upon his own designs, is more than I feel disposed to do." It is stated in reply that Mr. Hopkins, the consulting architect of the society alluded to, declined to give any opinion as to Mr. Allsop's plans, a duty which was accordingly performed by another professional gentleman. The building committee, we are told, have passed a resolution sympathizing with Mr. Allsop, and presenting him with 10l. for his loss of time. Whatever may be the merits of the present case, this "diocesan-architect" question is calling for discussion and plain speaking.

THE TRADES MOVEMENT.

Chester.—A strike is pending amongst the carpenters and joiners. The stonemasons employed at the new Town-hall a short time ago obtained an increase of 3s. a week in their wages, and the carpenters and joiners seeing that the masons had obtained extra payment for their labour, commenced a movement to obtain 2s. more wages, and half an hour less time on the Saturday. The carpenters and joiners resolved "that the men leave work on Friday next, if the masters do not comply with the demands made upon them. If the masters comply, the men to be paid an advanced rate of wages, viz., 5s. per day for Monday, 5s. 4d. for the four following days, and 3s. 8d. for Saturday" (90s. in all). They have abandoned the demand for half an hour less on Saturday, however, and only ask for the extra wages. Several employers have complied with the demands of their men. Mr. Hughes, the contractor for the new Town-hall, who has also several large jobs on hand in the town, has not conceded the extra money, and in consequence the men employed by him have left their work, with the exception of about half a dozen, who, to use the term of the fraternity, have "gone in black." There are four or five other firms who have not given way.

Nantwich.—The men connected with the building trade here struck work because, although their employers agreed to give them a half holiday on Saturday as they wished, they coupled it with a condition that they would come to work at six instead of seven on Monday mornings, as on other days. The condition, however, has since been withdrawn, and the men have resumed work.

Wrexham.—In reference to the Joiners' strike a meeting of the operatives has been held, when they were addressed by the union secretary (Mr. East, Manchester), in a lengthy speech, in which he strongly condemned strikes, and contended it was the masters who had been the cause of the present one. He also advised the men, however, the thing having taken the turn it had, to remain firm in the course they had adopted.

New Zealand.—Bricklayers earn in New Zealand 1s. per hour; plasterers have as good wages; while masons earn from 10s. to 12s. per day of eight hours. House carpenters and joiners can earn with ease 3l. per week; while blacksmiths, coopers, wheelwrights, the tin-smiths, and printers earn proportionately high wages.

INAUGURATION OF THE BRIGHTON PAVILION-DOME ASSEMBLY AND CONCERT ROOM.

The royal stable is now a great concert-hall and assembly-room: the royal *meus* has been dedicated to the muses. The stables and riding-school, of which the dome forms a principal feature, were built at a cost of about 70,000l. The Alhambra, in Leicester-square, with which the dome has been frequently compared, is much smaller in nearly every respect, but has cost in erection and improvements 100,000l. The stables were inclosed by glazed fronts. These inclosures have been removed, the heavy wooden supports replaced by iron pillars, and the whole of the space once occupied by the stables is now available for the audience. An immense chandelier has been suspended from the roof, composed entirely of glass, whilst twelve smaller ones are suspended from brackets. The prevalent tones of the dome are of tertiary colours, warm browns, which bring down the altitude considerably, and act as a foil to the more brilliant colouring below. Below the dome comes a rich cornice, and then the Moorish arches above the gallery, of varied span, and very symmetrical in form. The spandrels of these arches are painted with black figures on a chocolate ground, and the arches are all edged with gold. The front of the gallery is of open ironwork. Below the decorations of the cornice the brackets of the chandeliers and the capitals of the pillars are very rich in gold and primary colours. The decorations are Saracenic. Mr. Tony Drury was the decorator. The area under the dome is 60 ft. in diameter in the clear of the columns supporting the gallery front, and the site of the stables is 22 ft. on each side, thus making the extreme diameter 124 ft. The height to the springing line is 30 ft., and the total height to the iron grille under the lantern is 61 ft. 6 in. The orchestra occupies the width of three large bays of the dome. Under the orchestra are retiring-rooms for the performers. The available floor-space is over 7,000 superficial feet. The tenders for the performance of the work were as under:—For the builder's work, Messrs. G. Cheesman & Co., Brighton, 3,710l.; for the decorator's work, Mr. T. Drury, of Warwick, 1,420l.; for the gasfitter's work, Mr. H. Greene, Pavilion-buildings, 426l.

HOUSE OF COMMONS.

The University of London.—In reply to Mr. Goldsmid, Lord J. Manners stated that he could not say when Mr. Pennethorne was likely to finish the new design. The view he took of the vote the House arrived at last Friday was that the House wished itself to decide on the design; and therefore he should ask Mr. Pennethorne to place it in the library. He did not think it would be any part of his duty to submit the design to the senate of the University of London.

Gases from Sewers.—Sir G. Stucley asked the Vice-President of the Council whether his attention had been called to the present system of ventilating the sewers by shafts covered with open iron gratings placed in the centre of narrow and much-frequented thoroughfares; and whether the gases dispersed by means of such gratings could not be carried off in some other way.—Lord R. Montagu said his attention had been called to the matter. No smell, however, issued from sewers which had been well constructed, and were well kept. It was from a deposit that the noxious gases arose. If a sewer were smooth and well flushed, all deposits were swept away. If sewers were not ventilated into the streets, they must be ventilated into houses. If shafts were carried up houses for sewer ventilation, private property was interfered with. All this, however, was the business of the local authority, with which the central Government has nothing to do.

Metropolis Subways Bill.—It was ordered that the committee on the Metropolis Subways Bill consist of Messrs. Tite, Floyer, Jackson, McCullagh, Torrens, and Paull, and five members to be nominated by the Committee of Selection. The Bills allowed to be introduced were brought in and read a first time.

National Gallery Enlargement Bill.—This Bill was put through committee, read a third time, and passed.

The Building of Barracks Abroad.—Mr. Oliphant asked certain questions respecting the decision to erect barracks in Ceylon, the Straits Settlements, China, and Japan. Beginning with Point

de Galle, he said he had learnt with great surprise that barracks were to be erected there; for neither the health nor the discipline of the troops could be secured by it. He concluded by moving "That, in the opinion of this House, it is desirable to postpone the construction of barracks in those places until after the report of the select committee upon the distribution of troops in India and the colonies shall have been received."—Sir J. Pakington said it would be absolutely impossible for any arrangement to be concluded with reference to the construction of barracks at Point de Galle within a much longer period than would be required for the production of the report of the committee. With respect to the situation of any barracks which might be constructed at that place, the Government had not come to any decision whatever about the locality; and he could not suppose that the authorities would place the barracks in a low and unhealthy situation in preference to a high and healthy one, which he understood was easily accessible.—Sir H. Verney did not approve of leaving this matter in the hands of the colonial authorities. More men had been lost to this country from the construction of barracks in unhealthy situations than from any other cause. He hoped the right hon. gentleman would take care that the barracks were built in a healthy spot. The motion was withdrawn.

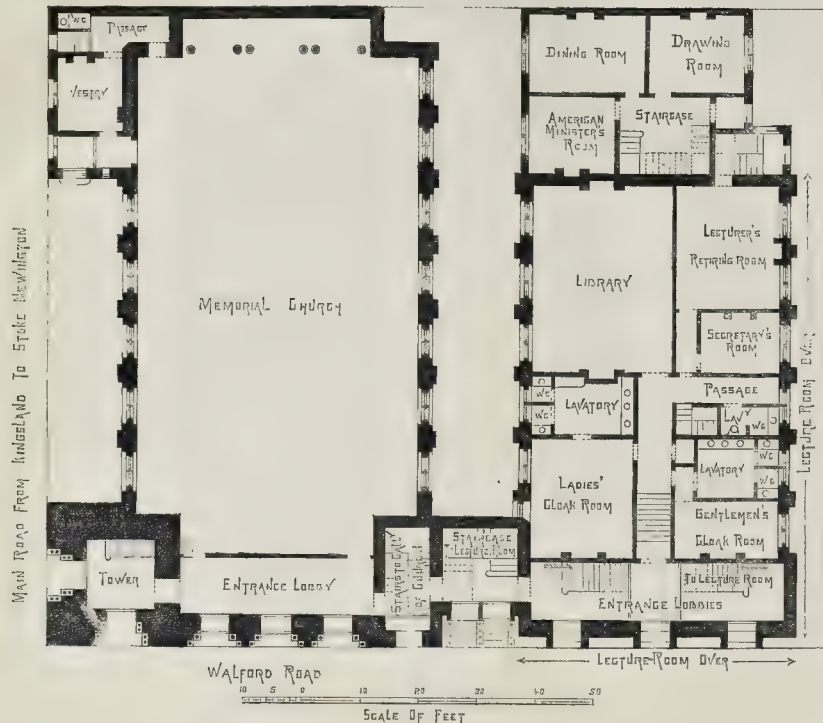
The "Black Death."—Mr. Verneker asked the Chief Secretary for Ireland whether he had received any information from the Registrar-General, or other authority, with regard to the very fatal disease called in the newspapers "Black Death," which had of late been prevalent in the neighbourhood of Dublin.—Lord Nase said in reply:—There have been in the neighbourhood of Dublin, since the 13th of May, 1866, about fifty deaths which are certified as having been caused by *fibris nigra*, or *purpura maligna*; but I may state, on the highest medical authority, that those diseases bear no analogy to the "Black Death" of the Middle Ages.

TOWN DWELLINGS FOR THE POOR.

THIS urgent question is being actively dealt with in Liverpool, by the authorities. At a recent meeting of the town-council, the committee to whom the matter has been deputed recommended that the tender of Mr. James Callie, for the erection of labourers' dwellings, in Silvester-street and Ashfield-street, according to the amended plans submitted by the borough engineer, for 17,964l. 16s. 7d., be accepted, and that application be made to Government for a loan.

Mr. Alderman Dover, in moving the confirmation of the recommendation, said it would be remembered that some twelve months ago the committee were authorised to purchase land to the value of, in round numbers, 20,000l., and the land on which it was proposed to erect these dwellings was a portion of that land. Having obtained an estimate for the erection of the dwellings, he should say in candour that the committee were disappointed. They were under the impression that the estimate would show a profit, but it did not do so, though he was happy to say that, if the data were correct, it did not, at all events, show a loss. The Health Committee thought that, inasmuch as they had been the means of demolishing a large number of labourers' dwellings, which had not been replaced by parties out-of-doors, it was their duty to make an effort to replace them; and though the calculations did not in this case show a profit, he thought that the accomplishment of so desirable an object as that of providing healthy dwellings for the working classes would be a sufficient justification for the erection of the buildings. It was calculated that they would give a return of 4 per cent. upon the cost, and the committee thought that, in the present state of the money-market, and with the disposition of the Government to lend money at 4 per cent., a small profit might be made. The cost of the land would be 3,290l., and the cost of the buildings, 18,192l., making a total of 21,482l. 12s. 11d. The accommodation afforded in the various dwellings would be as follows:—

Shops: First class consists of the shop, one living-room, two bedrooms, scullery, and closet. Second class consists of the shop, one living-room, one bedroom, scullery, and closet. Third class consists of the shop, one living-room, one bedroom, scullery, and closet—not so large as the second class. *Houses:* First class consists of one living-room, three bedrooms, scullery, &c. Second class consists of one living-room, two bedrooms, scullery, &c. Third class consists of one living-room, one bedroom, scullery, &c. Fourth class consists of one large room, 20 ft. by 11 ft. 6 in., with scullery, &c.



INTERNATIONAL MEMORIAL CHURCH AND LECTURE ROOM.—Plan.

Objection, he had no doubt, would be raised to this latter class of houses; but there would be a keeper on the premises, and care would be taken that only one individual, or a man and his wife, should occupy these single-roomed dwellings. It was not a large amount which the council were asked to invest in this property, and he thought it was well to make the experiment. The rents proposed to be charged were as under:—

First-class: Fourth floor, 5s.; third floor, 3s. 3d.; second floor, 5s. 6d.; first floor, 5s. 8d.; ground floor, shops, 8s. Second class: Fourth floor, in street, 3s. 8d., in court, 3s. 6d.; third floor, in street, 4s., in court, 3s. 9d.; second floor, in street, 4s. 6d., in court, 4s. 3d.; first floor, in street, 4s. 9d., in court, 4s. 6d.; ground floor, shops, 7s., in court, 4s. 9d. Third class: Fourth floor, 3s.; third floor, 3s. 3d.; second floor, 3s. 6d.; first floor, 3s. 9d.; ground floor, shops, 6s. Fourth class: Fourth floor, 2s. 6d.; third floor, 2s. 6d.; second floor, 3s.; first floor, 3s. 3d.; ground floor, 3s. 6d.

His impression was that the rents were low, and that there would be no difficulty in obtaining them, or even higher ones; but he thought it would not be desirable to ask more than would enable these buildings, so to speak, to pay their own way. He moved the confirmation of the recommendation.

A memorial from the Land and Houseowners' Association was read, asking that the proposed cottages be not built, and that the existing building and sanitary laws be relaxed, so as to enable builders to erect and maintain small separate cottages for the working classes.

Mr. Alderman Cooper opposed the recommendation. He said private builders had been driven out of the market entirely by persecution. He moved, as an amendment, that the matter be referred back.

Mr. Robinson and Mr. Picton also opposed the recommendation.

After a lengthy discussion the council divided on the amendment, with which had been incorporated an instruction to the committee to offer a premium of 200l. for the best plan, which was carried by 25 votes to 15. The Health Committee have since referred the question to the Sub-committee on Labourers' Dwellings.

INTERNATIONAL MEMORIAL CHURCH AND LECTURE ROOM.

This church is to be erected on a site purchased in the principal northern road out of London, viz., the Kingsland and Stoke Newington-road, and nearly opposite West Hackney Church. It is intended to be commemorative of the abolition of slavery in America, and a memorial also of the President who fell in the strife, and it will be devoted for one part of each Sunday to the use of the Americans.

It will be "International" in its uses, and memorial in its dedication.

It is remarkable that, notwithstanding our great intercourse as a nation with America, and the large number of persons from that country either resident in or passing through London, no place of worship exists in the metropolis the service in which is stately conducted by an American in the American manner, though the Parisians, with fewer ties of relationship, have provided such a church. It is now intended, therefore, to supply this lack, and it is believed that the closer intercourse so brought about between the clergy and others of both countries, and the better means of comparison afforded, will increase the liberality and wisdom of many on each side of the Atlantic. The other services will be those usual in the Independent body, by whom the erection is undertaken, and to this denomination the stated minister will belong. The building will be placed in trust for these purposes in the hands of Mr. Benjamin Scott, the City Chamberlain, Dr. F. Tomkins, of the Inner Temple, and others.

A small chapel, on a site closely adjoining, was erected two years since to serve first as an introductory chapel for this larger one, and afterwards as the school. This building will be named Lincoln School.

There will be accommodation for 639 adults on the ground floor, and other seats for 218 in galleries at the end and two sides. The latter will be only one seat in width, and all the galleries will be below the level of the window-sills. The windows are placed high in the walls,

in order that they may not admit the noise of the great traffic on the road. The whole of the light will, therefore, be admitted over the galleries.

The interior will be 96 ft. by 48 ft., and have a flat coffered ceiling of wood. The height of the spire will be 180 ft., and with all weatherings to the buttresses, will be of Portland stone: the remainder of the dressings will be of Box ground stone, and the walling of Kentish rag.

The lecture-room at the side will occupy the area of all the apartments shown in the plan, and is for general educational purposes. It will seat 670, including those in the galleries.

The floor will be raised 10 ft. 6 in. above the pavement, and below it in a basement story will be a library and retiring and secretary's rooms. The erection of the structure is largely assisted by Mr. Samuel Morley, in the neighbourhood of whose residence the site is, and the lecture-room is in part to meet a wish of Mr. Morley's to provide such a building in the locality.

The lobbies at the northern end of the chapel and lecture-hall communicate with each other, so that the united length, with its numerous doors, can be made available for either part, and the two buildings can be used together with convenience upon special occasions. Two other entrances are provided at the side of the church, viz., one for the minister and one for the congregation; and the central entrance (that for the basement), in front of the lecture-hall, is so separated from the others by screens internally that the uses of the library, and other rooms in the basement, need not be interrupted when public meetings are held in the hall above.

In the rear of the lecture-room will be a minister's house, with two rooms for the use of the American minister for the time being.

The site is easily reached by the North London Railway or by omnibuses, and it is on the crown of a rise in the road, and visible from a great distance.

The estimated cost of the whole is 13,000l., exclusive of the land.



INTERNATIONAL MEMORIAL CHURCH, KINGSLAND-ROAD, LONDON.—MR. HENRY FULLER, ARCHITECT.

THE METROPOLITAN MUNICIPAL ASSOCIATION.

THE first annual meeting of this association has been held at the rooms of the Social Science Association, Adam-street, Adelphi, for the purpose of receiving the report of the committee, and transacting general business.

Lord Ebury, the president of the association, took the chair, and made some introductory remarks, in the course of which he said that the main object of the association was the attainment of a legislative enactment that would secure a more direct and thorough municipal representation of the ratepayers, and a more responsible, efficient, and economical form of government for the metropolis.

The report was adopted, and the following resolutions agreed to:—

"That whilst the report of the committee of the House of Commons suggests most valuable improvements in the government of the metropolis, the Bill introduced by Mr. Mill to establish municipal corporations continuous with each Parliamentary borough embodies, as to the form of government, more fully the views of the association, and is similar to the scheme proposed by the Royal Commissioners (Lord Taunton, Sir G. C. Lewis, and Mr. Justice Pattison) in 1854; this association determines, therefore, to support such Bill."

"That the co-operation of the City of London and the vestries of the metropolis be invited in support of the proposal to enlarge the administrative areas in the metropolis, and to extend the powers of the Municipal Reform Act, so as to make such districts municipalities; and that it is desirable that other Bills should forthwith be prepared providing for the establishment of a central 'municipal council' for purposes common to all London, so as to extend the municipal system of the Corporation of the City of London to the entire metropolis."

The following gentlemen were elected to form the executive committee for the ensuing year:—Messrs. D. B.erry, Bonthron, Dr. Jabez Burns, F. Edwards, jun., Dr. Hardwicke, G. Horton, Hastings Hughes, F. Kneustub, G. P. Miles, J. W. Probyn, J. Rahles, E. D. Rogers, and James Beal.

ARCHITECTURAL PUBLICATION SOCIETY.

THE annual general meeting of this Society was held on Friday, the 31st ult., at the rooms of the Royal Institute of British Architects, Conduit-street.

The chair having been taken by Professor T. Hayter Lewis, the secretary read the report of the committee, which contained the following passages:—

"The audited balance-sheets annexed show that the receipts on account of the sixteenth year, 1863-65, has been £604. 19s. 3d., and the expenditure £603. 11s. 1d.; and that the receipts up to this date on account of the last year, 1866 (seventeenth year), has been 314s. 8s. 10d., and the expenditure 237l. 4s. 5d."

It is to be remarked, however, that of the amount expended in the production of the Part IV of the Dictionary, only 171s. 3s. was provided by subscriptions on account of that year, a fact hardly creditable to the profession, if it be taken as evidence of their liberality or their generous appreciation of the extensions of the committee and officers to benefit the entire profession by the production of a publication which has no parallel.

This great undertaking has passed the half of the quantity estimated, and the completion at no distant date may be considered as secured; this is therefore the moment for all who have hitherto stood aloof, doubting the possibility of success, to come forward, and by adding themselves to those who have up to this time borne the burden of the struggle, to share with them the advantages secured by their expenditure of energy and capital, and hasten on the work to its successful end."

In moving the adoption of the report, the Chairman called attention to the favourable progress which had been made with the Dictionary, and compared it with that of other similar works. He showed that the peculiarities of the scope and range of subjects dealt with, and the necessity for giving exact and full information within a very limited space, tended to impede the progress of the text; and that even in a case like that of the dictionary of M. Violette le Duc, about fourteen years had elapsed from the commencement, and the work was still incomplete, although dealing with only a single branch of one subject. The completion of the letter K, and the progress made with L, were very encouraging; and if the subscribers would exert themselves in the spirit mentioned in the report and make this valuable work more widely known, the progress to completion would be rapid. The Dictionary was so highly esteemed that all the early parts had been for some time out of print, until the committee incurred a heavy expenditure to reprint them; so that new subscribers might be supplied with new sets of the work. This stock was, however, limited, and, when once exhausted, could not again be replaced; so that there was every inducement

for all to whose interest it might be to possess a work of reference of such authority, so copious and original, and of so extended a scope, to at once become subscribers and secure copies before they became as scarce as the earliest publications of the Society.

In the discussion which ensued, Messrs. C. C. Nelson, H. B. Newton, Robert Kerr, Wyatt Papworth, &c., &c., took part, and in its course the committee were strongly urged to use all endeavours in their power to expedite the production of the text, and to devise some scheme by which the liberal donation of 100l. promised by Mr. T. H. Wyatt might be applied usefully to that end, and he made the commencement of a loan or subscription to place in the hands of the committee sufficient funds to justify them in proceeding to conclude arrangements by which the constant services of a responsible editor might be procured, and other steps taken to secure the completion of the text within a reasonable period.

In acknowledging a very cordial vote of thanks, Mr. Wyatt Papworth observed that no one more earnestly desired the completion of the work than he himself; that he had no desire to abridge the labour necessary to render the future pages as satisfactory as were the previous ones; and that his exertions in carrying on the Dictionary had not yet tired him; and he hoped to be able to afford at least the same amount of time as formerly during the ensuing year for what was to him such agreeable labour. A vote of thanks to the chairman terminated the proceedings, and the meeting then separated.

PICTURES IN THE HAYMARKET.

SOME of our readers will remember Mr. Bierstadt's interesting picture of "The Rocky Mountains." The same artist is now exhibiting at Mr. McLean's gallery in the Haymarket a work even finer,—"A Storm in the Rocky Mountains." The treatment of the masses of thunder-clouds surging with the wind, of the parts in sunshine, and the passing shadows, is admirable. It is, in short, a beautiful and pleasure-giving picture. At the same gallery are seen two clever works of an entirely different kind of merit, by Mr. Henry Barraud,—"The London Season," and "Hyde Park,"—which include a very large number of portraits. Two or three doors off, Mr. William Bradford, of New York, is exhibiting a striking piece of realistic painting, titled "Crushed by Icebergs," wherein the truthfulness of the bright emerald green of the ice will be less readily accepted by those who do not know the northern regions than by those who do. It is not the result of a painter's latitude, but of the latitude geographical. The drawing of the ice-boat ship in the foreground might be improved. Also, in the Haymarket, Mr. Frith's capital picture of "The Marriage of the Prince and Princess of Wales" is now on view.

CONDITION OF THE GAOLS IN INDIA.

THE Gaol Report of the Madras Presidency gives an annual death-rate of 129 in the 1,000! It is necessary to state any other fact to prove the necessity for immediate change in the system and the buildings used? Many of these are enormously over-crowded, and are most unsuitable in construction and situation.

The separation of criminals at night is an essential element of sound prison discipline; yet throughout the gaols of India there are but few separate sleeping-cells, sometimes as many as forty or fifty prisoners being locked up together, generally for twelve hours, and that without light. Under such circumstances it is no wonder that the prison officers find it impossible to prevent grievous moral contamination, and even heinous crime. Hardly any provision exists for the instruction of the prisoners, either by the appointment of suitable schoolmasters, or in any other way.

The case of the female prisoners seems to be even more deplorable than that of the males; since they not only suffer the same evils, but have the additional disadvantage of being left without any warders of their own sex, and in a great measure without care or help in their wretchedness.

The principles of convict treatment which have been adopted in this kingdom do not seem to have found their way into India. At this moment several new gaols are contemplated, and central prisons for long-sentenced prisoners are in course of erection; yet even in these the provision of separate sleeping-cells for all the prisoners does not form part of the arrangements, nor are the gaols generally being constructed in a manner suited to the adoption of a sound system of discipline. Immediate action seems, therefore, to be urgently required in order to prevent the expenditure of public money in a way which may hereafter be deeply regretted.

The Social Science Association embodied these and other statements in a memorial, and, last week, laid it, by a deputation (including the Hon. A. Kinnaird, M.P., Miss Carpenter, Sir Walter Crofton, Mr. G. W. Hastings, Mr. P. Urquhart, Mr. Baker, Mr. Godwin, Mr. F. Hill, and many other gentlemen interested in social and sanitary reform), before Sir Stafford Northcote at the Indian Office. Mr. Hastings urged the various points set forth in the memorial, and asked for the appointment of some person or persons versed in the improved treatment of convicts to be sent out to India to co-operate with the Government there in the establishment of a proper system of prison discipline. Sir Walter Crofton followed in the same direction; and Mr. Godwin alluded to the want of proper structural arrangements in the prisons, the necessity for care in the selection of sites, and the desirability of proper architectural supervision.

Sir Stafford Northcote appeared to agree in all that was advanced; said that the steps that had been taken by the Association would tend to strengthen the hands of the Government, and promised the matter serious consideration.

With the frightful death-rate of 129 in the 1,000 per annum in view, no other reason for immediate steps on the part of the Government can be necessary, and yet there are many that could be given.

THE PRUDHOE CONVALESCENT HOME.

THE foundation-stone of the Prudhoe Convalescent Home was laid on Tuesday in last week, at Whitley, on the Northumberland coast, by Lord Warkworth, grandson of the Duke of Northumberland. The building is dedicated to the memory of the late Duke of Northumberland, and will be connected with the Newcastle Infirmary. The building will accommodate fifty patients,—thirty men and twenty women; and it will be so arranged as to be capable of extension at any future time. The ground, containing six acres and three quarters, was bought for 1,500l., and the building will cost 12,746l., exclusive of the engineering work, which is estimated at 3,000l. more. It will be erected by public subscription, to which Sir W. J. Armstrong has contributed 1,000l., with a promise of another 1,000l., provided a certain number of subscribers add a like amount by increasing their subscriptions. The amount subscribed exceeds 12,000l. The building is intended as a memorial of the many benevolent and munificent deeds of the late Duke of Northumberland. The architect is Mr. Thomas Oliver; and the clerk of works Mr. John Adams, of Newcastle-upon-Tyne. The contractor is Mr. Joseph Kyle, of Newcastle; and the amount of his contract is 12,746l. The building will be on the pavilion principle. The length of the frontage is 230 ft.; and the various offices will extend to a depth of 190 ft. backwards. The style will be a plain form of Gothic, and the material stone. The building has a central tower, about the middle of which, on a projecting pedestal, and under a carved canopy, a statue of the late Duke may hereafter be placed.

GIGANTIC RAILWAY BRIDGE ACROSS THE MERSEY.

THE extraordinary and constant increase of traffic on the London and North-Western Railway, between Lancashire and the South, induced the directors some years back to take steps to provide a new outlet for the traffic from Liverpool. Of the various routes surveyed, one *via* Runcorn was finally selected, though it involved the construction of an expensive and gigantic bridge across the treacherous shallows of the river Mersey, at Runcorn Gap. When the subject was finally decided upon, energetic steps were at once taken to push on the works. The foundation-stone of the bridge was laid in 1864, and it is at last rapidly approaching completion. The total length of the structure, including the slopes on either side of the river (there being sixty-five arches on the Lancashire, and thirty-two on the Cheshire, side of the river), is a mile and a half. The river will be traversed by means of a huge iron bridge, consisting of three "stretches" of wrought-iron girders, resting on two stone piers rising from the bed of the river, and two on the margins at either side. Each of these "stretches" measures 305 ft.; the height

above the river at spring-tides being 75 ft. to the under edge of the girders, and 78 ft. 6 in. to the surface of the rails. The framework of the bridge proper consists of four iron beams, which extend the whole length of the span, the outer beams being strengthened on both sides by a trellis-work 40 ft. in depth, which, while helping to bind the structure, gives to the huge mass a comparatively light and airy appearance. Of the arches which form the remainder of the viaduct, eighty-eight have each a span of 40 ft., and nine of 61 ft. 6 in. The total cost of the viaduct and bridge will probably exceed 300,000*l.*, while the result will be a shortening of the distance between Liverpool and the metropolis by about a dozen miles.

BURSTING OF AN EMBANKMENT NEAR FLEETWOOD.

Mr. Bowie, of Limerick, who had undertaken the filling up of a large aperture in Kirk Scar Bay, near Fleetwood, commenced active operations a few weeks ago there. A number of navvies made their appearance, and earthworks were thrown up in a circular form, extending a considerable distance inland from the aperture to be enclosed. Openings were at first left to allow free ingress and egress for the tide, but one by one these openings were subsequently closed, until all except one was shut, that being at the point nearest the railway bank, along the base of which the tidal current was strongest. To meet the difficulty of this last inclosure a double row of piles had been driven, at about 12 ft. apart, and all the force of joiners which could be mustered was got together to nail fast to these piles planks of deal 3 in. thick to resist the action and pressure of the tide. A base of earthwork had also been made several feet deep to bank up and support the wooden fencing thus made; and by the addition of about fifty navvies from Barrow, making about 200 in all, it was hoped the resistance would be made successful. The men all worked energetically, and before the reflux of the tide the boarding was finished, and the spectators, of whom there was a large number, believed that the victory was certain. But half an hour before the tide had reached its height the water began to percolate the bank at the rear of the boards, and in a very short time, in spite of the determined efforts made to stem the current, the piles were lifted from their places, the deals rent asunder, and the water rushed back to its old domain. Several of the men had very narrow escapes.

MANCHESTER POLICE COURTS COMPETITION.

The committee for general purposes had resolved,—

"That it is undesirable to incur any unnecessary expenditure in the external elevation of the intended new police-courts, and that it is suggested that the amount to be expended shall not exceed the sum of 25,000*l.*" "That in order to save trouble, and to prevent unnecessary delay in the erection of the courts, it be recommended to the committee for general purposes to select an architect to prepare plans for, and superintend the erection of, the courts, on any site which may be selected by the corporation." "That it be recommended to the committee to select one of the undermentioned architects to prepare plans and superintend the erection of the new police-courts:—Messrs. Clegg & Knowles, Messrs. Mangnall & Littlewood, Mr. Salomons, Messrs. Speakman & Charlesworth, Mr. Waterhouse, and Mr. Worthington."

And further, as we stated last week,—

"That Messrs. Mangnall & Littlewood be employed to prepare plans for, and to superintend the erection of, the new police-courts."

Six days later the same gentlemen, under the name of the Council, met at the same place and upset their previous resolution, passing an amendment throwing the selection of architect open to competition between the architects named, by a majority of 34 to 17. Councillor Woodward proposed that the competition be thrown open to the whole of the architects of the city of Manchester. The amendment was seconded by Councillor Townsend, but was negatived, and the proceedings of the committee, with the exceptions referred to, were approved.

It was resolved that the sum of 50*l.* be paid to each architect from whom complete plans might be received, such premium to form a portion of the commission to be ultimately paid to the successful competitor.

The reason given by the members of the com-

mittee who voted against their first recommendation is, that the votes on the first occasion were not correctly taken, although this is denied.

We should mention that the police-court was formerly held in the upper portion of the post-office premises in Brown-street. On the failure of the post-office authorities to satisfy the Manchester people as to a site for a new post-office, they determined to enlarge the old one by taking in the police courts, which were then removed into Bridge-street, a large shop or bazaar formerly occupied by Falkner, Brothers, drapers, being adapted for the purpose. The corporation has also had to rent rooms from the county magistrates, in the assize courts, for business connected with the "city sessions," and the new courts are for the purpose of concentrating the municipal business under one roof.

THE WHITE VEAL INFAMY.

Nor months, but years ago, we pointed out repeatedly the horrible cruelties practised towards calves, with the view of rendering the flesh white to meet an unsound popular taste and opinion. Our statements were copied far and wide, universal horror was expressed, and—the poor calf was bled and beaten to death by lingering steps as before. Now the cry of shame has arisen again: again the daily papers echo it. Let us hope that this time public opinion may be expressed so unmistakably and so loudly as to lead to the abandonment of the scandalous practices. We can express an immense amount of virtuous indignation as to "vivisection" in a neighbouring country, and quietly insist on the pursuance of equally abominable and even less easily justifiable cruelties at home. Could not the Society for the Prevention of Cruelty to Animals effectually interfere?

ENCAUSTIC PAINTING.

Last week Mr. Cave Thomas gave the second lecture of a series on "The various Methods of Painting," at the Gallery of the Architectural Union, Conduit-street. A former lecture was on fresco, this on encaustic painting. The lecturer observed that paintings executed with vehicles in which wax is combined in certain proportions rank next to frescoes in architectural propriety of effect. They possess, in a great measure, the same freedom from gloss, and can be seen from any point of view; moreover, they powerfully resist the action of acids, atmospheric corrosion, and damp. The ancient marble sculptures were sometimes saturated with wax to preserve them. Pliny enumerates and distinguishes three methods of encaustic painting.

1st. That in which the ancients used a stylus, and painted on ivory or polished wood, previously coated with a wax preparation. The stylus or stigma, served to draw the outlines and its spatula or blade end, to clear off the filaments which it ploughed up in the prepared ground.

2ndly. That in which colours were mixed with wax, and spread over the pictures with a metal spatula. The various colours being previously prepared and formed into small cylinders for use. By the side of the painter stood a brazier, which was used to heat the spatula with which the colours were smoothly spread after the outlines were completed, and thus the picture was proceeded with and finished.

3rdly. That in which painting was performed by dipping a brush into wax liquefied by fire. By this method the colours attained considerable hardness, and could not be damaged by the heat of the sun, or the deleterious effects of sea water. It was thus that they painted their ships with emblems; which decorations were finally smoothed and polished. This kind of encaustic, therefore, was styled "ship painting." Some writers have been led to suppose that "encausto pingendi" must be enamelling, but a little consideration of the word *ceris* in connexion with "*urere*," will show that burnt *in*, inscribed on the pictures of Lysippus, ought not to be taken in the extreme sense as applied to enamels. If this had been the case, the ancient ships must have been either copper or iron-sided, at least, to have withstood the process of firing required by enamel painting; and it is difficult to imagine a Roman enamelled first-rate man-of-war. Other passages in Pliny were also examined, and the experiments instituted by Count Caylus

in the latter half of the last century detailed. Mr. Thomas also described the methods of Lorgna, Hooker, and others, and concluded by expressing a belief that, whatever be the process ultimately adopted, encaustic will probably be preferred to fresco in this country; promising as it does a somewhat richer range of effect, and to be the less encumbered process of the two.

THE WINCHESTER DRAINAGE PLANS.

We have received a communication from Mr. Newman, surveyor to the Winchester Local Board, giving reasons for adoption of the large scale, and the absence of a skeleton map, and denying the operation of any local influence, however the possession of "local knowledge" on the part of some of the competitors may have aided them. He does not find so much talent and judgment displayed in the schemes as he expected, and wonders that so many of the plans conveyed the sewage, either after passing through a filter or over a portion of meadow land, into the river Itchen, which a few miles below becomes the source of water supply to the important town of Southampton.

"Much has been said and written about the defilement of rivers of late; and as there is such an abundance of land in the neighbourhood of Winchester capable of absorbing the sewage for any imaginable time to come, it is singular that most, if not all, the schemes should allow it to find its way to the river in a greater or less degree."

Mr. J. H. Denton, principal engineer to the General Land, Drainage, and Improvement Company, says,— "There is no doubt that of all processes of filtration that by irrigation is the most effective. It is, however, far from a perfect process; though it has advantages which commend it to the country. All persons admit that, whatever ingredients are extracted from the sewage in its passage over or through the soil, they serve to increase the produce of the land and thereby enrich the country. Moreover, it is as generally allowed that towns so disposing of the sewage may fairly expect a return for this enriching refuse. But the desire to turn our sewage to profit should not lead us into the fallacy of believing that irrigation will render sewage pure enough to drink." This author cites other opinions on this subject. Sir Benjamin Brodie, Professor of Chemistry in the University of Oxford, says,— "I do not think that it could be asserted that all injurious matter was removed from [sewage] water by placing it on the land; but certainly it must be very much diminished."

Dr. Voelcker, the consulting chemist of the Royal Agricultural Society, says,— "Many people call water pure when it is clear and no smell perceptible, forgetting all the while that many of the properties of sewage (which he names) cannot be removed by filtration." That though the soil is the most efficacious of all practically available means of rendering offensive matters harmless, and converting them into the food of plants, yet it fails to make the water fit for drinking purposes. I could cite other opinions of great authority, but must forbear to trespass further on your space."

THE DESIGNER AND THE DRAUGHTSMAN.

SIR,—It may be owing to my own stupidity, but I have some difficulty in seeing what Mr. Bruce Allen has been driving at in his recent communications to you. Had he confined his remarks to art-manufacture I could have had no such difficulty; for I quite agree with him that the designer is too frequently ignored and all the credit given to the manufacturer. But when he touches upon architectural design I cannot follow him. Does he mean to say that the architect must, with his own hand, draw out every detail of his designs, and not employ a draughtsman to copy them? As well might an author be denied an amanuensis. The handwriting (upon which Mr. Bruce Allen seems to lay great stress) I conceive to be of very small importance compared with the ideas intended to be conveyed. The draughtsman, when in his proper place, is merely the medium of placing the ideas of the designer on paper; if he is entrusted by his employer to design any part of a structure, then he is entitled to credit to that extent, but not otherwise. Perhaps Mr. Bruce Allen may say that the ideas undergo a transformation under the hands of the draughtsman. It may be so in some instances; but where the designer has a marked individuality of his own, it is sure to appear. Many of your readers will doubtless be able at first sight to identify particular works as the production of certain architects, without having had previous information on the subject. The impress of the designer is obvious; that of the draughtsman obscure, if not invisible.

It is needless for us to attempt to stem the stream of time. Modern civilization has placed art in a different position from what it occupied in the middle ages. The change is sometimes not favourable to the individuality of the artist;

but we must accept things as they are; we cannot retrace our steps, and "it is useless to cry over spilt milk." The man of true genius is sure, sooner or later, to show himself. A genius starving in a garret is now a *rara avis*; and upon the whole, the age in which we live is an improvement upon its predecessors. The labourer and the peasant enjoy luxuries unknown to the great of former ages; and if art is less concentrated, it is more diffused.

I, for one, look with hope to the future. We have been groping our way towards the light of day through devious passages,—each nook and cranny has been scanned by the aid of "the lamp of truth." The morn of a new day is dawning.

SCRIPTS.

BEDFORD MIDDLE-CLASS SCHOOL COMPETITION.

SIR,—I am glad to find Mr. Sherman is able to give such an unqualified contradiction to the reports about this competition.

Though I am sorry to have been the means of spreading what is incorrect, you will remember that I quoted from a letter of a resident in Bedford, totally unprejudiced in the matter, who told me what was current report, and as such I sent it to you, adding "That the Directors ought to rebut it if they can."

A VICTIM.

SIR,—I was not surprised to see the letter in your paper, signed "A Victim," after the extraordinary and most unbecoming conduct of the Committee of the Bedford Middle-Class School. For six weeks I devoted the greater portion of my time and attention to the subject, besides having four assistants under my eye almost every day, adding to this, I spent much money in paper-mounting, taking a journey to inspect the site, the instructions being so very vague and indefinite. Guess my surprise when my plans were returned within a week, the same unpaid, and not a single line to inform me who was the successful competitor or to thank me for the consideration I had devoted to the subject. I was therefore in some degree prepared for the statements made by a "Victim."

VERITAS.

DORÉ AND TENNYSON.

SIR,—In a paragraph in your valuable journal of the 8th inst., reference is made to Mr. Gustavo Doré's illustrations of the Laureate's "Idylls" as "more than five times the of a misconception." As a superlative example of the poet's meaning, the fact of King Arthur having to pick up a crown from the ground while on horseback is quoted, and marked with an ironical! as a ridiculous absurdity. To this we can only reply that, while your correspondent is evidently a stranger to the "pigskin," Mr. Doré is a most accomplished and daring horseman, and perfectly understood what he was about when drawing this picture. If your non-equine critic will consult "Greenwood's Horsemanship," p. 73, he will be taught how to pick any object from the ground at the walk, steeple, or gallop; and will at the same time, it is hoped, learn for the future to "hold his horse's length."

EDW. MOXON & CO.

* * Notwithstanding an erroneous assumption in Messrs. Moxon's note, we give it place, and at the same time reiterate our assertion that the engraving in question is not an illustration of the author's words.

THE PURIFICATION OF WATER AND SUPPLY.

SIR,—Under the above heading in your impression of the 1st inst. I see an extract from a paper read by Mr. E. Byrne on "Experiments on the Removal of Organic and Inorganic Substances in Water," to the following effect:—That bad water could be purified by chemical agency to a "very limited extent only." I should be glad to know whether Mr. Byrne has made any experiments with Mr. Spencer's magnetic oxide filter agent, and if so, whether he would inform the public, through your columns, of the result of such experiments.

Mr. Spencer's system of filtration is largely adopted by the Water Works Company of this borough (Wakefield); and in his evidence before the River Commissioners last year, Mr. Spencer asserted that organic substances were separated from the water supplied to the town by means of his filtering system, and that its filtering powers would increase every year. The filtered water, which is the domestic supply for the town is drawn from the River Calder below the main-sewer outfall, and therefore needs filtering so as to purify it of organic matter.

L. E.

"WAGES" AND "SALARY."

SIR,—In the *Builder* of last week are two advertisements which are passed (no doubt by chance) side by side. One is that of a Local Board of Health, who offer 42s. per week "wages" with house, coal, and gas, for a mechanic to attend to their steam-engines and pumps. The other is that of a Waterworks Company in Wales, who offer 15s. per annum for a secretary and manager.

Although I have sufficient knowledge of machinery to fit me for the mechanic's place, unfortunately for myself I have studied a good many other things as well,—such as mathematics and mechanics, pure and applied; surveying, levelling, and drawing; chemistry and metallurgy; the laws of fluids in motion, the strength of materials, and the many other branches of science which are required in the profession of a C.E., in which I have had twenty years' experience in England and abroad.

I have also, unluckily, a knowledge of four modern languages, besides a fair amount of Latin, history, geography, literature, logic, and the usual branches of a

liberal education; and I therefore believe myself thoroughly competent for the double duties of secretary and manager to the Waterworks Company.

Supposing that I applied for, and obtained, that appointment, I reckon that it would cost me for "house, coal, and gas," as nearly as may be, 40l. a year, which would leave me 85s. per annum for those other expenses for which the filter will have 42s. per week, or very nearly 110l. per annum—that is, about 23l. more than I. He has also the advantage of being able to dress more economically than the secretary and manager, and the further advantage that if he is not perfectly satisfied with his work, wages, or employers, he can at any moment stick his somewhat black and oily hands into the pockets of his fustian unmentionables, decline to work any more, and be maintained in "*otium cum dignitate*" for a year or two by his "Union."

Are not these, Sir, very considerable odds in his favour, and against me? And really, so far as I can see, only because his hands are innocent of gloves, and his head of conic sections and Latin, whereas I plead guilty to all three. And if it be so, am I not somewhat too severely punished for the fault? And does it not rather tend to show that in these latter days the "Schoolmaster is too much abroad," and that it is high time to confine or restrain him a little, and to build hospitals and galls for those parents who are so wicked or so insane as to willfully ruin their children's chances in life by sending them to profit (?) by his lessons?

CONTRAST.

THE WESTMINSTER CLOISTERS.

SIR,—Your attention having been called to a passage in your last number regarding part of a paper signed "O. Bruce Allen," in which the writer asserts that the north cloister of Westminster Abbey "is now unhappily in course of being walled and harked to pieces, or, according to architectural modernisms, 'restored,'" the Abbey masons, we beg a space in your columns to correct this statement, which is utterly untrue. The fact is, that the steeple of one of the northern bays, to the great grief of all interested in the Abbey, fell during one of the storms of the present spring. So alarmed have the Chapter naturally been at this accident that they have, without Mr. Scott's knowledge, ordered the clerk of the works to remove some of the tracery on the west side, which has long looked very threatening, and was supported by wooden props. This was done, not by our workmen, but by some other of the workmen employed in the Abbey; and no sooner was Mr. Scott aware of it, than he directed that all which was in any way threatening should be strengthened by wooden props, though we fear that partial renovation has become inevitable.

No one who has ever gone over the Abbey with Mr. Scott can fail to remember the special interest which he takes in these bays of the northern cloister, of which he has given a special notice in his paper known as "Gleanings from Westminster Abbey."

In another part of Mr. Allen's paper a somewhat obscure observation seems to imply that the colour is being scraped off from the Abbey. Permit us to declare that nothing of this sort has been done in our memory. The keen interest which Mr. Scott always shows for preserving every trace of colour, and for maintaining the ancient surface, though ever so much decayed, keeps alive the same feeling in all those subordinate to him; and, happily, the adoption of recent appliances within the Abbey renders groundless the lamentation of the writer of the paper, at least as regards the interior, that "the Abbey itself is disappearing fast day by day."

HENRY POOLE & SONS.

THE WATER THEY DRINK AT DONCASTER.

A CORRESPONDENT from Doncaster says,—Our source of supply is the Don, and during the past week the mouth of the culvert—a subterranean channel that conducts the water to the wheel to be pumped up into the town for the use of the inhabitants, has been cleaned out, when the following, amongst other "ingredients," were discovered in the water, namely, *twenty-eight dogs, eight cats, two pigs, one sheep, one goat, sundry rats, and divers other things* belonging to the animal and vegetable kingdoms. Many of the animals being in an advanced stage of decomposition, the stench they emitted was intolerable. The waters of the Don are not now fit for human consumption, "fouled," as they are, in their course; and it is abominable that the inhabitants should still have to obtain their supply from such a polluted source. The question of pure water is of paramount importance, and the matter ought to be dealt with at once.

Several correspondents want to know what the Water Supply Commissioners are doing.

ELECTION OF SURVEYOR, ST. GEORGE'S, HANOVER-SQUARE.

At the last meeting of the Vestry, held on Thursday, the 6th inst., the election of a surveyor took place. There were sixty-nine answers to the public advertisement, and forty-nine candidates appeared before the committee. With some difficulty nine were selected to stand the chance of election, viz.,—Mr. H. Cochrane, St. Andrew's-square, Edinburgh; Mr. C. H. Lowe, Elm Tree-road, St. John's-wood; Mr. H. G. Matthews, 1, Finsbury-inn, Holborn; Mr. C. Finnoch, 1, Ebury-Bridge-road; Mr. E.

Prichard, Bedford Leigh, Lancashire; Mr. H. Royle, Townhall, Hulme; Mr. A. Scargill, Bower Spring, Sheffield; Mr. H. T. Tomkins, 39, Lancaster-road, Nottingham; and Mr. W. H. Wheeler, Bicester. The plan adopted at the Metropolitan Board in the election of district surveyors was followed on this occasion, and the contest was decided by Mr. Tomkins receiving 45 votes to Mr. Matthews's 31. The salary is 350l. per annum, with residence, rising gradually to 400l. An application for expenses was made by memorial from the unsuccessful candidates who had come from the country, but it was refused by the Vestry.

PATENTS CONNECTED WITH BUILDING.

FASTENINGS FOR WINDOWS AND OTHER PLACES. J. H. Roberts. Dated October 8, 1866.—This invention is performed as follows:—Upon one sash, say the outer, the patentee secures a plate formed with a slot, in which a button or stud is free to move backwards and forwards. Upon the other sash he secures another plate, which has a third plate hinged thereto, the hinged plate being capable of moving so as to come upon the first-named plate. This hinged plate is likewise formed with a slot corresponding to the first-named slot, and terminating at one end in a circular or enlarged aperture, corresponding to the button or stud. To secure the fastening it is necessary to bring the hinged plate on the inner sash upon the plate on the outer sash, so that the button enters the circular or enlarged aperture, and then to push the button along the slots. To release the fastening the reverse movements have to be made. The slots in the plates may be formed in any direction desired. Sometimes the patentee forms a thumb-piece or projection on the hinged plate for convenience of moving it.

HEATING AND WARMING ROOMS, &c. W. Clark. A Communication. Dated October 12, 1866.—This invention relates to the application of an air chamber in combination with an air stove or heating apparatus; this chamber contains a reservoir of water, over which the air heated in its passage through the metal or other fines is caused to pass, the water being heated by reason of its position. In this manner the air is supplied with fresh oxygen and nitrogen to compensate for that which has become absorbed in its passage through the fines of the air stove. This chamber also serves as a receiver of all impurities, and of the denser or noxious gases prejudicial to health.

CHURCH-BUILDING NEWS.

Eyke.—The church here has been re-opened after having been closed for some time for repairs and alterations. The restorations just completed include the refacing the west end of the nave and buttresses with flint, removing a wooden window, and replacing it by a four-light decorated window, which has been filled with stained glass; a new stone cross has been fixed on the gable; a modern brick vestry pulled down from the south wall of the chancel, the door opening into which has been filled in with a new Early English lancet window. This also has been glazed with stained glass as a memorial to a parishioner. An old Norman window at the east of the south transept has been opened and filled in with stained glass. The nave roof, which, some forty years back, had been mutilated by cutting away carved bosses, ribs of principals, &c., and introducing a lath and plaster ceiling, covering up the entire oak roof, has been restored. Fortunately, two out of eight carved angels found at an old curiosity shop at Wood-bridge, were known by two or three old parishioners to have been removed from the church when the mutilations took place. On hearing of this, the rector procured them, and thus enabled the architect to restore the roof by filling the six vacant places with new carvings to correspond. Mr. E. C. Hakewill was the architect employed in the restorations. Mr. H. Luff, of Ipswich, has carried out the work; the stained glass being supplied by Messrs. Lavers & Barrard, of London.

Hartlepool.—The parish church of St. Hilda, Hartlepool, has been re-opened, after undergoing a restoration. The work has consisted of the raising of the roof of the nave to its ancient high pitch, as indicated by the stonework in the tower; the replacing of the windows in keeping

with the original architecture, the tracery being in accordance with stones found; the lowering of the floor, and the disclosing of the basis of the piers; the removal of the gallery; refitting of the seats; chipping the interior walls, which were covered with thick coatings of whitewash; the repairing of the piers; replacing columns from the string-course of the clearstory to the heads of the piers; the introduction of carved corbels supporting the pillars, all in accordance with stones found. The church is fitted up with a heating apparatus by Messrs. Walker & Son, of Newcastle. The corbels, and carved work of the pulpit, seats, &c., were executed by Mr. Colley, of Durham. The contractor for the work was Mr. Graydon, of Durham; and who relet respectively to Mr. Thornton, stonemason, Mr. Laidler, plumber, and Messrs. Hodgson, painters, all of Durham. The total cost has been about 2,700l.

Slough.—The foundation-stone of the new chapel at the Eton Union Workhouse, Slough, a building to be erected by voluntary contributions, has been laid. The chapel will consist of nave and circular apse. The interior will be of red brick banded with black; the outside of ordinary stock brick banded with black. Mr. Wheeler, of Brencley, Kent, is the architect; and Mr. Holland, of Thame, the builder. The chapel will seat 100 adults, and its estimated cost, including all expenses, will be 530l.

Droitwich.—The foundation stone has been laid of a new church for the parish of St. Nicholas. Mr. Smith, of Droitwich, is the architect. The contract for the church is that of Messrs. Osborn & Inwood, of Malvern, for the sum of 1,650l. The church will be of the Decorated style of architecture, and consist of nave, chancel, north aisle, and tower. A spire is part of the design, but is not in the present contract. The church is designed to accommodate 258 persons, and all the seats are to be free and open. It will be built of Hadley sandstone, while the interior of the chancel will be of dressed Bath stone, the walls being plastered.

Swovesey.—St. Andrew's Church has been reopened. The Lady of the Manor has had the church, at her own cost (upwards of 3,000l.), thoroughly restored and beautified. The architect engaged was Mr. Street, of London, and the contract was entered into by Mr. Cliphaw, of Newark. The whole fabric has been repewed, and internally all the material is new. The chancel has been rebuilt, and is approached by steps, with a carved screen and stalls. The pavement is of encaustic tiles, from the manufactory of Mr. Godwin. The chancel is elaborate, its principal decoration being a reredos, of which the central compartment contains a sculpture of the Crucifixion in alabaster. The pulpit is of white stone. The seats are in character with the old ones, a few of which remain on the north side; and the wood-work has been done by Messrs. Rattee & Kett, of Cambridge.

Wingfield.—The parish church has been restored. Several windows in the south aisle are of three lights; three of these at the chancel end have been renovated, and stone mullions supersede the old wooden ones. Former churchwardens must have been wonderfully fond of paint, for even the panels of the font, filled in with various subjects, were painted, and that in various colours. All this paint has, however, been scraped off. The roof of the nave is new. The entire chancel is a step higher than the rest of the church, and it is here that the greatest amount of attention has been displayed. The chief features are old carved screens and stalls, and the table monuments, on which are the effigies of Richard de la Pole, Earl of Suffolk, and Catherine, his wife; William de la Pole, Duke of Suffolk; and John de la Pole, Duke of Suffolk. The entire chancel has been repaired; the new roof is of oak, open; the floor has been relaid with Minton's tiles, the east end of it with Poole's. The chancel was restored by the Ecclesiastical Commissioners at an expense of about 1,200l.; and the roofs of the nave and north aisle have been renovated at an expense of a little over 500l. Mr. Christian was the architect; Mr. Botwright, of Bungay, the builder; Mr. Nursey, Bungay, doing the mason work. The south aisle demands immediate attention. Its roof has to be braced up, and the restoration cannot be called complete till this part of the building has been taken in hand.

Kintbury.—Christ Church has been consecrated. The style of this new edifice is of the Second Pointed period, but modified to circum-

stances, and all richness of details or mouldings has of necessity been avoided. The material is brick, as it is obtainable in the locality, but all the dressings are in Bath stone. The plan consists of a tower entrance, a nave, chancel, and vestry. The tower is at the south-west end of the nave. The spire is of tile in two stages, with perforated woodwork intervening. The nave is 26 ft. wide and 66 ft. long, and will hold 250 adults; the seats are of deal, stained, and varnished. The chancel is 29 ft. long, and 20 ft. wide, and has four rows of sittings. On the north side is the vestry, which is separated from the chancel by a perforated wooden screen, and between that and the back seats of the chancel there is a space left for an organ. At the east end of the church, under the window, is a carving of the Last Supper; the figures are in high relief, and carved by Mr. Farmer; this is sunk in an ornamental frame or panel, and on each side are panels in which are carved the passion-flower and the lily; these, as well as the figures, are relieved by gold grounds, which throw up the sculpture, and on either side of the panels the walls are painted in ornaments and monograms up to the north and south walls. The chancel is paved with Minton's tiles. One of the features of the church, and particularly of the chancel, is the introduction of stained glass; all the windows of the latter are filled with it. Messrs. Heaton & Butler were the artists. The west window of the church is of four lights with tracery in the head, and filled with stained glass. As the font is placed under it, the subject selected is the Baptism of our Lord. The architect was Mr. Talbot Bury, of London, from whose designs the Vicarage at Kintbury and other buildings in the vicinity have been erected. The church will cost altogether, without special gifts, the sum of 3,133l. 1s. 9d. The stone-work has been done by Mr. Keats, of Newbury; the brickwork, tiling, paving, and plastering by Mr. Cumner, of Kintbury; and the wood-work by Mr. Cruise, also of Kintbury.

Hungerford.—The chief stone of the Eddington Chapel of Ease has been laid. It is anticipated that the outlay will amount to about 2,300l. The site (given by Mr. W. Honeywood) is on the east side of the road leading to Hungerford-Newton. The architect is Mr. Blomfield, of London; and the contractor Mr. Woodridge, of Hungerford. The chapel will be 83 ft. in length, and built in the decorated style with brick and Bath stone dressings. It will accommodate 275 persons, and all the sittings will be free.

Bolton.—The chief stone of St. James's Church, Waterloo-street, has been laid. The foundations are already in, and some of the walls are several feet above the level of the ground line. The quicksands that prevail in Bolton have given some trouble here, but the walls have been taken down to a solid bottom; and concrete and stones of great size have been used to prevent risk. The church comprises a nave of four bays, divided from the north and south-side aisles by four arches. These arches will spring from moulded and carved capitals of white stone; the cylindrical shafts which sustain the capitals being of a fine red stone, obtained from a quarry near Liverpool. Eastward of the nave a broad arch opens into the chancel, wherein are the choir seats and the prayer-decks. Six yards more to the east is another arch, beyond which the chancel ends polygonally, and is lighted by three traceried windows. The eastern part of the chancel is to be fitted up and furnished in the usual way. The tower and spire are placed over the western part of the chancel; north and south of which are transepts. The southern one will be appropriated chiefly for school children, who will enter by a separate door. Underneath the north transept is a cellar, where will be placed Haden's heating apparatus. There are no galleries; and the church will seat on the ground floor about 880 persons. The amount of the contract, which has been taken by Messrs. Warburton, is 4,600l., which includes tower, spire, and all the fittings complete. The style of the church is Early Decorated. It is to be built of stone throughout. The roofs are to be covered with Welsh slates. The floor under the seats is to be of wood, and the chancel, passages, porches, &c., are to be tiled. The nave is lighted by a large four-light traceried window at the west end, and by sixteen traceried clearstory windows above the aisle roof. The aisle windows are of one, two, and three lights, according to their position. The architect is Mr. J. M. Taylor, of Manchester.

Asfordby, Leicestershire.—The chancel and vestry of the church in this parish are now completely restored, and two of the windows are filled with stained glass. An effort is being made to raise funds for the restoration of the nave, aisles, transepts, and tower. Mr. G. G. Scott is the architect, and the works already completed have been carried out by Mr. John East, of Melton Mowbray.

DISSENTING CHURCH-BUILDING NEWS.

Watford.—It is proposed to erect a new Wesleyan Chapel at Watford, in the place of the present chapel, which is said to be inadequate to the requirements of the society, and to be plain and inconvenient, and situated in one of the most obscure parts of the town. Plans for the new building have been prepared by Mr. Pearson, of Rickmansworth. The chapel is to be in the Early English style, with a tower and spire.

Wolstanton.—The corner-stone of a Methodist New Connexion Chapel at Wolstanton has been laid. The style of the building will be Italian; the length within the walls 57 ft. 6 in., and width, 30 ft.; it will seat about 350. There will be two entrances from the front through porches 7 ft. wide, with a vestry between, and over which will be an organ-gallery and orchestra. The exterior front elevation will be faced with white pressed bricks and Hollington-stone dressings. The architect is Mr. Ralph Dain, of Burslem, and the builder Mr. Trevor, of Newcastle.

Over.—The new Independent Chapel at Over has been opened for divine service. The building cost 2,000l. Mr. John Douglas was the architect, the builder being Mr. Dutton, of Winsford. The edifice is in the Lombardic Italian style of architecture, and is built of white bricks with bands, &c., of red; the cornices, jambs, and arches of windows, and other ornamental features, are executed in moulded bricks; the three arches which form the entrance to the porch are supported on pillars of polished granite. Above these arches are three two-light windows, with semicircular heads and stone tracery, in accordance with the style of the building. These windows are filled with stained glass. In the side windows there are likewise circles filled with stained glass. The glass in the rose window over the pulpit is the gift of Mr. Thomas Rigby, and the subject is "The Good Shepherd." The organ was given by Mr. Haigh, of Darnhall Hall. The timbers of the roof are stained and varnished, and left visible. The floor of the church inclines slightly towards the pulpit. Accommodation is provided for 350 persons, including gallery across the end opposite to the pulpit. The masonry was done by Mr. Richard Price, and Mr. Henry Cross executed the decorative painting.

Leominster.—A small Congregational Church has been opened for public worship here. It is in the Gothic style, of red brick, with Bath-stone dressings, mullions, and bell-turret, the latter with pointed cupola. The building has been erected from the plans and specifications of Mr. Joseph Foster, of Bristol, who refuses to take any recompense for his services. The building will seat about 250 persons.

Books Received.

Holiday Excursions of a Naturalist. London: Robert Hardwicke. 1867.

This book, which is further described as a Guide to the Natural History of the Inland and Littoral, was written, the author says, by "one of a class of happy individuals who, through life, derive a chief source of enjoyment from intercourse with Nature in her works." Happy, indeed, are they who can thus find happiness; and sedulously should the inclination be cultivated in young and old. We well remember once, during a country ramble, hearing a man of great learning and eminent position lamenting want of knowledge of all around him. The trees, the flowers, the birds, the insects were all dumb to him, while to a much less man who was of the party they discoursed eloquently, and enabled him to do so too: not a weed, not a stone, not a passing cloud but had its story. It was this same enthusiastic lover of nature, by the way, who in early years caused a dear mother a severe attack of bronchitis by keeping

the sitting-room window open on a windy night to draw moths to the table-lamp. But the mother, like a wise mother, wanted her boy to have a hobby, and willingly humoured his bent.

The book before us is well calculated to make naturalists. It is pleasantly written, by one who evidently knows what he writes, is very suggestive, and very amusing.

A Descriptive Account of Houghmond Abbey, Salop. By HENRY PIDGEON. Leake & Evans, Shrewsbury.

Some Account of the Parish Churches of Abbey Dore, Kilpeck, Allensmore, and Holmer. By J. H. JAMES, Middle Temple. London: Limbird.

THE want of some particulars concerning the interesting ruins of Houghmond Abbey has been often felt by visitors, and we could have wished that the want had been met more completely than it is by this pamphlet, of which the architectural portion is but weak. Thus, alluding to the doorway in the cloister, to which we gave a view in a previous volume,* Mr. Pidgeon writes,—"This, in common with the front of the Chapter House, shows a peculiar and elegant example of Anglo-Norman architecture, for between the columns of the semicircular arch, under crocketed ogee canopies, stand finely sculptured statues of St. Peter and St. Paul;" though he afterwards says (adopting our observations without telling where he got them from), these figures are the work of a later time. How, therefore, their presence shows the doorway to be "a peculiar and elegant example of Anglo-Norman architecture" is not obvious.

The point worth notice in the second pamphlet named is a set of observations showing the mortality represented in the burial-ground of these churches. Mr. James is not sufficiently acquainted with architecture to give useful descriptions of old buildings.

Old London. London: John Murray. 1867.

Under this title, always attractive, have been published eight of the papers read at the London Congress last year of the Archaeological Institute, prefaced with Mr. Beresford Hope's opening address at Guildhall, and forming a handsome volume, and a not unimportant contribution to the history of our many-sided metropolis. It includes Dean Stanley's eloquent discourse in the Abbey pulpit on the text, "See what manner of stones and what buildings are here," Mark xiii. i.; Mr. G. T. Clark's paper on "The Military Architecture of the Tower of London," illustrated; Mr. Scott on the Chapter House; Professor Westmacott on the Sculpture in the Abbey; and, perhaps the most valuable of the number, Mr. George Scharf's account of the Royal Picture Galleries. In this the various inventories are brought together, and many of the pictures are commented on.

Miscellaneous.

A ROOM FOR BIDEFORD.—A Limited Liability Joint Stock Company has been formed for the purpose of erecting a large room at Bideford, to be used for balls, concerts, and other occasions, for which the present room at the Mansion-house is ill adapted, from its extreme smallness. The new buildings will occupy the sites of the Mansion-house and two adjoining houses, and will consist of a large supper-room, reading-room, green-room, and retiring-rooms with w.-c., &c., on the ground floor. The first floor will be occupied by the large room, 70 ft. by 35 ft. in clear, with a wide stone staircase at each end, affording two easy exits in case of alarm. The stairs at the south end will lead into a large lobby, with a gallery over, capable of containing fifty persons. The north end will have a large orchestral platform to hold 150 performers, with separate staircase approach from the outside. The space in the roof, which will be of good pitch, is proposed to be used for billiard and smoking rooms, which will command beautiful views of the estuary of the rivers Taw and Torridge. The buildings will be of an early Gothic character, of brick or local stone, with freestone dressings; the roof will be covered with Broseley tiles, with bold red ridge tiles. The plans are being prepared by Messrs. Gidley & Son, of Barnstaple, the architects to the company.

THE HYDRO-PNEUMATIC HOIST.—The action of the hoist patented by Mr. Wrightson, of the firm of Head, Wrightson, & Co., of Stockton-on-Tees, conjointly with Mr. Walter Crooke, of the same place, is as follows:—The balance-weight is made in the form of a bell, and allowed to work up and down in a tube filled with water. To raise the bell a valve is opened, which admits air to the under-side of the bell; this air bubbles up into the top of the bell, displacing a sufficient amount of water to give the required buoyancy. The bell then rises: when at the top the air is let out, on which the balance-weight sinks again. In the application of this hoist to blast furnaces a wrought-iron tube, 5 ft. to 6 ft. diameter, is erected, vertically, upon or near the air accumulator, a pipe from the tube passing down to within 3 in. or 4 in. of the bottom of the accumulator; the tube is carried up to 10 ft. or 12 ft. above the level of the top platform, and another tank, of similar capacity to the accumulator, is placed on the top of this tube. The tube is filled with water, and in the tube is a balance-weight formed like a bell, and of such a weight, when weighed in water, as to exceed the heaviest load the hoist is required to raise, and the hollow within it is of such a capacity that, when filled with air, it will attain the same power of buoyancy upwards that it possessed of sinking when full of water.

ACCIDENTS.—A fatal accident has happened at Easthamstead Park, the seat of the Marquis of Downshire. For some time past considerable improvements have been in progress on Lord Downshire's extensive estate, and some old farm buildings in the park were being pulled down. The brickwork of a barn had been undermined, and one of the labourers went to the back of the building to attach a rope to some portion of it, when he observed that the brickwork was giving way, and called out to a fellow-workman, who was standing on the other side of the barn, to get clear of the old structure, but unfortunately the brickwork fell upon him, and killed him. At the works of a builder named Isckaman, at Bury, the machinery moving a circular-saw was at work, when a man attempted to seat himself on a couple of iron rollers fixed in a bench. The rollers slid round with the weight of his body, and he put out his right arm to sustain himself. Unconsciously he put his arm against the circular-saw behind him, and the limb was instantly severed from the body. The poor fellow consequently fell against the saw, which in a moment buried itself in his right side, and almost cut his body in two, causing instant death. At the inquest a verdict of accidental death was returned. The terribly dangerous nature of lucifer matches has just been once more shown by the death of the young Archduchess Matilda of Austria, who is believed to have trodden on a match which must have set fire to her dress in a room where no fire was otherwise lighted.

ARTISANS' VISIT TO PARIS.—The Birmingham Chamber of Commerce have passed the following resolution:—

"That the proposition of the Society of Arts, of sending skilled workmen to the Paris Exhibition, to report upon the productions exhibited, is approved of; and that an application be made to the members of the Chamber, and the manufacturers of the town generally, asking them to subscribe to a fund for the purpose, and also to recommend qualified men for selection by the Society of Arts."

Mr. W. C. Aitken, in a letter to the Vice-president of the Chamber, suggests, as to the number of those who should be sent;—

"Two artisans engaged in button-making;—one to report on the tool-making; one to report on the ornament, style, and varieties of buttons exhibited.

Two artisans engaged in brass-founding, to report on brass and bronze casting generally; cabinet, and general brass-founding; on bells, and plumbers' brass-founding; on rolled brass, wire, sheeting, tube-making; on lamps, gas-fittings, and naval brass founding; one to report on style and ornament; the other on quality and construction.

One artisan engaged in the manufacture of electro-plated, or plated goods; to report particularly as to Russian products in silver work, and in reference to nickel and enamels associated with works on the precious metals generally.

One jeweller, to report also on gift toys, chains, &c.

One artisan engaged in the production of tools generally, who also has a knowledge of engineering connected with the construction of machines used in manufactures.

Two gunmakers.

One japanner, acquainted with the processes of japanning, has artistic taste, and is also acquainted with the manufacture of papier mâché; also to report if there are any substitutes for that material, and ascertain what they are.

One stamper of metal, to examine as to the various processes employed in raising up thin sheet-metal, as cornices and other stampings, &c.

One steel-toy or edge-tool maker.

One tin-plate worker, to report also on copper goods."

GAS.—The Harwich Gas Company have declared a dividend of 9 per cent. for the last year.—At Dursley the consumption of gas has so largely increased that the directors are now fixing a new gasometer at the works. The contractors are the Midland Ironworks Co., Donnington, and Mr. E. Bloodworth.—At Kingswinford a movement is in progress for the reduction of the price of gas from 5s. 6d. to 3s. 6d. The gas consumers have deputed a committee to act for them in the matter.

LAND AT MUSWELL HILL.—A case, "Fuller v. the Highgate and London Railway," has been just heard and decided under a writ from the Sheriff's Court. The value on one side was about 2,600*l.*, and on the other side about 1,100*l.* One side said the damage by the severance would be about 700*l.*, and the other said *nil*. Property near London had increased in value, and this was worth 1,500*l.* an acre. The property was at Muswell-hill, which locality had greatly increased in value. The jury gave a verdict of 1,600*l.* for the land, and 400*l.* for damage by the severance. A verdict was entered for 2,000*l.*

CHURCH HOUSE FOR CHURCH SOCIETIES; AND HOARE MEMORIAL.—A deputation from the joint committees of the two Houses of Convocation, consisting of the Bishops of Oxford and Lichfield, the Prolocutor of the Lower House, the Vice-Chancellor of Oxford, and the Rev. Canon Hawkins, had an interview with the Chancellor of the Exchequer on Friday, with the object of obtaining the consent of the Lords of the Treasury to securing the site now occupied by the National Society's buildings for a church house for the use of all the great Church societies, and to erect thereon a chapel which shall be a memorial of the late Henry Hoare. The Chancellor of the Exchequer expressed himself as favourable to the scheme, and did not anticipate any difficulties.

DUDLOW-LANE WATER-TOWER, LIVERPOOL.—The chief stone of the tower to be erected at the Dudlow-lane Waterworks, near Woolton, has been laid. The works will, in architectural features, be somewhat similar in character to the Audley-street big tower. The engine will be 56 in. in diameter, and the cylinder 10 ft., and they will be from the establishment of Messrs. Rothwell & Co., of Bolton. The well is to be sunk to a depth of 247 ft. below the surface, or to a depth of 40 ft. below the old dock-sill, and the water engineer proposes to sink a bore-hole 200 ft., commencing at a 2 ft. diameter, carrying it down to 150 ft. and possibly then diminishing it to 18 in.; but this latter will entirely depend upon circumstances. Already there is a yield of 500,000 gallons per day, and it is still required to go down with the well, independent of the boring, 45 ft. The intention is to supply the whole of the district lying to the south-east of Liverpool, including Garston, Alburgh, Woolton, Wavertree, and the intermediate districts. The Dudlow-lane works are being carried on under Mr. Duncan's personal direction. Considerable progress has already been made.

THE EARL OF DUDLEY'S FOUNTAIN.—The works for the Earl of Dudley's gift to the town of Dudley have been commenced, the space in the centre of the market-place having been barricaded. The site chosen is on the spot where the old town-hall stood. The fountain is the work of Mr. Forsyth, of London, sculptor. The height of the work will be 27 ft., and the width at the base 24 ft. The general appearance is described as being that of a triumphal arch. The ornamental enrichments consist of two figures representing Mining and Agriculture, and these are placed in niches under the dome. There are two basins on the top, into which two river-horses discharge jets of water, and the whole is surmounted by two figures representing Industry and Commerce, architecturally arranged. On the top will be placed four panels of coloured glass, and these under the influence of the sun's rays will produce a prismatic effect on the water and basins under the dome. There are two large drinking-basins, one on each side, supplied by jets from the mouths of lions' heads. The fountain is flanked by two large basins for the waste water from the upper basin, forming a fan-like discharge from the mouths of dolphins. The base will be executed in granite, together with the steps. The drinking-basins and basins under the dome will be executed in Sicilian marble, and all the other portions in Portland stone. The cost of the work is estimated at from 2,000*l.* to 3,000*l.*

GATESHEAD TOWN-HALL COMPETITION.—Designs by Mr. Johnstone, Messrs. Austin & Johnson, Mr. J. E. Watson (to whom a premium was awarded about four years ago for a design for the building on a larger scale), and Mr. Thomas Oliver are now being exhibited at the Mechanics' Institute, Gateshead: the sum named is 12,000l.

SOUTHAMPTON SCHOOL OF ART.—The total number of papers taken by the candidates for the prizes offered by the Department of Art, at the examination held here in March last, in the second or higher grade, was 116, and 42 of these papers were successfully worked, although the candidates were nearly all under 15 years of age.

MR. C. AUSTIN'S BOOK ON SEWAGE.—Mr. Austin thinks that our brief mention of the object of his work on the "Utilization of Sewage" does not convey a right idea of it. We depart from our practice, and let Mr. Austin speak for himself:—"It is true," he writes, "that I gave therein some details of a process of irrigation similar to that practised at Crofton, but I also stated that the process of irrigation there carried on is not perfect, for want of a proper system of filtration; and my object was to show that, in whatever manner sewage is disposed of, filtration is a *sine quâ non*; that it should be promptly performed whilst the decomposable matter is fresh; and that it should be effected by such mechanical means as would dispense with the formation of large stagnant deposits, which can only be got rid of by disgusting manual labour, at an inadequate cost. The drawings accompanying that paper refer to the construction of such mechanical means in the shape of portable filters, which, I hold, are indispensable in any system of town drainage."

INTERESTING DISCOVERY IN HORTICULTURE.—There is no telling where horticultural ingenuity will stop, says *Galignani*. "A gardener of Gaud, France, has, after many trials, succeeded in giving any kind of fruit the flavour he pleases, while it is still on the tree. Let us take an apple, for instance. He pricks it rather deeply in four or five places with a large needle, and then lets it dip for a while in a bowl containing a liquid possessing the taste he wishes to communicate. After a few seconds this liquid will have penetrated into the pulp; and, this operation being repeated two or three times, at intervals of eight or ten days, the apple is left to ripen on the tree, and will subsequently be found to have acquired the taste either of strawberry, raspberry, cloves, &c., according to the liquid employed." We have long had an idea that by sinking a hole with an auger in the trunk of an apple-tree to the pith, while it is bearing its fruit, and filling the hole with chloroform or bromoform, either of which has a delicious fruity odour, or by some other means should these fail, the flavour of the whole crop of apples might be greatly improved.

THE POST-OFFICE AND LONDON LETTERS.—We learn from a letter addressed by Sir Cusack Honey to the newspapers, complaining of the Duke of Montrose, the postmaster-general, curtailing the time of posting letters for the eleven daily deliveries in London without notice to the public, some interesting particulars respecting this important branch of the General Post-office department. In 1835 the local letters rose to about 11,200,000. In 1839, the year before the introduction of the penny-postage, they were 12,490,000. In 1840 they bounded suddenly to 20,372,000, and in 1844 they reached 27,000,000. In nine years afterwards (1853), they were 43,000,000. In 1855 London was divided for postal purposes into ten districts, by which very much more rapid delivery was obtained for local letters. The consequence was that in 1855, the third complete year after the alteration, local letters had risen to 58,404,000, and in 1859 to 71,961,000. In 1865 they were about 90,000,000 of which upwards of 16,000,000 were delivered in the districts in which they were posted. At the present time the average daily delivery of letters in London is about 560,000, of which about half are local and half from the provinces and abroad. The daily number of newspapers and book packets delivered is about 55,000. Sir Cusack asserts that, if London correspondence continues to increase as it has in recent years, it will soon be necessary to have half-hourly collections and deliveries during certain parts of the day. He also alleges that London local letters are the most profitable that the Post-office handles, and that a very considerable portion of the total net revenue of the department is derived from them.

RAILWAY MATTERS.—The new iron girder viaduct, at Hutton, for the down line to Scarborough, has been completed, and opened for the Scarborough and Whitby summer traffic. The viaduct carries the York and Scarborough railway from the North to the East Ridings obliquely across the river Derwent, three miles below Malton. It has stone and brick piers, and reversed iron girders, on the top of which the permanent way is laid. The various spans range from 90 ft. to 100 ft. The new viaduct is built by the side of the old wooden one, and from the necessities of the navigation is of the same height. The props and timbers of the old bridge will be at once struck, and a twin erection to the new one will be got ready for the up-line as soon as possible.

TENDERS

For alterations to the Vicarage, Hampton, S.W. Mr. W. Wigginton, architect:—

Hearle.....	£1,159 0 0
Johnson.....	1,025 0 0
Tm.....	954 0 0
Harrison & Edwards (too late).....	872 17 0
Warne.....	779 16 0

For works, Grass Farm, Finchley, for Mr. J. H. Heal. Mr. Edward Roberts, architect. Quantities supplied:—

Holland.....	£3,986 0 0
Tanson.....	3,339 0 0
Lawrence & Son.....	3,732 0 0
Higgs.....	3,673 0 0

For the erection of workshops at rear of, and alterations to, No. 47, Elizabeth-street, Hackney-road, for Mr. J. D. Link. Mr. William Munoy, architect:—

Larke.....	£1,482 0 0
Head & Son.....	1,198 0 0
Peters.....	1,143 0 0
F. & F. J. Wood.....	1,010 0 0
Forrest (accepted).....	897 0 0

For villa residence, Hawthorn-road, Booter, for Mr. David Carruthers. Messrs. William & Robert Duckworth, architects:—

Tomkinson.....	£1,227 0 0
Callie.....	1,228 17 6
Umson.....	1,220 0 0
Sinclair.....	1,155 0 0
Riley.....	1,150 0 0
Hardy.....	1,118 10 0
Nicholson & Ayre (accepted).....	1,127 0 0

For the erection of a lavatory and covered way, and paving the Lifford of Schools at Southall, Mr. H. Saxon Snell, architect:—

Brown.....	£273 0 0
Hanson.....	248 15 0
Nightingale.....	248 0 0
Gibson, Brothers.....	238 0 0
Brown.....	235 0 0

For construction and erection of a steam-engine, boiler, and necessary gearing for working a pair of pumps at Southall School. Mr. H. Saxon Snell, architect:—

Shard & Mason.....	£208 10 0
Jennings.....	187 0 0
Punchbeck.....	183 18 8
Gibson & Co.....	183 10 0
Lovelock, Bateman & Co.....	160 0 0
Potter & Son.....	116 0 0
Bevington, Topham, & Cortauld.....	110 0 0

For the erection of Bedford Chapel, Hanley, for the Methodist New Connexion. Messrs. Scrivenor & Son, architects. Quantities supplied:—

Steel.....	£1,098 0 0
Mathews.....	1,976 0 0
Bailey.....	1,919 0 0
Woodridge (accepted).....	1,975 0 0

For alterations and additions to Core and Hop Exchange, Canterbury. Quantities supplied by Messrs. Pann & Clarke:—

Wilson.....	£2,092 0 0
Perry.....	2,800 0 0
Naylor & Son.....	2,697 0 0
Cores, Brothers.....	2,636 0 0
Lancfield.....	2,655 0 0
Gaskin & Co.....	2,290 0 0

For alterations and new front to the "Tipping Philosophy," for Mr. Wm. Oulton. Mr. S. Brookes, architect:—

Chatter.....	£418 0 0
Langmead & Way (accepted).....	345 0 0

For new house at Hillingdon. Mr. Robert W. Edis, architect:—

Fassnidge & Son (accepted).....	£2,550 0 0
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For new house at Houghton, near Huntingdon. Mr. Robert W. Edis, architect:—

Maisle & Richardson (with additions), accepted.....	£4,200 0 0
Conder.....	4,078 0 0

For alterations and additions at No. 73, Gloucester-place, Portman-square, for Mr. George J. Leon. Mr. N. S. Joseph, architect:—

King & Sons.....	£1,590 0 0
Tye & Andrew.....	1,802 0 0
Newman & Mann.....	1,463 0 0
Clarke & Manzooch (accepted).....	1,533 15 0

For the restoration, enlargement, and resetting of the Church of St. Thomas-a-Becker, Newton Tracey, county of Devon, diocese of Exeter. Messrs. Gould & Son, architects:—

Pulsford.....	£218 10 6
Dendle.....	498 2 0
Hookway.....	498 0 0
Bale.....	368 0 0

For new house at Bournemouth. Mr. Robert W. Edis, architect:—

Hapgood.....	£3,574 8 6
Dunford.....	3,500 0 0
Dyke (accepted).....	3,460 0 0

For a house at Tufnell Park, for Mr. J. Robinson. Mr. George Truett, architect:—

Carter.....	£3,140 0 0
Simson.....	2,992 0 0
Saunders.....	2,873 0 0
Warne.....	2,400 0 0
Manley & Rogers (accepted).....	2,590 0 0

For a pair of houses, Tufnell Park. Mr. George Truett, architect:—

Warne (accepted).....	£2,051 14 0
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For the erection of the Chapel of St. Thomas the Apostle, in the parish of Swimbridge, county of Devon, diocese of Exeter. Messrs. Gould & Son, architects:—

Gannon.....	£999 0 0
Hartroll.....	988 10 0
Oliver & Son.....	900 0 0
Cock.....	898 15 0

For the erection of a vicarage-house at Yarncombe, North Devon. Messrs. Gould & Son, architects:—

Oliver & Son.....	£1,220 0 0
Bowden, Son, & Cook.....	1,189 0 0
Cook.....	1,150 0 0
Howard.....	1,096 15 0
Dendle.....	1,085 0 0

For the erection of a parochial school and residence at Challscombe, North Devon. Messrs. Gould & Son, architects:—

Palaford.....	£378 7 6
Pile.....	377 0 0
Delve.....	318 0 0

For the erection of a detached residence at Riddlesdown Park, St. J. Vener, for Mr. J. J. Vener. Mr. Thos. Danby, architect. Quantities supplied by Mr. Shrubsole:—

Darns.....	£3,204 0 0
Richardson.....	2,776 0 0
Garrud.....	2,612 0 0
Warne.....	2,600 0 0
Nightingale.....	2,407 0 0
Bassall.....	2,395 0 0
Wilcox.....	2,311 0 0
Poxon & Smith.....	2,270 0 0
Neale.....	2,263 0 0

For Police-station, East India-road, Poplar. Mr. Thos. Charles Sorby, architect:—

Nixon.....	£1,447 0 0
Howard.....	1,400 0 0
Fauman & Co.....	1,398 0 0
Crosswell.....	1,350 0 0
Higgs.....	1,288 0 0
Hill & Keddell.....	1,219 0 0
Lathey, Brothers.....	1,193 0 0

For police stables, Battersea:—

Foord & Son.....	£596 0 0
Lathey, Brothers.....	573 0 0
Eborals.....	568 0 0
Nixon.....	548 0 0
Adams.....	519 0 0
Higgs.....	463 0 0

For house in Bridge-road, Battersea, for Mr. Trow. Mr. Charles Jones, architect:—

Thornton.....	£460 0 0
Baker.....	443 0 0
Lathey, Brothers.....	437 0 0
Godbold.....	419 0 0
Harris.....	375 10 0

For three houses in Surrey-lane, Battersea, for Mr. Bridge. Mr. Charles Jones, architect:—

Harris.....	£1,698 0 0
Baker.....	960 10 0
Thornton.....	943 0 0
Lathey, Brothers.....	837 0 0
Godbold.....	897 0 0

For five pairs of villas at Norwood, for the London and Suburban Building Society. Messrs. Hammack & Lambert, architects. Quantities supplied:—

Nixon.....	£8,289 0 0
Newman & Mann.....	8,075 0 0
Hearle.....	7,557 0 0
Gibson, Brothers.....	7,477 0 0
Mann.....	7,045 0 0
Ennor.....	6,898 0 0
Hedges.....	6,837 0 0
Darby.....	6,745 0 0

For works at Blackstock Park, Holloway. Mr. Thomas J. Hill, architect:—

Sabey.....	£2,405 0 0
Corbieldick.....	400 0 0

For works at Norman's Buildings, St. Luke's. Mr. Thomas J. Hill, architect:—

Gadsby.....	£2,653 0 0
Morsland & Burton.....	2,947 0 0
Patman, Brothers.....	2,897 0 0
Sabey.....	2,463 0 0
Kilby.....	2,781 0 0
Webb & Sons.....	2,773 0 0
Henshaw.....	2,658 0 0
Freddy & Son.....	2,600 0 0
Anley.....	2,480 0 0
Perry.....	2,338 0 0

For building the King's Arms Hotel, Mortlake, for Messrs. Philips & Wigan. Mr. R. P. Pope, architect:—

Lovatt.....	£3,645 3 0
Goodall.....	3,380 0 0
Searle.....	3,316 15 0
Brown.....	3,310 0 0
Bouling.....	3,300 0 0
Adams & Son.....	3,203 0 0
Wigmore.....	3,198 10 0
Sharphing & Cole.....	3,050 0 0

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The Builder.

VOL. XXV.—No. 1272.



*Architectural Aspects
in Florence.*

WE pass from Genoa to Florence, and architecture again changes its aspect, not without certain reference to change of situation, from confined declivities to spreading plain, though it by no means brings us back to the type that we willingly quitted

at Turin. The most characteristic palatial architecture here is of earlier date than in either of those cities; and even the later declares a native affiliation by ease of transition, and persistency of well-marked features. Every change again bears at Florence a certain impress of originality, and we become insensibly habituated to expecting not merely novelty, but the enlivening reality that clings to handiwork replete with all instruction, and yet too self-reliant to merely or chiefly copy. The crudity of experimental advance there may be, but very rarely indeed a debasement of what is perfect elsewhere.

It would be difficult to find in Florence, perhaps, any remains so instructive for the history of early architecture as the side doors, especially the northern, of the Cathedral of San Lorenzo, at Genoa, or even its nave and aisles; and the banded black and white masonry of both exterior and interior has a value that will not be readily conceded to the panelled casing of the cathedral at Florence. But the tower of Giotto is unimitated and unrivalled. Some 273 ft. high, it is as elaborated in marble mosaic as a toy of Tunbridge ware, yet solid in its joinings after 500 years as if it were of a single piece; and owing whatever reparation it has had to the weathering of even best materials and not to flaws of workmanship. The white marble of the original has now assumed an orange tone, under influences that have not left other colours unaffected; but the clean, newly-inserted slabs, from point to point, enable us to see that when the primitive sheen of all was unimpaired, the effect of mingled tints and shades, while more brilliant, was quite as harmonious as that which now delights us.

Florentine mosaic is now best known, as shrunk to the dimensions of a brooch, or at most a letter-weight; but we may still see halls newly paved, with a happy sense that modest variety of colour is not of necessity tame, and that bold vivacity may defy the fatal risks of the patchy and the piebald.

This art is probably hereditary from later Roman times; a bolder characteristic—the architectural affection for massive, bossed rustication, might seem to have gained its hold from familiarity of the Florentines with the huge masses that form the prehistoric wall of their mother settlement on the heights of Fiesole. However this may be, the signs of the predilection itself in-

dulged most unsparingly, meet us in all directions, and give to Florentine palatial architecture its peculiar character. The application of it is not confined to the ground story; and the solidity it imparts is supported by the structure it is applied to, being for the most part a solid rectangular block. The windows are few, and small in contrast to those of Genoa, where the necessity to moderate the common Italian sun is partly counterbalanced by the narrower streets and shade of the loftier houses, and ever-welcome refreshment from breezes that come in from the sea. The somewhat fortress-like aspect of the Tuscan palaces is increased by the less liberal admission of inlook from the street, and by the absence of the balconies about windows, that express an interest in what may be going on there. Such palaces, more or less altered, are met with at every turn in the streets about the original city; more or less altered, but still retaining the appearance of having had all possible strength of passive resistance to violence, though, from whatever motive, dissembling any facilities for repelling attacks by main force.

The Strozzi Palace, so well known to visitors to Florence from its central position and imposing effect, is at once the most remarkable of its class, and has the highest claims, simple as it appears, to be regarded as a work of well-considered art. The commencement of it is dated in 1489—a period familiar enough from the relations of Geronimo Savonarola to a Borgia on the Papal throne. How this date is to be reconciled with the tradition on the same authority,—that Pitti began his palace in rivalry in 1466,—the editors must be left to explain. Art, and not archaeology, is our immediate interest, and this topic alone will fill our space.

The windows for admission of some light, and even air, to the basement, are masked by a massive stone bench, raised a step, and projecting in front of the building. Above there are only three stories, including ground floor, all of extraordinary height,—the two uppermost containing the noble apartments. The oblong block is met by lower houses at one end; high central portals give entrance on all the other three sides,—to a vaulted peristyle intermediate between offices and an impluvium, and bearing corridors and loggias above. Coach-houses and even stables are accommodated on the ground level, and we are reminded of the self-contained arrangement of a Roman house.

In the two upper stories on the longer fronts there are nine windows, and the central place below, intermediate between two sets of four, is occupied by the majestic portal. Upon the importance of this, and its break of the basement line, depends, and not in vain, the expression of a central line of symmetrical division. Other help is there none beyond the projection of the celebrated iron cressets from each angle of the lower story, and the attachment of coronets and scutcheons, now demolished, at the angles of the story above. The stories are marked and divided by string-courses or cornices, we might call them, from their mouldings, but for their very slight projection. The mouldings of the windows are all kept flat and within the lines of rusticated projections, and the plain mouldings of the doors are also taken out of the thickness of the wall.

The effect of solidity and repose which belongs to the building seems at first fully accounted for by the manifest strength of its construction out of huge blocks, some of them 20 ft. long, rudely though regularly bossed, but plainly channelled along the faces of vertical and horizontal joints, and showing most accurate fitting; then by the gradations in degree of bossed projection, which is reduced in the second story; the bossing moderates as it rises, even in a single story, towards the milder details of the string-course, and to the still more marked

change above it. This is greatest in the upper story, where the still boldly-expressed masonry is surmounted by a plain broad band, in the place of a frieze, but kept unornamented to relieve the general cornice.

The doorways, and the windows likewise, are arched with immense voussoirs, of less thickness, however, than the horizontal courses. The intrados is in all semicircular, and the extrados rises to the ogive by a simple curve,—the key-stone being the highest of a sequence of extending voussoirs,—the proper Florentine arch. The horizontal courses, therefore, finish against the voussoirs with a corresponding curve, and it may be doubted whether any transformations that were given to this junction had a better effect. The development may be traced at ease in Florence. When the voussoirs were stepped to meet the courses with a horizontal and vertical joint, their number was of necessity limited and character entirely changed. By degrees there ensued a conflict for predominance in expression between the true arcuation and the corbelling of the courses; and, after many more ingenious vagaries than we wait to notice here, a last disgrace was incurred of an unnatural union of voussoir and ashlar in a single elbowed stone.

Even the portal of the Pandolfini Palace, ascribed to Raffaele, contributes illustrations to this particular chapter of mishaps and failures.

But there are more refinements in the masonry of the Strozzi Palace, which only declare themselves when we have come back to it more than once with a conviction that its attraction is not to be divined so readily as it is felt. The forms and proportions of the superposed stories form happy gradation with that of the general front. The heights and breadths of openings develop the sequence in one direction, and it finds its base in the low long parallelograms of the enormous channelled rustication. But how, we ask ourselves, is the introduction of arcuation in such a structure, with such materials, harmonized—not to say justified? As regards the latter point, the wide span of the large doorway is motive sufficient. A lintel-stone, which should have been large in proportion to the door-opening, would have been a mountainous mass indeed; and then the treatment of the larger windows follows fairly by sympathy, although not of necessity. In the Sun Fire Office, in Threadneedle-street, very large stones are employed, but so applied that their size is not sufficiently seen nor value recognized, while arcuation is resorted to for bridging spans, for which as architraves they would have been more than competent. In the Strozzi Palace, while the office of spanning the doorway is appropriately delegated, the self-assertion of the gigantic masonry is not utterly renounced; for the course above the arch has one symmetrical stone, of unmatched scantling, that more than reaches across the breadth of the opening below, and thus seems to accept co-operation with dignity,—as free from presumption as from parade. The same principle is contained in other openings. The small square windows of the ground-story, having no claim whatever to be arched, are spanned by a horizontal stone both at cill and lintel. Again, in the noble stories, the course immediately over the Florentine arch of the windows has the symmetrical long stone of full span, their cills being on a level with the intermediate string-course. These stones, so critical in effect, are not made conspicuous by marked contrast with the adjacent, and only the architectural eye in search for the cause of a perceived effect would be likely to pick them out and credit them for contributing as they do to the accentuation of the mighty masonry. The stones, all large, vary very widely in largeness; and though always within a certain limit, if it were not for the element of symmetrical regularity thus introduced, the whole would scarcely escape a certain barbarous rudeness.

The Palazzo Riccardi, the original palace of Cosmo de Medici, if dated correctly in 1430, was well studied and well improved upon by the architect of the Strozzi. There is much more irregularity both in heights of courses and lengths of stones; the value of long stones as harmonizing, when of such magnitude, with a long front, seems not to have been recognized; and where such do occur they are introduced at discordant variance with the numerous others adjacent, that in length measure little more, not more, or even less, than their height.

A certain gradation of masonry in the ascending stories is applied, but much less grandly.

There are fine large doorways in front, or provisions for doorways, of which several are now filled up with windows, not very effective,—ascribed to Michelangelo. The doors come in very disorderly relation to the seventeen windows of the front.

In the fragment of the Palazzo Gondi, by San Gallo (1481), behind the Palazzo Vecchio, there is more uniformity in size of stones than in the Medici and less than in the Strozzi, but the incongruity of the massive style with frequent openings is apparent; in small intervals the division of alternate courses by joints enforces employment of stones disproportionately small. The general distribution of joints in this example is at once obviously systematic yet confusing, not as in the Strozzi occult yet harmonizing.

The Palazzo Bucellai, by Leon. B. Alberti, is worthy of remark for many beauties: it is its misfortune and our own that the present theme leads only to treat of its defects. In the contrast of channelled masonry with plain pilasters, and in the correspondence of the courses of both, we seem to have the suggestion of treatment applied with such success by Wren at St. Paul's; but in respect of variation of height of courses, Wren more wisely restricted himself to two. The varieties of height here run through from end to end of the front, but succeed with an irregularity that sadly impairs repose. This is particularly offensive on the ground story, where the breadths of the stones are as perplexingly capricious. In the upper stories the courses above the key-stone seem studiously perverse in their divisions, and a fine design is marred throughout by either disregard or mismanagement of a detail,—but an important detail,—or trifling with it.

In the Pitti Palace dignity and magnificence are debased, if anything Florentine can be, to clumsiness and futility. The three stories are here again graduated in roughness of rustication, and the basement of the terrace below and its wings are still more huge in proportion, and unshaped in surface and breakage. But the long building has itself but the proportions of a basement; and when the more concentrated embold form is renounced, half the motive for massiveness seems to go with it; but

"Talk we not of it,—glance and pass along."

We would linger more willingly over the charming Casa Pandolfini, but that the design involves some enigmas that would carry us wide away from our immediate subject, and here not without some exertion of self-control, we speak of it no further.

There is a Doric temperance in the architectural resources made available in the Strozzi Palace that is somewhat contradicted by the enrichment of the Corinthian cornice that crowns it, and that was no part of the original design. In detail it is far superior to that of the Medici Palace, and its magnitude in some degree reduces the sense of over-enrichment; still we may be well content that only the bed-mouldings were completed on the side most seen at present. Its completion on the other side shows that the proper front was considered to face the more open space of the onion-market, where onions are still to be bought.

So permanently did the old Florentines build, on such a scale and with such massiveness. Even at the present day a lavish thickness of walls is adopted that does not allow a new house to be speedily habitable, and gives current illustration of an Italian proverb—the first year of a new house for my enemy, the second for my friend, the third for myself. With respect to earlier times, this solidity has permitted such an excellent restoration as that of the Municipal Palace—the Bargello to be completely carried through. Within its noble hall, during the years that it was transformed into a prison, no less than five stories of cells for prisoners were built up. This inner structure has been simply

demolished, and the hall reappears in its original proportions. In an adjacent quarter of the city, wall after wall bears scutcheons charged with pears; so we recognize that we are among the properties and places of business of firms and families—the Perruzzi—whose prosperity came to an end in a crisis invited by ill-advised advances to our Edward III. for the expenses of his French wars. The record of this financial catastrophe in Villani reads sorrowfully like some that have interfered with building contracts nearer to our own day. The connexion of finance with architecture brings us back to the Strozzi Palace; for, unless history misreports, the fortune of which it is a monument chiefly grew from an exclusive dispensation granted by a Pope in return for a subsidy, for the exercise of usurious pawnbroking in Tuscany. Happy, say the Italians again, are the sons whose fathers are in hell. When we look at such monument of a noble family as the Strozzi Palace, the crimes of commerce may seem, indeed, to have been buried with their authors, and the successors to have entered blameless into the happy exercise of the patronage of art. But it is something more than a proverb that avouches the visitation of paternal misdeeds on the progeny; and the destroyers of the liberties of Florence who came out from the old banking-house of the Medici found pathways, no doubt, to the highest places of the world, but have left their tracks along them in miseries, and murders, and disgrace.

THE PROFESSIONAL PRACTICE OF ARCHITECTS.

MANCHESTER.

DURING the last two years there has been in existence in Manchester, a very active and useful society—"The Manchester Society of Architects." Its objects have comprised the discussion, and, so far as might be, the regulation, of all matters of professional charges and practice, important to the interests of the building-owner or the public, as also to those of its members and of the profession generally. Considering that attention is now being given, throughout the country, to questions of the relations between architects and committees, and between architects and builders; estimating the probability of future Acts of Parliament and local regulations having intimate connexion with our calling; and viewing the importance of all these things to the future condition of the art and science of architecture and the practice of building, some account of the proceedings of the Manchester society may be interesting and important.

There are in the town two societies connected with architecture and the profession. One of them, "The Manchester Architectural Society," is occupied chiefly with the reading of papers and the discussions upon them; whilst the other, the society first-named, confines itself exclusively to such objects as the establishment and maintenance of acknowledged charges for professional services; the obtaining information respecting competitions, and whatever else may affect the profession, together with the advising committees, and endeavouring to ensure equitable awards; and the affording mutual assistance, by advice or mediation, in cases of misunderstanding, either between members themselves, or between them and their employers, or those employed under them; besides the promoting personal acquaintance and good feeling between those belonging to the Society. In these objects, the success so far, of this association, seems to have been considerable; and we have now before us copies of several documents that have been prepared and issued, and which deserve to be widely known, to the end of adoption of such of their clauses as may be found applicable in a generally accepted code of practice.

The Manchester Society of Architects, as its name implies, is composed exclusively of architects, principals; and an indispensable qualification for membership is the having been in practice for not less than three years. The Society was established in 1865; and by its original constitution certain gentlemen, in number twenty, were to have the option of immediately becoming members. One of these, whose name is intimately associated with the architectural improvement that has been manifested in the last quarter of a century, in the town, however, preferred to stand aloof. As to members other than the twenty referred to, the election rests with the council. The subscrip-

tion is one guinea per annum. Honorary members, architects, but non-resident in Manchester, are also eligible. The council consists of five members, besides the president, vice-president, and the honorary secretary, Mr. J. Murgatroyd. The general ordinary meetings take place every four months, one of those meetings being for reception of the annual report and the election of a new council; but special meetings of the members are called when necessary.

The Society, on its establishment, at once adopted the scale of professional charges of the Institute of British Architects, but with three additions, the first, to the effect that duplicates of drawings, no less than the original, were to remain the architect's property; the second, that the "day" to be charged for, at the minimum rate of three guineas, was to be of six hours; and the third, as follows,—"When an architect supplies builders with quantities, on which to form tenders for executing his designs, he should do so with the concurrence of his employer; and it is desirable that the architect should be paid by him rather than by the builder." This statement of duties and terms is printed along with the Rules of the Society; and reference to it has frequently proved the means of avoiding the difficulty and misunderstanding apt to arise in a locality where obligations and claims of the profession are not so well understood as even they are in London.

The association soon found work for itself. A report on the management of competitions was speedily drawn up; which is sent to promoters of competitions wherever desirable.

We may here mention that the original Manchester Architectural Society, which was founded about the year 1836, did good service in its day, in the matter of competitions: for, it got up an exhibition which, we believe, was the first after that of the designs for the Houses of Parliament; and it moved, in some manner or other, with a view to the amendment of terms that were put forth by different committees, including those of the Liverpool St. George's Hall, and the London Royal Exchange. Indeed, the individuals now living who formed part of that society, may claim to have been pioneers of the exhibition-system; which is almost the only check that there is upon unfairness of committees,—slight, however, though that check be.

In August, 1866, the present society put forth the report of a committee "on the question of Builders' Agreements," and in October of the same year a "General Statement of the Methods recommended by the Society to be used in taking Quantities and measuring up Works." More recently the Society has interfered for the amendment of proposed bye-laws in connexion with streets and buildings in the town. The regulations, as revised, have been accepted by the Corporation of Manchester. The Society has also moved in the matter of the forthcoming Town-hall Competition; as to which matter we have reported from time to time.

In their original "Suggestions on the Management of Competitions," wherein the "great care" requisite to avoid causing injustice to competitors, and disappointment to promoters, is rightly dwelt upon, it is said;—

"Presuming that in no case will a competition be determined on except where a satisfactory selection of one architect has been found impracticable, and that it is not arranged for the purpose of covering a selection already mentally if not actually made by some or a majority of the promoters, it would seem that the chief desiderata in every competition must be,—

- I. Proper instructions to Competitors.
- II. Strict adherence to the instructions by both Promoters and Competitors.
- III. The offer of sufficient remuneration to induce those qualified to compete.
- IV. The selection (in limited competitions) of architects generally recognized as of equal standing in the profession.
- V. Provision for competent and impartial examination and adjudication."

As to the "instructions," we are inclined to think that the Manchester Society would agree with us that the more definite they are, excepting as to the drawings and what is necessary for comprehension and comparison of designs, the more will they fetter the suggestions that it was the object to call forth. This must be a result even from one of the Society's recommendations, which relates to decorative character of the design, namely, the one worded,— "When possible, the style of the intended buildings should be mentioned, e.g., whether Gothic Italian, or otherwise;" though we scarcely expect every one who is in the habit of competing, to assent to our view, at present. Should the

promoters have a decided prepossession, fairness of course should dictate announcement of the fact: but the Manchester Society urge something different to this: they urge what would tend to protract the prevalence of distinct systems in taste, and the subordination of art to mere style, in place of leaving the *rapprochement* in progress to go on, and the influence of art in architecture to be dominant once more, as in the past. If a committee were to complain that it held itself wholly untrammelled, and that any information given must be taken only for what it might be worth prior to receipt of the independent suggestions of competitors, architects would not be worse off than they are now, and architecture might gain something. The Society say:—"Either the exact accommodation should be set forth with or without the *approximate* contemplated outlay—or, the *maximum* outlay with general statement of accommodation, leaving the extent and nature of it to the skill and experience of the competitors." The italics are theirs. Either course advised would be an improvement on the present system: yet we have always held that, even, the mention of the sum of money in hand might involve the result of defeating the objects, or an alternative of injustice, since a good design might be means of inducing contributions of money. It is added:—"It would also be desirable that as regards hospitals, asylums, public schools, &c., the promoters should state the minimum number of cubic or superficial feet of space they expect to be allotted to each inmate," but surely, here, architects being supposed able to judge as to the space required, the recommendation should have been to the effect that intending competitors be asked to meet the committee, pursuant to an arrival at the conclusion with the benefit of advice,—payment for the attendance being made, if necessary. We are not certain that we should agree with the Society as to reduction of number of the drawings; but we are somewhat in favour of a limitation of the scale to something smaller than is now usual. Anything tending to increase the space that drawings cover in an exhibition, is a positive impediment to a right decision; but the architect's intention must be made more clear than it is usually. We quite agree with the Society that the majority of the drawings are never looked at by a committee, as ordinarily constituted,—the judgment, such as it is, "dwelling on the main plan and perspective-view,"—and that "constructional drawings for the guidance of the builder," and the "specifications" that are "frequently required" are indeed not wanted: but construction, we say, as well as ultimate effect of details, must have been taken into account by the competitor; and a qualified judge will require evidence of the fact, and will attach far less importance to the perspective-view than to the other drawings, whilst however using it for saving of time in the mental operation of putting those drawings together. The "best general arrangement of plan and elevation," as shown in drawings, may be utterly spoiled by the conditions of execution. But, actually, the drawings that the Society mention as sufficient, would include nearly everything necessary, or what in the previous paragraph of the "Suggestions" had been referred to as needless. The uniformity of method of representation, and even of size of strainers, is fittingly dwelt upon. On the head of remuneration, it is very properly observed that the whole amount for the successful man should be more in the case of a competition, than in that of professional work where there is no competition; and it is clearly shown that the premium should not "merge" in the usual commission. Where competitions are of the unlimited kind, the "Suggestions" say that sufficient sums should be allotted to, and equally divided between, the authors of other designs than the first premiated, found worthy of consideration (the number depending on the magnitude of the competition), in lieu of the usual second and third premiums only; and that in competitions of the other kind, each competitor should be remunerated,—drawings remaining the property of the competitor in either case. The question whether absence of the limitation is not calculated, always or generally, to defeat the object, does not seem to have been considered sufficiently by the Manchester Society. As to selection of men as competitors, it is urged that it is only fair that each one should know whom he is expected to compete against. As to that which is rightly regarded by the Society as "the most difficult question," the adjudication, we are unable to receive the sug-

gestions "as a solution," though they may be "worthy of consideration." Truly it is difficult to see how the best designs can generally be selected, unless by enlisting aid of the particular architects who have been "considering how to carry out the requirements,"—that is the competitors themselves: but the framers of these "Suggestions" do not seem to be aware,—or they have not attached sufficient importance to the facts,—that the proposal of a competitor's giving one vote in favour of his own design, as best, and another vote to a design as second-best, has been tried, with the result that it is now not so repeatedly suggested as it used to be. Whether the proposed statement of the competitor's opinion in writing, would prevent unfairness, may deserve consideration: but, ordinarily, we should prefer adjudication by a committee composed partly of architects, but these not in a minority, and with proceedings in open court,—giving opportunity to each individual to explain his design in presence of the other competitors. This course would involve limited competitions, without other argument for them. Public exhibitions of the drawings may adversely be allowed to continue: but the judges must not defer too much to the public expression of opinion; which, in the present state of qualifications for judging of ultimate effects, from drawings, and with the utter carelessness, indeed, or want of conscientiousness, in expressions of opinions on drawings, is proved to be deserving of little consideration. Referring to professional judges, the "Suggestions" say that the individuals appointed must be "not too much engrossed with their own business to spare the proper amount of time for the consideration of the designs." This point we have often insisted on; and it is really the most important to be dwelt on at this juncture, or that is connected with adjudication.

The question of building-agreements was considered in 1866, by a committee of the Society, keeping in view a form of agreement proposed by the Master Builders' Association, the discussions thereon in the Society, and several forms in use with members. The committee were unable to offer any stereotyped form, but recommended certain main features as to be included in all agreements. They dwelt upon the importance of the building-proprietor's not being in doubt as to nature or extent of his liability, or as to the thing to be received in return, and upon the desirableness of the builder's having sufficient opportunity, before signing the contract, of examining the quantities before accepting them as correct. This done, the agreement should, according to the report, contain, beyond the usual preliminary statement of its objects and the parties to it, clauses of certain kinds, which have been grouped under three heads, namely,—1. On the part of the contractor; 2. On the part of the architect; and 3. On the part of the proprietor. When read, however, these are not found, throughout, to be obligations on the part of the contractor, or architect, or proprietor: thus, it might be urged, there is no liability of any kind admitted as incurred by the architect. Generally, they are to the effect following.

The work shown, or described, is to be done in the manner set forth, proper means being adopted, by signatures, of identifying documents and constituting them part of the agreement. No deviation from the contract is to be made without the architect's authority in writing. Deviation that has been ordered, as referred to, is to be carried into effect without nullification of the agreement, and is to be paid for, or deducted, by the proprietor in a manner to be agreed upon. For instance, the manner may be,—

(a) According to a schedule of prices agreed on between the contractor and the architect;

(b) By reference to the original estimate,—or, in place of either;

(c) At the architect's determination,—with such a percentage allowed to the contractor upon the value of work actually omitted (not substituted by others) as shall be stated; and

(d) A proviso for deducting the value of materials found by the proprietor, or of contingencies to which prices are affixed in the specification, either at the net amount or with such a trade-discount as is set forth in the agreement.

No payment is to become due, or be made, except on production of the architect's certificate; and the works are to be handed over complete by a fixed date, subject, on the one hand, to a stated deduction for delay, as well as, on the other, to the following,—

Provision for an extension of time for completion of the works (to such an extent as the architect may on the occasion of such extension determine) on account of extraordinary stress of weather, or on account of a strike of workmen, if not originated by the contractor.

The architect is to have power to reject materials, or work, not, in his opinion, accordant with the agreement, and to cause removal and replacement, after notice agreed on, at the contractor's risk and expense; also to employ other workmen, and procure other materials, at the contractor's expense, if due diligence is not used, or in event of the contractor's bankruptcy; and power to remove workmen. All sub-contractors are to be first approved of by the architect. The next clause, which has, just now, peculiar importance, is thus worded:—

Decision of the architect in all cases provided for by the agreement, to be binding on all parties. In the event of any other circumstances arising, in which he and the contractor or proprietor may not agree, the decision of a referee, named in the agreement, to be final.

The obligations on the part of the proprietor, as stated, are to involve engagement to pay the amount contracted for, subject to the increase or diminution, on production of the certificate; whilst a following clause involves,—

Statement of time beyond which the architect shall not withhold such certificate of completion, provided the work has been carried out in accordance with the terms of the agreement.

The payments are to be made as agreed upon, for example, either in certain sums at stated periods of progress, or by instalments not exceeding, say, 85 per cent. of the value of the work, and, also, if agreed upon, the value of materials delivered and approved of.

The Statement of Methods recommended in taking Quantities, and in Measuring-up works, was very carefully considered. Its main features appear to be the taking out of the hands of the measurer the optional allowances, which are often excessive, for waste, for trade-usages, and so forth, and the measuring the actual amount of work done,—careful descriptions and particulars being given of all matters requiring special labour, as mitres, ramps, trimmings, and hips and eaves. The document, as printed, extends to 148 clauses, divided under the heads of the trades, and besides a page of general clauses and prefatory suggestions.

A desideratum in taking quantities is, as stated, the giving to parties estimating, the clearest idea, and in the simplest manner, of the cost and character; so that in measuring up works executed, no more is required than the ascertaining the principle of measurement on which the prices have been determined, and then the proceeding accordingly. It would occupy too much space here to mention the purport of the several suggestions or instructions; but we may say that they deserve to be studied by all estimators and measurers, as also by all architects, since they are suggestive of some improvements in the language of specifications. In the measurement of brickwork, the work is reduced to one-brick thick, and called "brick-length walling," and is taken in yards superficial; and there has, we believe, been a local system of charging for "hollows" or "cutting hollows." As to these items, or to prevent any misunderstanding with regard to other materials built-in, it is proposed to measure the net-quantity of brickwork, deducting entirely all labour and materials in openings having more than 100 square feet face-measure, and deducting materials only (leaving "hollows," for labour) on all other openings, the shape they are actually executed (provided they are openings in the walls and built above with the same materials), and on all sills, strings, cornices, and generally the masonry and dressings built-in and being more than 6 in. in height; whilst, further, fireplace openings, from underside hearth, and all flues, are to be deducted as "hollows," and the lineal dimensions of flues (with size, if various), to be given for extra-labour of forming and pointing. Such things as ends of joists, wall-plates, and door-frames, are not to be deducted, if built-in with the work. To indicate how much has been thought of, we may mention that one clause is to this effect:—"Covering walls to protect them during inclement weather or strikes, and manner of doing it, to be added to the brick-setter's contract." As regards mason's work, the minute subdivision in measuring, and the taking into account each necessary operation of the workman,—even to what may appear the measuring the same surface (as in pannelled or enriched work) more than once for different descriptions of work,—are prominently set forth. Generally, in the trades, the system appears to be characterized by perfect fairness; though it is capable of revision for use in London and in the country generally.

The action taken as to the local Bye-laws

resulted from an intention on the part of the corporation to make particular regulations applicable to streets and buildings in Manchester. On the discovery of the intention, and of the nature of the proposed laws, these were seen by the Society to have a somewhat arbitrary character. The local Act for Improvements allows the town-council to make such laws subject to approval of the Secretary of State. As the Council did not very favourably receive advances made on the part of the Society, the architects memorialized the Secretary against adoption of the bye-laws. Although they were too late to prevent the coming into force of the regulations, legally,—since the time given by the Act, to the Secretary of State, for disallowance, had elapsed,—the Secretary sent Mr. Rawlinson to inquire into the subject; and the result has been the adoption by the Town Council of a new or revised set of Bye-laws, which have been approved of by the Secretary, and have superseded the others. The circumstances show that if public and corporate bodies would avail themselves of assistance within their reach, absurd stipulations might be prevented, such as now get into Acts of Parliament, or are embodied in local bye-laws, and that the eye of the Secretary of State may be in danger of passing over. Some regulations that have been proposed in like cases, whilst professing improvement, as that of a sanitary character, would offer impediments in each direction of progress. This seems to be the case in Manchester with reference to prevention of the system of depositing small quantities of ashes in the streets, to be removed by the dust-cart, a system prevailing where from want of space there are no ash-pits, as in the case of the offices in the centre of the town. The truth is, the system of depositing refuse in a street, within prescribed hours, combined with such perfect street-cleaning as there is in Paris, and the rejection of all hoarding of refuse in a house, on the one hand, sanitariously speaking; though, on the other hand, from the defective scavenging of our towns, and on the other from the unavoidable unsightliness where heaps of refuse are temporarily left, the common ideas about it is very different.

Besides the business-meetings of the Manchester Society, the members dine together every year; and, generally, the Society has conducted to that friendly feeling which is not less important to the influence of the profession in the direction of the public interest, than to that of each architect in furthering his own claims.

The success that has attended the Manchester Society of Architects, has induced several of the leading architects of Liverpool to associate themselves for the formation of a similar professional body; of which Mr. Hornbrow is the honorary secretary.

Judging from the activity of the secretary of the Manchester Society, Mr. Margatroyd, we may attribute much of this success that we have referred to, to his individual exertions.

THE KENSINGTON NATIONAL PORTRAIT EXHIBITION, 1688—1800.

"THE SIR JOSHUA."

In the *Builder*, of the 25th of last month, we promised "something" with reference to the one hundred and fifty-four examples of Sir Joshua, now so pleasantly accessible at South Kensington. This promise we shall endeavour to make good.

Judges of the present or last generation who have reached a little beyond the middle period of the scriptural imitation of three-score-and-ten, who love art, and have frequented the British Institution in Pall-mall in its Aberdeen and Beaumont days, must have seen many choice examples of England's Sir Joshua, but never till this year have they had the opportunity of seeing our great painter in all his force of portraiture, in his full strength of fertility of conception, adaptation, and treatment of position, as he is to be seen and studied through the labours of the Committee of Council on Education. We cordially recommend all who love art to make a visit to "The Sir Joshua." If those who study good English writing are to give their "days and nights" to Addison, why should not portrait painters and portrait sculptors dedicate a long summer morning to the Sir Joshua here properly collected for their instruction and delight at accessible and fashionable west-end London?

Reynolds is the preserver on canvas of the ineameants, and red-and-white-rose complexions

of two generations of English beauty. He lived to paint the mother in her prime, the daughter in her youth. How many revolutions in dress has he been the means of perpetuating. He did not foresee crinoline, but he loved and painted full and richly embroidered trailing silks with the skill of a mercer or a milliner, and all the fidelity of an accomplished painter.

There are several "wants" in the present collection, rich as it is beyond precedent, in examples of Sir Joshua. We will instance some of the portraits which might have been usefully added. We miss, for instance, Reynolds's own portrait of himself, in his own hair—one of the treasures of the Dilettanti Society, at Willis's Rooms, in St. James's-street; we miss the two inimitable Dilettanti pictures—twin conversational and toasting portraits—in the rich colours of the Graphic Society know them well. Charles Turner engraved them. Did the Kensington committee ask for them? The Manchester Art Treasures Committee asked for the loan of them exactly ten years ago, and were refused; yet we remember to have seen them, or we are greatly deceived, at the British Institution in Pall-mall.

Where is the Thrale, Watson Taylor, and Sir Robert Peel noble head of Dr. Johnson? Was Sir Robert Peel asked for it? Would he not spare it from its central situation at Whitehall? Sir Joshua's George IV., too, when Prince of Wales, now at Sir Robert Peel's, at Whitehall, the portrait (head only) before which we remember the Duke of Wellington to have exclaimed aloud, in Sir Robert Peel's house, before the great ministers and a room full of the learned in art, "Ah! my old master. And very like him!" Nay, more, we miss the portrait of James Boswell, the prince of biographers, in the conversational way, painted by Sir Joshua, at Boswell's request, and on Boswell's own terms for payment. Witness the copy of Boswell's letter which Mr. Wilson Croker was the first to publish, and Sir Joshua's memorandum of acceptance at the foot of it. Sir Joshua's characteristic portrait of Horace Walpole (the Grosvenor-Bedford portrait), engraved by McDardell in mezzotint, and in line by Bromley, is also absent. Our reference to Johnson reminds us that a little forethought on the part of the committee might have carried to Kensington the portrait of Frank Barbery, Dr. Johnson's black servant. The careful reader of Boswell—and who is not?—would surely have exclaimed, when standing before it, "Frank, a clean shirt!"

At Kensington is not seen Sir Robert Peel's Commodore Keppel? or the National Gallery Gibraltar Lord Heathfield? The Committee has borrowed, we observe, from the Trustees of the National Gallery the portraits of three English worthies—Hogarth, and Woollett, and John Hall, the engravers. The Bedford, or Russell Family is still at Middleton, in Oxfordshire, the seat of the Jerseys.

Where are Elizabeth Keppel, the Woburn Marchioness of Tavistock (that lovely full-length in her wedding dress, so charmingly engraved by E. Fisher, living "at the Golden Head, the south side of Leicester-square, price 15s.")? and Mr. Thrale's Hester Lynch, Salisbury born, afterwards, sad to think, Hester Lynch Piozzi?

Where is the famous "Marlborough Family," that rival to Holbein's More Family and Vandick's Pembroke Family? Sir Joshua is seen in all his strength in this picture.

Where is the half-length of Lord Temple, which Horace Walpole noted in his Catalogue of the Royal Academy Exhibition as the finest portrait Reynolds ever painted? This was written in 1776.

But we have done replying to the cry of our old London apprentices, "What d'ye lack? what d'ye lack?" preserved to all time in "The Fortunes of Nigel." There is quite enough to be thankful for.

Three portraits here exhibited of a great English historian will delight other students of history besides the very revered and learned Dean Milman, the editor of Gibbon. We allude to 664—a miniature to waist of the historian of "The Decline and Fall,"—"looking to right, grey coat and flowered white waistcoat," the property of Mr. G. E. Wilbraham; to 667, Sir Joshua's portrait of the same great man; and to 668, Romney's almost unknown portrait of him. So little known, indeed, is Romney's head of Gibbon that we (curious in such matters) have never heard of a person who had seen it. Sir Joshua's Gibbon is grand; we have a photograph of it before us while we write, and have found no engraving worthy of it, or indeed very

much like it. What superiority of intellect is written on that lofty forehead and that towering Walter Scott-like head! There is a haughty insolence in the great historian's look which commands respect. One feels little when standing before the Sheffield Gibbon. By the way, we should like to have seen here Sir Joshua's companion head of Lord Sheffield. It was at Manchester in 1857, and was much looked at by artists. What does Malone say of Sir Joshua's Gibbon?—and he had seen Gibbon:—"The picture of Gibbon painted by Sir Joshua is as like the original as it is possible to be." This commendation would have enriched the Catalogue.

We shall conclude this brief reference to Sir Joshua with a correction on the subject of No. 650, the portrait of "Richard Stonehewer." The Catalogue tells us that he was the friend of the poet Gray and his executor. This was something new to us. Why the poet Mason and James Brown, the President of Pembroke Hall, Cambridge, were left the "joint executors" of the poet. "I give," says the poet in his will, "to Richard Stonehewer, esq., one of his Majesty's Commissioners of Excise, the sum of 500*l*. Reduced Bank Annuities, and I beg his acceptance of one of my diamond rings." And what does Mason leave to Stonehewer? "I also return," he writes, "to Richard Stonehewer, the portrait of himself, painted by Sir Joshua Reynolds." Where is it now? The portrait here exhibited is the property of the Duke of Grafton,—and, to our thinking, is the very portrait of Stonehewer that Mason bequeathed to the friend of Gray.

THE LAW COURTS COMPETITION.

The Judges of Designs have not yet commenced their work, but will, no doubt, do so now without delay; the various persons and committees to whom special inquiries were deputed having made their reports. The most important of these, the result of a very elaborate inquiry, is that from Mr. Shaw and Mr. Pownall, who preface it thus:—

"We have now the honour to present the report of our investigation of the competitive designs for the Courts of Justice on the several points contained in the instructions furnished to the competing architects."

We should have been glad to feel that this report, made, we believe, in conformity with the instructions contained in your minute of the 23rd day of March, would have enabled the Commissioners to determine "which of the designs upon the whole afforded the greatest advantages."

We fear, however, that this is not the case; and that, although we have expressed a definite opinion on all the most important requisitions, the number of those requisitions is so considerable, and they vary so much in their relative importance, as to make it extremely difficult, if not impossible, for the Commissioners upon the report alone to arrive at a satisfactory conclusion as to which of the designs does offer the greatest advantages, having reference as well to the relative compliance of the several competitors with the instructions in detail, as to the equally important points of the general arrangement and combination of the design as a whole.

We beg to submit the following observations for the consideration of the Commissioners:

We have been deeply impressed with the great talent exhibited in the designs, and with the unwearied application which must have been devoted to their preparation, and to the difficult task of compressing into the allotted space the large extent of accommodation called for by the instructions.

We are, however, decidedly of opinion that it is impossible properly to provide this extent of accommodation on the proposed site, and that in order to obtain sufficient light and air to the numerous courts and offices, it is essential that the area of ground should be enlarged.

This enlargement, it appears to us, is further desirable as facilitating the placing of courts and some of the more frequented and important offices on a lower level than has been found practicable in any of the proposed designs.

We consider this change in the level and must, with all regards to the convenience of the judges as well as of the numerous persons attending the courts and offices in question.

On the subject of warming and ventilation we beg to suggest, that while as regards the courts, halls, and corridors some general system of hot-air or hot-water should be adopted, it would be desirable to warm and ventilate all the rooms by means of ordinary fire-places and sub-windows opening, not into covered courts, but directly to the external air.

The Commissioners will be fully aware that the opinions we have expressed in the Report have been given entirely without reference to the relative merit of the designs as architectural compositions, that part of the subject not having been referred to us.

JOHN SHAW.

GEO. TOWNALL.

The result of their report is decidedly in favour of Mr. E. M. Barry's plans, thus confirming the good opinion we arrived at as the result of our necessarily much briefer and more superficial examination. Out of seventy-nine heads of comparison, they are of opinion that that gentleman's design "offers the greatest advantages" in thirty-two cases; and these for the most part under the most important heads. Mr. Scott's design, we elicit, offers "the greatest

"advantages" in the next greatest number of cases, namely seventeen. Mr. Lockwood's design comes up as the superior under eight heads. This statement is of course influenced by the opinion Messrs. Shaw and Pownall arrive at under the head "Accommodation," where they say:—

"As to No. 5, *Aren of Courts and Rooms*.—The designs of Mr. Street and Mr. Waterhouse as regards the courts are not in accordance with the instructions, being deficient in the prescribed area on the floor level; the rest of the designs are in accordance with the instructions."

The Committee of Bar and Solicitors in their report dissent from this opinion, and say:—

"We consider it incumbent on us to notice that part of the report of Messrs. Shaw and Pownall which states that the designs of Mr. Street and Mr. Waterhouse as regards the courts are not in accordance with the instructions, being deficient in the prescribed area on the floor level. It appears to us that neither of the designs is deficient in the prescribed area within the four walls of the courts, but that Messrs. Street and Waterhouse, for securing greater quiet in the courts, have suggested that, instead of leaving the stairs and back open, a portion of them should be partitioned off with glazed panels to allow of counsel and solicitors ascertaining the state of progress of the business in court without actually entering the court."

This Committee consider that the solution of the question whether any central hall is needed, and, if so, its position, and the uses to which it would more especially be devoted, has more than any other important bearings on the general scheme of each architect, and on the comparative advantage each scheme presents, and have passed the following resolutions:—

"1. That there should be a central hall. That one large hall is preferable to several smaller ones, and that it should be on the floor next below the courts. Mr. Waterhouse's hall is of ample size, and is the only one placed on the floor next below the courts; but the designs of Mr. Barry, Mr. Brandon, Mr. Lockwood, and Mr. Scott, could apparently be amended in this respect by removing the rooms and offices to the basement, and depressing the hall proposed by them to the level of the floor below, and their halls are of sufficient size."

"The form of the hall should be as simple as possible, and so arranged that the least difficulty is found in finding witnesses and suitors in it when they are wanted. The halls designed by Mr. Barry, Mr. Brandon, Mr. Scott, and Mr. Street, appear to be objectionable in this respect. Those of Mr. Deane, Mr. Seidman, and Mr. Waterhouse are in this respect the best, but Mr. Deane's is much too small."

The Metropolitan and Provincial Law Association also arrive at the conclusion that there should be a central hall; in which opinion we now, as from the first, fully concur.

The report of Capt. Shaw, chief officer of the Metropolitan Fire Brigade, consists of two statements only; one that "Mr. Deane's designs none nearer than those of any other competitor to the true principles of safety from fire;" and the second a somewhat vigorous denunciation of "the mode in which Mr. Scott has attempted to deal with this part of the question." He says, in conclusion:—

"Even as a financial question, there can be little doubt that it will be a sounder policy to make the building reasonably safe in construction and material in the first instance, and to reduce the subsequent expenses for watching to a small amount, than to neglect the subject of fire altogether at first, and then incur a heavy annual expenditure for guarding against it, but I most respectfully submit to the consideration of the Commission that this is something more than a mere financial matter; that, in short, it is a most important question of public progress."

In a second short communication, Capt. Shaw writes:—

"I gave my opinion simply as to the best and worst designs, judging them solely from my special point of view, and I omitted all reference to those which seemed to me to be of intermediate merit."

I am, of course, still of the same opinion as when I wrote on the 27th ultimo, and I have nothing to add to or retract from what I have said."

My object in writing now is merely to ascertain whether the Commission would wish me to offer opinions concerning any of the other designs."

In conclusion, I should wish to take this opportunity of drawing attention to the fact that a careful inspection of these drawings cannot fail to convince any one who understands the principles of construction and the nature of building materials, that the great majority of the designs are of a most decided and unquestionable advance on anything which has been done in this way of late years; and that even if the subject of safety from fire be now dropped for the present, the Commission have already achieved a most important result, and laid the foundation of a permanent reduction of the eventual expense of watching the building and securing its safety."

The Royal Commissioners have received these and other reports, proceeded to consider them, and with reference to the Bar and Solicitors' report, resolved:—

1. (Nimine contradicente), "That the Commissioners do agree with the report of the Committee that there should be a hall."

2. (With one dissentient), "That the hall should be of intermediate merit."

3. (With two dissentients), "That such hall should be placed on the floor next below the courts."

4. (Nimine contradicente), "That the recommendation of the Committee as to the design of the hall by Mr. Deane be approved, striking out the words 'where practicable.'"

And 5. "That the Commission, being unable at present,

to enter into a detailed examination of the remainder of the report, the same is to be transmitted to the Judges of Designs as the opinion of those Commissioners whose names are appended thereto."

We have only to add that the Judges of Designs, having assented to the proposal that two professional architects should be added to their number, have appointed Messrs. Shaw & Pownall to act in that capacity; and our readers now know exactly the present position of affairs.

EGYPTIAN AND CAMPANIAN DISCOVERY.

The time when an important discovery was communicated to the world as if by an electric shock has gone by, perhaps never to return. In the age of steam-locomotion and of electric telegraphs, men are too busy to care for the discoveries of their neighbours. Anything that may affect the price of funds, of corn, or of cotton, monopolises the wires, and is communicated by Mr. Reuter's agency in the largest capitals. A shot goes off in Paris, and the echo is heard in Pall-mall almost as soon as in the *pays Latin*. But a new form of life is discovered—some strange bird, or beast, or giant tree, and who knows anything about it? The discoverer, proud, and justly proud, of the results of enterprise, or of happy observation, finds, on reaching our shores, that all that he can do is, after much pain and expense, to submit a paper to some special society occupying itself with the subject. If the season of the year be suitable, and the society sitting, and not too busy, and the results of the new discovery are not too inconsistent with the opinions to which the leading members of the body are committed, the paper may be read, and subjected to the sceptical comments of the tarry-at-home travellers who so far honour it as to listen. And possibly a brief notice, in the very smallest type, may creep into some obscure corner of the daily newspapers. Such is the public meed of the discoverer now-a-days, unless he have time, and ability, and sufficient means of holding his own with a publisher, to give the results of his labours in his own name and in his own words to the world. And there are men who would find it easier to rival the heroic perseverance of Baker or of Livingstone than to give in plain English a readable story of their labours. How one of our most enterprising African travellers failed to take, in the first instance, his proper place in public esteem for want of some small share of literary skill, will be fresh in the remembrance of our readers.

To a great extent this indifference of the public to important discovery is a consequence of the march of science, of the immense amount of fact already collected, and of the necessity of referring separate branches of inquiry, as it were, to separate committees of the scientific world. But there is one point to which we more particularly refer, as coming within our own peculiar province. In Egypt, in Italy, in Central America discoveries are being almost daily made of the highest importance to the history of architecture, no less than to political history, and to our knowledge of the habits and manners of the past. While these discoveries may in each instance have their special interest for some small circle of philologists, of astronomers, of chronologists, of classical students, of ethnologists, and the like; they have a great and general interest for all lovers of art, and for all students of architectural and of engineering science. The opening of an Oscean tomb at Cumæ, or of a sepulchre of the time of the Hyksos in Lower Egypt, has a special interest for all who value our pages, no less than for the special Italian archaeologist or for the student of hieroglyphics.

It is therefore alike in the interest of our readers and of the general march of human intelligence to call attention to the work now silently pursuing in recovering the buried records of the past, and that not without the hope of attracting from time to time fresh intelligence to our own columns. It is strange not only that so little should be known generally in this country as to the progress of Egyptian and of Campanian discovery, but that it should be so difficult for those interested in the subject to arrive at the latest intelligence. No research in Egypt has had more important results than the discovery, by Mariette, of the Serapeum, of the sacred mausoleum in which the mummies of sacred bulls have been deposited from the very time of the exodus, and of the detailed inscriptions, which in some instances form the epitaphs of these incongruous sepulchres—inscriptions stating the year of the king

and the day of the month in which each Apis was born, was canonised, died, and was buried, and the number of years, months, and days which he lived, thus forming an absolute chronological check whenever the inscriptions are perfect. And yet it will be hard for the English student to satisfy his curiosity as to these invaluable discoveries. The *Bulletin de l'Athénæum Français*, in which M. Mariette was in the course of publishing them, ceased to appear in October, 1856. The *Revue Contemporaine*, in which it merged, seems to afford no means of printing hieroglyphic texts, and the abstract given by Mr. Birch of the Apis dates in the new edition of Bunsen's "Egypt" does not come lower than the date of the last Bulletin. At this moment, we learn from private sources, that excavations are being made in Lower Egypt, where monuments are being brought to light that promise information on the most perplexed time of the Egyptian annals, the reign of those shepherd kings who were an abomination to their native subjects. But whatever may be known at Paris or at Berlin as to these proceedings, we ask in vain in our own metropolis for news on the subject. There is evidence, some of us think conclusive evidence, to show that the colossal portrait of the very Pharaoh of the Exodus himself, as well as of his terrible predecessor who ordered the delivery of the Jewish boys to the crocodiles, are now reposing in the halls of the British Museum; and yet the public pass by the speaking faces with as little appreciation of the message they have to utter as of the hieroglyphics themselves.

Nearer home than Egypt, readily accessible in a six weeks' tour, steady progress is being made in uncovering the relics of Pompeii. From the first discovery of that buried city, 120 years ago, during the whole reign of the Bourbon dynasty, the excavations on the spot were but capriciously carried on, and for the most part rather with the object of extracting precious articles to enrich the Museo Borbonico, than with a view of laying open to the gaze of modern Europe a Campanian city of the date of the Christian era. When the power of the Bourbons, on the death of the formidable and little-understood Ferdinand II., collapsed from intrinsic corruption before the boy-troops of Garibaldi, a famous personage in the literary world was made ruler of Pompeii. No Roman prefect was ever better disposed to make the best of his power and influence than was Alexandre Dumas. Ensconced in one of the regal palaces at Naples, a gem of an abode, looking out over the blue bay, which he held for some time, in spite of the efforts of the incoming government of Victor Emmanuel, Dumas had too much to do with his history of the Revolution, and his *Indépendance* journal, and his never-ceasing flow of novel publication, to have much time to devote to the *Scavi*. His successor in the direction of the works at Pompeii was a man of another order,—a scholar and a gentleman, who had found shelter from political persecution by his attachment to the household of his late Royal Highness Leopold, Count of Syracuse, himself a sculptor and a virtuoso, an antiquary, and a man of taste. Under the direction of the Commendatore Fiorelli the works at Pompeii have assumed a new character; systematic preservation of all relics as much as possible *in situ* has been the rule. The frescoes, instead of having their colours refreshed for the inspection of every visitor by the usual Neapolitan practice,—we hardly like to describe it in its naked simplicity,—of being spit upon by the guide, and then rubbed with the cuff of his coat, if he had one, and with the skirts of its substitute if he had not, are now tenderly coated with a wax varnish as soon as they are exhumed, and thus promise to preserve their natural hues. An excellent map of the city has been prepared, and a superb delineation of the architecture, painting, and sculpture is in course of publication by the Brothers Niccolini, a work which, in purity of design and beauty of execution, is almost without a rival among the numerous editions *de luxe* of the Continental press.

The excavations of Pompeii have not the peculiar characteristic of those at Cumæ, where archaeology assumes almost the character of geology; and where three distinct strata of tombs, each containing relics of a race different in date, in habit, in mode of sepulture, and in the orientation of their tombs, are superposed. But their special interest consists in the vivid reality with which they enable the visitor to present to his mind the actual daily life of Rome, or rather of the Roman country villa, or provincial capital, at the time when Julius

Cæsar was making his hasty and abortive inroad upon our coasts, but at the time when a voice, which has never ceased to echo in the ears of each succeeding generation, bade the subjects of Roman conquest to render unto Cæsar the things that are Cæsar's. The ruts that mark the carriage-ways of Pompeii were being formed by the rude, springless cars of the masters of the world, while the divine footsteps yet lingered in the dust of Palestine. The long-silent volcano awoke, and covered town and inhabitants with that thick veil of impalpable ash which remained inviolate for more than sixteen centuries, only nine years after the no less fearful desolation of Jerusalem by the arms of Titus. And among the latest discoveries of Signor Fiorelli, of which we have any English intelligence, is that of the remains of a Roman soldier, who seems to have calmly set himself to die at his post, and of whose person and attire so faithful a cast has been preserved by the volcanic snow that overwhelmed him, that antiquarian difficulties as to the mode in which the Roman soldiers were sandalled, have been dispelled by the evidence thus grimly brought to light.

The effect of Roman civilization on our domestic habits has been a most important element in our national life. Our earliest monuments,—not of human habitation, or indeed of worship or of sepulture, but of fortification, or of building properly so called,—are Roman. The influence of a people cultivated to a state of corruption on a nation of the simplicity of habit that characterized the Gauls and the Britons of the Imperial age, can only be compared to the effect produced by our own colonists and missionaries on the Sandwich Islanders. The natural growth of an architecture adapted to our climate and to our habits has constantly been interfered with by the importation of some Roman form of basilica, or of portico, unsuitable to both. It is by studying the foreign element in its purity that we can best learn how to eliminate it where incompatible with our own requisites.

PAINTED DECORATIONS IN CONNEXION WITH ECCLESIASTICAL ARCHITECTURE.

THE ARCHITECTURAL ASSOCIATION.

At the ordinary meeting of members held on the 7th instant, at the House in Conduit-street, The Rev. Mr. Cutts proceeded to make some observations on painted decorations in connexion with ecclesiastical architecture. He remarked that when an amateur was asked to speak on a professional subject, he did so with some diffidence, and could only take the view of an amateur or perhaps of a critic. In ancient times the use of coloured decorations was much in vogue. In Egypt it was extensively used, while in Greece it was applied not only to architecture, but to the most magnificent works of the sculptor's art. In Rome, too, it was made to contribute to architectural effects; while in Gothic architecture, also, it was largely introduced. In the opinion of ancient architects, colour was essential to heighten the effects of building, and, in their opinion, no building could be perfect without it. Indeed, in the matter of decorations, the sister arts went hand-in-hand, and no building could be said to be perfect which did not contain the accessories of sculpture and painting. It might also be conceded that colour gave effects which nothing else could do. A chalk drawing, for instance, or an engraving, although careful and elaborate, still could not impart the idea of colour. So, too, it was with a building. Let them take, for instance, a modern church. It might be a beautiful example of architecture; but contrast it with a church built four hundred years ago, where colour had been judiciously introduced, and how very different would the appearance be. With stained glass, appropriate hangings, and rich furniture, how much more glorious was the interior of a church than when it was denuded of those appanages. Let them imagine, if they could, the Church of St. Mark, at Venice, churchwardensised. That church depended for its magnificent effects very much upon colour. While advocating the introduction of colour generally, he did not, however, recommend the practice of copying old colouring. On the contrary, he believed that any servile imitation would have an injurious effect, and would seriously retard the application of colour to architecture in our own day. If they were to put bits of green

where they found green, and bits of red where they found red, and so on, the effects would be clumsy, hard, and bizarre. What was wanted really was to get at the general system upon which old churches were coloured. Colour might be applied in various ways; first, in mere lines and tints, so as to bring out the architectural effects; or, again, it might be applied to the ornamental features of the buildings, especially in cases where sculptured work had not been introduced, such as in the bell of a capital, or on a string-course. In this way colour might be used to help the proportions of a building. If a building were too low, it might be made to look higher by the introduction of vertical lines. On the other hand, a building might be spoiled by injudicious colouring, and made to look high where it ought to be low, or low where it ought to look high. For walls a tinted slate colour might be used, or a pale claret colour with diaper, or powdered with some other pattern. There was, he thought, much to be done in this to a church after the mason had performed his part of the work. It was, he ventured to assume, the duty of the architect to study the application of colour to architecture.

The study of old buildings showed that the great architects and painters on glass and vellum in past ages were able to produce a harmonious effect over the whole of the interior of their buildings. The usual foundations for wall paintings appeared to have been, as far as he could judge, a thin coat of fine plaster of the colour of the vellum or parchment of which old manuscripts were composed. He presumed that the same artists who painted on glass and who illuminated manuscripts were also the persons who executed wall decorations, because he had found in the British Museum fac-similes in manuscripts of wall decorations which he had found in country churches,—proving, he thought, that the same artist had executed both. The colouring was almost always in diutemper, and the tints were flat and not vivid. It was only in small architectural features that brilliant colours were used. There might be said to have been two styles of colouring used in former days, namely, the Norman and the Tudor; and these were succeeded by the churchwarden style, which, however, he was glad to say was rapidly dying out. In the Tudor style there was the same ground colour, with the open spaces provided with *flours-de-lis*, or some other pattern; paintings from sacred history were then introduced in dark red lines, boldly drawn, with few flat tints for the drapery. Some excellent illustrations of this kind of decoration were to be found in a little detached chapel standing within the churchyard of a church in Jersey. The paintings were subjects chosen from the life of Our Lord. So, too, at an Early English chapel of thirteenth-century work with which he was acquainted, the walls were covered with masonry-pattern, done in double lines. In this case the floor of the church was paved with coloured tiles, which had a very good effect. The usual ornamental portions of church architecture were of course the work of the architect; but if really high art was to be appealed to, it would be necessary, as in ancient times, to have accomplished artists. So long, for instance, as stained glass was paid for by the yard, it would be impossible to expect any high development in that particular development of art. He might, he was aware, be asked whether they would be allowed to carry out all that the cultivated taste desired to see accomplished in reference to coloured decorations and cognate subjects; and his answer was, that he believed the architects of our own day would insist upon directing the public taste and feeling in those matters, and that eventually the public themselves would demand what the architect would now vainly accomplish, if allowed. He ventured, therefore, to recommend young architects to take up painted decoration as a special subject of study, always remembering that if they were commissioned to adorn a church, they could never make it too beautiful for the holy uses to which it was to be dedicated.

Mr. T. H. Watson observed that the subject to which Mr. Cutts had called attention was one of great interest to architects. There was much more to be done in the way of colouring than to put on crude masses of colour, for it seemed to him that much of the colour now used could only be justified in cases where the whole building was to be coloured.

Mr. R. P. Spiers thought we were very backward in the present age in the matter of colour, as it was seldom used for designs and drawings, the majority of which left the architect's office without any colour at all. Although agreeing with much that had fallen from Mr. Cutts, he could not think it inadvisable to copy old work, because it would be necessary for the student to have something

to guide him. In dealing with coloured decorations also, it would be necessary to bear in mind that we lived in a peculiar atmosphere unfavourable to bright colours. In Eastern countries (in Egypt, for instance), where the atmosphere was clear and dry, the ancient architects appeared to have used three simple colours, and yet with these they produced effects which we could not hope to realize. There were, he thought, two notable works at present in the metropolis in which glaring colours were being used, and which, he feared, when completed, would have anything but a pleasing effect. There were in Paris two or three modern chambers in which coloured decorations had been introduced with the best results, and there was also at Rouen the Church of Notre Dame de bon Secour, which was a fine illustration of the judicious application of colour to church architecture.

A member observed that the tardy decoration of St. Paul's Cathedral was a step in the right direction, although two or three hundred years had been taken to think over it. In painting walls, however, he recommended that two or three years should be allowed to pass before any colour was used, as if applied too early an effect might be produced similar to that on the fresco at St. Alban's the Martyr, in Gray's Inn-lane.

Mr. Birch stated that the effect to which the last speaker referred was not to be traced to the newness of the wall, or to any process of disintegration, but to dust, and that all the painting required was to be kept clean.

NOTES FROM THE CHAMP DE MARS.*

Of the pictures *within* the Exhibition building, those of Prussia remain alone to be commented on by me. Before commencing my survey, I may note, that in this gallery, also, the same ugly French ceiling prevails; but the floor is covered with cocoanut matting, which, though not so neatly laid as that in the English gallery, and consequently not so agreeable to the eye, is an immense comfort to the feet.

André Achenbach, of Dusseldorf, has two fine pictures, "The Port of Ostend," and "View of Amsterdam." The latter, a large canvas, is a magnificent work, very rich in colouring, the sails of the ships grouping in singularly with the trees and houses, and all seen against a stormy sky; the little red streamer from the tall mast contrasting admirably with its leaden hue. Becker's "Joallier et Sôneur," the latter buying jewels for his two pretty daughters, is pleasing; but his "Scène de Carnaval de Venise" is his great picture here. Brendel has some capital "Motions quittant l'Étable;" Frédéric Knabach, five fine portraits, of which that of the Comte de W. is especially admirable; Knaus, seven pictures, among them "Un Invalide," and "Une petite Paysanne cueillant des Fleurs dans une Prairie." In the latter, a pretty little child is coming down a narrow pathway in some most charmingly-painted high grass, and plucking the dowers that grow up amongst it. Lasch has two pictures, "La Fête du vieux Maître d'École," in which his pupils are bringing him birthday gifts of fruit, vegetables, poultry, and even small animals; and "A Village Festival,"—not noticed in the catalogue,—or perhaps "A Return from the Fair." E. Pape, of Berlin, has a lovely landscape, called "Le Rhin," so peaceful and holy, with just one large bird floating high above the placid water. Richter has two portraits, one "D'un Garçon," especially happy; and Schlesinger has "Les Cinq Sens;" not a new idea, but treated in such a novel manner that the five large squares, with two pretty girls in each, are particularly charming.

On the exterior wall of the Prussian gallery, Pfannenschmidt exhibits a "Cycle de sept Cartons coloriés pour les Vitraux de l'Eglise Saint-Nicolas, à Berlin." They illustrate the life of Christ, and are admirable productions; but if they could be used as wall-decorations, instead of for windows, they would be better. It is not only their gold ground which suggests this idea, but the large picture that each design forms, seems so much more adapted to that style of treatment than for the transparent substance of glass.

We now go forth into the Parc to visit some of the various "annexes" that have been built by different nationalities for the reception of their pictures, insufficient space having been allotted to them *within* the "great gasometer."

Bavaria has not attempted any decoration of her annex, but has adopted the French brick-dusted-coloured walls and ugly ceiling; she has boarded the floor, however; but this, as a matter of course, is very gritty and unpleasant.

Immediately on entering, the eye is attracted by the four immense pictures destined for the Maximilianum at Munich; the subjects of these are, "Frédéric Barberousse et Henri le Lion," by Folingsby, in which the twisted mailed arms look particularly thin and small; "Noces d'Alex-

* See pp. 319, 374, 383, 409, 427, ante.

and le Grand," by André Müller, very classic in treatment, and poetic in feeling; "Godefroid de Bouillon" by Piloty; and "La Cour de l'Empereur Frédéric II. à Palerme," by Professor Bamberg, wherein the emperor is represented fair and good-looking: much like our early English kings.

Bamberg has also some drawings *en grisaille*, most charming things, which of course were *ad vendi*, and which set one breaking the tenth commandment awfully. Four of these "cartons" are illustrations for Göthe's poem of "Herman and Dorothea," and are delicious. Kaulbach, director of the Académie des Beaux-Arts de Munich, has a very large cartoon, chalk apparently, of all the noted persons all over the world, who lived during the Reformation era. Baumgartner indulges in pleasantry, to wit:— "Les sept Sonnets chassant le Monstre," a poor little hare, which sits still, to have a look at them (taken from a German popular tale); and "Procession surprise par la Pluie," in which the grotesque distress of the ecclesiastical banner-bearer is most ludicrous; and the gusty wind that so roughly handles the painted and gilt silk tumperry, is very cleverly shown.

A painful contrast to the above, and the more painful because felt to be only too true, is François Adam's "Route entre Solferino et Valeggio, le 24 Juin, 1859," wherein the poor maimed soldiers are seen "falling out" of the line of procession, to rest their wounded limbs awhile, and dress their shattered hands or feet. A car of sadly contorted and agonized wretches comes jolting over the maddened ratty track which serves for a road. The face of the poor creature in bloodstained, torn shirt-sleeves, with an awful wound in his neck, who is trying to spare himself some of the shocks and collisions by leaning backwards on his hands, and thus raising himself slightly from the floor of the cart, is so terrible and yet so truthful as to make the tears start into one's eyes to look upon it. In the midst of this hellish misery and confusion, one man, apparently very little injured, has been pushed down, and is beginning to get up again, when straight over him comes galloping an enormous gun, the horses urged on madly by the lashes and shouts of their drivers and of the officer in command; the poor doomed wretch speculates and implores, but all in vain, for the spectator sees and feels nothing can save him from being crushed beneath the wheels of this modern Juggernaut. Such are the glories of war!

After contemplating this, it is a wonderful relief to turn to Schrandolph's two exquisite little pictures, "Groupes d'Ange faisant de la Musique." In each there are two floating angels, in richly-coloured robes, seen against a gold background; and in one group an angel bears a scroll inscribed "Gloria in excelsis Deo!" The calm, solemn beauty of these two little pictures is very touching, and makes one feel soothed and bettered.

Schoet's "Matinée de Pâques" is pleasing and purifying to the mind; a procession of fresh-faced children singing their Easter hymn, as they walk along the skirt of a wood, just waking up into the consciousness that "Spring's delights were now returning." Buerkel's "Paysage d'Hiver near Tyrol," with its train of little boys in tiny sleighs, coming full pelt down the steep road of a mountain village, is brisk and agreeable; "Dick's" "Messe de Minuit dans l'ancienne Abbaye de Petershausen" is effective, with its grim emmalated saints effigies on the walls below, lighted by the blue-white moonbeams; while in the gallery above is seen a group of monks gathered around a redly-flaring candle. Follingsby's "Première Entrée du Roi Jacques I. d'Angleterre et de Anne de Danemark" will be remembered as having been exhibited in London last year. Kappas has a charming little bit, "La Moisson;" Adolphe Lier a lovely "Paysage du Mecklenbourg," with setting sun and rising mist, a still pond, with a boat vividly reflected on its calm bosom; and there is something 'witching in Martin's "Lorley" she playing her Irish-looking harp, seated on the summit of the Lorlei-berg, overhanging the Rhine, with a smile full of mischief on her pretty face, and a beautiful unearthly light surrounding her head. Liezenmayer's "Marie-Thérèse naissant l'Enfant d'une Pauvre Malade," her own baby being brought in from the back by his pompous attendant, is interesting as matter of history, and commendable as recording a gracious and humane act; but the rich trail of the brocaded silk on the ground seems to have rather too much of studied display in it. Gabriel Max's "Une

Martyre" is a dreadfully painful picture. A sweet-faced black-haired girl is seen crucified and dead; the rough cross to which she is attached by nails through her delicate hands, still erect, and her head drooped backward against it. Her white robes and Greek-sandalled feet are bound to it by cords; and a handsome young man in Roman dress,—who would seem to be returning from some Bacchanalian feast, from the vine-bough twined across his shoulder and around his waist,—is kneeling before her, looking up pitiingly and lovingly into her face, and laying a garland of roses at her feet. Is he her lover?

A "Madonna," by Müller, of small size, with four attendant angels, is very good; as are also "Le Refus" by Neustätter; Piloty's "Episode avant la Bataille du Weissenberg: un Péro Dominicain exhortant les Soldats," in which the admirable kneeling soldier in the right-front recalls Louis Haghe's best manner; Seitz's "Tableau de Genre," where a Charles I. looking cavalier is playing a violin; Auguste Vischer's characteristic "Dance Nationale de Paysans de la Haute-Bavière," with the light streaming in from large opening in roof; and which picture, if I do not mistake, was shown in London at our International Exhibition; Zimmermann's "Cortège Nuptial," with its half-shy, half-proud bride, and the fussy bundle arranging the procession of gaily-dressed children; and Zwengauer's charming "Crépuscule," with its clear sunset.

Spitzweg has some delicious pictures; among them, "Enfants dans la Montagne," and a small "Paysage," in the latter of which a steep wooden bridge is seen in the foreground, with some figures crossing it, all cutting sharply against a grand thundercloud, that covers and almost conceals the hills, and envelops the village and church in lurid obscurity. "Is he celebrated, Spitzweg?" inquired a Yankee—bent on picture-buying, but evidently mistrusting his own judgment—of the extremely polite and obliging attendant who was kindly showing him round the gallery.

Some few of the Bavarian pictures, I remember, are within the building; and of these I must particularize two or three: to wit, "Dégustation secrète du Vin," by Hobach, where a fat old monk is drawing the wine out of a cask by aid of a small pipe applied to the bung-hole, and is discovered by another, who is coming up behind him; Koekert's "Cortège de Noces sur un Lac dans les Montagnes de la Bavière," in which the wedding party are seen in a very strangely-shaped boat, which is decked with flowers and garlands; and "Le Peintre de Portraits embarrassé," by F. Meyer, of Wismar, wherein the child, brought to have its portrait painted, is roaring and writhing about, and the nurse is shaking a bunch of keys before him, in the vain hope of quieting him; while the poor artist looks on in hopeless perplexity. The plants in the studio, especially a bignonia, and the ivy climbing up and around the door-case, are charmingly put in, and call to remembrance a well-known delightful studio in Munich.

R. F. H.

THE RECONCILIATION OF CLASSES.

THE WORKING MEN'S CLUB AND INSTITUTE UNION.

THE annual meeting of the "Working Men's Club and Institute Union," held on Tuesday (Lord Lytton in the chair), was a very interesting one from the speeches delivered; and it is to be regretted, especially when taking into account the immediate need of better understanding between classes, some of whom will shortly acquire political rights, and between employers and employed, that the importance of the society's operations did not secure a larger attendance.

During the past year the Union has been subject to some misapprehension of its objects. These are related to the chief questions of the day, but only inasmuch as they can be pursued by men of all parties, and alike by the representatives of the interests of capital or labour. The aim of the Union is to secure for working-men places of resort analogous to the clubs of the upper classes, where refreshment for mind and body may be obtained without obligation to defray the cost of the accommodation through the medium of drink, and where, in addition, different agencies for educational improvement, and meetings for discussion of questions of social interest, may be provided for, and quarters afforded for friendly and trades' societies apart from the public-

house, as well as opportunity given for occasional intercourse and interchange of ideas between persons of different classes. It is to be hoped that the misapprehension to which we have alluded, and which is perhaps the unavoidable result of the present state of political and social questions, will not continue. It would not exist after general acquaintance with the scope and operations of the Union, as set forth in its publications.

Very inadequate reports of the meeting on Tuesday last have hitherto appeared. In moving the adoption of the report, the Rev. Main Walrod pointed out (what indeed is felt by the Council of the Union) that working-men had yet in great measure to be induced to take, themselves, interest in the clubs, and generally to withdraw their business-meetings from the public-house. He thought that too great an attempt should not be made to persuade them that they would be so much wiser and better from reading certain books. The Rev. Harry Jones, M.A., dwelt on the necessity of men rising by their own exertions, and upon the importance of its being felt by the working-classes that they were treated in the manner of patronage. The second resolution, which was moved by Mr. R. E. Etkyn, M.P., and seconded by the Hon. Abernethy Herbert in an able speech, was "that in view of the present differences between employers and employed, such institutions as working men's clubs are of the highest value, as tending to bring about a better understanding between those classes." The third resolution was moved by Sir John Bowring, seconded by the Rev. T. W. Fowle, M.A., and supported by Mr. Hodgson Pratt. It was to the effect that the objects of the Society were such as to deserve the "active and cordial support of all persons desirous of improving the social condition of the working-classes." Sir John Bowring said, most impressively, that there never was a time when this movement was of the importance that it was at present, when our whole social position was about to undergo a thorough change. If any duty was pre-emptory, it was that of improving the social condition of the working-classes; and the working-men's clubs afforded an excellent opportunity for gathering all classes together. What was wanted to be done was to raise the many to the level of the few, not to bring down the few to the level of the many; and he believed the clubs would be fit instruments in accomplishing the noble object.

Mr. Hodgson Pratt, in supporting the resolution, observed that the Working Men's Club Movement, like many others of the same kind, arose out of a deep sense of dissatisfaction with the present condition of society. They all felt that it could never have been intended by the Author of the World that there should be so terrible a contrast in the condition of the "upper ten thousand" of the toiling millions around them. This contrast between immense wealth and hopeless misery distinguished this country, he believed, from all other countries. He thought that all persons who had lived much on the Continent would agree with him in thinking that the working classes there had a far greater share of happiness and enjoyment than in England. The fact appeared even in the countenances of the people whom one saw in the streets. The English workmen whom he had recently met in Paris seemed at once to feel the influence of the works of beauty around them, and of the lighter atmosphere. The fact was, that in our climate there was a special cause why our people could not have the enjoyments which were accessible to those who lived abroad; and a special evil like this required special remedies. He dwelt much upon this question of enjoyment, because he believed that God had constituted us for enjoyment, and that unless man had a certain share of it, the moral and spiritual, as well as the intellectual nature, was dwarfed and crippled. The absence of the innocent enjoyment afforded by the glorious forests and mountains of the country or the splendid works of architecture and painting in the great towns of the Continent, was a real evil to the English workman. Our great cities had shut him out from the influences of nature without giving him anything else. As in this climate, and in such towns as ours, he could not have much out-door recreation, it was necessary to consider what access he had to means of enjoyment within doors. Where was it? He had, on the one hand, a crowded, ill-ventilated, and often pestiferous dwelling, perhaps consisting of a single room, or he had the "public-house." The public-house, at present, was too often the working man's only resource. His whole life was bound up with the public-house. If he were a careful man, he must go there for his trade or benefit society; if an industrious man, he must go there for his house of call; if a politician, he must go there for discussion; if he wanted recreation or society, he must go there for it. The temperance advocates and teetotalers did not sufficiently bear this in mind. Until some substitute was provided for the public-house it was an absolute necessity to the working-man's daily life in all its aspects. The temperance movement would have made far more progress if their work had consisted in the positive work of substituting halls or clubs for tap-rooms, instead of merely in the negative work of denouncing the latter. The members of the "Working Men's Club and Institute Union" were doing more for the temperance cause than the teetotalers, and the best thing for the progress of the great cause of temperance was to rally round this movement. Intemperance was the greatest blot on the English character, which made them a by-word abroad, and which, more than anything else, impeded the progress of the

country. The public-houses were societies, not of "mutual instruction," but of "mutual degradation." Every man, therefore, who cared for the progress of this country, should be heartily for the establishment of clubs or halls. Every man who possessed leisure, wealth, or culture, was under a solemn obligation to make these possessions minister to the duties of his poorer countrymen. Property has its duties as well as its rights; and this was applicable not only to wealth but to all possessions, of whatever kind, by which we may help those around us who want these things. It was not necessary to give money to these clubs or halls. Let the upper classes of society offer to those institutions their services, their co-operation, their help in discussion or entertainments; occasionally lend them their works of art, or their books; give their members the opportunity of meeting them on a common ground of goodwill and mutual benefit. These institutions would then become so popular, so crowded, that they might everywhere be established on a large basis, and become self-supporting. Every man should seek to aid in the establishment and successful working of such institutions within his own vicinity; and if this aid were given in a right spirit, it would be gladly accepted. A greater spirit of goodwill between classes—a better knowledge one of the other—was the great necessity of the time. The mutual ignorance of each other's feelings, habits, and opinions, which prevails between the upper and working classes was a source of the greatest danger. Wherever he went he found the most extraordinary misapprehension of the motives and character of one class on the part of the other. Recent political changes in the distribution of power made this ignorance more dangerous. Such institutions as they were met to-day to advocate would enable these classes to meet and know each other better, and to confer a mutual benefit on each other by co-operation and association. With more true brotherhood we should learn better to understand the true Fatherhood of God, who is above us all.

In moving a subsequent resolution, the Rev. R. Allen spoke of the advantage that might be derived on both sides by visits of persons of the upper classes to the clubs; and a resolution expressive of the sense of the meeting of the valuable services of Lord Brougham, was moved by Mr. Fry. A well-deserved vote of thanks to Lord Lytton (moved by Mr. Edward Hall), terminated the proceedings.

The "Working Men's Club and Institute Union" deserves all the support claimed for it at this meeting. It owes by far the larger portion of its success hitherto to the Rev. Henry Solly, who has now resigned the secretaryship. Well-considered arrangements on the part of the Council will be needed to prevent his resignation involving a check to what has hitherto been the progress of the Union.

TRADES' UNION COMMISSION.

In the further evidence of Mr. Mault, of the Master Builders' Association, given before the Royal Commission at Westminster, he went into the question of the restraint of trade exercised by the holding of trades' unions in preventing the introduction and use of machinery. That, done, the witness said, more particularly by the masons, the bricklayers, and the brickmakers. In connection with the masons I may mention the case of the firm of Messrs. Coulter & Harpin, who have invented stone-working machinery which is admirably adapted for the purpose of dressing all manner of hard stone. This machinery they have endeavoured to introduce into various parts of the country, but they have been met everywhere by the fact that the masons forbid the use of machinery for the purpose of dressing stone; and, consequently, though they have had the patent out for some years now, I think they have only sold twenty-six of these machines. Six of them they have sold to Mr. Archibald Neill, a large contractor at Bradford. He employs them at a quarry which he possesses in the neighbourhood of Bradford, but although he keeps these machines going in that quarry, and it is close by Bradford, and the cost of dressing stone by that machinery is very much less than that of dressing it by hand, yet he is not allowed to use any of that worked stone in his own business at Bradford. His stone trade consists altogether, I believe, or very nearly altogether, in the supply of the London market and other markets where the unions have not been able to forbid the use of machine-worked stone. The cost of machine-worked stone is at least 35 per cent. less than the cost of hand-worked stone, and in many cases it is very much superior to hand-worked stone, especially in the case of large stones. The price of the machines varies according to their size. I think Mr. Neill told me that machines of the size that he uses cost him about 120l. each. I know another case of a gentleman at Manchester, named —, who many years ago invented a stone-working machine on a totally different principle from that of Messrs. Coulter & Harpin. I should explain that Messrs. Coulter & Harpin's machine is really a stone-grinding machine. It places stones face to face with other blocks of stone, and the two different faces in two different frames which revolve in different ways and at different rates, and the two surfaces come together and grind each other to a true face. The machine of Mr. —, however, is a chisel-working machine; a lot of chisels are fixed in a frame and they hit the stone and make the chisel, very similar to the stroke that is made by a mason using a chisel, and the stone which is dressed by this machinery looks very like hand-worked stone, only that it is a little more regular. This machine of his he cannot introduce at all; and, in fact, when he took me to see it, he had to take me as if we were a couple of conspirators into a back street of Manchester and locked me in before he could show it to me. It was lying there completely idle, just because the masons in his employment threatened to strike all his work if he used it. To take another branch of the trade, the bricklayers of Manchester refuse to allow machine-made bricks to be used on any work that they have anything to do with; they insist upon having hand-made bricks. At Sheffield they do the same. On the other hand, I can say that the carpenters and joiners, as a rule, never make any trouble whatever about it, but are quite content to allow machinery to be used, and they

never raise any opposition whatever to it. It is simply in connexion with the masons, the bricklayers, and the brickmakers that any trouble is experienced on that point, so far as I know.

In reply to the Earl of Lichfield, the witness said that there was a way of preventing stone from being carried by the are, and he had known masons to refuse work upon buildings where this stone "axed" in the quarry had been introduced upon the premises.

The Earl of Lichfield asked:—"Would you be surprised if you were told that the cost to the employer of putting stone into a building in a particular case had been 5s. 6d. a yard instead of 3s. 3d. a yard, in consequence of his being unable, owing to the rules of the society, to introduce into the building stone which had been prepared by the are in the quarry?" The witness replied, "I should not be at all surprised at that, because I know many instances very similar. I know a contractor at Manchester at the present time who is engaged in a large contract for the Midland Railway Company. His name is Mr. Edward Johnson. In that contract he requires upon walls. Now, the masons of Manchester have a rule allowing Yorkshire stone which is worked upon one side to be brought into their district; but if it is worked on two sides it cannot be brought in, or if it is worked upon the edge it cannot be brought in; they simply allow the stone to be worked on one side, and then it is brought into Manchester, and the Manchester masons are to joint it and work the edge, if the edge requires working, and work the other side if it requires working. Because, under the circumstances, Mr. Johnson cannot get this stone which he requires for coping worked at the quarry in Yorkshire, he calculates that it will cost him 35 per cent. more to put that coping on the wall than it would do if the rule which I have referred to did not exist. I have here another case from Messrs. Grindrod & Harpin, who are contractors at Liverpool. They are at present building a new Catholic church at Barrow-in-Furness, in Lancashire. In the course of the erection they required some moulded circular limestone bases or pilasters, to the number of sixteen. The stone was ordered direct from the quarries to the works to be worked there. On the foreman learning this he interceded and expressed a wish that the bases should be worked at the contractor's yard in Liverpool, giving the following reasons, namely, the workmen not having the kind of tools required to work the peculiar kind of limestone, would object to the outlay of say 10s. or 12s. a week or ten days' work, and it was probable that they would not require them again, as the limestone referred to is rarely employed in that district. The foreman's recommendation was taken, and the order was given for the stone to be sent to Liverpool, and there worked by members of the operative masons' society, who are paid a higher rate than the members at Barrow are. The bases were sent to Barrow and they lay on works two or three weeks before they were fixed upon the walls, and at the moment they had been fixed the masons found out that one of their local rules had been infringed upon; a general meeting of the masons in the town was called on the subject, and the enclosed resolution was agreed upon. This is the actual letter that the masons sent:—"Bowling Green Inn, Greengate, Barrow-in-Furness, November 26th, 1866. Sir,—I am directed by the Barrow Lodge of Operative Stonemasons to inform you that sending worked stone into Barrow is a direct violation of their local code of rules. According to a resolution passed here to-night, you are requested to return the stone sent to the chapel here over again (viz., the pilasters). They have allowed you till Monday next, December 3, to commence the same. On behalf of the members of the Barrow Lodge, I remain, yours respectfully, William Gaudie." On the receipt of the resolution, Liverpool, one of the firm immediately proceeded to Barrow, and there met a deputation of the workmen. They were told that working them over again was an impossibility; that by so doing they would interfere with the architects' designs, which would not be within the province of the contractors. A design, which would not be within the province of the contractors, would not be within the province of the contractors. They agreed to waive the point, but insisted on being time to lock to work them being occupied again in that proportion, as it involved the contractors not to listen to that proposition, as it involved the contractors not to listen to that proposition. The deputation were then withdrawing, saying that they had no further instructions in the matter, and intimating that a stone could be the consequence. The contractors, in view of which, could be proposed to allow them to be relied on the walls. The deputation promised to lay it before a meeting of the members, when it was ultimately agreed that the matter rest, on the consideration that the bases were taken from their beds and refixed, and that the contractors would promise not to introduce any worked or dressed stone into Barrow again. That statement is signed by Messrs. Grindrod & Hargreaves.

RATTENING AND RIBBANDING IN SHEFFIELD.

The disclosures made under the Sheffield Trades Union Commission are just what we expected. Of the complicity of the union officials there remains not a shadow of a doubt, notwithstanding their indignant protests against the implication that they must know more and do more in the matter than appeared in the villainous transactions which have made Sheffield a disgrace and a reproach to the whole country. And as if in defiance of commission, Parliament, and public, rattenning is going on, at the very time that these exposures are being made, and that one of those who refused to give information regarding a murderous outrage in which he admitted he was engaged, has been sent to the House of Correction for six weeks, and where his employers ought to be sent for a much longer period, with the cat-o'-nine-tails to make acquaintance with.

Strange to say, it is not directly against the masters, nor for the purpose of raising wages, or lowering time, that the rascally practices of the Sheffield unionists are mainly concocted, but for

the purpose of compelling unionists themselves as well as non-unionists, to pay subscriptions to the worthies who instigate the whole of this devil's work; although it is true that the masters are thus compelled in turn to pay union subscriptions and arrears, in order to be allowed to carry on their business; and masters are also obliged to pay black-mail, in order to protect the unionists from "the tyranny of their employers!" From the infamous tyranny of the unions, it is full time the Legislature set to work to free Sheffield. They are a disgrace to unionists of all classes; and we feel certain, that whatever faults other unions may have, they will be glad to learn that the Sheffield reproach against them as a class no longer exists.

ARCHAEOLOGICAL MEETINGS AND EXCURSIONS.

THE societies of the Archæological of Northampton and the counties of Bedford and Leicestershire, assembled on Tuesday in the week before last, in union, at Kettering. The attendance of members was large, but the uncomfortable state of the weather at the beginning of the week kept great numbers away. However, the congress altogether was regarded as a success.

After the transaction of some official business, and a visit to Kettering church, where divine service was held, a description of the church was given by the Rev. G. A. Poole, vicar of Welford. A public meeting was afterwards held at the Corn Exchange, the rector of Kettering in the chair, when a paper titled "Some Notices of an antiquarian Bishop of Peterborough," namely, Dr. Kennett, was read by the Rev. W. L. Collins, vicar of Kilsby. The meeting then broke up, and proceeded to examine a temporary museum collected for the occasion. The company then started on an excursion to Rushton Hall and the Triangular Lodge, Geddingdon and its cross and church; and in the evening partook of dinner at Kettering, and held a crowded evening meeting at the Corn Exchange, Archæological Trollope in the chair, when the Rev. H. Lindsay read a paper "On the History of Kettering," and the Rev. G. A. Poole one "On Aesthetics." Archæological Trollope described some of the chief objects of interest exhibited in the room.

On Wednesday another excursion was made to Barton Seagrave, Burton Latimer, Finedon, Irthlingborough, Higham Ferrers, Stanwick, Raunds, Ringstead, Woodford, and Cranford.

In course of the excursions through the district noted for "spires and aquirs," various of the churches and other places visited were described by the Rev. G. A. Poole and Archæological Trollope; and the Rev. H. Ward read a paper at Rushton "On the well-known Triangular Lodge."

"This building," said Mr. Ward, "was evidently designed to symbolise the Trinity. Almost every feature bears on the number three. The form is triangular, as denoting the three Persons, and in reference to the equality of the Godhead in the Trinity all the triangles are equilateral; next, each side of the building measures 33 ft. 3 in.; then the height of the parapet (25 ft. 7 in.), is exactly that which the apex of a triangle would reach with equal sides of 33 ft. 3 in. I have little doubt, also, if it could have ascertained the height of the centre pinnacle, that it would just be comprised within a triangle of exactly the same size, if lines were drawn from the corners of the building to it. Again, the building is of three stories, and there are three windows in each story on each of the three sides, and each of these windows has divisions of compartments of three. The shields of arms are arranged on each side in twice three couplets in three lines. Another point I stumbled on, is that, each of the long Latin inscriptions consists of thirty-three letters, and the single words below them are three sets of two letters on each face of the building. The very name of Treham (or, as I believe it should be pronounced, Treham) has a sound of three about it. The arms are made up of trifolds, arranged in threes. It is very probable that his name and arms may have given to such a strange mind as that of Sir Thomas a bias in favour of this doctrine; but that his purpose in the building was that which we have ascribed to him may be proved, I think, by his adoption of the Latin text over the door, 'There are three that bear witness.'"

Mr. Jardine, the author of "The History of the Gunpowder Plot," says, in a letter as to this building,

"It may be interesting to the believers in modern miracles to learn that, at all events, 'rapping' is no new thing. I now send you an account of an incident in the sixteenth century which bears a strong resemblance to some of those veracious narrations which have endeavored mankind in the nineteenth century. Rushton Hall, near Kettering, in Northamptonshire, was long the residence of the ancient and distinguished family of the Trehams. In the reign of Queen Elizabeth the house was occupied by Sir Thomas Treham, who was a pedant and a fanatic; but who was, in his private character in his time by reason of his great wealth and powerful connexions. There is a lodge at Rushton, situate about half a mile from the Old Hall, now in ruins,

but covered all over, within and without, with emblems of the Trinity. This lodge is known to have been built by Sir Thomas Tresham, but his precise motive for selecting this mode of illustrating his favourite doctrine was unknown until it appeared from a letter written by himself, about the year 1654, and discovered in a bundle of books and papers, enclosed since 1608 in a well in the old manor, and brought to light about twenty years ago. The following relation of a "rapping" or "knocking" is extracted from this letter:—"If it be demanded why I labour so much in the Trinity and Passion of Christ to depict in this chamber, this is the principal instance thereof; that, as my last being hither committed [this refers to his commitments to prison for recusancy, which had been frequent], and I usually having my servants here allowed me, to read nightly an hour to me after supper, it fortuned that Fulcis, my then servant, reading in "The Christian Revolution" in the treatise of "Proof that there is a God, &c." there was upon a wainscot table, at that instant, three loud knocks (as it had been with an iron hammer) given to the great amazement of me, and my two servants, Fulcis and Niklton."

LIVERPOOL.

THE valuable collection of antiquities presented to the town of Liverpool by Mr. Joseph Mayer has been formally opened at the Free Public Library and Museum, William Brown-street. The collection has been arranged by Mr. H. Ercoyd Smith and assistants, under the personal supervision of Mr. Mayer. The Gallery of Science and Invention is set apart for the collection, which appears of a far larger character than when it was housed in the Egyptian Museum, Colquitt-street. Nearly 16,000 Whitson holiday folk passed through the rooms during the day of opening, being the greatest number ever registered.

We may mention that the learned societies of the town have resolved to mark their sense of the importance of the gift by requesting the donor to sit for his portrait, which when completed shall be deposited with those of other worthies of the town in the Royal Institution. Mr. Mayer has acceded to the request.

The town council have resolved,—"That in commemoration of the eminent services to the nation of the Right Hon. the Earl of Derby, during a long and distinguished public career, and also as a memorial of the presentation of the Derby Museum to the town of Liverpool, a portrait statue of the earl be erected in St. George's Hall."

The recorder has suggested the erection of a cathedral in Liverpool, and the suggestion has elicited offers of money.

FROM SCOTLAND.

Fall of a Railway Bridge at Dalkeith.—The Victoria Bridge, on the Ormiston and Monkton-hill branch of the North British Railway, has come down, killing one man, and seriously injuring three others. Four labourers were pulling a wagon laden with stones across the bridge, when the woodwork suddenly gave way. Men, wagon, and stones were precipitated to the ground, a distance of 80 ft. The wood-work of the bridge is said to be in a very decayed and inefficient state, having been in use for about twenty-eight years.

The Pinielheugh Monument, Roxburghshire.—In the Vale of Teviot, and commanding an extensive view of the district, stands the monument erected by the late Marquis of Lothian and his tenantry, "to the Duke of Wellington and the British Army." It is situated on a hill named Pinielheugh, about 774 ft. above the level of the sea. The monument itself is cylindrical in form, and 150 ft. in height. It was intended by the late marquis to be a commemoration of the valour and endurance of the British army in its crowning victory of Waterloo. Either through faulty design or faulty construction the first erection proved a failure: it was built a solid column, and fell when nearly finished. The second erection was on another plan, and built with a spiral staircase running up the inside. Up till this time the monument has not been finished. The present marquis has resolved to have this carried out; and, according to a plan supplied by Mr. Pollon, architect, London, Messrs. Herbertson & Sons, builders, Galashiels, have got instructions to proceed with the work. The monument is to be surmounted by a gallery, protected by balustrades, all of wood, a lead roof, and a spire and vane. The gallery and spire are 37 ft. in height, making the monument, when completed, 187 ft. in all. The entire fabric is being made and temporarily put up in the contractors' yard at Galashiels.

Memorial of the late Miss Catherine Sinclair.—A monument to the memory of the late Miss Catherine Sinclair, who, by her many philanthropic deeds, won a high place in the affection of a large section of the citizens of Edinburgh, is being erected on a vacant plot of ground at the junction of North Charlotte-street, with St. Colme-street. The monument is in the form of a carved gothic cross, in freestone, somewhat similar in character to the Eleanor crosses. On a broad platform of stone, 2½ ft. in height, rests the base proper of the cross, consisting of a series of three steps, each 2 ft. in height. The plan of the monument is hexagonal, with buttresses at the angles, and the total height will be 60 ft. Above the base the structure is divided into three stages, in the two lower of which the sides are finished with arched recesses, surmounted by pediments, and otherwise ornamented. The upper stage consists of a crocketed pyramidal spire. The memorial is being built from designs by Mr. David Bryce, R.S.A. The cost is to be defrayed by a public subscription, which has already been raised. Mr. Rhind, sculptor, is the contractor for the erection of the memorial.

ART-DINNER AT THE MANSION HOUSE.

THE Lord Mayor, Gabriel, distinguished his mayoralty by a dinner on Wednesday evening last, in honour of the arts of the country, given to the members of the Royal Academy, and to meet whom a large number of men, for the most part distinguished, were invited and were present. The Duke of Cambridge was kept away at the last moment by an attack of gout. The Lord Mayor spoke fluently and to the point, touching admirably each toast. Lord Stanley, the Archbishop of York, Lord Elcho, Sir Francis Grant, P.R.A., Sir Rodrick Murchison, and Mr. Tom Taylor also spoke; as did M. Gallait, the eminent Belgian painter, as representing foreign art. The Corporation should play their part in the memories of the day by commissioning some of our best artists to remove the stigma of the fact that the Mansion House does not contain a single picture. The Egyptian Hall itself greatly needs colour.

THE BIRMINGHAM ART GALLERIES.

THE Birmingham Art Galleries Association has been completely formed. A committee and officers have been appointed, and their names, it is believed, will be a sufficient guarantee that the important interests which it is the object of the Association to advance have been entrusted to able and impartial hands. It meets with the local public to support this institution, in proportion to its local and national importance; and it is to be hoped that the corporation will act with it, so as to render its operations effective and successful on a large scale. The formation of art-galleries throughout the country is a highly important desideratum, which may either be advanced or hindered to a great extent by the result of the present attempt to establish one at Birmingham. The acquisition of pictures for the art-gallery is of course one important object of the society, but it is to be hoped it will be distinctly understood from the first that it is not the only important one. Articles of art-manufacture ought to be obtained, with a view to improving the taste of the artisans and manufacturers, and to advance the cause of art generally among the many.

BOROUGH SURVEYORS AND PRIVATE PRACTICE.

NORTHERN ARCHITECTURAL ASSOCIATION.

A SPECIAL meeting of the members of this Association was held at the Old Castle, Newcastle-on-Tyne, on the 12th inst., under the presidency of Mr. John Johnstone, vice-president, "to consider the propriety of sending a deputation to confer with the committee of the town council respecting borough surveyors accepting private practice." It had been thought desirable that the attention of the committee should be called to the fact of the corporation surveyor and assistants preparing plans, with detriment to the public service.

Mr. Thompson said he would move that a small committee of the members of the Association should be formed to wait upon the com-

mittee appointed by the corporation, to state their views. He thought that it was certainly not desirable that any official—no matter how low his status—should have any private practice.

Mr. Oliver remarked that that was, he believed, the unanimous opinion of the members of the Association.

Mr. Thompson said that Mr. Bryson was looking after a house at Riding Mill some time ago, and told him that he was forced to take such work. He (Mr. Bryson) said to him (Mr. Thompson), "Do you know what salary I have?" and he guessed 200l. Mr. Bryson said, "Only 100l." Shortly after that, he believed, Mr. Bryson had his remuneration increased to 150l., and it was understood that all private practice should be put on one side. He (Mr. Thompson) was, however, astonished to find that he had been employed to check the plans in competition at Gateshead, and considered that the position which he had taken would lay him open to remark.

After discussion it was resolved, "That a memorial should be drawn up and presented by a small committee, that committee consisting of Mr. John Johnstone, Mr. A. M. Dunn, Mr. Matthew Thompson, Mr. Septimus Oswald, and Mr. Oliver, the secretary, to wait upon the committee appointed by the town council of Newcastle, to inquire into the salaries and duties of the corporate officials, for the purpose of presenting a memorial respecting the custom and propriety of borough surveyors undertaking private practice."

PROVINCIAL NEWS.

Leeds.—Messrs. Beckett & Co.'s new banking premises in Park-row the foundation-stone of which was laid on the 19th of August 1863, and which, therefore, has been upwards of three years erecting, is now completed, and opened for business purposes. The new building forms the junction of Park-row and Bond-street, opposite the Philosophical Hall. The style of architecture adopted is Early English. The building is constructed of red brick, and the outside facing bricks have been procured from Mr. Robert Bond, of Thirsk, who made them expressly to the dimensions decided upon by the architects. These bricks are very thin, of a peculiar and pleasant red colour, and smooth-faced. They have the appearance of being polished, and are laid in dark-coloured mortar, carefully jointed. To relieve the brickwork a proportion of stone has been introduced, the string-mouldings, base-course, capitals to the shafts of the windows and doors, a portion of the parapet, and other portions of the building have been executed in this material, the major part of which has been procured from Mr. Walker's quarry, Mount St. Michael, about ten miles beyond Halifax, and is said to be most durable and hard of its kind. The front of the building in Park-row is broken into three parts, the ends projecting as wings, and the centre receding therefrom. This front contains the public entrance to the bank, which consists of a projecting porch, with brick-vaulted roof. The Bond-street front is one unbroken line. The front to Basinghall-street is formed of two wings, with a screen wall between, inclosing a courtyard, which gives the private access to the bank. The north side of the building contains a dwelling-house for the resident cashier, and one for the porter. The building has been designed and erected under the superintendence of Mr. G. G. Scott, and Messrs. Perkin & Son, architects. Mr. John Kaberry was the clerk of the works, and under his direction the works have been carried out by the following contractors, viz.:—Mason, bricklayer, carpenter, and joiner's work, Mr. T. Whiteley; plastering, Mr. Proctor Mountain; plumber and glazier's work, Mr. John Hall; slater's work, Mr. Samuel Croft; painter's work, Mr. F. Jackson; foundry work and hot-water apparatus, Messrs. Nelson & Sons; carver's work, Messrs. Farmer & Brindley, of London; gasfittings, Messrs. Skidmore, Coventry; encaustic tile work, Messrs. Minton & Co.'s granite and marble work, Messrs. Dennis Lee & Welsh.

Ringwood.—The foundation-stone of a new building, intended to be used as a corn exchange and town-hall, has been laid in Ringwood by Mrs. Morant, of Brokenhurst Park. The site selected for the building is on the left-hand side of the High-street, a short distance beyond the old town-hall. The entire depth of the new building will be 108 ft. 6 in., and of this, at the



ST. GEORGE'S CHURCH, WORTHING, SUSSEX.—MR. GEORGE TRUEFITT, ARCHITECT.

rear, the room to be devoted to the purposes of a corn exchange will be 72 ft. long and 37 ft. 6 in. wide. The corn exchange will be on the ground floor, and will be lighted on either side. The front to the High-street will be three stories high, and will probably be let off as business offices.

WORTHING.

ST. GEORGE'S CHURCH.

SINCE our last account of this pleasant watering place much has been done. A new esplanade has been formed, at least 50 ft. wide, extending along the whole frontage from east to west. In order to form this, new groynes have been constructed. The natives say these are not carried out sufficiently far into the sea, but are too steep, and will have to be altered, or, at least, some of them; also that the planking ought not to have been fixed except by degrees as beach is collected: but we leave these points to be settled by the storms, and congratulate the town for their fine new promenade. There is one thing, however, which can easily be altered, and should at once be attended to. The esplanade is covered with a thickness of about an inch of small stones, which no rolling can drive into the gravel and marl below. The greater part of these should be taken off, and only sufficient left to bind in with the gravel, as

at West Worthing. The members of the Board of Health at present walk on the pavement on the other side of the road. If they at once make this alteration, they and the visitors who are fast going to Worthing will be able properly to use this new walk.

In South-street large houses are being erected for shops, and in all parts building is going on.

At East Worthing the land has been selling well, and villas of a good class are being erected, and sold or let before finished. Here the new church of St. George, of which we give an engraving, is being built by Mr. Longhurst, from the designs of Mr. George Truefitt. The first stone was laid by the Lord Bishop of Winchester a short time since. The walls are now up 6 ft. all round. The materials are brick-faced with Bargate rag and Bath stone windows and dressings. The walls are double, having a 9 in. space between the outer and inner shell. The roof will be open boarded and tiled, the span being 40 ft. The present contract includes nave and chancel, with paving, &c. The cost of the building, when finished, including tower and spire, is not to exceed 5,000l.

At West Worthing the directors have laid down groynes, and continued their esplanade so far that it is now called the "Ladies' Mile." They have also formed a fine road by the side of the esplanade. Here they are also forming good roads inland, to open up their property. At the east end of Worthing is a large house with a

high wall round it, belonging to Lady Rose. Cannot this lady be prevailed upon to allow the town to carry their esplanade and road in front of her property? and East Worthing would then continue on. There would then be a fine promenade and carriage-drive two miles in length, without a break or interruption of any kind. It is to be hoped this suggestion will be carried out, and one of these days will be seen the Worthing and Brighton Esplanade joining at Shoreham.

REREDOS, BOXGROVE CHURCH, NEAR CHICHESTER.

THE reredos, represented by our engraving, Early English in style, has lately been added to the church at Boxgrove, near Chichester, at the cost of the Duke of Richmond. The work is in Caen stone, the columns or shafts being of Purbeck marble. It is 10 ft. wide, by 8 ft. 6 in. in height, that is to say, from the top of the altar table. The width is divided into three bays, richly canopied and finialled. At the springing of each of these canopies is an angel bearing a shield. The wings are slightly opened or spread. Under the canopies appear three subjects in *alto relievo* viz., the centre, the Crucifixion; the left, the Ascension; and the right, the Resurrection. Mr. W. Farmer has executed the work. Mr. G. G. Scott was the architect.



REHODOS, BOXGROVE CHURCH, NEAR CHICHESTER, SUSSEX.—Mr. G. G. SCOTT, ARCHITECT.—Mr. FARNER, SCULPTOR.

EASTBOURNE SEWERAGE.

WE mentioned recently the completion of this work from the designs of Mr. McClean, C.E., and under the superintendence of Mr. G. A. Wallis, C.E., resident engineer. Eastbourne lies in a bay formed by Beachy Head and Langley Point, on the west shore of Pevensey Bay. Beachy Head is of chalk, but Langley Point consists of shingle of an unknown depth. Some time since the people of Eastbourne determined to get rid of their sewage effectually. To this end about 10,000*l.* were raised, but the Duke of Devonshire, on whose property Eastbourne is built, on consultation with Mr. McClean, found that the sum was not sufficient to really secure the object in view, and he added from his own purse a further sum of 25,000*l.* Mr. McClean, satisfied that so long as the outfall was situated anywhere near the bottom of the bay, the sewage must return to the town in a more or less diluted form, determined to place it at Langley Point, where the run of tide would effectually dispose of all objectionable matters; and the necessary works were commenced about two years ago and completed about three weeks since. Three miles intervene between Eastbourne and Langley Point, almost the entire distance being single beds of enormous depth. Through this material an excavation was made, in many places 25 ft. deep. Into the bottom of the excavation cap piles were driven, and on these rests a cast-iron main, 3 ft. in diameter, and over three miles long. The outfall is 160 ft. lower than Eastbourne, so that no difficulty will be experienced in flushing the main and keeping it clear. It is a sad waste to throw into the sea valuable manure the land is in want of, but the authorities feared to try experiments. They might have felt strengthened by the example of Worthing, also a watering-place depending on its reputation for salubrity.

OPERA AND STAGE.

Royal Italian Opera.—"Don Carlos" is produced with all the care and completeness that are ordinarily bestowed by the management of this theatre, and its merits as a musical work have been admitted more unreservedly in London than they were in Paris. The story is interesting, but its unqualified sadness is an objection, and has probably prevented the display of the light and sparkling writing to be found in other of Verdi's works. It includes, nevertheless, some as fine music as the composer has ever produced; and, set forth as it is by Mdle. Lucas, Mdle. Fricot, Signor Graziani, and Signor Naudin, the result must be pronounced a great success. There is less local colour given by the scenery than might have been the case, considering how well known now Spanish buildings are. Nevertheless, the principal scene, "a large square in front of Notre Donna d'Atochâ," is a fine piece of colour, and the procession and grouping enforce the greatest admiration. Gonnod's last work, founded on our "Romeo and Juliet," is in continuous rehearsal, and will shortly be produced.

Princess's Theatre.—Mr. Slous, the committee of the Dramatic College, and Mr. Vining must all be satisfied with the warm reception that is given here to the prize play, "True to the Core." Its success is even greater than was the case at the Surrey, where it was first produced, though the principal parts are played by the same performers, Mr. Creswick, Mr. Henry Marston, and Miss Pouncefort. The pedlar is now personated by Mr. Forrester, instead of Mr. Shepherd, and with advantage, and Miss Nellie Moore acts *Truegold's* wife with great taste and feeling. The spectacle, too, is improved, and Mr. F. Loyds has been able to show his now well-known skill in a new scene, representing the Eddystone with the remnant of the wrecked crew, of remarkable beauty. A gorgeous sunset, the rising of the tide, and the approach of the boat to save them, are capably managed, and, added to the strength of the dramatic situation, and the good acting of the performers, who are nearer to the audience and better heard than they were at the Surrey, brought down the curtain on the first night with a perfect hurricane of applause. The College has good reason to be thankful to Mr. Angiolio Slous.

Re-opening of the Swansea Theatre.—Considerable alterations and improvements have been made in this theatre, under the direction of Mr. Phipps, architect, by Messrs. Thomas, Watkins, & Jenkins. The whole floor of the

stage and pit has been lowered 5 ft., the latter taken under the boxes, the proscenium removed 6 ft. further back, thus adding considerably to the size of the house. The pit, which only held about 100 persons, now accommodates 350, and is approached from a separate entrance; while the gallery-entrance is removed to Goat-street. In the lines of the box front also the character of a new theatre has been given; there is one sweep with a curve to the curtain-line, the plan being very much that of an egg with one-third cut off, which forms the proscenium-opening. In the sides formed by the extension are commodious private boxes, each holding eight persons. The dimensions are as follows:—From curtain-line to front of boxes, 30 ft.; ditto to the back-wall of pit, 36 ft. 6 in.; width between boxes, 22 ft. 6 in.; ditto enclosing walls of pit, 32 ft.; height of pit-floor to ceiling, 27 ft. in centre; width of proscenium-opening, 18 ft.; height to top of arch, 22 ft. 9 in. Under the whole extent of the pit, approached from the floor under stage, are dressing-rooms. A new stage has been laid down, and new grooves erected, the scenery being now 17 ft. high, instead of 13 ft., as heretofore. The decorations have been executed at Bristol by Mr. George Gordon, the artist at the theatre in that city.

THE DERBY BOROUGH SURVEYOR AND THE LOCAL ARCHITECTS.

THE local architects and surveyors have been unpleasantly excited by the announcement of a resolution of the corporation to allow their surveyor to combine private practice with the public duties; and a deputation of these gentlemen, consisting of Mr. H. I. Stevens, Mr. Giles, Mr. Brookhouse, Mr. B. Wilson, Mr. Sheffield, and Mr. R. Elliott, has waited upon the mayor at the town-hall, for the purpose of presenting him with a memorial on the subject, in which they protest against the resolution of the corporation, in the interest both of the architects and surveyors, and of the ratepayers, and the public at large. They point out that the surveyor (Mr. Thompson) has already a subsidy from the ratepayers equal to 400*l.* per annum, viz., 330*l.* for himself and his assistant, and 76*l.* for office expenses, enabling him to compete with them at a great advantage, and that every plan made for new buildings or alterations, either great or small, must necessarily pass under the supervision of the borough surveyor, and that it is not unreasonable to suppose that many persons, if at liberty to do so, might and would avail themselves of the surveyor's services, as saving trouble and uncertainty. It was also held to be next to impossible for the surveyor to have divided duties without injury to either the public or his own clients, and delegation of his work to an office clerk would be the rule instead of the exception. The works in the town, it was urged, are far from being numerous, and cannot partially be diverted from the resident profession without serious consequences. Further, that it is most essential that the borough surveyor should be on friendly terms with the resident profession.

The memorial is signed by Messrs. Stevens & Robinson, Giles & Brookhouse, Benjamin Wilson, and G. H. Sheffield.

In the conversation which took place on presentation of the memorial, Mr. Giles said he considered that it would be a great disadvantage to the ratepayers if the surveyor were permitted to have a private office, and be continually absent from the offices of the Board. It was also manifestly unfair to the memorialists as architects that they should be compelled to submit their drawings for inspection in the office of one who was competing with them.

The Mayor said Mr. Tarbotton had several times asked the Nottingham Corporation to be allowed private practice. They did not grant it, but raised his salary until it got to 400*l.*, when he came forward again, and said he must have another advance, which they declined to give, but allowed him private practice. Now, the Derby Corporation did not want to fall into the same error as the Nottingham Corporation. Mr. H. I. Stevens was at the meeting when the resolution was passed, and ably represented the architects. He was also ably replied to by Mr. Alderman Barber, and so satisfied were the Board that they carried the resolution unanimously. Mr. H. I. Stevens said he did not vote, and it seemed to him to be a foregone conclusion. He had been informed that Mr. Thompson would be glad to accept an addition to his salary, as he feels that by the resolution of the Board he

has been placed in a peculiar position. After some further remarks, the Town Clerk said it would be invidious on the part of the Mayor to summon a meeting of the Board; but if his worship received a requisition signed by five members, he could then summon a special meeting.

The deputation said they would get the necessary requisition signed.

TABLET TO THE LATE GEORGE LORIMER, THE LORD DEAN OF GUILD OF THE CITY OF EDINBURGH.

A TABLET of Sicilian marble has just been erected in the vestibule of St. Giles's Cathedral, in memory of this deeply regretted Lord Dean of Guild of Edinburgh, who it will be remembered at the destruction of the Theatre Royal was killed by the falling of a portion of the wall while attempting to rescue some of the workmen from death.

The monument is in the Italian style, and is supported by a winged angel springing from a background of Binny stone, the outline of which enhances the effect of the carved marble. Above the angel is the monogram G. L., surrounded by a laurel wreath, and surmounted by a cornice and circular pediment; the pediment enriched with a clam shell, and broken up with scroll ornaments.

The following is the inscription on the tablet:—

"In memory of George Lorimer, the Lord Dean of Guild of the City of Edinburgh, who lost his life seeking to save the lives of others during the destruction by fire of the Theatre Royal, 13th January, 1865. Erected by a number of his fellow-citizens."

The work was designed by Mr. David Bryce, jun., architect, and the marble sculptured by Mr. J. T. Amesty, successor to the late John Thomas, of London.

RESTORATION: ARCHITECTS' ASSISTANTS.

SIR,—It appears evident to those who believe the testimony of the past that he who would successfully advocate reform and amendments must have a clear perception of the evils he attacks, and also see how they may be practically remedied.

Your correspondent "C. B. A.," in his article headed "The Cloisters," seems deficient in this respect, though in his remarks on destroying old work he is right enough. Yet, in speaking of restorations, it is necessary to distinguish between what is for use and what not; in the latter, the best thing is to leave them alone, but when (as in the case of churches) they are in use, safety and comfort must be secured, and want of increased accommodation renders considerable alteration necessary. It would be well in many instances if the ancient edifices could stand and new ones be erected, but economy argues against this means of keeping our fast lessening examples of the past.

The idea many have of restoration is absurd: a few weeks ago at Winchester Cathedral, while looking at the remains of an ancient wall painting, a gentleman said it wanted "restoring and touching up,"—truly, an obliteration that the whole wash-pail and mop of the last century fail to effect.

The reference to assistants in the article mentioned appears very vague. It is certain that an architect with any amount of practice must have assistants; it is also certain that a man of skill can direct, arrange, and diffuse his ideas into designs which time would prevent his drawing.

We must not expect more than our meed of praise; the assistant may have a local and temporary fame, the architect may be known in his day and generation; but the country where they dwell, and the age in which they lived, shall reap the honour of all that is splendid in art and sound in construction when their names shall have passed away for ever.

The inference that many will draw is that all who display skill should attempt to practise for themselves. This is impossible; many who can act successfully as assistants would be unfit for the responsibility (too little thought of) incurred by those who undertake to carry out that which requires great judgment and experience, and who would swell the number, perhaps two-thirds, of those who bear the name of architects, that barely exist, though agents for coal, land insurance, &c., into the bargain, and whose amount of

practice any one may guess who has had to call at the third-floor office and disturb the drowsy pupil, sole representative and embryo of a future nondescript.

The comparison between wages is indefinite, as "mere mechanics" often deservedly earn large amounts. It is invitations, as many are men of great skill; perhaps the plentiful supply of assistants may account for the fact that their wages are low.

The term "art-architect" is objectionable; if a man can only design an artistic group without understanding the means of construction, he is merely an artist; if, with the skill of a "mere mechanic" he can also foresee the details, he is surely worthy the name of architect. If "C.B.A." has had the misery of using a set of drawings supplied by an art-architect, and seen the perplexity that the simple question of an intelligent workman concerning some very "foggy" point has occasioned, he would not perpetuate such a misnomer.

T. H.

BEDFORD MIDDLE-CLASS SCHOOL COMPETITION.

SIR,—I should be much obliged if you would insert this, with the enclosed correspondence, in your next issue. You will see from the letter of Messrs. Medland & Baker that I had reason to believe that this correspondence would have been inserted by them last week.*

As this was not done, and as I feel that some explanation ought to be made to the directors of the Beds Middle-class School have preserved up to this time, and that the real facts of the case referred to ought to be made known, I trouble you with this request.

In order to complete my statement of facts, I may perhaps add that, since my letter to Messrs. Medland & Baker, the directors have come to a final decision in favour of Mr. Peck.

JUNE 3rd, 1867.

Mr. Lord.—We beg to call your attention to the enclosed letter which appeared in the *Builder* of June 2nd, which contains serious charges of unfair dealing in the decision which your lordship and your colleagues arrived at in selecting Mr. Peck's design from among the thirty which were sent in competition for the Bedford Middle-class School.

We feel that such statements as those contained in the enclosed letter should not remain unanswered, either in justice to ourselves as competing architects or to yourself and the other members of the Building Committee, and we therefore ask the favour of a letter from your lordship answering these statements, and also permission to publish your letter with our own in the next issue of the *Builder*.

To the Right Hon. the Earl Cowper.

Panshanger, Hertford, June 5th.

GENTLEMEN,—I beg to acknowledge the receipt of your letter of the 3rd, enclosing an extract from the *Builder*.

The plans of the different competing architects, thirty-three in number, were all placed without distinction in the same room. The Directors, finding that it would be inconvenient for so large a number of men to go through the work of selection, appointed a committee of five persons for that purpose.

The Committee of Selection, after careful consideration, chose four plans for recommendation to the Directors.

The sealed papers of these four being opened, and the names made known, the Directors ultimately decided that those of Mr. Peck and Mr. Usher were the best, and have since been occupied in making further investigation in order to come to a final decision on the subject.

I have, at your request, laid before you the conduct of the Directors as far as it bears upon the subject of your letter; but I shall altogether refrain from making any comment whatever upon the unfounded reports which have been circulated against us.

I regret that my only having returned from Paris last night prevented me from answering your letter in time for our correspondence to appear in the *Builder* of this week.

To Messrs. Medland & Baker.

COWPER.

ARTESIAN WELLS FOR LONDON.

SIR,—The accident occurring at the source of the Vaux Water-works causing the rupture of the pipes, as well as a cessation of the water-supply to the inhabitants of Dublin, proves the necessity of not being dependent upon one supply of water alone for a want of such magnitude.

Instead of tapping a Scottish, Cumberland or Westmoreland, or Welsh lake, and carrying its contents to London, a distance of a great many miles, through a diversity of hill and dale, and a numerous amount of proprietors, all claiming large remuneration for wayleave and damaged property, I propose, as a method of greater economy and utility, to sink a number of artesian wells, in suitable situations, in the immediate vicinity of the several railways communicating with London, and on their level road convey the water-pipes from these several artesian wells, paying wayleave to the railway company over whose lines the aqueduct-pipes are laid. It would be a more simple and cheaper plan to enter into an agreement for right-of-way leave for water-pipes with these railway companies than with the innumerable legion of landowners between the great lakes and London. It would be

profitable to the shareholders in these companies in proportionate payment for wayleave. As the demand for water increased more artesian-wells could be sunk.

Any person who has acquired any information on the subject of sinking or boring for artesian wells must be aware that when the borer taps the different strata containing springs an enormous amount of water is liberated and rushes to the surface in vast continuous quantity, creating in the subterranean to the surface the greatest utility, and expense in mining operations. It is from this immense supply of subterranean water in diverse localities that I propose to carry, on railway level, water to London.

In Essex, artesian wells have been bored with the greatest facility, at small expense; at Braintree, Wallasea, Mersea, and in the district of Bullhamphes, seven miles from Brentwood, these wells yield a large supply of water, and have proved of the greatest utility; formerly, in some seasons, the ditches became dry, the cattle suffered and died, but by the aid of artesian wells the ditches are now kept full all the year of fresh, sweet water. An artesian well is a well that is always overflowing, either from its natural source or from an artificial tube, and when the overflowing ceases it is no longer an artesian well. Near Stifford, in Shropshire, an artesian well, discharging from 12 in. to 7 in. in diameter, and at a total depth of 280 ft., yields a continuous supply of 210,000 gallons daily; at Grenelle (Paris), an artesian well has for many years given out a jet of 3,000 cubic metres of water every hour, being sufficient supply for that district of Paris; but at Kissenengen, an artesian well yields 100 cubic ft. of water per minute, with a jet of 76 ft. high and 15 in. in circumference.

I do not think that the chalk or green and strata will either of them yield sufficient water-supply to repay the expense of boring and leading, but our great lines of railways from London must pass through several limestone districts, and these, particularly in the vicinity of rivers, would fill artesian wells with an abundant supply of water to be conveyed on the level route of these railways to the capital, with profit to the railway companies, and economy, comfort, and health to its inhabitants.

CHARLES F. PARKINSON, Colonel.

INQUESTS.

SIR,—To the suggestion contained in the closing paragraph of the article on Mortar-balls in your last number, I must decidedly demur, viz., "one jury will be able to dispose of a number of cases." I was recently on a jury at St. George's Hospital on three cases,—one, a cabman fell from his cab on to a man, a man fell from a pleasure van; and the third, a labourer killed by some bricks falling upon him from a scaffold. Apart from the time occupied, the sickening details of the witnesses in each case led me to the conclusion that one case at a time was quite sufficient.

J. WYMAN.

WORSE AND WORSE.

THE following list of tenders made for the works required in draining at Mold, Flintshire, has been sent to us by one of the parties. Will somebody explain it?—

Williams.....	£554	8	0
Davis.....	608	0	0
Cox.....	475	0	0
Roberts.....	463	0	0
J. Richard.....	450	0	0
Neval.....	300	0	0
Powell.....	258	0	0
W. Fritchard.....	250	0	0
Beckingham.....	250	0	0
Hamblin.....	239	0	0
Heap.....	138	0	0
Rovias.....	115	0	0
Hughes & Son (accepted).....	75	0	0

HINTS.

I KNOW we have architects brave enough "to throw a bridge" of iron and stone, allowing a graceful way to supplant disgraceful delay just at one place, at least, in Hyde Park, where the high public and low public seem to undergo an ordeal of gazing and counter-gazing. This is considerably qualified by seeing the beauty of goodness, still, thank God, left in the land; and I have yet to learn where these two admirable qualities are to be found so extensively combined, and some of us conjecture why. A pretty and strong and good bridge would be valued as an adjunct to the officially mounted and unmounted, as well as to the comfort of non-officials. Another want in London. It seems various brass edgcs on the stairs of railway termini are so worn as to help a possible fall, and one of the servants told me my slip, though alone, quite sober, and walking deliberately, was not the first, probably not the worst. Many of the pavings near shops are so smooth, as to endanger one's standing, though it were for a passing look at one where elegantly carved crosses in ivory attract notice. The non-sham regulators of work and reward could easily organise groups of those who need employment to groove these stones where needed, in some diagonal form, so as to save us from falling. In winter the feeble and drunken will be very likely to get injury if the rich and responsible neglect timely duty.

QUIES.

CHURCH-BUILDING NEWS.

Braywood.—The Bishop of Oxford has consecrated All Saints' Church, Braywood, an edifice erected by the Belgian minister and Madame Van de Weyer, as a memorial of the late Mr. Bates, the father of Madame Van de Weyer. The church, which, with its paragonage, cost nearly 15,000l., stands within the parish of Bray, on the border of Windsor Forest, and about a quarter of a mile from the residence of the Belgian minister. The style of architecture is Gothic, of the transition period between the Early English and the Decorated. The structure is in the form of a cross, having chancel, nave, and transepts, and adjoining the south transept is a lofty tower, which at one angle is surmounted by a turret, containing the termination of a winding staircase. At the junction of the chancel and the transepts with the nave are three pointed arches, which spring from granite pillars. The base of the tower forms a memorial chapel, with light open carved stonework between it and the south side of the choir, which it adjoins; and in the east window of this chapel there is a memorial window to the late Mrs. Brand, the eldest daughter of the Belgian minister, who died at Windsor Castle some months ago. The large east window is a three-light one, representing Faith, Hope, and Charity; the subject is, however, treated differently from the conventional representation of these attributes. The nave and transepts have open timber roofs, and the chancel has an oak wainscot ceiling. The floor is paved with Minton's tiles. The pulpit is of white marble, carved. It is intended that there shall be a peal of five bells in the tower; at present only one of them, cast by Messrs. Mears, has been hung. The paragonage house is at a convenient distance in the rear of the eastern end of the church. The architect was Mr. T. Talbot Bury, of London, who was the architect of New Lodge, the palatial residence built for M. Van de Weyer some nine years ago. The builders were Messrs. Dove, Brothers.

Gloucester.—The gradual restoration of the exterior of the south transept of the cathedral is now being carried out, the clearstory on the south side of the nave having just been completed. Decayed stones only are removed, and as much as possible of the ancient work is retained. The workmen have found a number of shot-holes in the stonework of the western tower of the transept, and have also removed some battered bullets from the mortar between the stones. These are curious relics of the siege.

Waterbourne Daintsey.—A discovery of mural paintings has been made beneath the plaster on the walls of the parish church, which edifice was built in the thirteenth century, and is now in course of demolition. The paintings are probably of nearly the same date as the church, as they appear to have been executed shortly after the erection of the walls. From the style of ornamentation their origin is assigned to the middle or latter part of the thirteenth century. The series commences at the west end of the north wall, and was, no doubt, carried completely round the church, representing, in order, the principal events of our Lord's life, and ending at the north end of the west wall, with His resurrection. The colours used are red and yellow, in distemper; and, considering that it is 600 years since these paintings were executed, the colours are wonderfully fresh.

Attercliffe.—Christ Church has been closed for the last three months for extensive alterations and repairs, and has now been reopened. The galleries have been removed, the partition which shut off the west end from the body of the church has been taken down, and the high pews, several of them square ones, have given way to open seats of a simple design. The ground-floor at the east end has been raised and enclosed by light screens on the north and south, so as to give the effect of a chancel. The work has been executed from the designs and under the superintendence of Mr. J. Fawcett, architect. The stonework and cleaning have been done by Mr. White, of Neepsend; the woodwork by Messrs. Hardy & Duke; the painting and staining by Mr. Hague, of Attercliffe; and the gas standards and brackets have been supplied by the Sheffield Gas Company. All the seats in the church are free and unappropriated.

Heston.—St. Leonard's Church, Heston, Middlesex, has been re-consecrated. St. Leonard's Church, an old Mediaeval building, had, from lapse of time, become so decayed, with the exception of a Norman tower, which was found

* The correspondence reached us last week, but too late for insertion in the current number.

comparatively sound, that restoration was deemed necessary. This has been effected, and additions have been made which afford increased accommodation sufficient for 120 persons. Mr. Brinley Richard's father-in-law, the celebrated Mr. Banting, has presented to the church a fine new organ, built by Messrs. Gray & Davison; and his eldest daughter has given a memorial window (by Bailey) in memory of her late husband, Mr. Westbrook, who was, during many years, one of the churchwardens. Mrs. Westbrook, having resolved to found and erect, also in memory of her husband, a workmen's club in the village, to be called the "New Workmen's Home," requested the Bishop of London to do her the favour of laying the foundation-stone of the building after the church consecration; and his Grace, having known her husband personally, and always held him in high esteem, did so. The building alone, it is said, will cost upwards of 3,000*l.*; and it is hoped by its establishment to induce the workmen to abstain from beer-shops and improve their minds by innocent recreations. Mrs. Westbrook has also devoted a large sum towards the new church fund. At the conclusion of the ceremony, Mr. Banting presented, as contributions from his own children and grand-children, twenty five-pound notes towards the expenses of the new church.

Gipsy-hill, Upper Norwood.—Christ Church has been consecrated by the Bishop of Winchester. The building accommodates 1,200 persons without galleries. It is of Kentish rag with Bath stone dressings. The internal columns throughout are of red and grey polished granite, and the five windows of the chancel, which is apsidal in form, are already filled with stained-glass memorial windows. The builder's contract was under 7,500*l.*, including 40 ft. of the tower. The remainder and the spire have yet to be completed. The architect is Mr. John Giles, of London.

Clitheroe.—The chief stone of the projected Church of St. Paul, Low Moor, Clitheroe, was laid on Whit-Monday by Miss Henrietta Garnett, of Roe Field. The architects are Messrs. Stevens & Robinson, of Derby.

Birmingham.—Obstacles to the erection of the proposed church in the Hagley-road, Edgbaston, have been removed; and, at a recent meeting of the committee, instructions were given to the architect, Mr. Chatwin, to re-arrange the plans so as to allow the erection of nave and chancel, leaving the tower and spire to be added at some future period. The cost of the proposed church, we understand, will be about 5,000*l.*, of which 3,500*l.* are promised, and arrangements have been made to raise the rest by an active canvass of the parish.

DISSENTING CHURCH-BUILDING NEWS.

Ross.—The foundation-stone of a new Congregational Chapel has been laid at Ross. The site having been purchased, and the plan of Mr. B. Lawrence, architect, of Newport, having been accepted, building operations were commenced a short time since; the contract being given to Mr. T. Durke, of Cardiff. The style is Geometrical, with open porch and entrance lobby on the south side of the chapel, which is to be divided into nave and aisles by iron columns, carrying open timber roof; with carved braces and boarded ceiling. The chapel will be built of the local red sandstone, with Bath-stone dressings; Forest stone being employed in the arches. There will be tracery windows, four on each side of the chapel; octagon staircases, minister's vestry, and a large schoolroom, which will accommodate about 250 scholars; two class-rooms, ladies' vestry, and all other necessary offices. The dimensions of the chapel will be 58 ft. long by 37 ft. wide, the height being about 33 ft., and it will be heated by the patent hot-air apparatus of Mr. T. Bright, of Carmarthen. The slates will be in colours of green and copper. The vestry, class-rooms, and ladies' vestry, will be situated in the basement. The chapel will accommodate about 400 persons, and the contract for its erection has been taken at 1,450*l.*, but the building will cost altogether about 1,570*l.*, exclusive of the price of the land.

Hereford.—The new Wesleyan chapel has been opened. This new edifice has superseded the one in Over-Ross-street. It is in the Gothic style; the walls are built in rubble stonework, with Bath-stone dressings. The window-frames are of the same material, and glazed in lead lights, with cathedral glass of two tints, green

and yellow. The principal doorway is of the Norman period, with carved capitals, and there is a lobby, paved with encaustic tiles. Inside, the flooring is of board, and open benches supply the place of pews. The building is 43 ft. long by 30 ft. wide, and the height is 31 ft. At the east end there is a small room, about 10 ft. 6 in. by 8 ft. 6 in., which is intended to be used as a vestry. There is also a warming apparatus for heating the body of the chapel in winter. There are side galleries, which, however, do not run the whole length of the building, extending only about halfway. These galleries will accommodate about 100 persons, 50 in each, and the body of the chapel will seat some 170 persons. The building was erected from the design of Messrs. Pearson & Son, of Ross, and the work has been carried out by Messrs. Smith & Son, of Weston. The entire cost, including the purchase of the land, is calculated to be somewhat about 1,100*l.*

STAINED GLASS.

Hanover Chapel, London.—A stained-glass window has been put up in this chapel by Mr. John Hunter, to the memory of his late wife. The subject is Mary Magdalene anointing the feet of our Saviour, illustrating the text "Thy faith hath made thee whole." The window was executed by Messrs. R. B. Edmundson & Son, of Manchester, being the second placed in this chapel by that firm.

Denton Church.—The chancel window of the parish church of Denton, near Manchester, has recently been filled with painted glass, in memory of Edward, son of Mr. John Bradbury, of Broom-stair House, Houghton. The church, designed by Mr. Scott, is in the Decorated style, and the window in question is divided into four lights, surmounted by geometrical tracery. The window contains two subjects, viz., "The wise Men's Offerings," and "Christ blessing little Children." These are framed by foliated canopies, the upper parts of which contain angels bearing scrolls, inscribed with the texts which the subjects below are intended to illustrate. The tracery contains our Lord sitting in his sovereignty, angels with musical instruments, the *agnus Dei*, wine and chalices, &c. This window is from the works of Messrs. R. B. Edmundson & Son, of Manchester, who have also decorated the reredos by the introduction of the Decalogue, Lord's Prayer, &c., illuminated in gold and colours.

Cummock Parish Church, Ayrshire.—A new church, from the designs of Messrs. Brown & Wardrop, Edinburgh, has been recently erected in Cummock. The structure is in the Decorated style, and the principal windows have been filled with stained glass, at the expense of the Marquis of Bute, the principal heritor. There are eight figures in the two principal windows, from the sketches of the marquis, and these are intended to form an epitome of the founding of Christianity, and its introduction into Scotland. The figures of our Saviour, the Virgin Mary, St. John, and St. Andrew are connected with the first; those of Queen Margaret, King David, St. Kentigern, and St. Ninian with the latter event. The upright compartments are surrounded with decorated borderings, and the tracery is filled with lilies, roses, and other ecclesiastical emblems. There is also a wheel-window between the two twin-light windows, where similar emblems are introduced. Messrs. Ballantine & Son, of Edinburgh, were the artists employed.

Wigton Parish Church.—A large triplet window in this church has been filled with stained glass. The central light, which is above 15 ft. by 3 ft., is a memorial of the late Peter Young, who was sixty-five years minister of the parish. An illustration is given of King Solomon, in presence of his fellow-worshippers, dedicating his temple to God. The two side-lights are presented by the Earl of Galloway. In one is a figure of Moses, with the Tables of the Law; in the other, a figure of Paul preaching at Athens. The borderings, medallions, and bases are mosaic, and the groundwork is grizaille. The work was executed by Messrs. Ballantine & Son, Edinburgh.

Morton Church.—A stained-glass window has been erected at the east end of the south aisle in the village church of Morton by Mr. Alfred Harris, jun., of Ashfield, Bingley. The window is in the Gothic one-mullion style; and the stained-glass illustrations have come from the works of Messrs. Heaton, Butler, & Bayne, of London. In one compartment of the window is

the representation of Christ as the Good Shepherd. In the other compartment is the design of Christ leading one of the faithful through the valley of the shadow of death.

Bromsgrove Church.—A memorial window has been erected in this church, in memory of the late Mr. Day, at a cost of upwards of 130*l.* This window was designed and executed by Messrs. Lavers & Barraud, the artists who also designed and executed the east window of the chancel. The new window is in the south aisle. The subjects chosen are the works of mercy mentioned by our Lord in St. Matthew xi. 5,— "The blind receive their sight, the lame walk, the lepers are cleansed, the deaf hear, the dead are raised up, and the poor have the gospel preached unto them." All the three east windows are now filled with stained glass.

Ringwood.—A stained glass window has just been placed in one of the southern lights of the chancel of the parish church, in memory of the late Mr. and Mrs. Davy. It consists of three groups of figures, representing the Visit of the Shepherds, the Crucifixion, and the Ascension, and was executed by Messrs. Ward & Hughes, of London.

Books Received.

The Electric Telegraph. By Dr. LARDNER. A new edition by E. B. BRIGHT, F.R.A.S. London: James Walton, Gower-street. 1867.

Mr. BRIGHT assisted Dr. Lardner in the preparation of the first edition of this work, and it has been revised and rewritten by him. He is the Secretary of the British and Irish Magnetic Telegraph Company, and therefore versed in telegraphic subjects as they now exist. The volume is illustrated by 140 cuts; and it gives a general view of the present state of telegraphy throughout the world, in which Great Britain certainly holds a distinguished place, even by comparison with the United States, considering that over and above its network of laid lines, it has already entered into electric union with Canada on the one hand and India on the other, and is preparing to unite Australia, New Zealand, and other of her distant colonies with the mother country in a similar way. The present volume is a record of astonishing progress and of wonders in natural magic.

VARIORUM.

THE "Charles Dickens" edition of Dickens's works, compact, clear, and cheap (in course of issue by Chapman & Hall), will reach a fresh public, and doubtless command a large sale. No one will wish it otherwise. No line has our admirable novelist written that the sternest moralist would wish to blot: scarcely a passage, indeed, could be blotted that would not be a loss to the public, for whose delight, and more than delight, he has so long and successfully laboured. "The Posthumous Papers of the Pickwick Club," wise as witty, is the first volume issued, with all its well-known illustrations, first by Seymour and then by "Phiz." The edition is dedicated to "John Forster, biographer of Goldsmith, in grateful remembrance of the many patient hours he devoted to the correction of the proof-sheets of the original editions, and in affectionate acknowledgment of his counsel, sympathy, and faithful friendship, during my whole literary life,"—words honourable to both.—The June number of *Nature and Art* completes the second volume, and with it ends the connexion of Day & Son with the work, excepting as regards the parts already published. The June number includes a sketching lesson, from Mr. Aaron Penley; Notes on the Early History of Engraving; and a short but instructive chapter on the Buddhist Architecture of India. It is capably printed and got up.—"The Laws and Bye-laws of Good Society" (Simpkin & Marshall), contains in a small compass much good advice, which will be useful to many who have worked their way up and are not "to the manner born." It is easy to laugh at such guides; but with many there is no advice to be looked for in any other direction.—Stevens & Hole's School Series: "The Standard Grammatical Spelling-book, in Four Parts. By H. Combs & E. Hines." "Arithmetic, Step by Step," by the same Authors. London: Longmans, Green, & Co. The specialty of the spelling-book is that on a combination principle, it presents all the more usual words

in the language, arranged in a systematic manner, in lessons of convenient length without entirely superseding learning by rote. The arithmetical book is intended, with a companion exercise-book, to supply the demands of those who require full explanation of the methods employed and additional examples for practice after they have gone through the arithmetical copybooks by the same authors.

—**Fox on Light Railways:** Institution of Civil Engineers." This is a reprint of a paper read at the Institution of Civil Engineers on 27th November last. By the term "Light Railways" the author means such lines as, "either being branches from existing trunk-lines, or being intended for districts requiring the development of their traffic, should be constructed in a thoroughly substantial and durable manner, equal in their details as to quality to the best trunk lines, but with every part made only of such strength as to carry loads represented by the rule that no pair of wheels should be allowed to have more than six tons upon it. This would enable these lines to carry the rolling stock of all other railways of similar gauge, with the exception only of the locomotives. The first railways constructed upon this principle, which have come under the author's notice, are those of the Norwegian Government; the designs for which were prepared, and the works carried out, under the guidance of Mr. Carl Pihl, the State engineer. The author visited these lines in 1864, and was struck with their efficiency and economy." —**Some Remarks on the Educational Uses of the Proverbs of Solomon.** By Robert Skeen. London: Norman, Covent Garden." As the title shows, this tractate is intended to advocate the inculcation of the Proverbs of Solomon in the schools and seminaries of learning throughout the country. —**"The Sewerage of Much Woolton."** A report has been made to the local board on the sewerage of the district and the disposal of the sewage, by Mr. G. W. Goodison, C.E., of the firm of Reade & Goodison, of Liverpool. Mr. Goodison proposes a plan of sewerage whereby the sewage will be disposed of by falling into the Mersey through two brooks forming the natural drainage of the district. The total cost of the sewerage is estimated at 11,628l. Mr. James Newlands, the Liverpool borough engineer, has been consulted as to the merits of this plan, and has reported favourably of it. The report of Mr. Goodison has therefore been approved of and adopted by the local board, and the works, we understand, will be gone on with immediately; application being made to the Home Secretary for borrowing powers to carry the scheme into effect. —**Report of the City Surveyor of Montreal for 1866,** presented to the Council" (Starke & Co., Montreal). Mr. Macquisten's report shows that in Montreal sewerage and water supply, widening streets, and paving are all in active progress, and a map of the city has been contracted for on a scale of 20 ft. to an inch. —**Readwin's "Index to Mineralogy"** (Spon, Charing-cross). Mineralogical students and collectors will find this list or index useful, although it is admittedly very defective; but it is put forward in the hope that ultimately a list of minerals worthy of the name may be produced. —**Telegraphic Reform:** the Post-office and the Electric Telegraph. Reprinted from the *British Quarterly Review*. Jackson, Walford, & Hodder, Paternoster-row. The author of this paper supports the proposal to transfer the telegraphs to the post-office department for their farther extension and more efficient management. He gives many interesting details of the contemplated measure, and urges that no more time should be lost in bringing the subject before the Legislature. —**Mr. Scratchley's Life Assurance Bill** for enabling Policies to be secured to the widow and children of the assured, and for rendering policies assignable, at law, in favour of creditors: with an introduction. Extracted from the new edition of the "Treatise on Life Assurance Societies and Building Societies" (Layton), Fleet-street. As a bill for effecting one of the objects suggested by Mr. Scratchley, namely, that of legalising assignments of policies, has at last been brought before Parliament, and a further measure is also pending for enabling policies to be secured for the family of the assured; the author has here re-issued from the new edition, in a separate form, those sheets of his treatise which relate to these suggestions. —**"Our Constitution,"** an epitome of our chief laws and system of Government, with an introductory essay. By A. C. Ewald, F.S.A., of H.M.'s Record Office. London: Warne

& Co. This volume is intended to occupy an intermediate position between technical works on English law and the various kinds of students' manuals on the same subject; and to form a useful book of reference, not only for county magistrates, members of Parliament, &c., but also for the general public.

Miscellaneous.

A REAL START IN AERONAUTICS.—A little model of an aerial machine has been exhibited in France, which, by purely mechanical force, it is said, carries a mouse through the air. A sanguine and patriotic critic declares that France has thus solved the difficulty of aerial navigation, and that a machine proportionately large will raise an elephant much more easily than the model bears its tiny traveller.

IMPORTANT DISCOVERY OF IRON.—For some months past the search for ironstone has been prosecuted on both sides of the Derwent, and these efforts have at last been rewarded. For nine years past the adventure has proved of varying success. The company, however, fortified by the opinions of Professor Phillips and other geologists and mineralogists, have steadily prosecuted their investigations. The result is that a royalty of 800 acres at Kirkham, in the East Riding, and 1,800 acres at Welburn, in the North Riding, the two being separated only by the navigable river Derwent and the York and Malton Railway, have been leased on favourable terms for a period of sixty-three years, as from the date of the first adventure in 1858.

COMPENSATION CASE: MIDDLE-ROW, HOLBORN. Last week a compensation case connected with the removal of Middle-row, Holborn,—"Edwards v. The Metropolitan Board of Works,"—occupied Mr. Under-Sheriff Burchell, and a special jury, the whole day. The claim was for 9,000l. Mr. Hawkins, Q.C., and Mr. E. James, were for Mr. Edwards, a mantle-maker and silk mercer, at the corner of Middle-row, facing the west. Mr. Lloyd and Mr. Philbrick were for the Metropolitan Board. The premises were said to be in the best part, and large incomes had been made by members of the same family. They were worth 500l. a year. The stock was tender between 3,000l. and 4,000l., and the loss by tender would be "50 per cent." One of the witnesses said the mantle business was very deceptive. There was "more deception in it than in any other trade." Mr. Lloyd called no witness, but contented himself with cutting down the claim. The Under-Sheriff placed the several items before the jury who had only been assisted by evidence on the one side. The alterations were for the benefit of the public, but Mr. Edwards was entitled to full compensation. The jury retired, and on their return assessed the compensation at 6,743l.

EGYPTIAN SCULPTURE.—Professor Piazza Smyth made the acquaintance of M. Mariette, otherwise Mariette Bey, a Frenchman, who has been appointed by the Viceroy as the officer in charge of the antiquities of Egypt. M. Mariette has recently discovered what he thinks the oldest extant piece of sculpture in the world, and he has placed it in the museum of which he is the custodian. The following is a description of this exceedingly interesting statue:—"When Mariette Bey shows you the chief piece of it, you stand almost appalled before the presence it conveys. It is the life-sized portrait of a king who built one of the Pyramids, seated in the calmness of majesty and the isolation of rank, gazing honestly straightforward, and on high thoughts intent, into space. There is neither the total nudity of Greek sculpture, nor the encumbering frippery of modern royalty; but the man is there, slightly more muscular in the arms than the Apollo Belvidere, though not less justly proportioned or exquisitely rendered; yet still, his *forte* is thought and administration rather than manual labour, and his manner that of one who can afford to bide his time, and expects with solid reason to see all things eventually combine for good. The eye is large and peaceful, the lips are rather fine as well as precise, the nose straight and thin, but not so much in the Grecian as the Anglo-Saxon manner; and almost the only decoration is the quasi-heraldic supporter of a hawk developed out of, rather than exactly standing on, the summit of the rocky seat, and folding its wings with benign protective influence towards the monarch's respected head."

EXCAVATING APPARATUS.—Milroy's patent excavating apparatus was invented and first successfully employed for sinking the cylinders of the Clyde bridge, on the Glasgow (City) Union Railway. It is considered that the machine will be found useful in making any kind of perpendicular excavation, but more particularly in sinking coal-pits and wells through watery strata, and in sinking cylinders for the foundations of bridges, breakwaters, lighthouses, forts, &c., its suitability for such purposes consisting in its being perfectly independent of the water, which is allowed to remain in the pit or cylinder until the excavation is completed; and in the fact that it may be used with equal ease at any depth, without sensibly increasing the cost of working; and that its rate both of sinking cylinders and of excavating is higher than has yet been obtained by any other method. On the Clyde Bridge, cylinders 8 ft. 4 in. in diameter were sunk by means of it, at the rate of 4 ft. per hour, till the hard foundation was reached at a depth of 80 ft. below low-water level. The expense attending its working is said to be comparatively trifling, as skilled workmen are not required.

WATER SUPPLY FOR VALPARAISO.—A new company, called the Valparaiso Waterworks Company (Limited) has been formed, and appeals for capital to the extent of 200,000l. The shares are of 20l., and the dates on which the different instalments must be paid up are specified. The object of the company is to supply the city of Valparaiso, in Chili, with water. It seems that Mr. Waddington, an Englishman, had obtained a concession as far back as 1856 from the municipality, which was approved of by the Government in 1862, to bring water from the range of the Andes. Mr. Waddington had begun to build a canal coming to the city by a circuitous route for the double purpose of supplying a reservoir and of irrigating the country. A length of 72 miles of the canal has already been finished. The company now formed has purchased that portion, with the concession, from a son of the concessionaire, and with whom also they have made a contract to complete the works. The contractor agrees to pay 6 per cent. on the capital during construction in consideration of receiving any income derived from the works during that period. The price to be given to the concessionaire for his concession, and the portion of canal already completed, is 100,000l. in fully-paid-up shares after the whole undertaking has been completed. This amount of fully-paid-up shares is to be a fresh issue in addition to the capital of 200,000l. The total net revenue derivable from the city and the irrigation is estimated at 76,366l.

THE POLITICAL ECONOMY OF MR. RUSKIN.—Two lectures on this subject have been delivered in the Town-hall, Manchester, by Dr. W. B. Hodgson, Examiner in Political Economy, London University. In the second, the lecturer proceeded to deal with Mr. Ruskin's problem, "How to maintain constant numbers of workmen employed, whatever may be the demand for the article which they produce." He agreed with him that wages should not be based upon charity, but justice; but he differed with Mr. Ruskin as to his ideas of justice, for the latter laid it down that if a man did an hour's work for you, and you only did half an hour's work for him,—no matter what the quality of the work was—an injustice was done to the man. Mr. Ruskin, however, would not estimate half an hour's work with his pen as only of the same value as half an hour's work by a blacksmith; therefore such an idea of the equality of labour was an absurdity and a fallacy. The lecturer then went on to show what constituted the real value of a man's labour, and how Mr. Ruskin failed in endeavouring to show that an hour's labour of a blacksmith was worth an hour's labour of another man who perhaps had devoted a lifetime to the study of a profession. The theory, however, was not new, as it was only the revival of a plan laid down by two other authors some years ago, whose object had been to abolish specific payment for hour labour. Indeed, Mr. Ruskin seemed to have stated his opinion on political economy without having duly considered them. He was sometimes right, but what he said was generally made worthless, as some previous statement of his would turn up to contradict it. His opinions on war as the great promoter of the arts and paternal government, the lecturer said, were all fallacies, which, when fairly judged by the science of economics, would not bear to be investigated.

HOUSE PROPERTY IN BRIGHTON.—At the Estate Mart, North-street, last week, Mr. Attree sold a large quantity of property in Brighton public auction, and of which the subjoined—(all freehold)—were sold at the following prices:—No. 3, Lower Rock-gardens (let at 105*l.* year), 1,670*l.*; No. 44, Park-crescent, 690*l.*; the houses in Prince's-street, 485*l.*; Nos. 11 to Francis-street (let at 30*l.* a year each), 1,100*l.* each; No. 60, Old-steinie, was bought in at 30*l.*

PROJECTED IMPROVEMENT IN CABS.—Some enterprising capitalists at the West-end are about to originate a new cab company, for the purpose of supplying light and even elegant vehicles in place of the heavy, dismal, and, in nine cases of ten, dirty ones at present used as hack-carriages. The company intend to let both cabs and horses to their drivers at the smallest possible amount of hire, and upon the good old principle of "live and let live." The men employed are to wear a livery of plain black or blue cloth, with a narrow gold band round the hat. The carriages are to resemble private broughams, the men will be those of sober and tried character only. So says *The Whip*,—a professional paper.

NITRO-GLYCERINE IN SLATE AND TUNNEL CUTTING.—Experimental blasting has been made at various near Slatington, in the United States. Blasting was considered entirely successful in hard to rock. Experiments in the use of the "sculpting" (the technical term for getting the blocks from which slates are made) have been concluded, but interested parties express themselves confident of its ultimate success in this branch of the business. The oil, it is said, requires one-fifth less drilling for than necessary in the use of powder, and is more economical in many other respects. Nitro-cerine is cutting the Pacific Railroad tunnel about the summit of the Sierra Nevada at the rate, it is said, of 50 ft. per week, and by December fifty miles of road will be added to ninety-four already in operation at the California end.

ARTESIAN WELLS IN ALGERIA.—At the end of 1864, seventy-five wells, sunk by the French, were flowing and delivering 4,200,000 litres of water every hour, or 100,000 cubic metres a day. The water is limpid and drinkable, but generally little brackish. A village and date plantations sprang up around every well, and the natives, having nothing to lose, prefer peace to predatory expeditions. Fifty-five of the wells are in the Oued Rir district, which stretches far to the south. The deepest well is 175 metres, the shallowest 29 metres, and the total of all the borings amounts to 8,625 metres. The entire cost, defrayed by a loan on the natives, was 400,000 francs. Among the material results, we are informed that 1,000 date-trees have been planted in the Oued Rir district alone, besides fruit-trees of other kinds, and more than 2,000 new gardens have been formed. Four boring brigades have been established for systematic explorations.

HOME FOR LITTLE BOYS.—At Horton Kirby, in Farningham, Kent, the opening has now taken place of the "Home for Little Boys," the foundation-stone of which was laid by the Prince of Wales on the 7th of July last. It is designed for children from all parts of the country, the only limit being that it shall be for the boys who are homeless and destitute. The buildings consist of five spacious houses, which are furnished in the plainest manner by Mr. Beaton, of the Hampstead-road. House No. 1, the permission of her Royal Highness the Princess of Wales, is named "The Alexandra House." No. 2, the committee have named "The Hanbury House," Mr. Hanbury having obtained from his family the donation of 500*l.*, which, with his own contributions, completed the cost of the house. No. 3 has been erected at the request of the congregation of the Rev. Dr. Raleigh, of Hare-court Chapel, Canonbury. No. 4 is known as "The Children's Cottage," having been erected entirely by the subscriptions of children of friends and supporters of the institution; and No. 5 had been erected at the cost of Lady Morrison. Each house is surrounded with its allotment of land and garden-ground, on which the children are employed in agricultural pursuits during a portion of the hours not devoted to education, and there are workshops in which various trades are taught. The school chapel is a Gothic structure, built of Kentish stone, and at its south-eastern corner contains the foundation-stone, with its inscription.

PRIZES FOR ART-WORKMEN.—The Society of Arts again offer a large number of prizes, in various departments, for art-workmen, whose attention to the list published we invite. It may be obtained at the House of the Society, in John-street, Adelphi.

THE INTERNATIONAL SOCIETY OF FINE ARTS, LIMITED.—The rooms of this company (Bond-street) contain this year a number of pictures by foreign artists, none very great, but some very pleasing. The mixed purposes of the company scarcely seem to us to promise a very successful issue.

THE POPULARITY OF THE PEEL PARK MUSEUM, MANCHESTER.—The plan of counting the visitors during Whit-week has been now continued for the last ten years, and the total decennial return of visitors in Whit-week is nearly a million: the actual number is 898,780, being an average of 14,979 each day!

CONVALESCENT HOSPITAL, WITLEY, SURREY.—In connexion with this hospital, the laying of the foundation-stone of which was mentioned in May last, a chapel for the use of the convalescent patients, the children, and the establishment, is now about to be erected on the grounds, and this, so far as their presence will not interfere with the primary object of the building, the neighbours will be invited to attend. Mr. Sydney Smirke, R.A., is the architect, and Messrs. Mansfield & Co. are the builders. King Edward's Schools, mentioned by us when speaking of the hospital (p. 318, ante), have been erected by the same builders, also under Mr. Smirke, and not as then stated.

MONUMENTAL.—About two years ago a proposal was entered into for the erection of a monument to William, late Duke of Hamilton and Brandon. The subscriptions were chiefly confined to the tenantry and the personal friends of the duke, and a good sum was thus raised. The site has finally been fixed on the bank of the Avon, about 100 yards above the entrance to Cadzow Forest, by the Barncloth-road, amid a piece of the finest river scenery in Scotland. This position was specially approved of by the duchess, Princess Marie of Baden, as also the plans of the monument, which are by Messrs. Heath, Wilson, & Thomson, architects, Glasgow. The structure is to be circular, in the Italian style of architecture, 26 ft. high and 22 ft. in diameter, of polished freestone, from Dalpatrick quarry, in the parish of Dalsferr, where the columns of the front of the palace at Hamilton were taken from. There are to be nine openings in the circumference, which will be divided by as many granite pillars. The roof is to be of wood, covered over with lead. In the centre of the monument a column is to be placed, surmounted by a bronze bust of the duke. A monument has been erected at Chlum, in memory of the Austrians who fell at the battle of Koenigsgratz. It is of iron, and consists of a colossal cross on a Gothic pedestal.

CRYSTAL PALACE.—The preparations for the great musical festival on Wednesday next, June 26th, in aid of the restoration of the Palace, have proceeded with much vigour, and may now be said to have been completed with a remarkable amount of success. The orchestra will comprise an extraordinary array of musical talent. Besides the entire Royal Italian Opera orchestra, and many of Her Majesty's Theatre, the band of the Sacred Harmonic Society, that of the Crystal Palace Company, the leading amateurs of the Wandering Minstrels Society, headed by their conductor, the Hon. Seymour Egerton, as violin, with Lord Gerald Fitzgerald, as violoncello, many other well-known instrumentalists will lend their aid, making up above 350 stringed, and nearly 100 wind, instrument performers, or in all, between 400 and 500 carefully-selected instrumentalists. The orchestral arrangements, as at the Triennial Handel Festivals, are organised by the Committee of the Sacred Harmonic Society. The chorus comprises the London Festival Chorus, that of the Royal Italian Opera, and many other professors and amateurs, solo singers, and members of choirs and choral societies and others, who have offered their services, thus forming an aggregate of 2,500 carefully-selected performers. The principal solo artists include Grisi and Adeline Patti and Titiens, with Lemmens-Sherrington, Rudersdorf, Vida, Sainton-Dolby, Sims Reeves, Mario, Naudin, Graziani, Santley, Arabella Goddard, &c., an unprecedented combination of talent.

GLYCERINE GLUE.—A German chemist, M. C. Puscher, has discovered that, if glue or gelatine be mixed with about one-fourth of its own weight of glycerine, it loses its brittleness, and becomes applicable for many purposes for which it is otherwise unfit. A cement composed of starch, glycerine, and sulphate of lime is said to remain plastic and adhesive, and is recommended for luting chemical and philosophical apparatus, and other similar purposes.

THE PALACE FOR THE NEW BISHOP OF CHESTER.—The alterations and additions now being made to the residence of the late Chancellor Raikes, and which is destined to be the palace for the newly-appointed bishop of this diocese, Dr. Jacobson, are rapidly progressing. Two wings have been added to the old mansion, and the work is being specially superintended by Mr. Bramwell, of Oxford, architect. The builder is Mr. Hughes, of Aldford, who is also erecting the Town-hall.

AGRICULTURAL RETURNS.—The Board of Trade are soliciting returns from all occupiers of land in Great Britain, to obtain, for the information of the public, reliable facts as to the home supply of corn and cattle. The occupiers of land in Great Britain are so numerous, that a large staff of persons must be employed throughout the country to collect the necessary particulars. The successful collection of agricultural returns must, however, greatly depend upon the willing help of the landed proprietors and the tenant farmers; and we would earnestly urge upon them the importance of assisting, as far as they are able, to make the returns a source of correct and valuable information.

THE NATIONAL PORTRAIT GALLERY, GEORGE-STREET, WESTMINSTER.—Several new portraits have lately been added, we may mention for the sake of those who have already visited the collection. But how few, comparatively, these are, considering the numbers who would derive pleasure and instruction from a visit to the rooms in a proper spirit! The collection is open free on Mondays, Wednesdays, and Saturdays; and an interesting catalogue, compiled by Mr. Scharf, is obtainable. The collection is at present augmented much too slowly. When better housed, as will by-and-by be the case, larger funds should be made available, and more determined measures adopted to carry out the idea to a worthy extent. Our readers, however, need not wait till then: they will already find plenty to interest them.

THE TRAFFIC AT LONDON BRIDGE.—At a recent Court of Common Council, Mr. E. D. Rogers brought forward a motion to the effect that, in consequence of the constantly increasing traffic over London Bridge, it be referred to the Bridge House Estates Committee to consider as to providing additional accommodation for foot-passengers on the bridge, and that they obtain plans and estimates, and report as early as possible to the court. The motion gave rise to lengthened discussion, and Mr. Paterson moved as an amendment that the committee should confer with the South-Eastern Railway Company, with a view to ascertain upon what terms they would be willing to open their bridge at Cannon-street for public traffic. Ultimately the question was referred to the Bridge House Estates Committee.

FRATERNISATION OF WORKMEN AT THE EXHIBITION OF 1867.—A letter has been sent by M. Chabaud, president of the Paris Working Men's Committee and ex-president of the Paris working delegates to the Exhibition of 1862, to Mr. Blanchard Jerrold, acting director of the Foreign Workmen's Reception Committee at the Universal Exhibition of 1862, who is requested to obtain what publicity he can for it in England. In this letter the writer says:—"We have resolved that, in the Exhibition itself, there shall be a place where the working delegates of Paris, of the provinces, and of the foreign countries, may meet to promote, in a fraternal spirit, the complete enfranchisement of labour. With this idea, which will be sympathetically received by every generous nature, we have devoted the model house, constructed by us in the Exhibition Park, and known as the Paris Workmen's House, to the reception of delegates. We wish it to be their meeting-house. They will find in it every description of statistical and descriptive document necessary to the fulfilment of their mission, together with the French and foreign papers. Foreign editors are requested to forward copies of their newspapers for the use of the workmen of their respective nationalities."

EXPLORATION OF PALESTINE.—Oxford University has made a grant of 500l. to the Palestine Exploration Fund by a majority of 1 only; *placed, 32; non placed, 31.*

ENGLISH GAOLS.—It is not alone in India that the gaols want revision. A public meeting has been held in Carnarvon relative to the erection of a new gaol there, and in the course of it a surgeon stated that the existing gaol is "scarcely ever free from fever: it is a huge nuisance: a hotbed of disease."

THE DRAINAGE OF FARNHAM.—The gentlemen who are competing for the drainage of Farnham want to know what has become of the plans sent in, and when the decision of the authorities is to be made. The plans and reports were delivered to the clerk of the Board of Health of Farnham on the 1st of March last.

GREAT FIRE NEAR LEEDS.—A destructive fire has destroyed the Airedale Mills, at Rodley, five miles from Leeds, the property of the Airedale Mill Company, and used by them for cloth and wool scribbling and milling. The mill was a stone building, 60 yards long by 60 yards wide, and was five stories in height. It had been built about seven years, and was fitted up with new and costly machinery, at a large expense. Damage was done to the estimated amount of 25,000l.; and, in addition to this, nearly 1,000 people will be thrown out of work.

A NEW MATERIAL FOR PORCELAIN OR STATUETTES?—M. LEROUX has made a borate of magnesia with an equivalent of calcined oxide of magnesium and another of boric acid, which melts at a strong white heat, and yields a very fluid liquid. This liquid, on being poured on a cast-iron plate, is transformed into a slightly greenish sort of glass, remarkable for its lightness and strength. But, strange to say, if poured into platinum moulds, it will come out quite opaque, partaking of the appearance partly of porcelain and partly of white marble.

SANITARY REFORM IN THE METROPOLIS.—The report of the special committee on the Sanitary Act of 1866 appointed by the Marylebone Vestry has been presented to the vestry. The report recommended the adoption of numerous clauses of the Act, involving a revolution of the present sanitary arrangements of the parish. At an adjournment of the vestry the first recommendation had been adopted, by which it was resolved to devote a separate building to the special purpose of disinfecting the clothing, bedding, &c., used by persons suffering from infectious diseases. Mr. Hallam, Professor Marks, Dr. Whitmore (medical officer of health), Mr. Galsworthy, and other gentlemen pointed out the great aid this would prove in the endeavour to prevent the spread of infectious diseases. The remaining paragraphs of the report were left over to be considered at next sitting.

THE COPPER TRADE.—Messrs. Vivian, Younger, & Bond (June 7) write:—Business has been on a most limited scale. Prices have altered but little, and no feature of interest has presented itself. We note sales of Urmenete ingots at 80l. per ton. A cargo of regulus brought 14s. 4d. per unit, and about 250 tons Chili bars have changed hands at 71l. per ton. The available stock of Chili bars, ores, and regulus in Liverpool, Swansea, and Havre, and English and foreign copper in London, is thus estimated in fine copper:—June 1, 1867, 21,436 tons; June 1, 1866, 18,538 tons; and June 1, 1865, 17,866 tons. An annual Parliamentary return shows that, in the year 1866, 129,547 tons of copper ore and regulus, from Chili and other parts, were imported into the United Kingdom,—11,346 tons of copper unwrought, &c.; 10,063 tons partly wrought; 270 tons of plates and sheets; and copper manufactures and copper plates engraved of the value of 9,475l.; this last item showing a great decrease from the previous year, when it amounted to 30,054l. The British copper exported in the year, chiefly sheets, nails, &c., amounted to 28,424 tons, as against 31,609 tons in the preceding year. India is the largest customer.

TENDERS

For shops, Starch-green, Hammersmith, for Mr. Foley. Mr. G. Saunders, architect:—
Webster £716 0 0
Eyles 693 0 0
Key 695 0 0
Chamberlain 680 0 0
Kelly 667 0 0
Martin 547 0 0

Accepted for alterations, &c., to Star and Garter Public-house, High-street, Shore-ditch, for Mr. Radway. Messrs. Mayhew & Calder, architects:—
General Works.
Curtis £152 0 0

Accepted for alterations, &c., to the White Horse Public-house, White Horse-lane, Mile End-road, for Mr. H. W. Payne. Messrs. Mayhew & Calder, architects:—
General Works.
Ennor £560 0 0
Grimes 112 0 0

For Baillif's House at Stone, Kent, for Mr. C. White. Mr. Herbert Ford, architect. Quantities supplied by Mr. J. W. Donnison.
Hill £1,625 0 0
Piper & Wheeler 1,181 0 0
Turner & Sons 1,161 0 0
Guthrie 1,150 0 0
Brass 1,148 0 0
Browne & Robinson 1,130 0 0
Pritchard 1,114 0 0
Henshaw (accepted) 1,065 0 0

For the erection of house and shop at Notting-hill, for Messrs. Lawrence & Venning. Mr. Albert Bridgman, architect.
Mildard (accepted) £450 0 0

For taking down and rebuilding Messrs. Hill, Evans, & Co.'s present warehouses and offices, No. 34, Eastcheap, and rebuilding the same. Old materials of present building to be re-used. Mr. R. L. Roumieu, architect. Quantities by Messrs. Welch & Atkinson:—
Wood & Son £10,170 0 0
Lawrence & Co. 9,740 0 0
Mansfield & Price 9,617 0 0
F. Anson 9,284 0 0
Dove, Brothers 8,975 0 0
Piper & Wheeler 8,870 0 0
Longmire & Burge 8,661 0 0
Rigby 8,488 0 0
Myers 8,487 0 0
Browne & Robinson 8,170 0 0

For rebuilding three houses, Alfred-terrace, Dayswater. Messrs. N. A. Withall & A. Evers, architects. Quantities by Messrs. Fain & Clark:—
Bywaters £4,880 0 0
Tongue 4,868 0 0
Ebb & Sons 4,850 0 0
Webb & Sons 4,385 0 0
Richardson 4,092 0 0
Foster 3,972 0 0

For alterations to No. 36, Cornhill, for Mr. J. P. Smith. Mr. W. E. Williams, architect:—
Ennor £295 0 0
Eaton & Chapman (accepted) 395 0 0
Anley 353 0 0

For alterations and additions to No. 9, Bishopsgate-street. Mr. T. C. Clarke, architect:—
King & Sons £660 0 0
Sargent 620 0 0

For new sluices, &c., at Felpham and Boggor levels. Mr. Arthur Smith, engineer. Quantities supplied by Rake & Rawwell:—
Plews £4,587 11 0
Coker 3,432 4 0
Simms & Marten 2,795 0 0
Wecacs 2,375 0 0
Lawrence (accepted) 2,600 0 0

For two houses at Felpham, for Mr. G. H. Rush. Mr. Arthur Smith, architect. Quantities supplied by Rake & Rawwell:—
Goble (accepted) £248 0 0

For villa residence at Godstone, for Mr. Henry Rose, exclusive of bricks, lime, and sand for walls, and plaster. Mr. H. Saxon Snell, architect. Quantities supplied:—
Ebb & Son £4,170 0 0
Sharphington & Cole 4,147 0 0
Manley & Rogers 3,945 0 0
Newman & Mann 3,886 0 0
Stumpson 3,760 0 0
Gibson, Brothers (accepted) 3,490 0 0

For erecting a residence at Kingston Hill, S.W., for Mr. J. Galsworthy. Messrs. Pennington & Bridgen, architects:—
Lathey, Brothers £1,733 0 0
Marth 4,287 0 0
Perry & Co. (accepted) 4,287 0 0

For new warehouse and repairs to house, Wantage, Berks. Mr. J. P. Spencer, architect:—
Wheeler £341 8 0
Kents 310 10 0
Partridge & Aldworth 280 13 0

For the erection of new warehouse, King Edward-street, E.C., for Mr. J. N. Debenham, Mr. Wimbles, architect:—
Patman & Fotheringham £3,335 0 0
Collis & Son 3,260 0 0
Hill & Sons 5,130 0 0
Kelly, Brothers 4,905 0 0
Screener & White 4,363 0 0
Conder 4,019 0 0
Newman & Mann 3,766 0 0
Kilby 4,399 0 0
Morrice 4,443 0 0

Accepted for alterations and additions to the Horse-shoe Brewery Tap-house (Meux & Co.), for Mr. Charles Best. Messrs. Mayhew & Calder, architects:—
General Works.
Curtis £200 0 0
Comyn, Ching, & Co. (accepted) 2216 0 0
Anglis £101 0 0

For six cottages, for Mr. H. Roberts, grocer. Mold:—
Roberts £1,070 0 0
Powell 890 0 0
Hughes 800 0 0
Williams 783 0 0
Hamblin (accepted) 750 0 0

For Primitive Methodist Chapel, Grafton-road, K. Town. Mr. W. Allen Dixon, architect. Quantities supplied:—
Mann £1,665 0 0
Staines & Son 1,648 0 0
Manley & Rogers 1,627 0 0
Tarrant 1,616 0 0
Garrad (accepted) 1,473 0 0

For museum for firearms and factory for leather. Peckham Rye, for Mr. G. G. Bussy. Mr. W. Dixon, architect. Quantities supplied. Labour only:—
Galer £285 0 0
Sayers 569 0 0

For the erection of stables, laundry, and office. Stockton House, Fleetwood, for Mrs. Cox. Mr. Fischer, architect:—
Stumpson £1,522 10 0
Waliden 1,450 0 0
East 1,350 0 0
Fairbairn & Weeks 1,336 0 0
Liming (accepted) 1,054 6 9

For tavern, two shops, and six houses, for Mr. Chapman, on estate of Mr. B. Roycroft, Camberwell. Knell & Son (accepted) £2,540 0 0

For new vicarage, Abingdon, Berks. Mr. Edwin D. architect:—
Townsend & Sons £2,095 0 0
Barrett 2,712 14 0
Bowler 2,679 0 0
Beyman, Townsend, Sheppard, & Rogers 2,623 13 6
Townsend 2,600 0 0
Dover 2,575 0 0
Jones & Co. 2,550 0 0
Thomas 2,642 0 0
King 2,505 6 8
Seely 2,423 0 0

Ballard 85 5 0
Howes 257 15 0

For a small church at Headly, in the parish of K. clere, Hants. Mr. Edwin Lolly, architect:—
Kents £768 15 6
Thomas 605 0 0
Dover 600 0 0
Rabbitts 456 7 8

For a pair of semi-detached residences, at College Highbury. Mr. J. Messenger, architect. Quantities supplied by Mr. Jno. Glenn:—
Henning £2,100 0 0
Stans & Co. 2,054 0 0
Warne 1,975 6 0
Sturman 1,945 0 0
Makay 1,926 0 0
Johnson 1,900 0 0
Langmaid & Way 1,874 0 0
Nightingale 1,840 0 0
Ems 1,740 0 0
Ruy 1,620 0 0

For alterations at the Star and Garter, Caldonian-r. Mr. William Nunn, architect:—
Simmonds £1,150 0 0
Day 1,075 0 0
Kenley, Brothers 1,075 0 0
Chaute 847 0 0
Bathfield 833 0 0
Selleck (accepted) 777 0 0

Fewster's Work, exclusive of old counter.
Herring £125 19 6
Moore 126 0 0
Phillips 120 0 0
Rogers (accepted) 103 18 0

Winn (accepted) 62 0 0

For stabling at the Half-Moon, Upper Holloway. William Nunn, architect:—
Carter & Sons (accepted) £450 0 0

For three houses to be built at Hereford, for Mr. James Lewis. Mr. J. H. Evans, architect:—
Bacham £1,068 0 0
Morgan 1,630 0 0
Freeman 1,620 0 0
Bowers 1,578 0 0
Bulton 1,567 0 0
Thomas 1,500 0 0

Colle, not in the competition, 1,200l., accepted by proprietor.

For building villa residence, Hereford, for Mr. Wal. Williams. Mr. J. H. Evans, architect:—
Freeman £1,003 0 0
Bowers (accepted) 1,000 0 0
Thomas 900 0 0
Mason 885 0 0
Evans 870 0 0
P. & D. Fritchard 864 14 0

For brick tank, 61 ft. 6 in. diameter, and 24 ft. 6 in. single-lift gasholder, 80 ft. by 24 ft., for the W. mouth Gas Company. Mr. Alfred Penny, engineer:—
Tank.
Coker £1,335 10 0
Leonards 1,064 0 0
Williams 807 19 0
Seaman 763 10 0
Dodson 759 0 0

Gasholder.
Porter 1,680 0 0
Hanna, Donald, & Co. 1,500 0 0
Piggott & Son 1,190 0 0
Horton 1,430 0 0
Coulson & Co. 1,410 0 0
Tudley 1,123 0 0

WOODFORD, ESSEX.—Freehold Mansion, and about Six Acres
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The Builder.

VOL. XXV.—No. 1273.

French Views of English Designs.

THE *Journal des Travaux Publics*, under the signature—not altogether unknown in this country—of Hector Horeau, expresses surprise that it is in the midst of objects manufactured in iron, in wood, and in artificial stone, that the works of the English architects are to be sought. However limited the space allotted to the English section, where food and deadly weapons occupy so prominent a position, it is inconceivable that architecture should have allowed itself to be so entangled, strangled, garrotted in the midst of artificial stone-work, which would have been better placed out

of doors, than in spaces so narrow that two persons cannot look at the drawings together. This is the more striking from the fact that the designs are for the most part only represented by little photographs, occupying but very little room.

This complaint is all the more reasonable, continues our contemporary, from the observation of the empty spaces outside the principal building. Austria, Belgium, Switzerland, have erected special annexes at their own expense; but the architectural questions which agitate London at this moment are of a higher importance with reference to art and civilization than any that are under discussion in these continental kingdoms. In extending to foreign art that hospitality which has here been understood to be limited to roof and to floor, to an extent calculated to include a further space to be roofed as well as furnished by exhibitors at their own expense, M. Horeau omits to mention whether it is expected that the English architects should build a special annexe for the exhibition of their detailed drawings; whether this duty should be performed by our patentees of artificial stone, or whether Parliament is to be asked to vote an expenditure supplemental to that provided for by the French budget.

The New Palace of Justice, the *Journal des Travaux Publics* goes on to say, will be as large as the old and the new Louvre united, and will cost some 1,200,000l. Eleven English architects have competed for the design. Well, this competition, too exclusively English as it is, is only visible at the Exposition as represented by little photographic views, without any geometric plans such as are requisite in order to arrive at the relative value of the designs. The subject can, therefore, only be spoken of with reserve,—and that the more so since three of the competitors, Messrs. Abraham, Garling, and Street, have exhibited nothing, or rather have not allowed

their designs to be exhibited in consequence of the small space allotted to the works of English architects.

The eight other designs, represented only by photographic fragments, are as follows:—That of Messrs. Banks & Barry, whose plan is too much cut up, and wanting in simplicity.

Mr. Brandon has five drawings, which, both as to exteriors and interiors, too much resemble churches and cathedrals.

Messrs. Barges & Dean only show some picturesque views, which do not enable us to speak of their compositions.

Mr. Lockwood has a right-angled plan, which appears to offer scope for improvement. The elevations of this architect show much taste and draughtsmanship.

Mr. Scott has sixteen views, without a single geometric design. It is not possible, from these picturesque elevations, to form an opinion as to the architectural value of the work.

Mr. Seddon, with his exterior views, presents a not agreeable group of gabled houses; and in his interiors a transverse gallery in two stories, with the upper part heavier than the lower.

Lastly, Mr. Waterhouse exhibits nine picturesque views, which do not enable us to appreciate his architectural work.

In this great rivalry of little photographs is chiefly remarkable, continues the *Journal*, an undue richness of ornament unfitting a temple of justice, and a lamentable spirit of reproduction of forgotten architecture, incompatible with that use of iron, of glass, and of earthenware, which has been introduced into our modern buildings, and which architects who seek only to reproduce the past cannot employ.

We do not know whether a choice has been made among these eleven competing designs, concludes the *Journal des Travaux Publics*, or who has been able to make the choice.

The example of the *Journal des Travaux Publics* has not convinced us of the superiority of the French method of signing every contribution to a journal, since a signature does not seem to be an absolute guarantee as to the quality of the article. It does not prevent attack taking the place of criticism, and the productions of laborious artists from being blamed for matters regarding neither the artists themselves nor the art which they practise. Enough has been said as to the manner in which English exhibitors have been dealt with at Paris to make it quite unnecessary to call attention to the fact of deficiency of accommodation. But to blame the competitors for a work like the Courts of Law, because there is not room to exhibit their detailed plans to Parisian visitors, is a most curious and novel illustration of the fable of the wolf and the lamb. The accusation, once made, should surely be enough. But it is reiterated with almost every name, and not a single word of kindly and merited admiration is found for designs which certainly contain much to call forth such a welcome.

Originality, so that it be not the originality of ugliness, is one of the rarest gifts of the architect; and from the very nature of his art, it is far rarer with him than with the painter, the sculptor, or the engineer. For the painter and the sculptor the portals of fancy are open. Limited only by the nature of his materials, or the size of his canvas or his block, the artist who relies on his brush or his chisel has the means of presenting to the world the embodiment of the highest flights of imagination, or the most faithful photographs of daily life. Witness that most wonderful creation of Paton in the Royal Academy Exhibition, the "Fairy Changeling," a picture that is a study, a marvel, and a delight—luminous with the most poetic fancy, and crowded in every niche with graceful forms of elfin life, while the solemn, wondering look of the babe borne by the elfin queen brings humanity itself into fairy-land. Look, on the other hand,

at the pigeons in Holman Hunt's "St. Swithin's Day;" are they not actual birds—are you not tempted to shout to make them take wing? For the engineer, again, constant demands are made on originality by the occurrence of new conditions. To bridge the Menai Straits, to carry locomotives over the Thames, to tunnel under the City-road,—all these are such novel demands on his skill that great originality must characterize an adequate execution of the task. But for the architect, for the most part, only recurs the repetition of the solution of the same old problem. The church, the hall, the castle, the palace will, in the same climate, have pretty much the same characteristics century after century, varying only with the changing habits produced by the changing forms of social life.

But the English architecture of the day, with all the room that yet remains for its improvement, has not proved wholly inadequate to the demands made by modern life on the genius of the architect. Gradually our street architecture is becoming at once more convenient and more picturesque.

M. Charles Garnier, the architect of the new Opera House, in the course of an interesting series of papers he is now contributing to the *Moniteur*, on Architecture and the Arts connected with it, takes a more generous tone, but nevertheless thinks it desirable to mention by name only one exhibitor. What Great Britain has sent, he correctly enough says, are for the most part water-colour drawings and perspective views of buildings proposed or executed, and not architects' drawings. But this admitted, the great talent shown in these water-colours cannot be too much admired, and whatever may be the ability of our French architects to produce, it would be difficult for them to compete in the mode of setting forth with our colleagues beyond sea. All designs being remarkable, M. Garnier continues, it is nearly impossible to class them: the weakest are nevertheless beautiful. As to the style employed, it does not vary much, and little as English architects are wanting in imagination, they still live, to some extent, on a passed architecture where the Gothic type rules, but it is a type peculiar to England. To sum up, he continues, much as we may regret the absence of plans and geometrical drawings, and that the architecture of Great Britain is represented only by water-colour sketches and perspectives, one is forced to acknowledge that this collection does the greatest honour to the artists who have contributed to it.

ON THE INFLUENCE OF SOME CONTEMPORARY WRITERS ON ARCHITECTURE OF THE DAY.*

THE revival of Art, and especially Ecclesiastical Art, in England, is no doubt due, in great measure, to the Christian feeling of the country. I mean by this the deep religious feeling of the various religious bodies in this land, especially of the English Church. The Church, perhaps, in a higher measure than any other body, can take advantage of that earnest sympathy for Christian union, which, in spite of many discouragements, must be looked upon as one of the most cheering signs of the times.

It is the fact, however, that not merely in Christian but in Heathen lands the influence of philosophical and other writings in moulding the forms of external art has been fully recognised, while the converse—I mean, the effect of external beauty upon the moral nature of man—has been equally acknowledged in all ages.

The susceptible disposition of the Greeks exemplifies both these currents of human thought and human art. We have their actual imagination endowing wood and stream and flower with divine attributes and human form. We have their philosophy in its turn influencing human

* By Sir Walter C. James, Bart. Read at the Architectural Exhibition Society.

affairs and poetical sculpture springing up, as it were, the natural product of divine poetry.

We think too little of these things, too little of the indirect impetus which philosophy gives to the tendencies of an age, too little of the indirect modes in which all we see and hear affects us. The object of the present lecture is twofold: to exhibit, in the first place, the influence of mind upon matter; and in the second, to give a few examples of the effect of matter upon mind; to show how fine writing is connected with fine art, especially with fine architecture; and, again, to trace the influence of a noble style of building, in creating noble thoughts, and making a really noble man.

The great wars, which followed the French revolution, produced an injurious effect upon the arts in Europe, specially, perhaps, in England. What really happened was the more intense envelopment of an insular character. The reign of George III. was decidedly unflattering in great architects. The name of Chambers alone is handed down to posterity as worthy of remembrance. In the other arts I am inclined to think scant justice is done to the conclusion of the last and beginning of the present century. Sir Joshua Reynolds is sufficient to immortalize the era in which he lived; but with Reynolds were associated other great names, notably those of Gainsborough and Wilson, who almost founded (we may say) the British School of Painting. In sculpture and the fictile arts, the name of Wedgwood can never be forgotten; while, associated with him, we have the still greater and nobler genius of Flaxman, whose works, more, perhaps, than those of any other Englishman, have attained a continental—a world-wide reputation. Such artists could not have been produced in a country (this is my theory) wholly destitute, as it is sometimes represented to have been, of taste for the fine arts. At the period to which I allude, the author of "Anastasis" was furnishing his house, and writing his learned works on the costume of the ancients; Beckford was building Fonthill; the poet Rogers was gathering about him that select collection of pictures for which all who knew the author of the "Pleasures of Memory" have the tenderest regard. Here stood furniture made by the hand of Chantry, while he was yet a journeyman carpenter. Here the young artist, whatever his speciality, was sure of a kindly and genial welcome from one whose refined and gentle nature made him not only the kindest but best of judges.

When the revolutionary wars ended, the artists of England were hardly known; not at all appreciated upon the continent. And this to a very great degree is still the case.

In France, or Italy, or Germany, the names of Reynolds, of Gainsborough, of Wilson, are certainly not household words, and it has been reserved for the genius of Ruskin to draw out into full daylight the merits of that great landscape-painter, who, at the period to which I allude, was beginning to give proofs of his transcendent genius, and, as it were, to remodel the art of the landscape-painter.

With regard to architecture our efforts were futile. In this day of small things, however, Rickman and Britton, and the elder Pugin, were studying and collecting materials of rare value, the full importance of which could hardly become known till after their deaths. The weight of taxation, which accumulated debt never fails to produce, was a serious hindrance to building, and the first decade of the present century hardly boasts a single edifice of any importance. The proprietary chapel was the fashionable "place of worship;" and, I think, there is a letter in Gisborne's correspondence with Wilberforce in which the former says that, "having been solicited to aid in the formation of a parochial district, and the erection of a new church, the subject was one entirely new to him, and he could not tax his memory with any demand of a like nature." I wonder whether there is in this day any churchman who has come to years of discretion, and of religious character, who could with truth venture upon such an avowal.

It is a striking, though quite to be expected fact, that with peace the arts of peace began to revive. A taste for archaeological pursuits has always been congenial to so aristocratic a nation as the English; and from the days of Selden and Camden the "painful antiquary" has always been a character much respected among us. The wide popularity, however, of the architecture of the Middle Ages, and of "Mediævalism" in general, which accompanied the peace, must be

ascribed to the works of one appropriately called the "Great Wizard of the North." With every detail of castellated work Sir Walter Scott had a most intimate acquaintance, and probably neither Hudson Turner nor Hartsdorne could better give the details of a Mediæval fortress than our Scottish novelist. Sir Walter Scott, however, was not a warm churchman, and in ecclesiastical subjects probably less at home than in Border history or romance. Yet, what can be more eloquent than many of his descriptions of Gothic minster or moonlit ruin. Take, for instance, the celebrated lines on Melrose Abbey:—

"If thou wouldst view fair Melrose aight,
Go visit it by the pale moonlight,
For the gay beams of lightsome day
Gild but to flout the ruins grey;
When the broken arches are black in night
And each shafted pillar glimmers white;
When the cold light's silverian shower
Streams on the ruin'd central tower;
When buttress and buttress alternately
Seen framed of elon and ivory;
When silver edges the imagery,
And the scrolls that reach thee to live and die;
When distant Tweed is heard to rave,
And the howlet is lo'ter the dead man's grave;
Then go,—but go alone the while
To view St. David's ruin'd pile,
And home returning, soothingly swear
Never was scene so sad and fair."

Even Nature presented herself to the poet in the garb of castle and spire, as is well shown in these beautiful verses on the Trossachs, which we all remember:—

"Each purple peak, each flitting spire
Was bathed in floods of living fire;
But not a setting beam could glow
Within the dark ravines below;
Where twice the path in shadow hid
Round many a rocky pyramid,
Shooting abruptly from the dell
Its thunder-splinter'd pinnacle
Round many an insulated mass,
The native bulwarks of the pass,
Hug as the tower which builders vain
Presumptuous piled on Shinar's plain,
The rocky summits, split and rent,
Form'd turret, dome, or bastiment,
Or seem'd fantastically set
With cupola or minaret,
Wild crests as Pagod ever deck'd,
Or mosque of Eastern architect,
Nor were those earthen castles bare,
Nor lack'd they many a banner fair;
For from their shiver'd brows display'd
Far o'er the unfathomable gace,
All twinkling with the dew drop's sheen,
The briar-rose in streamers green,
And creeping shrubs of thousand dies
Waved in the west wind's summer skies."

These lines, I think, show with what pleasure Scott must have noted that remarkable feature of Mediæval building, the sky-outline, admirably adapted as it is to contrast with the fleecy character and rounded forms of our clouds, and of which we have such splendid examples in the towers and keep of many a castellated castle, and in the lofty spires of many a noble minster. Any young man, however, who wishes to see the difference between the man of imagination and the man of practical knowledge, need only visit Abbotsoford; for, notwithstanding the considerable sums spent upon it from time to time, it must be pronounced a failure,—built twenty years before its due time, and characterized by the miserable insignificance of what is called "villa Gothic." Whatever is worth doing at all, is worth doing well,—a maxim sadly forgotten by those who attempt to combine the bulk and grandeur of the old castle with the conveniences and prettinesses of a modern house. I do not mean to say the combination is impossible. Those who possess such lordly castles as Alnwick or Raby do right, unquestionably, in living in them and turning them as best they may to the uses of social life. It is a difficult thing to rear such buildings anew, when the warlike purposes to which they were turned are to be numbered among things of the past. Nothing can be more noble or elevating than a real relic of antiquity—nothing meaner or more contemptible than an artificial ruin.

There is, then, a preliminary fitness in the English mind to create for itself a style of architecture at least founded upon the Mediæval styles. The glorious traditions of our history and the literature at the beginning of the century matured that fitness. These, however, were but indirect encouragements. It remained for men of architectural talent to put, as it were, the torch to the pile, and to develop buildings worthy of the age and country. Before, however, I can enter at all at large upon the merits of those who have directed the architectural movement of the day, I must say a few words,—and they shall only be few,—upon the state of religious thought, which powerfully contributed to bring about the taste for building, the origin of which it is my duty to investigate.

I need not say I allude to the great religious movement which, beginning thirty years ago, has, as it were, popularised Church teaching. I venture to remark that, while "preaching" alone was much appreciated among us, there was little need of splendour in our ritual or in our churches. Self-glorification might well be attributed to the clergyman who wished to raise a tabernacle, the chief object of which was to display his own powers of oratory; but when, in addition to the idea of preaching, the still greater idea of a common and catholic worship was superadded, it then became obvious that not the glory of the preacher, still less the comfort of the auditory, was to take the first place, but rather those rites which, "in honorem Dei," have always held the first place in the church of God, and which require, indeed, decency and order for their fitting celebration, and of which the effect is ever augmented by glory and beauty.

As the air is full of seeds, which do not prosper or germinate till they find an appropriate resting-place,—a nest, as it were, in which to place their habitation,—so with "art ideas," it is not till the public mind has nursed them that they expand into maturity. The splendour of Leo X. produced a Raffaele and Michelangelo. Each age, unlike its predecessor, produces its own work; each work, as the case may be, is but the child of the parental and first idea.

The England, then, of the present century, has all the elements which go to make a country great in art:—an enterprising and intelligent people, a prosperous commerce, a taste for antiquity, and perhaps more than all, strong religious sentiment. Among the individuals, however, who have brought this feeling into active energy no two can be named more remarkable, and yet more different, than Pugin and Ruskin. The publication of two lectures delivered at St. Mary Oscott, defining the true principles of the Pointed style, may be considered an era of some importance in the revival. With scientific precision Pugin proceeds, laying down the rule,—

1st. That there should be no features about a building which are not necessary for convenience, construction, or propriety.

2nd. That the ornament should consist of the enrichment of the essential construction of the building.

To the neglect of one or other of these rules, he adds, is due all the bad architecture of the present time.

The scientific precision and clear language of these definitions naturally astonished the public, brought up, as they at that time were in the belief, that "Gothic" was only another term for barbarous architecture,—a term of reproach for one or more kinds of architecture which prevailed during the Middle Ages. Mr. Evelyn, quoted by our great architect Sir Christopher Wren, writes in his Parentalia,—"Gothic architecture is a congestion of heavy, dark, melancholy, monkish piles; and again, 'The Goths and Vandals have demolished the Greek and Roman architecture, introduced in its stead a certain fantastical and licentious manner of building, which we have since called Modern Gothic, of the greatest industry and expensive carving, full of fret and lamentable imagery, sparing neither pains nor cost.' And to these opinions Sir Christopher Wren assented; indeed, he himself, speaking generally of Gothic architecture, calls it "mountains of stone; vast gigantic buildings not deserving of the name of architecture;" and Horace Walpole, with a supercilious admiration akin to contempt, says, "The pointed arch, that peculiarity of Gothic architecture, was certainly intended as an improvement on the circular; and the men who had not the happiness of lighting on the simplicity and proportion of the Greek orders were, however, so lucky as to strike out a thousand graces and effects, which rendered their buildings magnificent yet genteel, vast yet light, venerable, and picturesque." We certainly in this day should think it a very strange phrase to speak of a "genteel" cathedral.

When men inquire who invented Gothic buildings, they might as well ask who invented bad Latin? The former was a corruption of the Roman architecture as the latter was of the Roman language. Both were debased in barbarous ages, both were refined as the age polished itself, but neither was restored to the original standard. Beautiful Gothic architecture was engrafted on Saxon deformity, and pure Italian succeeded to vitiated Latin." Again, "one must have taste to be sensible of the beauties of Grecian architecture; one only wants passions to feel Gothic." Strange as these sentiments

appear now, they are hardly so strange as the sad disfigurements by which many of our noblest temples and edifices were debased. Many were altered, and, unhappily, not a few entirely destroyed. I question much whether the zeal of the Reformer, or the Puritan, actuated by a good honest faith, has been so fatal to the arts as the ignorance of our immediate forefathers. The fanatic has done much evil: perhaps the churchwarden may have done more.

Towards the close of the last century the ingenious Bishop Warburton revived or perhaps originated what we may call the "Avenue theory" of Gothic architecture. Two systems prevailed in his day,—one deriving Gothic architecture from the Northern Goths, the other from the Eastern Saracens. Attempting to combine the two systems, he says,—“When the Goths had conquered Spain, and the religion of the old Christian inhabitants had inflamed their piety, they struck out a new species of architecture, unknown to Greece and Rome; for this Northern people having been accustomed, during the gloom of Paganism, to worship the deity in groves, when their new religion required covered edifices, they ingeniously projected to make them resemble groves, at once indulging their own prejudices and providing for their present conveniences, by a cool receptacle in a sultry climate, with the assistance of Saracen architects, whose exotic style of building suited their purpose.

When we see the crude and ignorant ideas thus prevalent, little more than half a century ago on the subject, we cease to wonder that the Pointed style of architecture has amongst so many enemies, that it has had to contend against the prejudices of many in high places, including such great names as Peel and Palmerston.

It was, I repeat, a matter of no slight importance that a man like Pugin should have been raised up, at the period to which I allude, to show as clearly as he has done that the Mediæval architects are guided not merely by monkish fancies, but by strong sense, and a knowledge of mechanical principles; his exposition of the suitability of high-pitched-roofs to the northern climate, in which we live, has always struck me as peculiarly happy.

“The pitch of roof in Pointed architecture,” he writes, “is another subject on which some useful observations may be made. It will be found, on examination, that the most beautiful pitch of a roof or gable-end is an inclination sufficiently steep to throw off snow without giving the slate or lead covering too perpendicular a strain, which is formed by two sides of an equilateral triangle.

“If this form be departed from, the gable appears either painfully acute or too widely spread. All really beautiful forms in architecture are based on the soundest principles of utility.

“Practical men know that flat-pitched roofs, which are exceedingly ugly in appearance, are also but ill-calculated to resist the action of weather. In slated roofs especially, this is wind actually blow under and uplift the covering. When the pitch is correct, its proper elevation, the whole pressure of the wind is lateral, and forces the covering closer to the roof.”

The elevation gained by a high-pitched roof forms one of the most remarkable features of the Pointed style. It is, however, worthy of passing remark that Mr. Ruskin, in his discomparisons between Northern and Italian Gothic, giving, as he does, the undoubted preference to the latter, never once alludes to the great glory and beauty of the northern roofs, which are, *par excellence*, the most remarkable characteristic of the style, and that, too, whether we look at them externally or internally—externally as improving and heightening the sky-line, internally as a mere covering to the groined vault, with its manifold interlacings, the very triumph of the architect's skill.

The theory of the roof is applied by Pugin with much ingenuity to the spire and the pinnacle. It may be well, before concluding this passing notice of his work, to quote it:—

“In the third place, we will proceed to the use of pinnacles and spiral terminations. I have little doubt that these are considered by the majority of persons as mere ornamental excrescences, introduced solely for picturesque effect. The very reverse of this is the case, and I shall be able to show you that their introduction is founded on the soundest principles of construction and design. They should be regarded as securing a double intention, both mystical and natural. Their mystical intention is like other vertical lines and terminations in architecture to represent an emblem of the Resurrection. Their natural intention is that of an upper weathering to throw off rain. The most useful criterion for this purpose is of the spiral form: only let such a form be devised as to finish and crockets, and we have formed a perfect pinnacle. Now the towers, piers, of which these floriated tops or the terminations, are all erected to answer a useful purpose when they arise from the tops of wall-buttresses.”

They serve as piers to strengthen the parapet, which would be exceedingly weak without some such support.

Their utility on the great piers which resist the flying buttresses is obvious. At the bases of great spires the clusters of pinnacles are also placed to increase strength and resistance; in short, wherever pinnacles are placed in pure Pointed architecture, they will be found, on examination, to fulfill a useful end.

The same remarks apply to the crocketed or floriated terminations of floriated and other turrets, which are in fact ornamented roofs; and I need hardly remark, that turrets were not carried up without legitimate reason.

Every tower built during the pure style of Pointed architecture, either was, or was intended to be, surmounted with a spire, which is the natural covering for a tower. A flat roof is both contrary to the spirit of the style, and it is also practically bad. There is no instance before the year 1400, of a church tower being erected without the intention at least of being covered or surmounted by a spire; and those towers antecedent to that period which we find without such terminations, have either been left incomplete for want of funds, weakness in the substructure, or some casual impediment; or the spires, which were often of timber, covered with lead, have been pulled down for the sake of their material. In fine, when towers were erected with flat embattled tops, Christian architecture was on the decline, and the omission of the ancient and appropriate termination was strong evidence of that fact.

Thus Pugin runs through the various features of the Pointed style in rapid succession, dilating upon each with consummate knowledge and the highest feeling for art.

From Pugin I pass by an abrupt transition to a writer of more than ordinary genius, but of a very different stamp. I allude to John Ruskin. Yet are there points of similarity. Both have been endowed with that sensitive and enthusiastic temperament which, as it were, drinks in the beautiful with the utmost avidity. Both had intellect to fathom the principles from which beauty is derived. In addition to this remarkable sensibility for the beautiful, both had an cultivated eye, for they were trained and finished architectural draughtsmen. The admirable illustrations which adorn Ruskin's great work, “The Stones of Venice,” are familiar to the art-world; yet I may add that it was my lot, as a young man, to see at Christ Church, Oxford, many of his earliest works. Young as he then was, nothing can exceed their elaborate care and artistic finish. Pugin's son has done good service to the memory of his father in photographing many hundreds of his beautiful sketches. I can pass no higher encomium on them than that, while they never lose sight of his own great object,—the revival of the Pointed or Middle Pointed style in its true grandeur and proportions,—they show the deepest love for art as art. It is quite clear from such efforts that the man who became so eminent an architect would, under other circumstances, have become a painter equally eminent. There is hardly a sketch among them which does not of itself form a picture.

Thus gifted alike by nature with rare gifts, and a sense of the beautiful so fine as almost to touch upon the borders of the morbid (gifts which, in combination, amount nearly to a true definition of artistic genius), these two men arrived at theories with regard to art very opposite to, if not contradictory of, each other.

Pugin fixed his faith, strong and ardent, upon that phase of Christian art which is called Decorated or Middle Pointed. He looked upon it as not a question of relative excellence, but of absolute perfection. He says, “if we view Pointed architecture in its true light as Christian art, as the faith itself is perfect so are the principles on which it is founded. We may, indeed, improve in mechanical contrivances to expedite its execution, we may even increase its scale and grandeur, but we can never successfully deviate one tittle from the spirit and principles of Pointed architecture. We must rest content to follow, not to lead. We may, indeed, widen the road which our Catholic forefathers formed, but we can never depart from their track without the certainty of failure being the result of our presumption.”

It would not, I think, be difficult to show that this is very serious exaggeration. The vaulting of a fourteenth-century church poised high in air, with its wonderful tracery, its hexapartite groining, can hardly be defended as consistent with true principles of taste. It is rather a magnificent, not to say exaggerated, “*tour de force*,” than a legitimate exercise of skill, in

which not only ought the means to be nicely adapted to the end, but the end is beautiful because it is adapted to its purpose. Now, Gothic groining is by no means, in this respect, praiseworthy. It is in no sense a true roof. “At St. Peter's,” observes Pugin himself, “the dome is the actual covering of the building; at St. Paul's, London, the dome that is seen is not the dome of the church, but a mere construction for effect.” The same reasoning applies to the vaults of our Gothic cathedrals. They are structures for effect, and never the actual coverings of the building, which are mostly timber roofs covered with lead, forming an efficient protection to what without such cover would soon turn to decay. Again, we find frequently in the Decorated period shafts and pillars so scantily and ill-built, so far too narrow, that the architects have been compelled to abandon their original designs on account of the weakness of their supports. Hence it is, no doubt, that many of our cathedrals want to this day their central spire; while others are disfigured by the bulging of buttresses and artificial supports from pillar to pillar, enabling them thus to sustain the superincumbent weight.

But, if we disagree with Pugin in thinking the Middle Pointed style the acme, as it were, of true perfection, still less can we agree with Ruskin in that expression of the general inferiority of Northern to Southern work, in which his celebrated book on Venice abounds.

It is worth notice, that while Pugin considers “ornament or beauty to be attached with propriety only to such parts of a building as are truly useful,—bones, as it were, of a skeleton to be clothed with muscle, flesh, and bright skin,—Ruskin looks upon beauty essentially as an adjunct,—as a super-addition, in which we may revel, as it were, “*ad libitum*.”

“The first thing we have to ask of the decoration,” says Ruskin, “is that it should indicate strong liking, and that honestly. It matters not so much what the thing is, as that the builder should really love it and enjoy it, and say so plainly. The architect of Bourges Cathedral liked hawthorns, so he has covered his porch with hawthorn,—it is a perfect Niche of May. Never was such hawthorn. You would try to gather forthwith but for fear of being picked. The old Lombard architects liked hunting, so they covered their work with horses and hounds, or men blowing trumpets two yards long. The late Renaissance architects of Venice liked masquerade and fiddling, so they covered their work with comic masks and musical instruments. Even that was better than our English way of liking nothing, and professing to like tripe.”

“The second requirement in decoration is the sign of our liking the right thing, and the right thing to be liked is God's work, which He made for our delight and contentment in this world; and all noble ornamentation is an expression of our delight in God's work.”

Between these two theories it may be asked, “Is there no true resting-place?” To say that we must ornament only the true constructive parts of a building, seems open to some objection. I hardly know whether it would be thought correct to say that the angle is a constructive “member” of a building in the sense in which Pugin speaks of construction, or the ridge of a roof, or the wall-space generally; yet all these are very appropriate places for ornament,—quite as much so, one may say, as the jambs of a window, or the finials of a pinnacle. Still less do we like the theory of “revelling” in ornament. Appropriate ornament seems to be that which selects some point, or points, for special glory and beauty, leaving other parts comparatively plain. This is nature's plan. She selects her point—the flower; or in the human form, the face; and then moulds, as it were, secondary objects into her general design, subordinating them to some few, and often to one single grand object, upon which she lavishes all her concentrated treasures. Thus, in a Christian Church the chancel is and ever must be the “flower” upon which most skill is to be spent. Here we have the altar, its attendant priests, its reredos, its rich and traceried windows. In a castle there probably would be one single apartment, the banquetting-hall, or saloon, to which the chief attention is directed, where all else is rude and almost barbarous. In a modern dwelling-house, the drawing-room, or chief sitting-room, is the most costly, as being devoted to the most costly purposes. In every work of art there is a central object—a jewel, as it were, the central stone of a diadem, or ring, to which other parts contribute. Here it is that most pains should be spent; just as the petals of the rose are more delicate and more highly coloured than the leaf of the rose-tree. I venture to throw out this theory as taking a *via media* between Pugin's view of ornamenting only those parts of a building which are constructive, and Ruskin's more licentious view of scattering beauty with a liberal hand wherever fancy dictates.

What can be stranger, or, indeed, more unreasonable, than the following passage:—

"Then as regards decoration, I want you only to consult your own natural choice and liking; but you will assuredly like the right thing if you suffer your natural instincts to lead you. Half the evil in this world comes from people not knowing what they do like, not deliberately setting themselves to find out what they really enjoy. All people enjoy giving away money, for instance; they don't know that. They rather think they like keeping it,—and they do keep it, under this false impression, often to their great discomfort. Everybody likes to do good, but not one in a hundred finds this out. Multitudes think they like to do evil; yet no man ever really enjoyed doing evil since God made the world."

It is a pity that moral reflections, of so crude and questionable a character, should disfigure the works of so admirable a critic; but the fault of John Ruskin as a writer unquestionably is an overweening self-esteem.

Nullius addictus jurare in verba magistri. He trusts implicitly in his own powers, not unlike a writer who, in a very different province of thought, has made himself a reputation second to none,—I allude to "Carlyle." Ruskin in his own way is, like Carlyle, an intense hero-worshipper; Turner, among the landscape painters; "Fra Angelico, and Giotto" among the religious; Titian, and to a still greater degree, "Tintoret," among the colourists; Rembrandt among the Dutch; Italian Gothic among the architectural styles. These are his gods, and very worthy divinities they are; grand and solemn figures which from age to age we gaze upon with reverential awe. But woe to those who question their entire supremacy; woe to that man who is not content to sit at the feet of our modern Gamaliel and listen to his rhapsodies,—whether a rhapsody in applause of a Madonna by Fra Angelico or a "Phryne" by Turner.

Tennyson has, I think, with his universal and glowing sympathies, influenced us too much in this direction. The hurry in which we live does so much more; I mean in the direction of an abundant applause to art in every phase; to literature of all kinds, without a decided and masculine preference for any. It leads to a flimsy earnestness; to a small but not lasting enthusiasm. It leads men instead of doing one thing well to attempt to do twenty things; the result of which is that they are ill-done. It is a warning to all young men, and not least to professional men. If we look back to the days of Queen Anne, we find Sir Christopher Wren, Vanbrugh, and others despising Gothic or Pointed architecture; but then they were enthusiastic in their own line. Now-a-days we have artists equally ready to turn their hands to anything,—to Greek or Gothic, or Italian, the beauties of the Parthenon, or the beauties of the Alhambra. In this activity of thought it is surely very desirable to aim at something definitely to limit our designs, and to frame our purposes, so adapted to the spirit of the age as not to be without a true reverential feeling for the past.*

THE LATE SAMUEL CUNDY, MASON.

ALL who remember Pimlico when "the Queen's House" (*alias* Buckingham House) was standing, must well remember some of the leading families in that George IV.,—1820-1830,—outlying "off the stones" district, when the nearest letter-box for the reception of letters, frank or unfranked, was at a grocer's in St. James's-street, over against the Thatched House. Many a letter has the writer carried from Eocleston-street and Lower Belgrave-place, through Buckingham-gate, and by the stable-yard, through St. James's Palace, to the grocer's post-box in St. James's-street, some three or four doors above Mr. Sams's library and box and stall ticket office. Why, we remember the overflow of the Thames in 1821, when "the cuts" inundated "The Willow-walk," and Jerry Abershaw the highwayman's cottage (he adorned Wimbledon-common in chains), and Pimliconians were seen to carry pigs with them on horseback, to escape being "swept away with the flood." In the days we refer to Pimlico was without a hackney-coach stand; a bellman with a bag collected general-post letters, for which he had his perquisite of a penny himself per letter.

We have been led into these old-day remembrances by hearing the somewhat unexpected news of the death of one who belonged to a family of some note in Pimlico, when Pimlico was an isolated environ or suburb of West-end

London; bound on the north by the Five Fields, where robbers were wont to lie in wait; on the south by a morass, with "cuts" belonging to the Chelsea Waterworks; on the east by unlighted Buckingham Gate and St. James's Park; and on the west by the far-famed Chelsea Bunhouse. We allude to the family of the Cundys, who were largely connected with the Earls of Grosvenor, to whom Pimlico belonged when it was of little comparative value.

We have many pleasant recollections of the place. There Chantrey used to play at quoits with his men,—foreman, modellers, sculptors, and masons,—and being a good shot (in spite of his left-shouldered gun and the want of his right eye, though the loss was in no way apparent), he could "ring" and "cut out" with a craft and certainty which many envied.

Death has just taken away Mr. Samuel Cundy, mason, known by his portly person, his always smiling lips, and rosy cheeks, beyond Pimlico and Millbank, "The Mason's Arms" and "The Rule and Compasses." He was the son of that Mr. Cundy who was of note in Pimlico, and who was killed in Waterloo-place while on horseback by the pole of a butcher's cart.

Samuel Cundy (whose death we mention) was born in Pimlico about the year 1816. His education was uncertain. He early took to the mason's mallet and apron, and was an expert when very young with his chisel.*

His restoration—in stone, with mosaic and gilding—of the Westminster Abbey tomb of Philippa, Queen of Edward III., will be in the memory of all who remember the Hyde-park Exhibition of 1851. It was done with taste and the true antiquarian feeling of an heraldic mason.

Mr. Cundy's skill with his line and rule attracted the attention of a judge not readily mistaken, Mr. G. G. Scott (now R.A.), who secured his services. He wrought as foreman for him at the church of St. Stephen in St. Alban's; and afterwards at the noble Abbey, St. Alban's, until the subscriptions were exhausted, and the work was at a full stop. The thorough restoration of the church of St. Michael, the church in which Lord Bacon is buried, he had much at heart. We have heard him discourse "about it—and about it" most pleasantly on the spot. He understood his subject, and had the art to make his listeners understand what he said.

RANSOME'S CONCRETE STONE.

THE Patent Concrete Stone Company have removed their works from Ipswich to a commodious factory at East Greenwich, including two workshops, respectively 145 ft. long by 100 ft. in width, and 108 ft. long by the same width, with furnaces, boilers, steam-engine, hot baths and shower baths,—the first to saturate the blocks with chloride of calcium, the second to wash out the salt crystals left by the recombination. To see the new works and the processes going on in them, about 100 gentlemen interested in such matters, including a number of architects and engineers, assembled there on Friday, the 21st, when Mr. Fredk. Ransome explained the system to them. We have before now done this, but we may repeat in brief that the material is made, by preference, of finely-sifted dry sand. A small proportion of pulverized lime is added to the sand, to give the silicate of stone produced in the manufacture the necessary closeness of surface for its cementing action. To every bushel of the mixture about one gallon of prepared silicate of soda (melted flint) is added, and the whole mass is then thoroughly mixed and incorporated in a simple mill, from which it is taken—a putty-like plastic substance—in a fit condition for the moulds. The mixture of each charge of the mill occupies only from three to four minutes, and is remarkably complete.

The moulding is, for the greater part, done in wooden moulds, but in some cases metal, and in others plaster of Paris, is employed. The prepared mixture is pressed into the mould by means of suitable tools provided for that purpose. A peculiarity of this material is, that mouldings retain the precise form in which they emerge from the mould, without enlargement, contraction, cracking, or warping, which is not the case with materials that are burnt.

The men, when they have taken their work from the moulds, place it upon a bench, where, by means of a flexible hose, it is drenched

with a solution of chloride of calcium, in a cold state. The chloride of calcium acts rapidly upon the silicate of soda, and solidifies the mass. The castings are next conveyed upon trucks to the adjoining room, where they are immersed in cisterns containing a solution of chloride of calcium, having a specific gravity of about 1.400, and a temperature of about 212°. The chemical action between the silicate of soda and the chloride of calcium is consummated in this stage, and results in the formation of what is thought to be an insoluble silicate of lime, which envelopes and joins all the particles of sand, gravel, chalk, detritus of stone, or other mineral base, of which the block or casting is composed. After the work has been thoroughly saturated by the boiling calcium, all that remains to complete the process is to wash away the chloride of sodium, or common salt, which has been evolved by the combination of the sodium with the chloride. This is done by means of troughs with perforated bottoms, that discharge a copious shower-bath upon the castings.

Some experiments were made to show the strength of the concrete stone, as to its power to resist both pressure and pulling. A 4-in. cube, made fourteen days previously, remained intact under 35 tons, and was crushed by 40 tons. A second cube, of the same size and age, was damaged at the edges by 35 tons, and was crushed by 44 tons. Of its strength, however, there is no doubt. The question, of course, is what effect long exposure to atmospheric changes and the weather may have. Very satisfactory opinions were expressed by several of the visitors who had looked into the process and had had some experience of the result. The manufacture is in full activity, and a large amount of work under the direction of various architects is being produced.

MOSAICS.*

I HAVE been asked to say a few words on the use of mosaics. Recent inventions have so far reduced the price of them as to place them within our reach, in many instances in which, only a few years since, they would have been quite beyond it; and the splendid effects which they assist us in producing tend, naturally, to their employment to a large extent. But, as in all cases of vivid colouring, there arises the fear that so useful an aid in decoration may be made the means of overstrained effect, and thus produce a gorgeous deformity in place of beauty.

It happens, too, that their use has been for many centuries so rare, that there is really very little opportunity of studying the actual work itself in any place north of Italy.

A short half-hour or so will, therefore, scarcely be wasted in considering the subject of the various kinds of mosaics—how they were used, and how combined with each other, and with other kinds of decoration, so as to produce an agreeable and effective whole. We may consider them as being divided into those used for pavements; walls; and ceilings, or other roof coverings.

I shall say little by way of description of the several kinds. They are so well known to most, that the detail would have little of interest; and I shall, therefore, say only just enough to recall to memory the precise kind to which I shall refer.

I begin with the pavements.

The earliest kind of these whereof remains of any great size exist is the Roman, and we have large examples of it both in Britain and France. In scarcely any case, however, do the walls there exist of sufficient height to show the kind of decoration used in combination with these pavements. But in many parts of Southern Italy, Rome, and Pompeii, especially, we get it exactly.

The Roman pavements were of several kinds. That of which we have, perhaps, the finest specimens was the simplest (*opus sectile*), and was of geometrical pattern, formed of pieces of marble of different sizes and colour. One of the most noted specimens of this is at the church of S. Pietro ad Vincula, at Rome. It was found at the Baths of Titus, and is quite different from the kind that we ordinarily see in Medieval work. There is none of the large circular pattern, and very little of the rich filling in with

* To be continued.

* He restored the tower of Fulham Church, in Middlesex, under the direction, in early days, of the conductor of this Journal.

* By Professor Hayter Lewis, Read at the Architecture Association.

small pieces, as in the Alexandrine; but it is made of geometrical figures, formed of pieces of light marble, usually nine inches square or so, with filling-in pieces of a darker kind, and of smaller size, forming centres or borders. The whole is of a more even and less prominent pattern than the Alexandrine.

The other kind, best known out of Italy at least, is that made of small cubes of differently coloured materials (*tesselatum*), of which we have very many good examples in our Museum. These cubes were, generally, arranged also in geometrical patterns, in scrolls, frets, squares, circles, &c. Often, too, there are representations of animal life, human faces and figures, fruit, fish, &c. (*vermiculatum*). But these representations are roughly done, and are evidently mere bold studies for giving a good effect. These pavements were, in fact, generally rather coarse in execution, and not intended to do more than give a pleasing effect of colour. To make these pictures was certainly not the object. They were admirable things to walk on, so far as their structure was concerned, being somewhat rough and not at all slippery.

As to the question of the propriety of representing the human face, fruit, and so on in positions, wherein they must have constantly been trodden on, I say nothing here: that is another part of the subject. I am speaking now simply of decoration. But there are some examples in which the workmanship was of a much higher kind; one of the most noted being, perhaps, the famous battle mosaic found in the House of the Fann at Pompeii. This is executed in very small pieces with great care, and the result is a really beautiful picture, with such outlines and colouring as one could, at first, scarcely believe could be produced by the natural materials employed. A somewhat rude example of Medieval date, and so far rather uncommon, exists in the mosaic of the knights in S. Lorenzo at Rome. These are made of little cubes, varying from $\frac{1}{4}$ in. to $\frac{1}{2}$ in. square according to the delicacy required in the several parts. The whole are of marble, the red being of porphyry, the green verd antique, &c. But this luxury of materials is to a considerable extent exceptional. The more usual substances were of a much more ordinary kind. Take one case in England—Cirencester, *p.s.*, as described by Mr. Wright. The white was of chalk, but very little of this was used on account of its softness, and the ground was put in with a cream colour; the material being a fine-grained freestone. The grey was of the same stone, slightly altered by heat. The yellow was from an oolite of the neighbourhood; chocolate from a variety of the old red sandstone; slate from the lower lias stones; and the light and dark, red and black, were obtained by burning different kinds of clays at different heats.

Now, you will see from this description that a pavement so composed could have had as its general tone of colour little more than a series of half tints, with, every now and then, emphasis given to a particular part by a few cubes of glass being introduced. The general tone of colour was, in fact, even lower than what we might expect from my description, as the pieces of which the pavement was composed were very small and put together with tolerably thick cement joints, and the cement used in them was not coloured in my way; so that, probably, about one-eighth of the whole surface was made up of the light brown cement, assisting very materially to subdue the effect of even the very moderate colouring used.

It is supposed that the pavements were, to a certain extent, polished. If so, this must have been very slightly done, as the materials which I have named are too soft to have allowed of much gloss being given to them. We may take it, then, that as a rule, the floors used by the ancients presented a general mass of pleasing ornamentation, with just so much colouring as would serve as a sort of base for any decoration on the walls, but without being at all obtrusive in itself.

With the architects of the early Christian times, those to whom are due the great basilican churches of Rome, Ravenna, &c., we get an altogether different class of paving—I mean the Alexandrine. This seems to derive its name both from the emperor (Alexander) who introduced it into Rome, in the third century, and from the place whence he derived it, viz., Alexandria. It had been, no doubt, used in the East long before, and by the Pagans; but it is so commonly found in the Christian churches, that it is almost identified with them. We have a

very early example of this in the famous Byzantine church of S. Vitale at Ravenna, and several others, though in fragments, in the various churches in Constantinople. One of the most characteristic specimens is from the S. Lorenzo frieze. This seems to be formed of circular slabs of marble, porphyry, and other coloured marbles or granites, taken as centres, with patterns in small mosaics, taken round these in geometrical forms, and imbedded in slabs of marble. The large centre circles are very irregular in outline—for what reason I am at a loss to account; but the sweeping lines of the small mosaics round them are truly struck, so that the borders are of very irregular width.

In this case, and in that of all (or nearly so) the Alexandrine mosaics, the whole of the materials are of a kind to bear a fine polish. The green is of verd antique, the red of porphyry, and the ground of white marble—the whole undoubtedly of a much more gorgeous character than that of the ancient Roman pavement. But you must remember that the whole colouring was that of the actual materials used. There was nothing but Nature's own decoration, and you know well that this is never gaudy.

Examine a piece of verd antique or deep red porphyry, and you will find that it is little more than of a rich neutral tint,—nothing, for example, of the light green, blue, and red, of an artificially made tile. Then the marble ground, white enough when first laid down, became toned down to a rich stone-colour by the damp which rose to it from the earth on which it lay; and the whole series of patterns was lowered in brilliancy in the same way as the ancient Roman were, though not to the same extent, by each of the pieces which composed it being bedded in a brown cement, with joints which were often very wide and carelessly made; so that, when these pavements had the gloss slightly taken off them by time and wear, they must have formed a very beautiful pavement, of rich but subdued colouring, without a single piece of positive colour about them.

In their present state nothing can be more effective; and we see their effect as well now, probably, as when they were new, because the colouring to the walls and ceilings, then fresh, is now subdued as the pavements are. It is scarcely necessary to mention that there are a few specimens of this work in England, viz., at Westminster Abbey and at Canterbury; but they are on too small a scale to give a good idea of their general effect when used throughout the area of a large church. If we come down to later times amongst the works of the Medieval architects here and abroad, we get the same succession of subdued half-tints, however deep in tone they may be.

The actual mosaics, such as those used anciently, were little enough employed, either here or in France, in large masses. We have a kind of mosaic in the incised stones so often found, in France especially; but in general these were laid down in detached slabs, without any particular reference to the general effect. One of the most noted of these is that to the memory of the architect of Rheims Cathedral, which remains there perfect.

But there is another specimen at S. Remi, in the same town, filling up the whole of one chapel, or the general floor of it, showing its use in a more comprehensive way. This flooring is of stone, inlaid with lead, in various geometrical patterns, filled in with Christian symbols, &c., so that the general tone of colouring was very sombre indeed. Of somewhat of the same kind of effect were the very elegant pavements used in Italy, though at a later date.

These are simply composed of black and white marbles, inlaid in the most elegant patterns,—sometimes of figures, sometimes of scrollwork, a little sparkle being given to them by a few spots of red here and there: at the Baptistery and other edifices in Florence, also at Sienna and many other noted churches, are very admirable specimens found.

This work has, of course, none of the richness of the Alexandrine paving, and its beauty depends upon the elegance of the outlines only.

It is altogether different with the paving used more particularly by the English Medieval architects. Their deep red and white glazed tiles are too well known to need description.

But you all know that, however bright these pavements would seem to be, judging from the description only of their colours, they really were only of a rich neutral tone; there was no bright artificial colouring beyond the richness which the deep yellow glaze gave, and the whole sur-

face of the pavement was simply of a dull red, contrasting with any stonework about it much as the deep red brickwork of Tudor mansions contrasts with the stonework of them.

The artificial bright reds, blues, and greens, were used only in exceptional parts to pick out and brighten some place as a chapel or a chapel, more vividly coloured than the rest; and, as a rule, the pavements in Medieval times, though deeper in general colour than the ancient, were less richly variegated in tints, and were, altogether, as little obtrusive as a ground-work for the whole. Amongst the work of this class I must beg you to note the paving of the cloisters of the Certosa at Pavia. The tiles are not figured, but merely inlaid in geometrical patterns.

We may, then, lay it down as a general rule, that, whether in ancient or Medieval times, the principle has been to make the paving so far ornamental as to be pleasing both in outline and tint, but not to use in it any such bright, artificial colours as to render it gaudy or overpowering in effect.

The next point is, how was the decoration of the walls arranged, so as to carry off the amount of colouring, which we find actually on the flooring? Now, it must be remembered, that the sides of a building, of whatever class, are sure to have in them a series of breaks and shadows, and effects of sunlight, such as are given by the doors, windows, pilasters, and so on; and if even stone be employed, it gets deeply tinted by time, so as, in itself, to oppose a varied effect to the plain unbroken surface of the paving.

But the ancients seem seldom to have trusted to that in their buildings of importance. From the nature of their climate, porticoes and columns were of more common use than with us; and when these were of marble, as they very often were, the richest paving was at once subdued by the large masses of marble starting from it. Very often this was carried still farther, and the whole walls lined with these marble slabs of costly kind and vivid colours.

Few of these remain, but enough to show the practice, if we even did not know it from descriptions. But any such course as this, beautiful though it might be, would be quite out of our ordinary means; and, however telling it might be, could scarcely satisfy the mind of a true artist, who must always rank the beauty produced by an effort of the mind before any which owes its fascination to the mere barbaric splendour of the material, however beautiful or costly.

That this feeling weighed with the ancients is most certain; and in the majority of cases preserved to us, the remains of their palaces or mansions have been found precious, not because of the costliness, but of the artistic beauty of their adornments. In England we have few vestiges left, only a part or so, in general, of decorated wall-surfaces above the pavements. But in Italy, in Pompeii, and Rome especially, there are vastly many which, year by year, are increasing in number.

From these we know that the houses of the Romans or Thesian Greeks (as those of Pompeii were) had the natural colour of the pavements altogether carried off and subdued by the most vivid artificial colouring that can be imagined.

The walls and columns alike were covered with the beautifully delicate white crystalline plaster, which surpassed the very marble itself in absolute purity of whiteness. And this plaster was then marked and divided into panels, and covered with delicate ornament in the most brilliant and powerful colours that have been ever used.

Colours were used not as mere auxiliaries to heighten the general effect of a more quiet general tint, but in large broad masses, edged round with borders of tints deeper but just as bold; and, where the mansion or the room was of a more ornate class, set off with a border or a centre piece which embodied the dreams of their elegant but licentious theology, and in forms of very loveliness. But all this was very superficial and fading. A damp wall, a piece of imperfect plaster, could wreck the finest fresco; and the ancients then brought to bear upon their wall decoration the same kind of work which they used more coarsely, though effectively, in their pavements.

Thus we arrive at the use of wall mosaics, of which we have many remains of exceeding beauty. They have been found *in situ*, as for example, in the walls of Cicero's villa, at mansions at Pozzerode, &c. The beautiful execution of these may be imagined by comparing them

put all, nevertheless, worked in a similar way.

But their artistic treatment is very different. In some cases, as the apse mosaics at S. Cecilia at Rome, which have the figures all round and the row of lambs, as usual beneath, there is no shading to the figures, and the folds of the dress are indicated by lines only. In this instance the whole work is coarse, the eyes of the figures large and staring, and the whole seems done by careless or inferior workmen. The same is the case in S. Prassede at Rome.

But it does not follow that such work need be badly done, and in some cases where bold effects are wanted probably the use of the single lines would be the most effective. In the Italian work, however, this plan was seldom adopted.

Take some of the most noted, as S. Pudenziana. The apse mosaics there are equal in freedom of outline, clearness, and shading to any of the Renaissance ones in the dome of St. Peter's. The same with those of S. Maria, in Trastevere; so, too, with those of S. Chrisogono, where there is a mosaic almost equal in beauty to the ancient Roman, the pieces of glass being only one-eighth or so square. But then they were almost always designed strictly as decorative works. But with regard to pictorial effect, there was no violent action with the figures. Each one was designed in a statuesque position, and stood freely and unencumbered out from the background of gold, around which there was also commonly taken a rich border of gold and colour. As exceptional cases in point of treatment may, perhaps, be mentioned the above-named S. Pudenziana, and S. Vitale. There the figures are arranged in a more artistic way than usual; but there is an archaic formality about the whole which prevents its being pictorial. The whole effect was, in fact, in admirable keeping with the formal geometrical patterns of the floors, and designed on very much the same general idea as the mosaic glass of our best windows.

Then, again, the colours were always of the vivid tints which one usually thinks to be an absolute characteristic of these glass mosaics.

In many cases it was quite the opposite. At S. John Lateran, S. Clemente (thirteenth century), S. Cosmo e Damiano, and others, the colours were either faint or in quite half tints. In fact, with mosaics, as with every other kind of decorative colouring, one can lay down no absolute general rule.

A depth of colour that would be quite suitable to the richness of one edifice would look altogether glaring and out of place in another; and with mosaics, as with everything else, special study is required in order to make sure of their proper use.

Now all these works were of the earlier times of art. The latest that I have quoted was, I think, of the thirteenth century.

It was revived and continued by the Renaissance architects, and we have some very grand works indeed left by them. The comparison of their mode of treatment with that of their predecessors is a most valuable one.

You will bear in mind that the early works did not affect to be in any way more than artistic decorations. There was little action in the figures, and the whole arrangement was, if I may so say, geometrical. The Renaissance architects worked in an entirely different way. They designed their mosaics much as they did their pictures.

The figures, instead of being isolated, were often massed together in groups, the draperies contrasting thus with each other in place of with the gold ground. It is so in many of the mosaics of S. Marco's, at Venice. They date from the sixteenth century, and are admirable in point of execution, the outlines and the work as good as in any other instance of the same kind, ancient or modern. As pictures they are excellent; but in contrast with the old works, simply viewed as giving a decorative effect to the grand old church, they fall utterly.

It was not the case with all the work of this date. At S. Marco's, the ceiling of the sacristy, which is arranged in geometrical patterns on a gold ground, is singularly effective; so, too, are the gold mosaics in the spandrel of S. Peter's. These are treated in quite a different way from that now being tried at S. Paul's, the centre being filled up in each case with a circle, in which is one large head. The rest is of gold, and the whole effect very much like that of the early mosaics.

With this latest, perhaps, of the grand series of decoration, which forms the subject of this

sketch, it may well end. Nothing as a decoration can be grander. Nothing in able hands and with careful study more effective. But it requires study to understand its use and talent to apply it. Like all instances of the use of vivid colours, the least mistake in its application will produce discordance. But when its use is thoroughly understood, I believe that no such aid to the beauty of our buildings was ever invented, short, of course, of the absolute handicraft of the sculptor and the painter, before whose work all other appliances in the artistic working of our art must give way.

CONVERSAZIONE: INSTITUTE OF ARCHITECTS.

THE Conversazione of the Royal Institute of British Architects on Monday evening last was well managed, and passed off agreeably and successfully. Mr. William Tite, M.P., the president, received the guests, and there was a very large attendance, including many ladies. Pictures, carvings, photographs, and glass, afforded matter for conversation up-stairs; and the band of the Coldstream Guards down-stairs very pleasantly stopped it at intervals. Decoration and industrial art were represented by some specimens of Salviati's mural mosaics and Venetian table-glass, as well as by examples of furniture and cabinet-work, some designed by Mr. Seddon, and other specimens by Mr. Charles L. Eastlake.

Amongst those present, we recall the names of Sir Henry Holland, Sir F. Grant, P.R.A., Mr. Beresford Hope, M.P., Brigadier-General Lefroy, R.A., Lieutenant-Colonel Lane Fox, Commander Evans, R.N., the Hon. Ashley Ponsonby, Colonel W. Pinney, Admiral Sir George Back, Professor Adams, Dr. Hatfield, Professor Wheatstone, Professor Pistrucchi, Professor Kerr, Professor Willis, Mr. Cave Thomas, Mr. Sydney Smirke, R.A., the Rev. Canon Jelf, Rev. B. Whitelocke, Dr. Druitt, Rev. B. Webb, Rev. C. B. Scott, Rev. B. F. James, Rev. C. Jackson, Mr. E. W. Cooke, R.A., Mr. C. F. Hayward, Mr. Joseph Bonomi, Mr. J. G. Crace, Mr. C. Knight Watson, Mr. Frost, A.R.A., Mr. T. Landseer, Mr. Digby Wyatt, Mr. A. Waterhouse, Mr. Barges, Mr. W. White, secretary Royal Society, Mr. Godwin, Mr. Henry Baker, Mr. W. J. Thoms, Mr. F. Marrable, Mr. Garling, Mr. Hemans, Mr. E. Christian, Mr. Tarring, Mr. L. Collmann, Mr. Trefitt, Mr. W. Hawes, Mr. Sidney Godwin, Mr. F. E. Conder, Mr. Hansard, Mr. Roger Smith, Mr. G. Gambier Parry, Mr. Bury, Mr. Poynter, Mr. W. Papworth, Mr. Massey, Mr. J. W. Porter, Mr. J. Fahey, Mr. F. Wyburd, Mr. John Gibson, Mr. C. Fowler, jun., Mr. Bateman, Mr. W. L. Donaldson, Mr. E. Salomon, Mr. Teulon, Mr. L. Pocock, Mr. E. W. Tarn, Mr. Charles Martin, Mr. W. H. Black, Mr. Frost, Mr. R. K. Penson, Mr. D. Brandon, Mr. H. Jarvis, Dr. Barlow, Mr. Spiers, the Bishop of Dunedin, Archdeacon Hale, Mr. Harry Oliver, Mr. G. Mair, Mr. E. B. Lamb, Mr. N. Gould, Professor Donaldson, &c., &c.

MATTERS PROFESSIONAL IN SCOTLAND.

At the closing meeting of the Edinburgh Architectural Association, on the 19th inst., Mr. Beattie, the president, delivered an address. After reverting to the rapidity with which events now succeed each other, he said,—When everything else is driving forward at such a high-pressure rate, it is not to be wondered at that our own department should share in the general acceleration of speed. Accordingly, we find that to a large extent the good old paths are deserted, and that novelties, acrobaticisms, and short cuts to fortune are very much in vogue. We find the spirit pervading the building trades to a very great extent.

Take the lowest department first, the hewers of wood,—what do we find? We find that apprenticeships have become a mere farce and byword. We find the youthful aspirant, instead of faithfully and laboriously serving out his six or seven years, hardly disposed to serve as many months, and then deserting his master and seeking employment in some other place as an experienced workman. Like a well-known living engineer, who stated that it had cost a certain railway company 50,000*l.* sterling to teach him his business, the runaway apprentice acquires a knowledge of his trade, very imperfect at the best, at the expense of his future employers.

Hence I believe arise to a great degree all that agitation about shorter hours and higher payment, about less work and greater remuneration. Hence the determined efforts of the trades' unions to put the good and bad workman upon the same footing. The good workman is independent of trades' unions; he can secure constant employment and the best wages without any assistance from them. Trades' unionism is too often the instrument by which the inferior and half-qualified workman strives to put himself upon an equal footing with his more highly qualified neighbour, and, as a general rule, I believe trades' unions discourage superior excellence, and strive to retain all in a state of unhealthy mediocrity.

I suspect, however, that it will be a more beneficial employment to examine into our own failings rather than to occupy ourselves longer with those of our neighbours. Are there no imperfectly educated architects? Are we all animated by the same high motives, and aiming at the same worthy ends? Do architects dwell together in charity and brotherly love, and are we all prepared frankly to say, "Palmarum qui meruit ferat?" I am afraid it is not so. With us, as with other classes, there is the same hating to be rich, the same confidence that the race will be to the swift and the battle to the strong, the same sacrifice of much that is worthy and noble to mere temporary convenience or expediency. We often forget that to secure the golden harvest the ice and snows of winter are quite as essential as either the showers of spring or the heats of summer, and that slow and steady progress is more to be depended upon than those brilliant bursts which may for a moment dazzle the eyes of men, but disappear again with equal rapidity. An important point for all young architects to keep in view is the large extent to which their professional education is dependent upon themselves. It has been well remarked that self-culture is always the most permanent and the best, and it is peculiarly so in our profession. In an office the young architect can never acquire much more than the requisite technical skill. All else must be acquired by his own exertions; and I suspect he will find, before he has finished, however different the vulgar idea upon the subject may be, that mere technical skill in drawing is the least part of his professional knowledge. I consider this association a most valuable adjunct and assistance to our architectural education. Here, meeting after meeting, we have the most varied subjects brought under our notice, and opportunity afforded for discussing them. I would urge strongly upon the younger members the importance of their favouring us with papers. I can assure them that the party most benefited by a paper is always the individual writing it. Do not always choose the subject you are most familiar with; rather sometimes take a subject that you are ignorant of, but are desirous of acquiring a thorough acquaintance with. Take this for your subject, but systematically about acquiring all information you can in regard to it, and I will guarantee that, before your paper is finished, the knowledge you have acquired will be fixed in your memory and impressed upon your mind in a way that nothing else will do. Writing a paper systematizes, and, as it were, focusses our information.

I would also strongly urge the younger members to take part in the discussions. I am sure that they will afterwards find the benefit of it. In the course of business an architect is often called upon to explain a design or some other matter to a body of gentlemen,—it may be a church committee, it may be a town council, it may be a public meeting; but on any such occasion the young architect will find the facility of expressing himself clearly and to the point which he has acquired at our meetings will be of great value. It is, to a great extent, a mere matter of practice, and nothing looks more absurd than to see an educated man, who can talk well and even eloquently to a single hearer, stammering and stammering when he has to address either half a dozen or half a hundred auditors.

There is a subject which, during the past year, has been brought formally under the notice of the Architectural Institute of Scotland, and also of our own Association, by the Edinburgh Master Builders' Society, namely, the subject of measuring the quantities of work, whether from plans or otherwise. I believe that it is high time that attention was turned to this point. The present state of affairs is a most anomalous one, and should not be allowed to continue. The present condition of the measurers is much like that of

the Israelites in the days of the Judges, when every man did that which seemed right in his own eyes. Every town,—and, indeed, I may say, every measurer, has his own peculiar system, and in some point or other is sure to differ from all his brethren. This is most unfair, both to the builder and to the employers. Measurers vary so much in their way of measuring and reporting, that unless the contractor is familiar with the particular measurer's system, he is not safe, and may make most egregious blunders in the pricing of the works. I consider that there ought to be some fixed system from which no measurer could depart.

As the subject of measuring has not, I believe, been before brought under your notice, I will describe briefly a few of the discrepancies in measuring which occur to me. I may mention that in England measurements are generally much more detailed and dissected than in Scotland. In mason work, for example, English surveyors measure the work upon the beds and joints of hewn stones. In measuring mason work in Edinburgh, the whole stone work is first taken as rubble, and then the hewn work is measured in detail, the taking it as rubble being understood to be for the building of it. The surface work upon one side of all external rubble-walls is generally given as a separate quantity, but sometimes not. In some primitive parts of the country I believe they sometimes even do not separate the hewn work, but give a slump measurement of so many rods or yards, as the case may be, of ashlar-faced rubble stone wall, at a certain thickness.

Even in the measurement of rubble work there are many discrepancies. Some reduce all rubble work to 2 ft. thick, while others state the actual quantity at each thickness. Some deduct only through-going openings, and make no deduction for presses, fire-places, or recesses. Some give no scontions or rough corners for the inside of windows, doors, presses, &c., while others carefully take all these. Some measure scontions lineal and some superficial. Some measure safety-arches in rubble walls by the lineal foot, some superficial, the soffit, while others superficial the extreme of the arch.

In measuring hewn work there are many variations. In Scotland all hewn stones, 12 in. thick and under are superficialised, and all above that thickness are cubed. In England all stones over 3 in. thick are cubed. In measuring ashlar some measurers merely superficial the surface, while others add in all the ingoings of the window and doors, and allow at all internal angles for the bond of the ashlar into the wall. Some include sills, lintels, corners, &c., in the ashlar, while others state these separately by the lineal foot. Beds and joints are not measured here, while in England the labour upon them is superficialised.

Some Scottish surveyors give the stone in cornices, strings, &c., separately either in cube or lineal measure, and then in a separate quantity the labour on the face. Others slump the whole together, and state so many feet of cornice, stone a certain size, and labour a certain girth. The first is obviously the more accurate way, as, in the second case, the dimensions being taken along the extreme projection of the cornice, a false idea is given of the quantity of stone, all stones at angles being measured both ways. Some surveyors in measuring steps take them on the clear, while others add in for the wall-hold; but there appears to be no fixed allowance for this, which ought properly to vary with the length of the step. In England, when work is more than 40 ft. from the ground, I believe an extra charge is made per cubic foot for hoisting.

In measuring brickwork in Scotland, it is generally superficialised at the various thicknesses, and stated by the yard. In England, on the other hand, it is reduced to a standard thickness of a brick and a half, and stated in statute rods of 5½ yards square. Packings and dressings are taken by the superficial foot.

In carpenters' work there are also variations in the modes of measurement. Some surveyors in the case of framed timber roofs take the extreme length of the timbers over the tenons, while others measure the apparent length. Some in the case of wall-plates and door standards measure the bilgate, and add them into the quantity, while others do not.

In measuring roofs some make an allowance in the superficial quantity of 18 in. broad, at all cuttings for valleys, while others superficial the actual surface, and state the cuttings lineal. In Scotland superficial measurements in carpenters' work are given by the yard;

but in England flooring, roofing, &c., is given by the square of 100 ft. superficial. In measuring doors with special mouldings or ornamental work, some measurers merely superficial the door, and say see drawing; while others first superficial the door as plain square framed, and give the mouldings or ornamental works separately, carefully girthing them.

In measuring slaters' work in Scotland, surveyors give an allowance of 9 in. for all cuttings, both sides of centre gutters, valleys, and peads being taken, while in England the allowance is 6 in.

In the measurement of plaster-work Scottish surveyors take the ceilings from wall to wall, while in England they deduct one projection of the cornice. Scottish surveyors take the plaster on walls from the top of grounds to the ceiling, while in England they take from top of grounds to foot of cornice, or a little above. In Scotland all mitres of cornices above four in. a room are considered extra, while in England a mitre is allowed for every 10 ft. of cornice.

I have only mentioned a few of the more obvious differences in the way of measuring which occur to me. There are many other variations in minor matters. I believe the cause is that measuring is in a sort of transition state just now. The old measurers formerly used to have all sorts of absurd allowances, but at length a strong reaction took place against these, and I believe just now things are in a somewhat confused state, not having got settled down again. There is, therefore, great reason why architects should interest themselves in the matter, and get a system of measurement based upon equitable principles brought into general use. They will not have such an opportunity again, and this is my reason for calling your attention to a matter which is of general importance to the profession.

In the last paper read before this Society the Paris Exhibition was alluded to, and the paucity of prizes awarded to English exhibitors noticed with regret. The question was also asked, did not this go to prove that we are not an artistic people? I very much fear that this is the truth. I have read carefully the evidence of several Englishmen of eminence who were connected with our former Exhibitions, and who have visited the Paris Exhibition, either in an official capacity or otherwise, and they are almost unanimous in expressing the conviction that in many departments we are far behind our continental rivals, and that we have not made nearly such rapid advances as they have done within the last few years. Dr. Lyon Playfair, who was one of the principal jurors at the Paris Exhibition, expresses among others these opinions, and ascribes our want of progress to several causes. He says that our workmen have not the same facilities as they have on the Continent for acquiring an artistic education. He considers that this want of proper training is a great drawback to our onward progress. He also states that we have been much kept back by the constant strikes and disputes between employers and employed, and denounces the disgraceful regulations of the trades' unions, preventing good tradesmen working to the full extent of their powers, and appointing a maximum quantity of work beyond which they may not go.

I believe myself that the early training has most to do with the matter; and that if our young art workmen were properly trained, and were surrounded afterwards by as many objects of artistic skill as they have on the Continent, the result would be a very different one. In Scotland we are peculiarly ill off in these respects. Not only are we very deficient in the means of training, but also, in consequence of the Presbyterian mode of church government and worship general throughout the land, that highest and noblest development of art—namely, ecclesiastical art—has, until a very recent date, been not only neglected, but intentionally and of purpose discouraged. Presbyterianism has much to answer for in this respect.

In commenting upon the recent revival of art in the sister country, I think Mr. Henderson omitted to notice one of the most powerful agents which has been at work, not only in causing a shaking among the dry bones of art generally, but peculiarly in reviving the practice of Gothic architecture. Whatever its opponents may have to say of it in a religious point of view, there is no doubt that so far as the artistic development of the nation is concerned, what is generally known as the ritualistic movement in the Church of England, has been of inestimable benefit. It has given an impulse to ecclesiastical

architecture, and along with it to all the cognate ornamental arts—such as metal work, painted decoration, encaustic tiles, wood carving, mosaics, organ building, &c., which can hardly be overrated. It would be well, I consider, if both our clergy and our laity had a little more of that spirit which has animated the supporters of this movement in England. There nothing is considered too good or too precious for the house of God. There is still to be seen the same spirit of love and sacrifice which eighteen centuries ago inspired the repentant sinner to anoint her Master's feet with precious ointment, and wash them with her tears. Cavillers still say now as then, Why this waste? Can ye not pray as well in plainer edifices? Is our worship not to be in spirit and in truth? Are there no poor to be relieved? no heathens to be converted? Such arguments are better replied to by deeds than words; and when we find that those who are most zealous in the matter of church architecture and church decoration are also those who do most to relieve the miserable, to feed the poor, to convert the ignorant, we consider their conduct needs no further defence. The saviour of that precious ointment has, as our Lord foretold, during the long ages which have since elapsed spread over the whole world, enshrining in the hearts of all the memory of that loving deed; and we doubt not that those whose zeal and affection for their Master have led them to do many things which may appear extravagant or even superstitious, in the eyes of a Sadducean age, will yet compare favourably with others, whose colder love and fainter zeal never lead them to step astray from the orthodox path, and that these deeds of love and reverence may hereafter find gentler judgment than on earth is given.

NOTES FROM THE CHAMP DE MARS.*

THE Swiss annexe is a spacious erection, entered by a handsome flight of steps, and is arranged in five compartments, appropriated severally to oil-paintings, water-colours, engravings, and so on. In the frieze of the centre portion appear the names,—M. Herian, S. Gessner, J. Pradier, L. Robert, H. Holbein, C. Maderno, D. Fontana, and F. Borromini, serving to show how much more the arts are indebted to Switzerland than is sometimes supposed. Amongst the architectural drawings within the main building is seen the design of this annexe, from which is learnt that the architect was M. F. Jaeger, who also designed the screen of the Swiss section. The central, and most important, compartment in the annexe contains the oil-paintings; it is lofty, and decorated in the deep-toned richly-coloured style peculiar to Swiss interiors. In a hasty walk through this gallery, a beautiful landscape by Meunier irresistibly arrested my progress,—a "Vue prise de Mürren, canton de Berne," a grand mountain-gorge, with a large bird poised high above the rocky bottom.

Belgium has created a charming gallery for her pictures, in a spacious annexe. Wide steps lead up to an open vestibule paved with coloured cements in various patterns; the inner doorways are draped with crimson cloth; and statuary and coloured glass adorn the three sides; the fourth being the open entrance-way. The interior of the building is divided longitudinally, by a wall, into two compartments; and these are subdivided into three bays by Corinthian pilasters and columns of imitation green marble; the walls are light crimson, with an imitation marble dado of a deeper hue; and the floor is well boarded and cleanly swept. An iron rail protects the pictures from too close contact of eager gazers; the centre only of the ceiling is glass, muslined over; and handsome benches, covered with green velvet, and fringed round, invite the wearied sight-seer to rest, while he feeds his eyes and soul with the pleasant subjects before him.

Baugniet has three pictures, all charming: 1. "Visite à la Venne," in which two darling comforters—one in blue silk, with black and gold berrous, straw hat and white feather; the other wearing a brown silk frilled pelisse, with scarlet hooded-cloak over—have come to console the poor widow and her three little children. The colouring in this, though so brilliant and vividly contrasted, is yet full of harmony and beauty. 2. "La Seconde Année," a young mamma watching her sleeping baby. 3. "Un

* See pp. 349, 374, 393, 409, 427, 446, ante.

Rêve après le Bal," where a charming young creature has passed from her waking dream to her sleeping one, and is seen still in her ball-dress, with morning dawning and candles burnt out.

Bouaifas, in his "Corps de Saint Étienne Martyr," forgot that the process of stoning to death must needs make wounds and bruises, even on a saint; besides which fact, stones around show evidence, in the patches of blood upon them, of the tragedy that has been enacted. Bossuet has some landscapes, which, for a wonder, are bright and sunny: continental landscape painters usually ignore Phœbus altogether. "Vue générale de Malaga," besides its pleasant sunshine, has some nice ripply water; and the old "Eglise Mozarabe près de Saragosse," and "Aquaduc Romain, Cordone," are especially interesting relics of the past. Campotosto's "Un Coin heureux" is nice, but somewhat indistinct when viewed close; and Clay's "Calme plat," translated "dull weather" in *English* in the catalogue, is very pleasing; but Marie Collart's "Un Vercor," with cow-grazing, is sadly dull and dingy. Damsert's "Bon Serviteur" is natural: a family group, where the father, a footman in a gorgeous livery, has come to visit his wife and children, and is seen nursing his little baby.

De Gronckel has "Deux Portraits," both admirable: one with black hair and moustache, and grey shortish beard; the other, an old gentlemanly head with close-cut hair and moustache. De Groux sends five pictures: "Les Bourgeois de Calais devant Edouard III.," in which the kneeling queen is monstrously long from the waist downwards. "L'Hospitalité," a cottage scene, wherein some beggars are being fed from broad bread. "L'Amour," a sadly depressing picture, in which soup is being distributed to some most miserable-looking objects. "La Visite du Médecin" and "Mort de Charles-Quint," he who introduced the Inquisition into the Low Countries: pity he didn't die beforehand. De Knyff's "Le Barrage du Moulin de Champigny" is natural, but gloomy; but Delfosse's "Conversation défendue" is admirable. A pretty young girl and her lover hold the forbidden conversation at the foot of the well-hole of a fine old carved oak staircase. She has a pansy—*pensée*—in her left hand, while her right is clasped between both those of her lover, who kneels on one knee at her feet: a bent grandam has come out from a room, and is peering over the handrail of the landing above, and her attendant cat is descending the stairs: *tableau complet!* De Schampheeler has some good stormy water in his landscapes; and "Giboulée de Juin, Environs de Gouda," is effective. De Vriendt shows rich colouring in his "Saint Luc peignant la Madonne," in which, however, the P. R. B. mother and child are just like a wooden group from an altar; the emblematic pictures are characteristic, to wit, "Une Noce au Zuid Beveland" (*Zelande*), in which the old grand'mère is the only sad and weeping guest among a joyous party; "Le Cordelier et son barbillon," where a bright-faced country girl stands outside the shop wherein the shoemaker sits, and sticks up her foot on the sill of the window, through which he takes her measure for her new pair; and "Ordre et Désordre," among skaters. Fourmois' small-sized "Moulin à Eau" has, of course, the proverbial gloomy name; Alexandre Francais, besides his good name, has a good picture borrowed from our Scotland,—"Loch Etive;" Hamman sends three pictures, "Les Dames de Sienna pendant le Siège de cette Ville en 1553," wherein richly-dressed ladies are seen working at defences, and one poor thing in white satin robe looks sadly worn-out and tired to death, but will not give up; "La Fête du Bœuf-taure;" and "L'Éducation de Charles-Quint: une Lecture d'Erasme," where the queen-mother sits on a sort of throne, and he in a state chair on her right.

Jacob Jacobs has a large and singular picture, "Château de Sarp sur le fleuve Glommen, Norvège," where the clear brown water is seen swirling and eddying amongst piles and tangled heaps of wood, and wooden huts of the workers or watchers, and over and around all a magnificent storm-sky; Kindermans has a "Pêcherie en Ruines, sur la Semoir," the scenery of which recalls that of Cliefden-on-the-Thames; and Pierre Kremer has chosen a charming subject in his "Daniel Seghers, célèbre peintre de fleurs, représentant une guirlande qui doit lui servir de modèle."

Lamorinière has three pleasant "paysages," but in the one taken at Edgheem, the sun, which shines so brilliantly at the extremity of the avenue, should not have forgotten to peep and glint amongst the trees a little, for they do not stand so closely together as to exclude his rays, by any means. "Interior of Burnham Wood, England," is capital, with its wondrously twisted old beeches; and "Vue prise en Angleterre; effet de Neige au Crépuscule," with beech trees also, and hunter and dog screening themselves behind a tree from the distant deer, is very English and truthful.

Baron Henri Leys sends twelve of his remarkable pictures, several of them well known in England. "Le Bourgmestre Lancelot Van Uersel haranguant la Garde bourgeoise pour la Défense de la Ville, 1542," is a large canvas, crowded with figures. "L'Archiduc Charles, âgé de 15 ans, prêtant Serment à Anvers, 1515," reproduced in fresco in the large hall of the Antwerp hôtel de ville, is an interesting work; as is the "Publication dans les Rues d'Anvers des Edits du Charles-Quint, introduisant l'Inquisition dans les Pays-Bas," but which always seems to me a helpless and hopeless scene, too saddening to look upon. In "Luther chez son Ami Lucas Cranach," the head and dark beard of the latter are very fine; and "Conciliabule du Temps de la Réforme," painted 1857, is very admirable, especially the girl seated in the front, which is like nature, rather than point and canvas.

Musin has one picture, and a very fine one,— "Napoléon Ier. . . . visitant l'Escadre dans le Port d'Anvers, le 1er Mai, 1810:" the wind in the bulging sails, and the manner in which the vessels sit on the brimming water, are admirably represented. Pauwels' "La Veuve de Van Artervelde" will be remembered with pleasure from the Exhibition of 1862. After the massacre of Van Artervelde by the people of Ghent, the town being surrounded by enemies and reduced to the greatest straits, the magistrates appealed for assistance to the patriotism of the citizens; and this noble lady, still in "widow's weeds" for her murdered husband, was among the first to answer the appeal, by bringing out all the treasures she possessed, gold and silver, and even the most precious of all, her husband's sword. In "La Retour des Proscrits du Duc d'Albe," also by Pauwels, the poor exiles are affectionately met and greeted on landing by their relatives and friends. Quinaux has a pleasant "Vue prise dans le Dauphiné," a sunny middle-distance with foreground, and mountainous background, in shade. Robbe's "Fleurs et Fruits" is good; but in his second picture, "Fleurs," he has not done justice to the honeysuckle, or else his specimen was a very different thing to what we could show him in English hedges and around rustic porches; and Robie, in "L'Antenne," has some capital fruits and sparrows. Roffiden's "Lac Lomonde, Ecosse," is very good, with the steamer in the distance; but his "Chauxière dans la Campine" bears the almost universal stamp of gloominess. Eugène Smit's "La Bague Nouvelle, Costume de Fête de Nettuno, États Romains," the bust of a handsome Italian woman in a red jacket, contemplating her new ring, is charming; as are Stallart's classic-looking pictures, "La Balançoire," in which Cupid floats above the swinging girl, and helps to propel her; and "Lebbie," a Pompeian-looking girl, crying over a dead bird with her attendant.

Soubre's "Victor Pisani," the Venetian admiral, receiving back his sword, and swearing to forget the injustice of which he had been the victim;—his imprisonment, that is to say, for some slight reverse, after manifold successes against the Genoese, when his country is once more imperilled,—sets one thinking, "What villains the nobles were in those days!" Some of Alfred Stevens's little pictures are too like "Le Petit Courrier des Dames" to have any especial interest; but "Pensive," in her blue velvet high dress, her cloak slipping off, and holding a letter in her hand. Joseph Stevens, who would seem to be related to the above, giving the same address, indulges in the comic vein,—apes dressed as men, smoking and drinking. Doubtless these pictures are cleverly painted, but I hold the comic in art to be usually a mistake; when a thing of this kind has been once looked at and laughed at, no one cares to see it a second time. The same remark applies to grotesques in bronze, monstrosities and deformities, of which there are several specimens in the Champ de Mars and elsewhere. In "Anciennes Maisons, Bruxelles," Strobant gives a clear bright atmosphere, pleasant to look upon; and his "Ancien

Palais des Princes-Evêques à Liège," with its well-known singular columns, like giant balustrades, ornamented in parts with a sort of Greek honeysuckle, is interesting. Thomas, in his "Vierge au Calvaire," has given a strange and unaccountable light around her, but her blue robe is fine. Still, is not her presence there apocryphal? Christ bade his beloved disciples take her home ere the death-agony approached: moreover, the crown of thorns is too thick and strong-looking.

Teschegany, in his "Sourvenir d'Afrique," shows the shepherd in scarlet cloak and white head-gear in front of his flock of sheep, goats, and camels, leading and piping; and his "Madame entourée de Fleurs," representing an alto-relievo on gold diapered ground, is very charming. Van Kierablick, in "Le Chevalier de Saint-Géry, Échevin de la Ville de Bruxelles, haranguant le Peuple du haut du perron de l'Hôtel de Ville, 1407," has painted his principal solidered figures too short and thick; but "le peuple" is excellent. Van Knyck has a capital "Intérieur d'Ecurie, avec Chevaux," and dogs and fowls, and a dear little stable-boy, all excellent. Van Lerins's "Portrait," a fair little child in white, holding flowers, is very charming. Van Moers' "L'île Saint-Georges à Venise; Crépuscule," is good; and in "Intérieur de l'Eglise Saint-Marco à Venise: étude," the sun seems to shine out as one gazes.

Verlat has a good "Vierge et l'Enfant Jésus," qui appartient à S.M. l'Impératrice des Français; and his "Au Loup," belonging to the King of the Belgians, is very vigorous. A wolf has killed a lamb, apparently the property of a peasant family: on the alarm being given by his wife, the man has seized a pitchfork, and has rushed upon the wolf, while the two brave dogs assist, and, with the terrified girl, complete the group. Willems has thirteen pictures, mostly of small size, but all more or less worthy of note. The "Visite de Marie de Médicis à Rubens à Anvers en 1663," is the largest canvas, and is placed first on the list. The Queen has arrived on a white horse; Rubens is seen leading her across the court-yard of his house, over a scarlet cloth strewn with flowers. His wife stands waiting to receive her under the arcade, just advancing from the shadow into the light, and a fine peacock and hen add beauty and colour on one side, to balance the brilliant lures of the gay dresses of the attendants on the other. In "L'Anneau des Fiançailles," a girl, in a wonderful white satin robe, receives the ring from a gallant in red cloak and hat with blue feather. "La Veuve" sits sadly and pensively, with an open letter in her hands, lying upon which rests the expressive *pensée*, as folded up in it by him whose pictured resemblance looks down upon her; and at her feet lies a capriciously-painted "love" of a dog. "La Visite" shows the visitor dressed in pink satin, with drab cardinal cape over, and a man's stand-up hat of drab felt. In "Les Intimes," the profile, black-haired and coral-eared, is charming. "La Confiance," shows a girl in white, seated at a table, reading a letter; messenger standing apart before the door. "J'y étais!" with its simple and touching title, and treatment equally simple and touching, is another of his. A girl, in yellow satin and lace ruffles, is showing the pictures in a gallery to an oldish man, in grey suit, whose back is turned to the spectator. When they arrive before a certain battle-piece—a sea-fight—the calmed and subdued veteran says simply, "J'y étais!" and then comes "Les Adieux," between a lady in white satin dress, and a cavalier in yellow;—and with this I also make my *adieu* to the very interesting collection of pictures in the Champ de Mars.

In the Exhibition building, Léopold Harzé has several extremely clever "Groupes en Terre cuite," the figures small in size, but most carefully and minutely manipulated, the subjects taken from Molière, Shakespeare, Béranger, &c. One of these, "La Mère Aveugle," with three figures in it, was alone unsold, the attendant said, and the price was 3,000 or 4,000 francs, he did not know which!

Near to the Belgian annex, in the Parc, stands a fine heroic-sized figure, by Jules Martin, "Modèle du Monument d'Ambiorix, Roi des Eburons, qui se trouve placé sur la Grand' Place de la Ville de Tongres." The hero stands proudly erect, trampling under-foot the Roman eagle, a laurel crown, and weapons. He looks like an early Dane, or Saxon, to English eyes; the more so as the pedestal on which he stands is a reproduction, in small, of our Kit's-Coty-House, in Kent. The railing is composed

Jacob Jacobs has a large and singular picture, "Château de Sarp sur le fleuve Glommen, Norvège," where the clear brown water is seen swirling and eddying amongst piles and tangled heaps of wood, and wooden huts of the workers or watchers, and over and around all a magnificent storm-sky; Kindermans has a "Pêcherie en Ruines, sur la Semoir," the scenery of which recalls that of Cliefden-on-the-Thames; and Pierre Kremer has chosen a charming subject in his "Daniel Seghers, célèbre peintre de fleurs, représentant une guirlande qui doit lui servir de modèle."

Lamorinière has three pleasant "paysages," but in the one taken at Edgheem, the sun, which shines so brilliantly at the extremity of the avenue, should not have forgotten to peep and glint amongst the trees a little, for they do not stand so closely together as to exclude his rays, by any means. "Interior of Burnham Wood, England," is capital, with its wondrously twisted old beeches; and "Vue prise en Angleterre; effet de Neige au Crépuscule," with beech trees also, and hunter and dog screening themselves behind a tree from the distant deer, is very English and truthful.

Baron Henri Leys sends twelve of his remarkable pictures, several of them well known in England. "Le Bourgmestre Lancelot Van Uersel haranguant la Garde bourgeoise pour la Défense de la Ville, 1542," is a large canvas, crowded with figures. "L'Archiduc Charles, âgé de 15 ans, prêtant Serment à Anvers, 1515," reproduced in fresco in the large hall of the Antwerp hôtel de ville, is an interesting work; as is the "Publication dans les Rues d'Anvers des Edits du Charles-Quint, introduisant l'Inquisition dans les Pays-Bas," but which always seems to me a helpless and hopeless scene, too saddening to look upon. In "Luther chez son Ami Lucas Cranach," the head and dark beard of the latter are very fine; and "Conciliabule du Temps de la Réforme," painted 1857, is very admirable, especially the girl seated in the front, which is like nature, rather than point and canvas.

Musin has one picture, and a very fine one,— "Napoléon Ier. . . . visitant l'Escadre dans le Port d'Anvers, le 1er Mai, 1810:" the wind in the bulging sails, and the manner in which the vessels sit on the brimming water, are admirably represented. Pauwels' "La Veuve de Van Artervelde" will be remembered with pleasure from the Exhibition of 1862. After the massacre of Van Artervelde by the people of Ghent, the town being surrounded by enemies and reduced to the greatest straits, the magistrates appealed for assistance to the patriotism of the citizens; and this noble lady, still in "widow's weeds" for her murdered husband, was among the first to answer the appeal, by bringing out all the treasures she possessed, gold and silver, and even the most precious of all, her husband's sword. In "La Retour des Proscrits du Duc d'Albe," also by Pauwels, the poor exiles are affectionately met and greeted on landing by their relatives and friends. Quinaux has a pleasant "Vue prise dans le Dauphiné," a sunny middle-distance with foreground, and mountainous background, in shade. Robbe's "Fleurs et Fruits" is good; but in his second picture, "Fleurs," he has not done justice to the honeysuckle, or else his specimen was a very different thing to what we could show him in English hedges and around rustic porches; and Robie, in "L'Antenne," has some capital fruits and sparrows. Roffiden's "Lac Lomonde, Ecosse," is very good, with the steamer in the distance; but his "Chauxière dans la Campine" bears the almost universal stamp of gloominess. Eugène Smit's "La Bague Nouvelle, Costume de Fête de Nettuno, États Romains," the bust of a handsome Italian woman in a red jacket, contemplating her new ring, is charming; as are Stallart's classic-looking pictures, "La Balançoire," in which Cupid floats above the swinging girl, and helps to propel her; and "Lebbie," a Pompeian-looking girl, crying over a dead bird with her attendant.

Soubre's "Victor Pisani," the Venetian admiral, receiving back his sword, and swearing to forget the injustice of which he had been the victim;—his imprisonment, that is to say, for some slight reverse, after manifold successes against the Genoese, when his country is once more imperilled,—sets one thinking, "What villains the nobles were in those days!" Some of Alfred Stevens's little pictures are too like "Le Petit Courrier des Dames" to have any especial interest; but "Pensive," in her blue velvet high dress, her cloak slipping off, and holding a letter in her hand. Joseph Stevens, who would seem to be related to the above, giving the same address, indulges in the comic vein,—apes dressed as men, smoking and drinking. Doubtless these pictures are cleverly painted, but I hold the comic in art to be usually a mistake; when a thing of this kind has been once looked at and laughed at, no one cares to see it a second time. The same remark applies to grotesques in bronze, monstrosities and deformities, of which there are several specimens in the Champ de Mars and elsewhere. In "Anciennes Maisons, Bruxelles," Strobant gives a clear bright atmosphere, pleasant to look upon; and his "Ancien

crossed lances, with stone corner-posts; in his hand Ambiorix brandishes a battle-axe. This statue is extremely bold and grand, and for power and feeling it is, to my thinking, one of the finest things of the Exhibition.

R. F. H.

BELL TOWER, ROTHENBURG, BAVARIA.

IN a recent article on Bell and Clock Towers, with illustrations of the Clock Tower of the Rathaus, Prague, we mentioned, as a quaint and original example, that of the Rathaus of Rothenburg, in Bavaria, and promised a sketch of it.* This we now supply. The tower, it will be seen, grows out of the gable of the Rathaus. It is square in plan for two stories, and is then branched into an octagon, with four statues standing on the "broaches." At the top a projecting cornice supports an iron parapet railing; the whole being capped with a bulbous spire of two orders.

ANCIENT ALTARS IN GERMANY.

It must have often struck those who have been in the habit of seeing Continental churches as a very remarkable circumstance, that although the remains of ecclesiastical furniture in some of them are plentiful enough, ancient altars are very rarely to be met with. The magnificent cathedrals of France, which in ancient times must have been rich in this important feature, at present exhibit scarcely one single example. Why, when, and how were all these old altars swept away, are questions which it is difficult to answer. In England, of course, the spirit of the Reformation caused the removal of all ancient altars, no longer recognized as altars; but how is it that so few examples exist in Roman Catholic countries? In France the revolution doubtlessly destroyed a few, but probably by far the greater proportion had disappeared before that date, and it is to be feared that the vile taste of Louis XIV.'s days did far more injury in this respect than sacrilege and violence. To gain some idea of the splendour of the altars in the French churches during the Middle Ages, we refer our readers to M. Viollet-le-Duc's work, under the head "Autel." The churches in Belgium are nearly as badly off for old altars as the French; one or two examples exist at Leau, and there are one or two in South Brabant. None of them, however, are remarkable either for age or beauty. In fact, the only countries in Europe which offer us valuable examples of ancient altars are Spain, Italy, and Germany. In Spain and Italy they are very rare, though often very remarkable and singularly beautiful; but in Germany nearly every cathedral and many parish churches contain valuable examples. The cathedral at Cologne is rich in this respect. It contains a high altar of the earlier part of the fourteenth century, one fine triptych altar of wood of the same date, and four wood triptych altars of the fifteenth century. The high altar is a very beautiful work. It is composed of black and white marble. The frontal consists of a series of niches, occupied with statues and ornamented with delicate carving.

The earliest altar known to exist in Germany is one in a Romanesque chapel adjoining the cloisters of the cathedral at Ratisbon. This chapel goes by the name of the "Alte Dom," and is said to have been the original cathedral: the altar, which is still *in situ*, dates from the ninth century; it is a simple oblong mass of stonework, about 6 ft. by 3 ft. 6 in., and about 3 ft. high: the lower portion of the stone frontal is pierced with circles containing crosses. In another Romanesque chapel, attached to the same cloisters, is also an ancient altar, probably as early as the eleventh century. This altar is very singular in form, being exactly square on plan, and about 4 ft. each way; the *mensa*, or altar slab, is very solid, and is supported upon four short columns with cushion capitals at the corners, and a solid mass of stonework in the centre.

In the church of St. Emmeran, in the same town, is a small Romanesque altar, with the *mensa* supported upon two triangular-headed openings and dwarf columns. In the cathedral at Brunswick is a fine high altar of late Romanesque work; the *mensa* is very large, and is composed of one slab of marble,—the pillars supporting it are of bronze, with capitals orna-

mented with the heads of birds and beasts. In the chapel of Castle Transnichts, at Landshtut, in Bavaria, is a fine specimen of a thirteenth-century altar, with a "ciborium" or "baldachino" over it, against each pier of which is a tall statue in small crimped drapery, similar to those in the western portal of the Cathedral of Chartres; over these statues are fine "Jerusalem canopies."

In the cathedral at Ratisbon are several early fourteenth-century altars. They have all ciboria above them, which are richly ornamented with canopies, statues, and foliage-carving. The frontals of these altars are plain, and were evidently intended for moveable "antependia."

The "Obermünster" church at Ratisbon contains three fine fourteenth-century altars of the same description as those in the cathedral, with the exception that the frontals are pierced with an arcade, which shows through it a full-length recumbent effigy. Probably these altars served also for monuments.

Our lower illustrations represent two very pretty stone altars of late fourteenth-century work at Erfurth.

Fifteenth-century altars are very frequently to be met with in Germany. They are generally of wood,—at least the reredos; and the altar itself is perfectly plain: the reredos is generally formed of a large triptych, either filled with carving in deep relief or pictures. One of the earliest altars of this description is the high altar in our Lady's

Church at Oberwesel. This is fourteenth-century work, and consists of a series of Gothic niches filled with statues. It is said to have been the work of an Englishman.

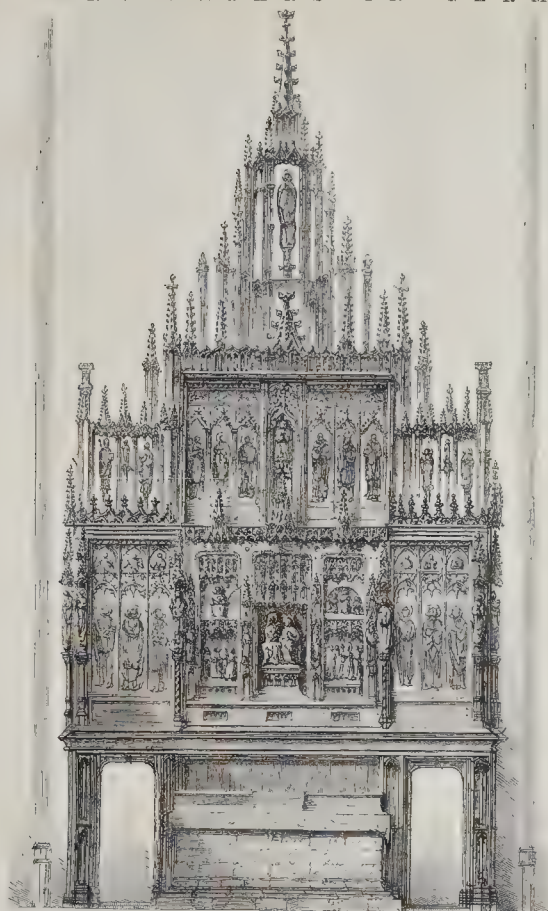
Perhaps the finest altars of this description are those in the church of Lorsch, on the Rhine, and Alt Breisach, near Freiburg, in Breisgau. The former altar is nearly 50 ft. high to the highest pinnacle of its reredos, and when the valves are thrown open exhibits a wonderful combination of carving and painting. The date is 1420. The altar at Alt Breisach is equally beautiful, but not quite so large. Our principal illustration, represents an altar of this description in the Carmelite Church in Erfurth. This altar is in a very perfect state of preservation, and is beautifully decorated with paintings. Fine triptych altars of the fifteenth and earlier part of the sixteenth century exist at Nuremberg, Rothenburg, Ulm, Freiburg in Breisgau, Landshtut Nordlingen, Dettwang, Creglingen, Erfurth, and many other places. Fine stone altars of a late date exist at Paderborn and Landshtut Marburg, Soest, and Blanburen. In the Phynne Church at Prague is a late altar with a baldachino over it of very elaborate and singular design, the vanling of which is pierced with tracery. Altars of the mixed style which existed in the middle of the sixteenth century are to be found at Mayence Cathedral, in the crypt of St. Gerson, at Cologne, and in St. Lawrence, Nuremberg.



BELL TOWER OF RATHHAUS, ROTHENBURG, BAVARIA.

* See pp. 113, 115, ante.

A N C I E N T A L T A R S I N G E R M A N Y .



In the Carmelite Church in Erfurt.



In the Cathedral, and Church of St. Severin, Erfurt.

ARCHITECTURE, UNIVERSITY COLLEGE.

The prizes of this college were presented to the successful students by Sir John Lubbock, in the lecture theatre, who, at the conclusion of his task, made an apposite speech on the liberal character of the college. The following is a list of the prizemen in architecture:—

Architecture.—Professor T. Hayter Lewis.
Fine Art, senior class.—Donaldson silver medal and certificate, Josiah Rose, of London. Second prize and certificate, Alfred Henry Paget, of Leicester. Third certificate, R. Lockyer Cox, of London.

Construction, senior class.—Donaldson silver medal and certificate, Thomas Batterbury, of Hampstead. Second prize and certificate, Josiah Rose, of London. Third certificate, R. Lockyer Cox, of London. Fourth certificate, R. Carne.
Fine Art, junior class.—Prize and certificate, Josiah Rose, of London. Second certificate, R. Lockyer Cox, of London.

Construction, junior class.—Prize and certificate, Josiah Rose, of London. Second certificate, R. Lockyer Cox, of London. Third certificate, Edward Haslehurst.

ASSOCIATION FOR IMPROVING THE DWELLINGS OF THE POOR.

The twenty-third annual meeting of the shareholders of this company has been held at the offices of the Association, Coleman-street, City. Mr. Julian Goldsmid, M.P., presided.

The annual report was read, in which the directors stated that the Gatliff-buildings, in Commercial-road, Fimlico, were complete, and in full occupation. They consisted of 27 single rooms, 104 sets of two rooms, and 18 sets of three rooms, erected under the arrangement with the Marquis of Westminster referred to in previous reports. The Marquis, by arrangement, having advanced the necessary funds at 3 per cent. interest, had reserved to himself the right of fixing the rents at a low rate, varying from 2s. 6d. for a single room, with every convenience, to 5s. 6d. for three rooms, and has thus enabled the Association to accommodate a poorer class of tenants. Since the last report ten more pairs of cottages at Penge had been completed, making a total of thirty-six cottages there, which were all occupied by London workmen; and arrangements had been made with the London, Chatham, and Dover Railway Company to convey them at the rate of 2s. per week each. To enable the directors to proceed with the erection of similar cottages, they had, in conformity with the resolutions of the meeting held on the 12th April last, applied to the Public Works Loan Commissioners for an advance of 18,000*l.*, which had been accorded to them. They had also obtained a Treasury order to relieve from house tax all the dwellings of this association. The net profits of the year amounted altogether to 3,515*l.* 5s. 11d., sufficient to pay a dividend of 3½ per cent.

The report was unanimously adopted, and a dividend of 3½ per cent. declared.

EXCURSION OF THE LIVERPOOL ARCHITECTURAL SOCIETY.

The annual excursion of the Liverpool Architectural Society took place on the 22nd inst., when, in conjunction with some members of the Manchester Architectural Society, they visited Hooton Hall and Church, which latter was erected a few years ago, at the cost of Mr. Naylor, from designs by Mr. J. K. Colling, of London. The church stands just inside the park gates. It is a transept church with cupola in the centre, somewhat in the Byzantine style. It is built of white Stourton stone, relieved by bands of red stone from the Runcorn quarries. The new observatory and the entertaining and dining rooms at the hall, also by Mr. Colling, were next visited in turn, and last of all the new picture and sculpture gallery. The picture-gallery, which is 100 ft. long, was first built, and subsequently a corridor 200 ft. long was added, forming a vista 300 ft. in length.

The society and their friends afterwards dined together at Eatham, Mr. T. J. Kilpin, the president, in the chair. Mr. Bonlt proposed the death of Mr. Colling, who in reply acknowledged himself a heretic in architecture, and disposed of innovation. Mr. Picton, in the course of a

reply for the Liverpool Society, said the Liverpool corporation had been doing something for the encouragement of art, and he rejoiced to see that a member of that society had obtained the first prize offered by the corporation for plans for the laying out of a magnificent park, and he had been engaged to carry out the scheme at a cost altogether of about half a million of money. Another matter engaging the attention of the corporation was the provision of dwellings for the working classes, and there was no problem, as it appeared to him, more difficult of solution than that of providing convenient and comfortable dwellings for the working classes without pauperizing them,—erecting them so that they would pay a fair rate of interest, and not be mere almshouses. He, as a member of the corporation, had strongly held the doctrine that it was the duty of that body to solve the problem if they could by offering such a premium as would induce architects to come forward and devise a scheme by which money could be so applied in providing dwellings, comfortable, cheerful, and cheap, for the working classes, as to yield a fair return of interest. He was glad to say that a premium of 200*l.* was, or would shortly be, offered by the corporation for the solution of the problem, and most delighted should he be to find that it had been solved by a member of the Liverpool Architectural Society.

The Chairman, after reply to his "Health," extemporised a song, in which he related and lamented the circumstances that had prevented him from joining the excursion earlier.

To the toast "The Contractors and Builders of Liverpool and its Neighbourhood," Mr. Nicol, of the firm of Holme & Nicol, the contractors for the work at Hooton Hall, responded; after which "The Town and Trade of Liverpool" was proposed by Mr. Vale and responded to by Mr. Gibbs.

Mr. Statham, the honorary secretary, proposed "The Manchester Architectural Society;" and a toast to his own health closed the pleasant proceedings.

THE COVENTRY AND MIDLAND EXHIBITION.

The Manufacturing, Industrial, and Art Exhibition, at Coventry, has been formally opened by Earl Granville. In the course of his address his lordship, in allusion to foreign competition, said:—My opinion respecting our competition with foreign countries is, that there is no real danger whatever, if we meet it in a proper manner. But, in order to induce us to meet it in a proper manner, I am not at all sure that it is not wholesome for us to fear a little, but not with undignified fear. I believe there is something in the persevering—something in the combative—character of an Englishman that prevents him doing his best until some strong stimulus or some successful rival puts him to the test. I am not quite sure, he also remarked, that I agree with Dr. Lyon Playfair as to the importance of establishing large schools for the application of science to manufactures and art, but I believe what is really wanted is great diffusion of scientific knowledge; and if you only get that diffused, the practical application of it is perhaps better taught and better learnt in the workshop and manufactories than in any other possible way.

In the afternoon, a large and brilliant company dined together in the New Market Hall. Lord Leigh (the lord lieutenant of the county) presided, supported by Earl Granville, Lord Hyde, and many of the gentry of the county and city.

THE SHEFFIELD TRADES' UNION HORRORS.

SURELY "the reign of terror" which has so long, and with such impunity, prevailed at Sheffield, is now drawing towards a close. The method adopted by the Legislature and the Commission whom they have appointed, has been singularly effectual in unmasking the remorseless villains who have been so long a curse to Sheffield. The craven scoundrel to whom we alluded in our last issue has since, under the terror of the power of the Commission, made a full and terrible confession of murder and maiming, explosion and rattening, or wicked destruction and theft, for years practised by him and others, at the instigation, and with the pay, of a master villain, who has long occupied an official

and influential position amongst the Sheffield trades' unions; and even he has been compelled to lay bare his black soul, to the horror and detestation of the nation, and especially of those who have covered with fear of his anonymous and malignant power, and who would have torn him to pieces could they have laid hold of him after his self-condemnation—"evidence" was given. Broadhead, the master villain—Mr. Broadhead, as the Commission and the press have been naming him till now,—in addition to being secretary, treasurer, and factotum of the said trade union, was a principal official of the Sheffield Association of Organized Trades, and had only recently been appointed the treasurer of the United Kingdom Alliance of Organized Trades. The whole of his examination was a confession of crimes of the deepest dye in which he had been concerned. "Rattening," he said, had been practised in Sheffield long before any one in the room was born; and he appeared to justify it on this ground. He also seemed to think that, as regarded the outrages committed, the end justified the means. He confessed that, after Linley's murder, for committing which he had paid his two unscrupulous instruments, Crookes and Hallam, he had written letters to the newspapers exhibiting great abhorrence of the crime! After Wheatman's place had been blown up, he wrote a letter in which he truly described the deed as a *hellish* one, and endeavoured to throw the blame on the Messrs. Wheatman themselves! He did similar things after Fearneshough's place was blown up, and he offered a reward out of his own pocket for the discovery of the perpetrator of that outrage!!

And are these scoundrels,—these disgraces to humanity, to escape scot-free? It was unfortunately, and yet unavoidably, a condition laid down by the Commission that, if they confessed fully and truthfully, they would obtain each a certificate, securing them against molestation or punishment by the law; but it is to be hoped it will be proved that they have not quite fully or truthfully confessed, so that the law may yet lay hold of them. And, at all events, their career at Sheffield is at an end, and they will have no Government aid, at least, to depend upon elsewhere. Perhaps, however, before they can get away from Sheffield, the townspeople may give them a testimonial of some kind which they shall have reason to remember. It would indeed be a pity to "put them under the pump," for the pump would be defiled by such a process; but we should not be sorry to learn that some of their bones were accidentally, or even unlawfully, broken.

PROPOSED ASSOCIATION OF BOROUGH SURVEYORS.

SINCE the passing of the Board of Health Act in 1848, and the adoption of the Local Government Act by all the principal towns in the kingdom, a large staff of officers has been required to carry out the provisions of these Acts. The most important officer of this staff is the surveyor, who has the practical management of all those works in a town which are essential to the health, the comfort, and the convenience of the inhabitants.

It is scarcely necessary to say that the duties of the surveyor are exceedingly varied in their nature, requiring not only much practical and scientific knowledge, but a special aptitude of character to enable him successfully to deal with the various and intricate matters that are constantly referred to him, and to discharge efficiently his duties to the Board, on the one hand, and the public on the other. Only those who have held the office can fully realise the trying nature of the position of a borough surveyor, always liable to be attacked by a small clique, who are averse to every improvement, and jealous of the expenditure of public money collected by rates; and never properly supported by a Board, who have no fixed principles of action, owing to the fact of their chairman and many of the members changing every year.

The importance of the office cannot be denied, when it is considered that the whole of the works connected with the paving, lighting, and sewerage of the town; the superintendence of new buildings; the highways, pleasure-grounds, and baths; the management of the fire brigade; the scavenging; and in many cases also of the water and gas supply, are included in the duties; and, occasionally, the surveyor is expected to design and carry out large and important works

of construction; and even, if not primarily responsible, yet to him must always pertain the duty of procuring the necessary local information for, and providing the consulting engineer with, the data necessary to enable him to advise as to the best course to be pursued.

The number of towns that have adopted the Act is over 400; and, as many boroughs have two surveyors, and the metropolis adds about fifty more, the number is sufficient to form a very important body.

My object in thus calling attention to the position of the borough surveyors is to point out the fact that they are as a class unrepresented. While engineers, architects, lawyers, doctors, and all other professions have their common meeting-ground in their representative association or institution, the surveyors are an isolated and scattered body. It seems, therefore, exceedingly desirable that they should unite and form an association, the objects of which should be:—

1st. To confer a recognised position on the class of engineering surveyors who have been called into existence by the sanitary demands of the day.

2nd. The collection of statistical and other information for the use of its members.

3rd. By conferring degrees by voluntary examinations, similar to those granted to the "District Surveyors" of the metropolis, or as proposed by the Institute of British Architects.

4th. To confer all those advantages of membership which appertain to a central representative institution.

With regard to the first object, it must have often been felt by a borough surveyor that he holds an anomalous position. The title "surveyor" conveys no idea of his standing, the word having so many meanings; there are land surveyors, highway surveyors, mining, measuring, building, and numerous other surveyors. It is true, some borough surveyors are members of the Institution of Civil Engineers, and others of the Institute of Architects, but the great body of them are not qualified by their antecedents or attainments for membership of either, while fully qualified to hold a middle position. An Institution of Engineering Surveyors, with the initials M.I.E.S., would meet the want, and give at once a recognised position to its members. It might even be a branch of the Institution of Civil Engineers if the Council would take them under their wing.

The importance of the second object must be felt by all who have held the position of borough surveyor, from the numerous papers of queries that are constantly sent out by different officers for inquiry on particular subjects, and the necessity felt for obtaining the fullest information on the various sanitary appliances that are constantly being brought forward.

The third object is one, the necessity for which will be recognised by all who have either been candidates for vacant offices, or who have had the difficult task of selecting from the numerous applicants.

An advertisement for a borough surveyor to a town of any size, will call forth a response from seventy to eighty candidates,—some eminently qualified, others totally unfit. The only means a committee of selection has of judging of the merits of the several candidates is from their testimonials, and the indiscriminate way in which written testimonials are given, renders them eminently unsatisfactory as a means of judging of the fitness and qualifications of a candidate. The fact of having passed an examination before a properly recognised authority, would give a qualified man an advantage over all others, that would amply repay the time and trouble it might take.

I hope this letter may be the means of tending to some joint action on the part of my brother surveyors.

W. H. WHEELER,
Borough Surveyor, Boston.

A FEW HINTS ON BATHING.

As your columns are always open to suggestions which have a sanitary purpose, I feel sure you will allow me space for a few observations on bathing. Considering the great ignorance that prevails on the subject, and the risk incurred by numbers of persons during the bathing season, I wish to propose that notices be conspicuously placed near all bathing-places and baths, cautioning persons not to go into the water within two hours after a meal. Bath attendants should be well instructed upon the

rules of hygienic bathing, and see them attended to.

I throw out these hints, as cases are not rare in which apoplexy and other seizures are induced through an ignorant and imprudent method of bathing. There is no reason why such an agreeable recreation during the summer season should not be indulged in with benefit instead of harm, if proper precaution be exercised in the use of the bath.

SANITAS.

HAUGHMOND ABBEY.

SIR,—My attention has been called to a review of Mr. Pidgeon's "Guide to Haughmond Abbey," in your number for June 15th, and being away from references, I am unable to do more than point out that in the seventeenth volume of the *Journal of the British Archaeological Association* (pp. 216—218), appears a tolerably exhaustive account of this abbey, both architecturally and historically. Judging from your review, it appears that Mr. Pidgeon has erred in the usual way of local writers, by disregarding your own valuable remarks, as well as those of others who endeavour to treat, critically, subjects such as this, on true and broad principles, for the use of students.

Paris.

E. ROBERTS.

BUILDING PRICES.

SIR,—It frequently happens, in the event of a builder's account being disputed, that the evidence before an arbitrator is very wide as to the percentage of profits on labour and the various descriptions of materials. Would it not be well if the various local associations of architects would define these points, and fix a standard for future valuations? This, together with the mode of admeasurement, is a matter requiring immediate attention, as those can testify who have had to support a case before a legal arbitrator, with unscrupulous witnesses on the other side. I think it a great pity that so much false evidence should be given where it is possible to prevent it by means of some recognised authority.

Z.

ST. GEORGE'S, HANOVER SQUARE.—THE RECENT ELECTION OF SURVEYOR.

At the last meeting of the Vestry, held on the 20th inst., a further application was read from the unsuccessful candidates for the office of Surveyor, requesting to be allowed their travelling expenses, amounting together to 23l. 10s. The memorial was signed by Mr. H. Goehane, St. Andrew's-square, Edinburgh (who made two journeys to London); Mr. M. Pritchard, Bedford Leigh, Lancashire; Mr. H. Hoyle, Corn-hall, Helms; Mr. J. Scargill, Bower Spring, Sheffield; and Mr. W. H. Wheeler, Boston. Mr. Joseph Bennett said it was perfectly certain that in the first instance it was stated no expenses would be allowed, but when the nine gentlemen were requested to come to stand the chance of election nothing was said as to expenses. In his opinion, it was a clear case for the consideration of the Vestry, and he would ask as a matter of principle whether it was worthy of them to refuse what was asked. Admiral Duncombe, M.P., said the previous resolution arrived at by the Vestry must be recorded, and a special Vestry called for the purpose before the request could be acceded to. Mr. Joseph Bennett gave notice to that effect. A motion by Mr. Westerton, that "the letter lie on the table," was lost, 11 voting for it and 16 against. The general feeling of the Vestry seemed to be in favour of granting the application.

At the same Vestry an application was read from Mr. H. G. Matthews, 1, Farnley-street, Holborn, who stood second on the list at the election for surveyor, asking for a testimonial to that effect. Dr. Appleton moved the request be granted, and that the seal of the Vestry be attached to the testimonial. It was resolved the matter should be postponed till the next meeting.

FLINT STONES ON LONDON STREETS.

At the usual meeting of the Committee of Works of St. George's, Hanover-square, on Wednesday, Sir William Codrington, of Eaton-square, made a reiterated complaint against the enormous size of the flints placed on the thoroughfares in the parish, especially in Belgrave-square and Eccleston-street. The contractor is bound not to place stones larger than five ounces on the streets, but the complainant assured the committee that he saw plenty of stones, as big as four times that size, lying about, and that men were actually breaking them whilst the traffic was going on. In conclusion, Sir William observed, "I submit that it is the duty of some person to see that the contractor does his duty, and that the Board employ some person out of the rates to do so. At present the contractor is favoured at the expense of the horses and carriages of all descriptions which have to break these stones instead of the contractor being kept to the terms of his contract." The new surveyor said he had only been a few days in office, but, from what he had already observed in the different thoroughfares, there were just grounds for the complaint which had been made to the size of the flints. It was resolved unanimously to call the attention of the contractor to the complaints which had been made to the committee on the subject.

THE ACCIDENT AT WELLINGBOROUGH NEW CHURCH.

SIR,—At the time of the accident at Wellingborough new church, a statement appeared in your paper to the effect that the cause of the fall of the south arcade was the failure of the stones of the neighbourhood of which the piers were built; but this was not true.* It was owing to the fact that, instead of building the foundations under the piers of large flat-bedded walling stones, well grouted with gravel mortar, as specified, the cores were filled in with small stones, and no gravel grouting used at all. Moreover, cracks appeared in them a fortnight or so before the fall of the south arcade, and neither the clerk of the works nor the builder informed me of them; but, seeing them get worse, they consulted together, and in their wisdom came to the conclusion that the best course to pursue was to loosen the centres, when down the whole thing came, fortunately without injuring any one: they then sent me a telegram informing me of the catastrophe. The north arcade I found to be also in a very bad condition, but fortunately the centres had not been loosened, and we have just completed the reconstruction of the foundations under the superintendence of I need hardly say, a new clerk of works, keeping the arcade up by proper cradles and shores; and the fallen arcade is being reconstructed on thoroughly good foundations.

The same of the neighbourhood is seen in the piers of the fine old parish churches of Wellingborough, Finedon, and others, carrying far greater weights than we are putting on to the piers of the new church, which are built of Box-ground stone and local red stone, in alternate courses, and were, previously to the accident, uninjured.

C. BUCKERIDGE.

THE LAW-COURTS COMPETITION.

SIR,—I read the article in last week's *Builder*, and felt some surprise that the joint committee of the bar and solicitors should differ from Messrs. Shaw and Fownall on a question of fact.

I therefore determined to go to Lincoln's-Inn with dividers and ascertain for myself whether or not in Mr. Waterhouse's design the courts are of the specified size. Taking the common-law side, where the courts are specified to be 1,376 square feet in area, they are shown by Mr. Waterhouse exactly 32 ft. by 38 ft., giving an area of 1,024 ft. or 352 ft. less than the area prescribed by the conditions; and this diminished area includes the inclosures on the sides of the courts.

The deficiency is caused by the architect boldly taking his bar-corridor out of the back of the courts, and this corridor is the only means of public communication between the courts on the one side, and the bar-corridor on the other, and the courts were made the prescribed size, there would be no means for counsel and others to pass from court to court on the same floor, except through the intervening courts.

As to the statement of the Bar Committee, that because the portion cut off from the court has been so cut off for the sake of quiet, and because it is partially glazed, therefore the court, which is only 1,024 ft., is in accordance with the conditions which prescribe an area of 1,376 ft. I will only say I cannot understand it, and should be very anxious to know whether any architect before appointing the eminent lawyers who have signed the Report, it seems to me that they may succeed in proving their statement when 2 and 2 are shown to be 3; or not before.

A SURVEYOR.

CERTIFIED FOREMEN AND CLERKS OF WORKS.

SIR,—Has it ever occurred to you in this competitive age of examinations as to qualification, to see the necessity of a council, composed of architects and builders, empowered to grant certificates of ability to builders' foremen and clerks of works? I have often thought that a council, composed as above, would be productive of a great amount of good; both as a guarantee to the public that they had fit and proper persons to see that their works were carried out in a proper manner; also to architects, as it would be great satisfaction to them to know that there were efficient foremen and clerks of works employed on their jobs. Builders in general would soon find it very much to their benefit to employ men so certified; and, lastly, the clerks of works and foremen themselves would be proud to have the grain separated from the chaff: they would be recognised as men who would have no difficulty in getting employment and a proper remuneration for their services; it would tend to elevate them as a class, and give them a position they never before occupied. As a rough outline of the plan, I would suggest six architects and six builders (practical men) to sit as a council, two leaving office every year, but eligible to re-election; to be elected by the presiding foremen of all our large towns, on the one side, and by the employers, and nominated by the Architectural Society. Each candidate for examination to pay 5s. previously to being examined, and on receipt of his certificate. As there must be some expenses incurred, it is only fair that the certificates should be paid for; and I

* No such statement was made in the *Builder*. Mr. Buckridge should be more precise. What the paragraph said was—"On the 1st of June it was at present difficult to get the same rests. The piers were constructed of the soft red sandstone of the neighbourhood, the material specified in the contract."—See page 417, ante.

think no man would find fault with the expense. The council to meet once in every three months. Of course, each large town could make its own arrangements.

We certify captains and mates of vessels, and also subject candidates for the civil service to a competitive examination; and why not clerks of works and foremen? The lives of her Majesty's subjects are of equal value on sea or on land.

F. W. B.

NAMES OF PLACES IN LONDON.

In the *Builder* for April last, page 285, I referred to "Blow Bladder-street" as marked in some old maps of London to be situated between Newgate-street and Chancery-lane, and as one the name of which has disappeared in modern maps.

It is perhaps hardly worth troubling your readers upon so trifling a matter, but in the event of your regard for antiquity inducing you to feel otherwise, I beg to say the name is, I find, mentioned in Pennant's "London," octavo edition of 1813, vol. i., page 338, and as situated in the very place I named; and I am therefore confirmed in my conviction of having seen it in some old map, though I cannot now say what map.

Perhaps some of your readers may be more fortunate. Pennant also refers to several other places, the names of which have gone to the tomb of all the Capulets, such as Peck-house Fields, now Carnaby Market; Gelding-square, now Golden-square. Folio 175, &c.

A. Z.

NOTTINGHAM MECHANICS' HALL COMPETITION.

Sir,—The first premium is awarded to an "Architect and Builder" of the town, and a member of the committee!

"CAUGHT NAPPING."

LOCAL SURVEYORS AND PRIVATE PRACTICE.

Sir,—I see by your last number that an organized system of practising has been set on foot by what is called the "Northern Architectural Association" against architects and surveyors holding public appointments; and that also in Derby the architects and surveyors of the town have got up a sort of trade-union for the same purpose. The object they have in view, apparently, is to exclude any unhappy member of their profession who should have had the ill luck to be selected for a public appointment from ever after practising his profession. They are, however, only actuated by a sincere desire to protect the interests of the ratepayers and the public at large; and one member of this Northern Trades' Union, Mr. Thompson, is of opinion "that no official, however low his status" (or high, either, we may suppose), "should have any private practice." Now if this opinion is the one which should apply to all officials, and not to local surveyors only! How is it that we do not find the Law Society, or any other legally constituted body, interfering with the right of private practice, which almost every town clerk in the board? It is in England enjoyed by the clerk to the local board he debarred from the practice of his profession as a solicitor because he has been appointed clerk to the board? It is unfortunate for the profession that any person who chooses can call himself an architect, or dub himself a surveyor; and if he happens to know nothing of these professions, or anything akin to them, then he assumes the right of imposing title of civil engineer. Solicitors and attorneys on the other hand, are the title of gentlemen granted them by law, and are bound to have some education to support it.

But every one who is lucky enough to be elected or elected to any office which requires a qualification for the office they would have. Few towns can afford to pay a sufficient salary to secure the services of a competent person; nor do they, indeed, require them. It is most desirable that every local surveyor should be the best man that can be obtained, and it is monstrous to suppose that he should be debarred from practising the profession he has spent his life in studying further than the sanitary or public works of one small town may afford him opportunities.

It would be as reasonable as appointing a parish doctor and prohibiting him from practising in the neighbourhood. In the contrary, it is most desirable that if the surveyor is a clever man, he should practise in the neighbourhood, and the district be benefited by having at least one who aims to professional skill have stood the test of competition and examination.

Should the machinations of these architectural trades' unions be successful, the result must be that no man of proved ability will be able to hold any of the smaller class town surveys. In London all the district surveyors, and the private practice; in Edinburgh the city architect has a large private practice; so also in the city of London, and in many other places. What would be said in London if any society of literary men in the metropolis petitioned the authorities that these gentlemen hold office is sufficiently precarious, and it is of the highest importance for the proper discharge of their responsible duties that they should, by means of their private practice, obtain more independence than the independence which is placed in them entirely at the mercy of their respective Boards.

"A LOCAL SURVEYOR."

THE DERBY SURVEYOR'S DUTIES.

A SPECIAL meeting of the Derby Local Board of Health was held last week.

"To take into further consideration two important matters brought forward without due notice at a late special meeting held on the 5th of June, viz., the increase of salary to the clerk of the Local Board, and permission to private practice by the surveyor to this Board."

After a good deal of discussion, with a noisy accompaniment amongst the ratepayers present in the hall, which required the intervention of the police, the following resolution was carried by a majority of 20 to 18, (one vote in the majority being objected to), as an amendment on one confirmative of the previous one,—

"That, in the opinion of this Board, the resolution passed at the last meeting, held on the 5th instant, with respect to a re-engagement of the borough surveyor, is irregular, if not absolutely illegal, and it is therefore resolved that such resolution be expunged from the minutes of the Board."

It was also resolved,—

"That, in the opinion of this Board, the resolution passed at the last meeting, held on the 5th instant, with respect to an increase of the salary of the clerk of the Board, is also irregular, if not absolutely illegal, and it is therefore resolved that such resolution be expunged from the minutes of the Board."

Finally it was resolved, by a majority of 21 against 16, that—

"This Council resolve itself into a committee of the whole house to meet at 11 a.m., July 10th, to consider the application of the borough surveyor and clerk to the Board."

CHURCH-BUILDING NEWS.

Nuthurst.—The chancel of the church, which has been closed for several weeks past, while undergoing renovation, has again been opened. At the time the church was restored, the chancel was left incomplete; but now the whole is finished. The carpenter's work was done by Mr. John Fuller, of Nuthurst, and the fresh laying of roof and stone work executed by Mr. Hoadley. The reredos of encaustic tiles from Messrs. Minton's was laid by Mr. England, of London. The decorations of the walls and roof were by Mr. Fisher, also of London. The texts round the windows and arches were painted in oil on zinc by Mrs. McCarogher. Gurney's patent radiating stove has been placed in the chancel.

Burton-on-Trent.—The foundation-stone of Christ Church Mission-room, Fleet-street, has been laid. After the opening, the congregation adjourned to the spacious malt-offices belonging to Messrs. Alsopp & Sons, where tea had been provided. The building will be 70 ft. long by 20 ft., and is to be in the Gothic style. The design is by Messrs. Giles & Brookhouse, of Derby; and Mr. Joseph Lakin, of Stapenhill, is the builder.

Ingatstone.—The old church of St. Mary has been re-opened, after being restored and beautified. The work of restoration, which was commenced about a year ago, has been carried out by Mr. Jas. Brown, of Braintree and Chelmsford, from the designs of Mr. F. Chancellor, architect, Chelmsford. Nearly 1,600l. has been expended in the restoration. When the work was commenced, the building was in a sad state of dilapidation; but an entirely new roof has now been placed on the south aisle, the chancel new roofed, and the roof of the nave restored. The old belfry-floor over the doorway has been removed; new windows have been placed throughout the church; and the old pews have been removed, and the church resealed throughout with open benches of stained deal, with carved traceries at the ends of the benches, the traceries of the chancel-benches being carved poppy-heads. The flooring is also new, and there is a new stone octagonal pulpit with carved panels. The restoration of the chancel has been carried out at the sole expense of the rector, the Rev. L. Parkin.

Boulge (Woodbridge).—Boulge Church, after having been closed for some time, during the progress of restorations, which have been carried out entirely at the expense of Mr. J. P. Fitzgerald, of Boulge Hall, has been re-opened for divine service. Boulge is a small parish, lying to the north of Woodbridge, from which town it is about three miles distant; and the church, which is dedicated to St. Michael, stands just within the park of Boulge Hall. In order to complete the restoration of the body of the church, Mr. Fitzgerald has added a south transept. The walls of the nave, &c., are rubble, with Caen stone dressings, angles, &c., and the

roof of plain tiles with a ridge. The new chancel-walls are faced with riven flints, with Caen stone angles and quoins, the roof resembling that of the other parts of the building. In the gable of the new transept is a stone window, in the Decorated style, to which the building belongs, of three lights, filled with cathedral glass. The only other alteration which has been made, whilst the church has been closed, has been the insertion of a lancet window on the west side of the north porch. The brick tower remains unaltered, all that has been done to it being to underpin it, and put down some new brickwork last year, signs that it might give way having been observed. The work, as well as the former restoration, has been carried out by Mr. B. Dove, builder, Woodbridge; Messrs. Habershon & Pite, being the architects. The cost of the work just completed is between 300l. and 400l.

Nottingham.—The ceremonial stone of a new church at Sneinton Elements has been laid by the Earl of Manvers. The new church is dedicated to St. Matthias. The church is situated on a declivity almost opposite the block of buildings known as the "Elements," about fifty yards from the Carlton-road. It is shaded by a number of poplar and elm trees; and when the building is completed the appearance of the whole will be pleasantly quiet and comparatively rural and secluded. The church, which is in the Gothic style, is nearly ready for the roof. It consists of a nave 67 ft. long and 48 ft. wide, with open-timbered roof, the ridge of which will be nearly 50 ft. from the floor; a chancel, with circular apse, of equal height, 32 ft. long and 20 ft. wide; and chancel-aisles on either side, out of which a vestry and organ-chamber are partitioned off with open screens. The division between the nave and the chancel and chancel-aisles will be by a triple arcade, with two stone columns, in one of which the ceremonial stone will form the base. A fourth arch, rising to a height of 35 ft., will divide the chancel from the apse. The walls throughout are built of Bulwell stone, and lined with red brick, interspersed with black brick bands and panellings. The building will provide for upwards of 700 on the floor of the church, and the cost, including fittings and internal decorations, will be about 2,600l. Messrs. Hine & Evans are the architects, and Mr. J. E. Hall the builder.

DISSENTING CHURCH-BUILDING NEWS.

Burley.—A new Wesleyan chapel having become necessary, it was decided to build one, and to use the old place of worship as a schoolroom. A subscription was therefore entered into, architects were engaged, and plans were prepared, and the works have been completed. The new chapel stands near to the old one. The edifice is of Geometric Decorated character, and consists, on the ground-floor, of an inclosed vestibule, from which both the body of the chapel and the gallery staircase are reached. The internal dimensions on the ground-floor are 50 ft. by 45 ft. within, with central recess for the Communion, opening into the chapel by an archway, enriched with corbels, shafts, and carved capitals. On one side of this recess is the organ chapel, and on the other is the minister's vestry. A gallery runs round three sides of the chapel, supported by light iron pillars, which are continued to carry an open timber roof, divided into a central span and two side aisles, of dressed timber-work, and stained and varnished. The front elevation presents a central double doorway, surmounted by a rose window of plate tracery, inclosed by a pointed arch, and the gable terminated by a foliated metal finial. This elevation is flanked by the inclosures to the gallery stairs, forming turrets with conical roofs and gilded finials. The side elevations have two light cusped-headed windows. The accommodation is for 500 adults and 150 children. The building will be of stone throughout. Lighting, warming, and ventilation have been attended to, and the estimated cost of land and building is 2,500l. The architects are Messrs. Lockwood & Mawson, of London and Bradford.

Bristol.—The foundation stone has been laid of a new chapel at the top of Lawrence-hill, one of the poorer quarters of Bristol, where a new colony, which has been named Russell Town, has sprung up. This new Congregational Church is to be erected at the sole expense (3,000l.) of Mr. William Somerville. The site has been presented by Mr. Charles Topler Godwin, and this is considered equivalent to 400l. The

designs of the chapel are by Mr. W. J. Green, architect, of London. The general building contract has been taken by Messrs. Harding & Vowles, of Bristol. The style of the chapel is to be the English Perpendicular. The edifice is designed to afford sitting accommodation for 800 persons.

Chipping-Norton.—Some months since a site for the erection of a new chapel and school-rooms in the West-street, Chipping-Norton, was purchased by the Wesleyan Methodists of this town. Since then the old buildings have been cleared off, the foundations laid, and the building commenced. The corner stones have also been laid. The architect is Mr. William Peachey, Darlington, and the builder is Mr. Charles Young, of Chipping-Norton.

Books Received.

The Engineer's, Mining Surveyor's, and Contractor's Field-Book. By W. DAVIS HASKELL, C.E. Second edition. London: Lockwood & Co. 1866.

In this second edition the author has entered more into detail than before as to the application of the tables. He has therefore given, in the Introduction, an explanation of the system of levelling with the theodolite, and also of the system of traverse surveying and plotting, more especially as applicable to the working surveys required through thickly populated districts, where great accuracy in the plans is necessary. For those who object to the theodolite a set of tables has been given for setting out curves by numerous offsets from one tangent. The author has, besides, added earthwork-tables for every 6 in. up to 80 ft. deep, and a table of gradients intended to reduce the labour of preparing working sections.

The Sewage Question: being a general Review of all Systems and Methods hitherto employed in various Countries for Draining Cities and Utilising Sewage, &c. Also a Description of Capt. Liernur's System, &c. By F. C. KNEP. London: Longmans & Co. 1867.

This is scarcely an honest title. It tends to the belief that in the book it prefaces will be found a full and fair examination of all the systems of drainage employed, whereas the volume is simply and merely the trade book of "Captain Liernur's Engineering Agency." It is all fair and right for an inventor to set forth the merits of his scheme; let him do so by all means. But it is better to do it in a straightforward way, and not to publish the description and panegyric under cover of something else.

We have before now briefly described the system in question. We will repeat the outline, however, by one quotation from Mr. Krepp's book:—

"Small iron reservoirs are placed under the pavement of all principal street-crossings, each reservoir being connected by means of small iron pipes with the privies of the houses next to it, in such a manner that no offensive gases can escape; in other words, from every single privy a continuous air-tight passage leads into the next subterranean street reservoir, without the intervention of any cesspool.

The pipes are provided, each one, with a valve, to be worked from the side-walks of the street, so that the communication between each privy and a street reservoir can be established or cut off at will. These valves remain always hermetically closed, except during a short moment, when the privy contents are to be discharged into the street reservoir connected with it, which occurs during the night, in the following manner:—

A locomobile steam-engine working an air-pump is driven near the small subterranean street reservoir, to exhaust the air out of it, and out of the entire system of main and branch pipes up to the hermetically-closed house-valves, which are then, one after the other, opened and shut again, thus discharging the privy contents, including all gases, into the street reservoir.

After all the house-valves have thus been successively opened and shut, an operation which practice has shown can hardly be done quick enough, the small reservoir itself is emptied by pneumatic pressure into a hermetically closed wagon-reservoir, attached as a sort of tender to the air-pump carriage. This done, the connecting hoses, by which the movable apparatus communicates with the stationary one

under the pavement, are uncoupled, and the locomobile with its tender proceeds to the next reservoir, and then to another and another, until the tender is filled.

The filled tenders are drawn away by the horses to a temporary dépôt, where they are decanted by direct hydraulic pressure into air- and water-tight barrels, which are then at once sent like any other goods, by rail or steamboat, to the lands requiring the excellent fertiliser thus collected."

Very ingenious, but certainly not what we are disposed to recommend; and our readers will not want to be told why.

The Manual of Dates. By G. H. TOWNSEND. Second edition. Warne & Co., Bedford-street, Covent-garden. 1867.

This edition of a very useful book has, it is stated, been much enlarged, and also revised and verified, as far as possible, by renewed reference to authorities. The number of articles in it, alphabetically arranged, is said to be 11,045, the first edition containing 7,383. It consists of upwards of a thousand pages, broad octavo.

A work such as this can never be made quite correct, nor in all cases satisfactory; but some trouble in examination induces us to think that it is amongst the best of its kind. We have failed in some cases to obtain from it what we required; but in a great majority of instances it contained all that was wanted, or that could be expected in such a work; and where, at first, it seemed to be defective, a little further research enabled us to find the required information under another head than that first referred to.

Miscellanea.

SOCIETY OF ARTS MEDAL.—The Society of Arts have this year awarded the Albert Gold Medal to W. Fothergill Cooke and Professor Charles Wheatstone, F.R.S., "for their joint labours in the introduction of the electric telegraph." The medal has been struck in duplicate, and a copy will be presented to each.

THE LEEDS EXHIBITION.—The arrangements for the National Exhibition of Works of Art, to be held in Leeds next year, appear to be progressing very favourably: a large number of influential persons have already promised contributions of pictures and objects of ornamental art.

EXTENT OF THE RAILWAY SYSTEM.—In the reply of the directors of the Brighton Railway to the Committee of Investigation, it is stated, that at the end of 1855, the total number of miles of railway sanctioned in England and Wales amounted to 9,486 miles, and the share and borrowing powers to 272,817,039*l.*; whilst at the end of 1866, the total number of miles authorized was 16,292, and the total share and borrowing powers, 515,801,356*l.*

NEWSPAPER PRESS FUND.—The expected dinner will take place this (Saturday) evening, the 29th, at Willis's Rooms, St. James's, and the Right Honble. W. E. Gladstone, M.P., will preside. The object of this Association, we may repeat, is to raise by subscriptions and donations a fund for the relief in want or distress of the whole paid class of literary contributors to the press of the United Kingdom, being members; as well as to afford assistance to their widows, families, parents, or other near relatives, in the hour of need. A remarkable list of stewards has been published, and there is every reason to expect a large assemblage of men connected with politics, art, literature, science, and the drama.

ISLINGTON VESTRY-HALL.—At a general meeting of this vestry, last week, the subject of the mass of scaffolding with which the new hall is disfigured was discussed, and it was explained by the clerk that a quantity of the compo facing of the building (13 or 14 cwt.) had fallen down; and it was found, on Mr. Dennis, the builder, examining it, that the facing had not been put on till the first coat was too dry, and that there was risk of more and more of it coming down, so that the whole work ought to be done over again at a cost of upwards of 250*l.* The vestry finally resolved that no further steps be taken in the repairing of the building till Mr. Higgins, their surveyor, had examined it, and reported to the vestry on the probable cost of the repairs.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—On Thursday evening last, an interesting lecture "On the Archaic Influences affecting Ionian Art," was given by Dr. Hyde Clarke.

RESTORATION OF ST. LAWRENCE'S CHURCH, READING.—The Finance Committee have decided upon at once entering upon the work, the contract having been taken by Mr. Lovett, of Wolverhampton, builder. Further subscriptions to a great extent are needed. The tenders for the work received by the committee were as follow:—Mr. Barnicoat, 4,457*l.*, being 3,229*l.* for general repairs, and 1,228*l.* for the tower. Mr. Sheppard, 4,050*l.*: 3,574*l.* for general repairs, and 476*l.* for tower. Mr. Matthews, 3,580*l.*: 3,530*l.* for general repairs, and 450*l.* for tower; and Mr. Lovett, Wolverhampton, 3,784*l.*: 2,700*l.* for general repairs, and 1,084*l.* for tower. Mr. Lovett's tender for general repairs was accepted, with slight alteration, the amount being 2,628*l.*, exclusive of tower. Mr. Joseph Morris is the architect. Mr. Lovett is the contractor for the new local station on the Great Western Railway.

MEMORIAL OF MR. LE STRANGE.—The east window of Hunstanton Church has been recently filled with stained glass. The subjects in the centre light are the crucifixion, Resurrection, and Ascension of the Saviour. In the two lights on either side of the centre are represented Old Testament types of each of these great events, and in the two outer lights are depicted the Last Supper, the Agony, the Betrayal, and Burial of our Lord, with His appearance to St. Mary Magdalene and to the two disciples at Emmaus, making fifteen subjects in all. The head of the window is filled with paintings of the Heavenly Host, corresponding with the corbels in the chancel roof, and with the figures painted on the reredos. The inscription runs across the window immediately below the medallions, and is as follows:—"In memoriam Henrici l'Estrange Styleman l'Strange, conjux et liberi ejus posuerunt, MDCCCLVII." The window is the work of Mr. F. Freedy, architect.

THE HERTFORD NEW UNION WORKHOUSE.—For the new Union Workhouse seventeen plans were sent in, and inspected by the Board. A Committee of the whole Board was appointed to make a selection. The selected designs are those of Messrs. Thomas Smith & Son, of Hertford; Mr. Hooker; Mr. Peck, the architect of the workhouse at East Grinstead, a view of which is exhibited with the plans; Messrs. Messinger & Co.; Mr. J. T. Bressey; and Mr. Blesly. In most of the plans the corridors are closed at the ends. In all of them, the infirmary and fever-wards are detached from the main building, and at a considerable distance from it; and the tramp wards are placed at a corner of the ground accessible from the road. In most of them the front of the building has a western aspect, looking towards Hertford; in others it has a northern aspect abutting on the road. In some cases the competitors have omitted to give sections showing the natural fall of the ground, and the buildings placed on it clearly marked.

RESULTS OF SONOROUS VIBRATIONS.—This interesting and curious subject has again been brought before the Royal Institution by Professor Tyndall, who extended the consideration of it to the influence of vibrations on light, on streams of water, and on jets of smoke. Some of the experiments exhibited in previous lectures were repeated with variations. A long gas flame, just on the point of becoming sonorous, or roaring, was put in agitation by sounds resembling the chirruping of birds; and Professor Tyndall, having called on his audience to take part in the experiment, they commenced imitating the sound, and the general chirruping of the members of the Royal Institution was accompanied by violent movements of the flame. A jet of smoke was influenced by sonorous vibrations in a similar manner, a continuous jet of smoke about 2 ft. high being broken down and divided into two jets by the sound of an organ-pipe. A stream of water was similarly affected, a continuous stream having been broken into drops by the sound of a tuning-fork. [Moral: Keep quiet while fire-engines are at work in extinguishing flames, whether they be "singing flames" or roaring ones.] This experiment was varied by directing the jet of water upwards so as to form an arch; and when a tuning-fork of a certain pitch was sounded, the continuous arch of fluid was broken into drops. Several other interesting experiments were exhibited to illustrate the remarkable effects of sonorous vibrations.

A CEMETERY FOR SOUTH STOCKTON.—A site the Mandale-road has been purchased for a cemetery for South Stockton (on Tees). The committee have selected Mr. G. G. Hoskins, of Middlesbrough, as their architect for the chapels and lodges.

BRISTOL ASSIZE COURTS COMPETITIONS.—The signs sent in for the second competition have been received, and have been referred by the committee to Mr. Street. It is urged that they ought to be exhibited and publicly canvassed for a decision is arrived at.

APPOINTMENT OF MEDICAL OFFICER OF HEALTH FOR PADDINGTON.—At the last meeting of the vestry of Paddington, Dr. William Hard-oke was elected medical officer of health for that parish, in the room of Dr. J. B. Sanderson, resigned. He received 29 votes. There were numerous other candidates, but the only other gentlemen who received any support were Dr. Evenson and Mr. Bird; the former obtaining 4 votes, and the latter 4.

THE TRADES' MOVEMENT.—The carpenters in the employment of one of the leading employers in Nairn struck work in order to compel their employer to dismiss a non-union workman, and the employers were on day's wages, it was said for them to leave or be discharged at a moment's notice, so that the employer was completely in the power of the men; and being engaged in finishing a contract in connexion with the Marine Hotel, the non-fulfilment of which would involve a serious loss, Mr. Mackintosh was obliged to comply with the terms of the men, by dismissing the non-unionist.

A NEW BREAKWATER AT THE ISLE OF MAN.—There is every prospect, it appears, of an efficient breakwater being constructed at the mouth of Douglas Bay, Isle of Man. The Government has sanctioned the appropriation of a balance of creased customs duties to this and other works of improvement around the island; and this balance will amount to about 13,000l. per annum. The Douglas breakwater, if carried out according to the plans submitted to the Tyndal Court, will form an island 1,200 ft. long, and will enclose an area of 42 acres of low water. Its entire cost will be 179,000l., but the plans may be so modified as to reduce the expenditure to 130,000l. The construction will occupy seven years.

OPENING OF A FREEMASONS' NEW LODGE AT DOCKMOUTH.—At the annual St. John's meeting of the Skidaw Lodge (1002) their new lodge room was opened for the first time. The dimensions of the room are 27 ft. by 16 ft., and it occupies a prominent position in the Market-place. The ceiling is a light blue, whilst the pilasters and cornices are a somewhat darker purplish tint, the quoins being adorned with plaster busts. The walls are panelled in imitation of Scottish granite. At the top of a recess which forms the background to the canopy of the chair or throne of the W.M., appears "The All-seeing Eye" in a blaze of illumination; and the cornice, which is mosaic, is in red and gold. The canopy is crimson damask, with a heavy gold fringe, and lined with yellow satin, and the chair is cushioned with crimson velvet and gold fringes. Nothing can be smarter.

CHOLERA AND EPIDEMIC DISEASES IN THE METROPOLIS.—At the last weekly meeting of the Marylebone vestry, the subject of sanitary precautions was introduced, and the medical officer of health, Dr. Whitmore, thought it highly important that the vestry should take such precautions at the earliest possible date, as there had been already two or three cases of undoubted cholera at the East-end of London, and a very fatal and formidable disease, closely resembling black fever, had appeared in Liverpool, and was very prevalent in Ireland, especially near Dublin. These diseases were promoted and aggravated by overcrowding and defective ventilation; and if they found their way into Marylebone, the overcrowding was so great, and the ventilation so imperfect, that very fatal and serious results would follow. With respect to the erection of mortuary houses, his opinion was there was no other sanitary arrangement so much needed. In his experience he could state that there were many houses where a dead body was kept in a room occupied by six or seven persons, and where every domestic office was performed. He hoped the Board would no longer defer the consideration of sanitary matters. It was resolved to go fully into the subject.

A NEW CONCERT-HALL FOR BRIGHTON.—A concert-hall is in course of erection, on ground situated between West-street and Middle-street, under the superintendence and from the designs of Mr. Horatio N. Gouly, architect. The hall is 200 ft. by 46 ft., with galleries on three sides, capable of accommodating 3,000 persons, in addition to which the orchestra will accommodate 400 performers and an organ. The building is fire-proof. The basement, which is let off as wine-cellar, is arched over with concrete on iron girders. At either end will be restaurants and private billiard-rooms. The hall is being erected by a private gentleman, an old inhabitant of Brighton.

HERTFORD VILLA RESIDENCE COMPANY.—The second ordinary general meeting of this company has been held. The chairman, in moving the adoption of the report, said the company had now fairly and satisfactorily entered on its career. The estate at Bengoe, purchased last year, and which they have named the "Warren Park Estate," has been laid out according to the plans of the architect, good roads had been made, and arrangements had been made with the Corporation for the supply of water. The company had given the public 10 ft. of ground—5 ft. of pathway and 5 ft. of roadway—at the narrowest part of the road at the top of Port-hill, which greatly improved the entrance to the town from the village of Bengoe. The company was about to commence building; and were now in a position to offer plots for sale; and he hoped the ground would soon be studded with pretty and commodious villas, which would be an ornament to the neighbourhood and a benefit to the town. The report was adopted.

JAPANESE ART.—The Japanese is a very developed form of art, possessed of strong individuality, no small amount of versatility, acute and various observation, wonderful executive skill within the range of attainment which it contemplates and lays itself out for, and the most admirable consent between its aspirations and its performances. It has a certain directness of idea, conception, invention, perception, and aim and result in realisation, an adjustment and adaptation of each of these artistic elements to all the others, and withal a definiteness of standard, method, and traditional style, such as render Japanese art, from one point of view, the most living and efficient school now extant in the world. . . . The Japanese delineation is distinctly not bungling or make-believe; and it constitutes a school of art in the fullest sense of the word,—as fully as does the school of Giotto, or that of Van Eyck, Mantegna, Titian, Rubens, or whatever other illustrious European of the past; more fully, one might say, than any of the present. It has its traditions and generic conceptions, its fully-developed schemes of execution, its varying and duly related divisions of subject and treatment: it has both soul and body, and the complex of the two.—*Chronicle.*

LIME IN WATER PURIFICATION.—A patent has been taken out by Mr. James Davis, of Southsea, Civil Engineer, for "an improved method of treating limestone and applying the products for purifying and rendering water palatable, and for imparting a briskness to other beverages; as also for utilising the substances to the various purposes of the builder." He submits limestones to heat in retorts, with or without the alkalies, potash, and soda, sustaining the heat until the expulsion of both the free and latent water, together with the carbonic-oxide gases present in the materials, be fully consummated, collecting in receivers for use the gases set free. He purifies water by first destroying infusoria, fungi, &c., and decomposing vegetable and animal matter with caustic alkali, separating the substances by subsidence, filtration, or otherwise; and afterwards forces the liberated gases through the caustic fluid in order to free it from the alkali, which it does by converting the soluble lime into an insoluble carbonate. He then runs the bright water from off the deposition into another receptacle, and again gives it a further supply of the carbonic-acid gas to impart briskness, and hold in suspension such mineral constituents as may give the characteristics of good refreshing spring water. Further, he applies the caustic alkalies in combination with aluminous, silicious, and ferruginous earths, or one or more of them, for all purposes to which ordinary lime is used, whether it be in the manufacture of mortar, plaster, or cement, or castings of any kind in which lime forms a component part.

RAILWAY TRAFFIC RECEIPTS.—The traffic receipts of railways in the United Kingdom amounted for the week ending June 8, on 12,792 miles, to 783,531l.; and for the corresponding week of last year, on 12,516 miles, to 719,892l.; showing an increase of 276 miles, and of 63,639l.

ACCIDENT IN A ROMAN CATHOLIC CHAPEL.—During the celebration of mass in St. Patrick's Roman Catholic Chapel, Donegal-street, Belfast, a portion of the ground flooring immediately in front of the altar, about 16 ft. in length by 6 ft. in width, gave way, precipitating a large number of persons, who were kneeling on it at the time, into the open space below the flooring, which is about 5 ft. or 6 ft. in depth. A panic ensued, and many of the congregation rushed to the doors, while others fainted. The front door very soon became blocked up, and a great number of persons were trampled on, injured, and had their clothing almost destroyed.

UTILISING SCRAP IRON.—An improved method of utilising Bessemer and other steel and iron scrap has been provisionally specified by Messrs. Clay & Bowater, of Liverpool. They heat it in any convenient manner, and whilst it is still warm pour liquid Bessemer steel around it; or after heating it, they place it in or amongst liquid Bessemer steel, in either case during the solidification of the mass, and so form a strong casting, be it in the form of an ingot or otherwise. The croppings of Bessemer steel rails and other heavy bars and rods, as well as scrap of Bessemer cast and other steel, and of malleable and other iron, of various shapes, can be thus utilised.

IRON SHELLS AND SHINING PLUMAGE.—Eggs with iron shells ought to be a fact for the Paris Exposition. A Berlin chemist, it is said, caused his hens to produce them by feeding them on a preparation in which iron was made to take the place of lime. "Seeing is believing," but we have not yet seen them. The fine aniline colours were got from a substance which abounds in the excreta of brilliant-feathered birds after they have moulted, but not while they are getting their new feathers. Basing on this fact, we some years since suggested, in the *Builder*, that if it were possible, without poisoning them, to give moulting birds or fowls this substance, it might give brilliancy to their new feathers. This is at least as likely an idea as that of the Berlin chemist; but no one ever wrote us to say he had tried it, or with what result. We again suggest it for trial.

EASTBOURNE PARISH CHURCH.—Mr. Ewan Christian, architect, has recently surveyed this church, and has found it in a state of considerable dilapidation. He reports that it requires substantial repair in every part, but especially the tower, which he considers to be hardly in a safe condition. According to an approximate estimate he has furnished, the probable cost of needful reparation and restoration will be for the tower, 474l.; nave, 613l.; south aisles, 665l.; north aisles, 550l. Total, 2,302l. An appeal is now being made by the vicar and churchwardens for the necessary funds. They suggest, according to the recommendation of the architect, that the work should be proceeded with divisionally, as funds may be forthcoming; excepting only that the reparation and restoration of the south aisles should not be delayed, a lady having offered to give stained glass for four of the windows upon the accomplishment of this part of the undertaking.

SALTAIRE.—Until recently, Saltaire, near Shipley, the well-known establishment of Mr. Salt, in addition to its extensive works, consisted of 470 dwellings, including a proportionate number of shops and other buildings. Great improvements, however, are now being made; two contracts, one for the erection of eighty-three dwelling-houses, and another for eighty-two, are nearly finished, and tenants are daily beginning to occupy the houses even before they are completed. Other contracts are now going on; one for the erection of fifty-nine dwelling-houses, also the building of forty-five almshouses, a dispensary, and a schoolroom upon a large scale, with a suitable number of class-rooms, capable of accommodating 750 scholars. Messrs. John Ives & Sons are the principal contractors for these buildings. The erection of a Wesleyan Chapel is also progressing, and plans have been prepared for the erection of a Mechanics' Institute: there is also much talk about a people's park. The population of Saltaire will now be about 3,500.

ACCIDENT.—While a number of workmen were engaged in hoisting one of the large girders of the new Corn Exchange in course of erection at Dorchester, the scaffolding and gear fell to the ground, burying one poor fellow beneath the rubbish.

A CONVALESCENT HOSPITAL FOR LIVERPOOL.—It is resolved to devote the sum of £4,679, balance of the Liverpool Cotton Famine Relief Fund, to the building of a convalescent hospital in a healthy position near the town, to act as a supplement to the existing infirmaries and hospitals.

A METHODIST MONUMENTAL CHURCH AT WASHINGTON.—The Methodists intend to build a large monumental church in Washington, U.S., to cost 200,000 dollars. Seats will be set apart for the President and his cabinet, the judges of the courts, generals of the army, and other distinguished persons. Seats also will be provided for the different States, so that strangers from every section of the extended republic may feel that they have a place of worship when visiting the metropolis.

THE BIRTHDAY OF ALEXANDER THE GREAT.—We have already spoken of the *graphiti* or scribbles of the Vigiles, lately discovered in Rome. At the last meeting of the Archaeological Institute, Mr. Shakespeare Wood, secretary of the Archaeological Society of Rome, showed two large sketches of them, and spoke highly of the value of such discoveries, and of the extreme interest shown by the Pope in encouraging them. Their expense was, however, considerable, and help would be most welcome. Mr. Parker said one of these "*graphiti*" established the date of the birth of Alexander the Great. Alexander Severus, we are told, was so called because born on the same day as Alexander the Great; but the historians do not say what that day was. The Roman "*Vigil*" scratches a note of the feast on the birthday of Alexander Severus, and so settles that of Alexander the Great.

CONCRETE FUEL.—Heretofore, in order to cause small coal, or coal-dust, to adhere so as to form solid blocks, it has been found necessary to introduce and incorporate with the coal-dust pitch, bitumen, tar, or some other adhesive substance. In order to mix these substances together and form the compound into blocks, expensive and cumbersome machinery has been required, and it has also been found necessary to heat and char, or partially burn the blocks. The object of the invention of Mr. J. Roberts, of Cranmer-road, Brixton, is to cause the several particles of small coal to adhere together, so as to admit of the mass being moulded into the desired form. To this end he makes the small coal or coal-dust into a concrete mass, by the addition of pulverised lime and water. The lime may be added in various proportions, but he finds that from one-tenth to one-twelfth the quantity by measure of lime, well slaked with water, will be amply sufficient to form the coal into a hard concrete, but somewhat porous mass. The materials, when mixed, may be placed in wooden, earthen, metal, or other moulds, until the concrete becomes firm enough to be turned out to dry, for which purpose it will only be necessary to expose it to the air or wind for a few hours. The blocks will thus, in a day or two (without the application of any artificial heat), become hard enough to admit of moderately rough handling, and will burn with clearness and steadiness in any common grate or fireplace. He finds common lime answer the purpose of making a concrete fuel as well as any of the stronger and more expensive cements, and, therefore, on account of its cheapness, he prefers to use it.

TENDERS

For sundry works at the Licensed Victuallers' Schools, Kensington-lane. Mr. Wm. Dunn, architect:—
Emery £38 0 0
Wate 395 0 0
Langmead & Wey 337 0 0
Taylor 353 0 0
Geddes 327 0 0
Lamble (accepted) 327 0 0

For the erection of a lecture-hall, school, and classroom, at Clapham. Mr. John Tarring, architect. Quantities supplied:—

Kilby £2,178 0 0
Myers & Sons 2,659 0 0
Eldon 2,690 0 0
Richards 2,621 0 0
Saunders (accepted) 1,976 0 0

For chancel to proposed new church at Great Grimsby, Lincolnshire. Mr. J. H. Hawke, architect:—
Simpson & Malins £2,187 15 0
Dove, Brothers 1,798 0 0
Ruddleston 1,748 0 0
Brown 1,489 0 0

For flour mills at Waltham Abbey, Essex, for Mr. James Carr. Mr. John Randall, engineer. Quantities supplied by Messrs. Church & Rickwood:—
Patman £3,196 0 0
Smith & Coy 1,516 0 0
Mansfield, Price, & Coy 2,923 0 0
Gardner 2,923 0 0
Piper & Wheeler 2,589 0 0
Field, Brothers 2,572 0 0
Browne & Robinson 2,347 0 0
Kirk 2,750 0 0
Wiggs (accepted) 2,650 0 0

For brewery, offices, and four shops, for Messrs. Hannay & Dickinson, Cross-street, Manchester. Mr. Wm. Elsworth, architect. Quantities supplied:—
Ellis & Hinchliffe £12,247 0 0
Patterson 12,566 0 0
Farrell 11,800 0 0
Thomson 11,633 4 0
Bates & Brothers 11,515 0 0
Robinson & Son 11,600 0 0
Neal & Sons 11,033 0 0
Thompson 10,983 0 0
Foggett 10,630 0 0
Clay (accepted) 10,500 0 0
Warburton, Brothers (too late) 10,205 0 0

For boundary walls and conduit to new almshouses, Wantage, Berks. Mr. J. P. Spencer, architect:—
G. & J. Kent (accepted) £128 17 0

For villa residence, Denmark-road, Gloucester, for Mr. J. P. Jenkins. Mr. H. James, architect. Quantities supplied:—
Clutterbuck £1,170 0 0
Merredith 1,142 0 0
Sims 1,116 0 0
Cullis (accepted) 1,093 0 0

For alterations, Red Cross-square, Cripplegate:—
Knight £256 0 0
Lark 708 0 0
Newman & Mann 680 0 0
Shurmer 651 0 0
Ellis 651 0 0
Chessum 555 0 0

For alterations and additions to mansion, No. 76 A, Marine-parade, Brighton, for Mr. W. Budj, Twickenham-park. Quantities supplied by Mr. Henry W. Broadbridge:—

Cheesman & Co. £3,140 0 0
Wills 2,341 0 0
Kemp 2,300 0 0
Jarrett 2,290 0 0
Sawyer 2,218 0 0

For new buildings, 13, Carter-lane, Doctors' Commons. Messrs. John Young & Son, architects:—

Conder £2,826 0 0
Macey 2,613 0 0
Brass 2,648 0 0
Piper & Wheeler 2,472 0 0
Hill & Sons 2,459 0 0
Webb & Sons 2,345 0 0
Ashby & Horner 2,325 0 0
Newman & Mann 2,295 0 0

For the erection of stables, with loft and rooms over, in Hill street, Finsbury, for Mr. A. M. Namara. Mr. P. Tash, architect. Quantities not supplied:—
Harvey £1,233 10 0
Mann (accepted) 1,225 0 0

For alterations and additions to No. 20, Dover-street, Piccadilly, for Mr. J. T. Campbell. Mr. T. Dudley, architect. Quantities not supplied:—

Mann £1,975 0 0
Baker 1,575 0 0
Baker 1,500 0 0

For bar-fitting at the Queen Victoria, Clapham Junction. Mr. Wm. Nunn, architect:—

Day £285 0 0
Summonds 280 0 0
Sulick 268 10 0
Aney* 260 0 0

Shultze £25 7 2

Moody* Pecteter's Work. 99 14 0

Winn* Gaffster's Work. 65 0 0

* Accepted.

For Infant School, Well-street, Hackney, for the Hackney Theological College. Mr. James Harrison, architect. Quantities supplied:—

Perry & Co. £291 0 0
Cannon 590 0 0
Hill & Keddell 808 0 0
Browne & Robinson 828 0 0

For the erection and completion of a synagogue in John-street, Thornhill-square, Islington. Mr. H. Collins, architect. Quantities supplied by Mr. George Mortimer:—

Hill & Keddell £5,636 0 0
Dove, Brothers 5,850 0 0
King & Sons 5,693 0 0
Williams & Son 5,577 0 0
Tarrant 5,399 0 0
Ennor 5,372 0 0
Turner & Sons 5,298 0 0
Hart 5,265 0 0
Pritchard 5,186 0 0
Perry & Co. 4,960 0 0
Roberts 4,942 0 0
Newman & Mann 4,835 0 0
Heiggs 4,903 0 0
Heiggs 5,472 0 0

For additions to Messrs. Bagallay, Westall, & S. cer's warehouse, Love-lane, City, E.C. Mr. Herbert P. architect:—

Henshaw (accepted) £1,304 0 0

For erecting ten cottages and outbuildings for Joseph Gudgeon, near Henlow, Bedfordshire. Mr. Shilcock, architect:—

Freshwater £1,500 0 0
French 1,263 0 0
Patten 1,215 0 0
Butterfield 1,187 0 0
King 1,118 18 6
Redhouse 1,082 15 0
Loom 1,075 0 0
Richardson 1,043 0 0
Mayes & Pryor (accepted) 861 10 0

For erecting two small houses, for Mr. J. Pearson. Hitchin. Mr. J. Shilcock, architect:—

Stapleton £215 0 0
Andrews 200 0 0
Deves 167 0 0
Butterfield (accepted) 170 0 0

Carpenter's Work, &c.

Foster £119 0 0
Anderson (accepted) 113 0 0

Painter's Work.

Best (accepted) 17 3 6

For a house at Bushey-hill, Camberwell, for Mr. Nayk. Mr. James Wilson, architect:—

Shapley & Webster £267 0 0
Wilks 219 0 0
Smith 189 10 0
Bayers 723 0 0
Bowman (accepted) 687 0 0

For new factory and offices at Battersea, for Messrs. Moser & Son. Mr. J. D. Hayton, architect:—

Gammun £8,280 0 0
Rider & Son 6,129 0 0
Rider & Son 6,928 0 0
Adams & Son 5,716 0 0
Downs 5,700 0 0
Hart 5,680 0 0
Coleman 5,229 0 0

For sewage tanks and drains for the parish of Finchley. Mr. Farmer, engineer. Quantities supplied by Mr. Shrubsole:—

Bloomfield (accepted) £1,060 0 0

For villa residence at Addiscombe, Surrey, for Dr. A. Carpenter. Mr. R. Grover, architect. Quantities supplied by Mr. Shrubsole:—

Water £1,440 0 0
Wright & Co. 1,232 0 0
Munday & Hutchinson 1,200 0 0
Fauler 1,189 0 0
Stanes & Son 1,168 0 0
Shurmer 1,130 0 0
Warne 1,125 0 0
Hennings 1,125 0 0
Thomas 1,080 0 0
Johnson 1,067 0 0
Jenkins 1,067 0 0
Hazel 1,060 0 0
Candler (accepted) 1,040 0 0
Wilcox 1,030 0 0

For the erection of warehouse-premises in Wellington-street, Blackfriars-road. Messrs. Lynes & Rivett, architects:—

Taylor £1,049 0 0
Richards 894 0 0
Hoare 884 0 0
Hoare 764 0 0
Kilby 720 0 0

Entrance Gateway. Kilby £138 0 0

For two pairs of semi-detached residences at Hertford. Mr. Arthur Ever, architect. Quantities supplied by Messrs. Pain & Co.:—

Grover £5,667 0 0
Gill 5,300 0 0
Wells & Son 5,293 0 0
Andrews 5,124 0 0
Tongue 5,060 0 0
Foster 4,794 0 0
Warne 4,724 0 0

For alterations and additions to the Corn and Hop Exchange, Canterbury. Mr. John Green Hall, architect. Quantities supplied by Messrs. Pain & Co.:—

Wilson £3,602 0 0
Perry 2,800 0 0
Taylor & Son 2,697 0 0
Cosens, Brothers 2,636 0 0
Lauzeield 2,595 0 0
Gaskin & Godden (accepted) 2,390 0 0

Accepted for erection of three houses on the New Walk, Leicester. Mr. W. S. Burton, architect. Quantities supplied:—

Newman Bricklayer's Work. £770 0 0

Nicholson & Goffey Stonemason's Work. 249 12 0

Shenton Slater's Work. 58 0 0

Morall Plasterer's Work. 238 19 0

Barnett Carpenter's Work. 584 0 0

March & Co. Tinsmith's Work. 49 19 0

Hill Plumber's and Glazier's Work. 309 8 0

Bramley Gaffer's & Bellkanger's Work. 29 17 6

Bell & Son Painter's Work. 87 19 0

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WANTED, by a good Oil Grainer, a JOB. Not particular to fit up time with glazing and painting. Town or country.—Address, Mr. BEADY, 5, Little Cross-street, Euston.

WANTED, a RE-ENGAGEMENT as FOREMAN of JOINERS, or Joiners and carpenters, General Foreman of W. & C. up to setting out and kind of work. First-class references. No objection to use the tools, or will take good carpenter and joiner's work.—Address, J. ARVIS, 40, Lockington-road, Battersea Park, S.W.

WANTED, a RE-ENGAGEMENT as GENERAL FOREMAN, Joiner by trade, town or country.—Address, M. R. 2, Park-road, Richmond, Surrey.

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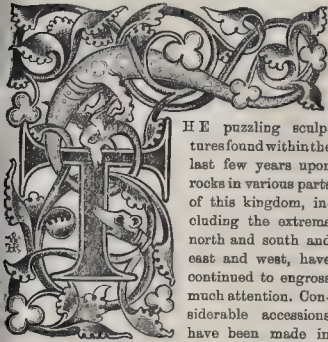
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The Builder.

VOL. XXV.—No. 1274.

Our Pre-historic Sculptile Remains.



THE puzzling sculptures found within the last few years upon rocks in various parts of this kingdom, including the extreme north and south and east and west, have continued to engross much attention. Considerable accessions have been made in information concerning them, although no certain solution of their meaning has been found. But as every new fact brings us nearer to the clue that will doubtless, at last, put us into possession of their meaning and age, we must examine its bearings with interest, although it may not be very definite in its suggestions. When first observed, the central cups within the circles and concentric circles were passed over without any impression that they were of more meaning than the rest of the configuration of which they formed a part; but recent additions to our known examples have led to the recognition of these central semi-spherical hollows as leading features in the scheme of representation. As far as we are aware, the *Builder* was the first to point out that the stones having semi-spherical depressions upon them found in the neighbourhood of the Swiss lake dwellings, were most probably scattered links of this same system of rock-carving, and to urge that further search should be made on this scent. We now learn that Dr. Keller, the Swiss historian of the lacustrine settlements, has ascertained that very numerous examples of the cup-markings are to be seen on rocks *in situ* in the western cantons of Switzerland, Vaud, Fribourg, and Berne, as well as on erratic blocks of gneiss and granite. Turning to our stock of English and Scottish examples, we perceive that the cup-like hollows, without inclosing rings, are also of frequent occurrence. There are numerous instances of these in Northumberland, and some in Scotland. A second fact of some importance is the certainty that these curious sculptile works are to be seen on several of the great monoliths forming the so-called Druidical circles or temples. In an amplified reprint of a communication made to the Society of Antiquaries of Scotland, Sir James Y. Simpson states that he has traced all the different types of figures, cups, rings, and volutes upon the megalithic circle of stones near Liverpool, called the Calder Stones. The same indefatigable archaeologist has supplemented Sir Gardner Wilkinson's discovery of a fourfold concentric circle on Long Meg, the large monolith grouped with the sixty-seven "Dear Sisters" at Salkeld, Cumberland, by tracing out several others on the same stone. These all consist of the central hollow, with the ring proceeding from it through three or four encompassing circles. The sixty-seven Sisters were examined with a negative result, except as to

one, on whose western face a faded circle suggested itself, but which he doubted to accept as a certainty. Three sets of circles in Banffshire, Rothiemay, Thorax, and Bankhead; another in Inverness-shire, at Bruiach; four in Perthshire, at Cultra, Glendieve, Moncrieff, and Craighall; one at Turin, in Forfarshire; two at Graystone and Holywood, in Dumfriesshire; besides those mentioned, and another example in the Isle of Man, at Oaklands, bring the number of instances in which these sculptures are associated with megalithic remains in the north up to fifteen. In the parish of Llanidan, in Anglesey, there is a circular entrenchment, whose name, handed down to modern times, gives us some information as to the uses of at least this circle. It is called Bryn-Gwyn, *i.e.*, the supreme or royal tribunal; and, as the author of "*Mona Antiqua Restaurata*," points out, the early Welsh poets applied the same term to the Parliament House or Westminster Hall, thus identifying the uses of the two structures. The Bryn-Gwyn circle is, however, formed of earth and stones, not monoliths.

Several of the Scottish memorial stones have been recently observed to be linked with the subject in hand, by carvings of both cups and rings upon them. Hitherto unnoticed, these curious figures, indeed, seem to be found almost wherever they are looked for. We have before related that a few of the flat slabs of stone forming part of the rude cists, in which bodies have been interred at some unascertained remoteness of time, have been found to be marked with concentric circles and cups. And now we see the same mysterious impress on another sepulchral feature, the cromlech. Although this branch of the inquiry has as yet been scarcely handled, Welsh cromlechs have yielded sufficient evidence that we have only to seek for the symbols in question to find them. So far, then, these signs are equally associated with the dead and the living. Just as the cross is found on the tomb and on the church, so are these one-rayed circles and cups found in the grave and in places of meeting and memorial. That they were once very much more numerous than they are now is curiously shown by the discovery of similarly inscribed stones in "weems" or underground houses of Pictish antiquity, in positions more or less covered, which indicated that they had been carved before they had unceremoniously been taken by the Pict builder, to assist in forming his dwelling. We should be sure, from this hint, that those few examples of inscribed stones found in graves have not been simply used up in this unconsidered manner. Those to whom the sign-writing that still obtains among us, by virtue of which almanac-makers indicate the sun by a dot with a circle round it, has suggested the possibility of a solar association of idea with these figures, will read with curiosity the following extract from the first known account of any cup and ring cutting. It has been brought to light by Sir James Y. Simpson, and printed in the "*Proceeding*" to which we have before alluded. In a description of the Antiquities and Scenery of the parish of North Knapdale, Argyshire, Mr. Archibald Currie, the author, mentions a rock on which there are fifteen sets of concentric circles. He thus accounts for them:—

"These circles are similar to those used in astronomical plates for elucidating the revolution of the planets round the sun. Of these circles, there are five in each of the concentric ones, probably to correspond with the number of the planets then known. The doctor is of opinion that this is one of those methods which were in use previously to the introduction of letters into this country, for commemorating extraordinary events; and, in the case in question, he thinks these circles represent the right of the proprietor to the estate which the rock lies on which they are engraved, and that they signify that his descendants were to enjoy it as long as the celestial luminaries which the circles represent should perform their unerring revolutions round the sun. This opinion is not at all improbable; for, of old, rights to inheritances were in many instances conveyed by hieroglyphic symbols, similar to those now described. I am informed, on unquestionable authority, that the right of Macmillan to the estate of Knap, in South Knapdale, was cut in rude characters in the Celtic language on a rock on the shore at the point of Knap, which are now obliterated by the action of the waves on its surface."

This speculative solution of the enigma will, perhaps, start in other minds a wonderment as to the fate or whereabouts of the King's Stones, whereon, according to the most ancient of Welsh writings, the ancient British princes ordered their will and pleasure upon important matters to be recorded. As the inscribed stones under notice have lain so long unheeded, perhaps these exceedingly interesting relics, which must have also been very numerous, may be some day recognised.

Danish and Swedish antiquaries have hitherto confined their investigations of early sculptures to those of a less enigmatical character, such as the engraved stones of the cairn at Kivik, representing an immolation of prisoners of war by long-robed priests, and the rude sketches of ships with crews, and figures of animals found on some cromlechs and on rocks. But their antiquarian literature would seem to indicate that there are carvings more nearly approaching the character of our own that only require examination. The sketch of the Balder Stone, near Falköping, in Sweden, given by Professor Nilsson in his "*Skandinaviska Nordens Ur-Invanare*," shows only a large number of cups, as in the case of the Swiss stones illustrated by Dr. Keller. But, as the cups exist, it is more than probable that the circles so frequently seen associated with them in other countries, are also to be found. Nilsson gives an instance of a set of concentric circles occurring on a standing stone on Asige-moor, in Halland, Sweden; but these circles are formed by dots in close proximity, like some of the ornamentation on early Irish stones. It is somewhat singular that the marked difference that has been noticed between the rude carvings on Scandinavian stones and those of our country, is strikingly observable in the case of two sculptured stones found in a grave in Aspatia, Cumberland, a locality ever esteemed as more strongly impressed with traces of Scandinavian occupation than any other. This is, moreover, a case of mysterious disappearance, for when inquired after, recently, these stones were nowhere to be found. There were circles upon them having crosses for centres reaching from edge to edge, all being out in slight relief instead of being deeply incised as in our other examples. There were also circles having central cups from which proceeded a long ray like a sunbeam, and in one instance this sunbeam terminated in three crooked prongs having a fork-like appearance. Two other arrangements of lines or prongs departing in each instance from another line at right angles with them are noticeable. This is, however, by no means an accession to our stores, as it was found in the last century: it is simply a classification of a known relic under a heading in which it is likely to be viewed with new lights.

Another class of sculptile antiquities which must be looked at in connexion with our rocks is the carving frequently found on pre-historic tools and weapons. The sepulchral tumuli of Brittany have already yielded representations of axes and bows delineated upon the stones forming part of them; and a cromlech at Locmariaquer shows an axe with a fluted head and a looped handle. Hitherto, however, no weapons have appeared in connexion with the mysterious circles. The ancient Romans delineated upon their altars the implements with which the sacrifices were made. A Scandinavian stone possesses a combination of a double-horse chariot and some outlines of boats, as though to represent a victory by sea and land, with some cup-hollows; but the latter are clearly of an earlier age, as one of the boats runs into one of the hollows as a necessity, which was of no consequence. The idea that the cups were intended for the reception of the blood of the victims slain is nowhere borne out by the delineation of the weapon of sacrifice, as in the Roman examples.

We have seen a numismatic suggestion concerning these unknown figures in which the extraordinary departures from good models by rude mint-masters have been dwelt upon as producing configurations as startling as these and somewhat like them. The originator of this train of investigation will probably put his arguments and examples before the antiquarian world himself. It will not, however, detract from their interest then to state that a horse and rider on a coin, shown in fine bold circular and semicircular lines, becomes in the transition from one degenerate die to another a chaotic group of single and concentric circles without apparent dependance upon one another. In proportion as the dies became debased from the original mould so did the various lines delineated become larger and coarser, till the coin which at first held horse and rider fully equipped was only of dimensions sufficient to show a fragment of the charger, whose noble proportions would not be recognizable in the scattered circular and crescent-like lines employed to represent them if the diligent numismatist had not traced the wonderful deviation to its source. The so-called elephants carved on the walls of the caves in Fife do not require a bolder flight of fancy to identify them.

The Luman figure has been found attempted in early carvings, but in very few instances. Wemyss Cave and Jonathan's Cave, in Fife, have each an example. In the first the rude attempt is but 6 in. high, and possesses neither hands nor feet, though a club held at arm's length enables us to realize that the artist was not aiming at handing down an omission of such grave import on the part of nature. The second sculptured figure is of more elegant form. It is furnished with a good foot, though the arms are no longer visible. This is 25 in. high, a size which gives more scope to crude powers. Close to this figure are two examples of ringed cups, thus identifying it with whatever they express, be it a confession of faith or a sign manual, or accessories to worship, or the first manifestations of art, or a system of philosophy. Impressions of feet, or foot-prints, are, however, more frequent and more widely scattered. So far Norway carries off the palm as the possessor of most of these curiosities. Holmberg gives in his *Scandinavian Kew Sculptures* ("Skandinaviens Hallristninger") several instances of numerous foot-prints on rocks in that country. In one place, Bygdø, in Westerbotten, there are as many as thirty in a row hewn out of the rock, unaccompanied by any other carving; and in several others there are foot-prints, or foot-soles, mixed up with representations of ships and other figures. Ireland has a few examples, associated there in at least one instance with the raints of the Early Celtic Church. The Stone of St. Columba has two sculptured foot-marks upon it. Sir James Y. Simpson, who has also been sweeping this field of investigation, has linked these foot-marks to the main types of rock carvings by the discovery of a grouping of the two classes of objects on one stone. In a small megalithic circle within the grounds of Monzie, Perthshire, he states there is a stone, called the Witch's Stone, on which are two foot-prints and several cup-markings, and on another stone just outside the circle there are more cup-hollows, and ten sets of concentric circles. Probably the removal of the central stone, as in this and the Salkeld instance, besides others, has been done with the view of overthrowing the temple or breaking some charm, just as we know all Roman remains were mutilated at a subsequent period.

The theory of the Phœnician origin of these sculptures is considered scarcely tenable, since the negative result of the search of Sir Gardner Wilkinson and Mr. Blight, in the counties of Devonshire and Cornwall, the district in which the particular object of the trade of the Phœnicians must have caused them to frequent more than any other part of the kingdom. It is, indeed, somewhat curious that it could have been started without a basis of probability rising out of the existence of similar figures in Phœnicia or her colonies,—a fact which has not hitherto been discovered. Leading members of the Scandinavian school have, however, supported this opinion. Our Druidical temples in their eyes are sun temples; our cut and single circles are emblems of the same great luminary which, under the name of Baal, has been in all known time the seducer of the worship of the unwary; and the additional circles present in so many examples are the records of the death of near relatives. Professor Nilsson pursues this idea

further: he gives the period when this solar worship obtained. It was, he deems, the bronze era. It was allowed in the old school of antiquaries that the Phœnicians largely influenced the philosophy of the Druids, that the Tyrian and Sidonian traders brought with them ideas as well as merchandise, and that the Druids under this influence taught their points of philosophy in obscure and enigmatical terms as the heathen philosophers did, dealing at the same time with such subjects as astronomy, geometry, medicine, and natural magic, besides the nature of things. Without the aid of books, which we know they scorned, diagrams on rocks may have made evident to their hearers the bold metaphysical flights of these early civilisers. The head-quarters of the Druids, the Isle of Anglesea, should yield the typical carvings that Devonshire and Cornwall have failed to do, if there be aught in this suggestion. We have Caesar's warranty that the Gallic Druids resorted to Britain for instruction. "And now," he says in his Commentaries, "those persons here who would arrive to any excellency and perfection in that Druidical learning, frequently go over to Britain to complete and accomplish their studies."

There is one more subject which recent research has tackled on to our pre-historic sculpture remains. This is the present erection of megalithic structures in Upper India by the Khasias, a wild hill tribe. In Dr. Hooker's "Himalayan Journal" may be seen sketches of modern cromlechs, rivaling, as he remarks, those of Stonehenge in dimensions and importance. These are put up annually by the aid of the whole country-side, which the great man of the district summons for the purpose, and entertains during the process.

THE SOUTH KENSINGTON SECOND NATIONAL PORTRAIT EXHIBITION.

"THE SIR THOMAS LAWRENCE."

THE portrait-painter who suffers most in reputation in the present South Kensington Collection of National Portraits is Sir Thomas Lawrence. This arises from the collection "ending [under authority, of course] with 'the jubilee centenary of 'the year 1800,'" at a time, when Lawrence's hand was not in its full dexterity, and his skill little more than academical and clever, and uncertain at the best. The abler half of Lawrence's life, with his pencil, was from 1800 to his death, in the winter of 1829-30.

But Sir Thomas Lawrence was, when young, no common painter of men, and women, and children, singly or in groups, and the fourteen "Council on Education" examples we have had selected for us, foretell and foreshadow what his facile and prolific pencil (so early ripe), was to give in "advancing age" to an admiring public, nay, more, to admiring nations, for his name in his life-time was known further than the latitudes to which the name of any other English portrait-painter had ever reached, or has since reached. Sir Thomas, of Russell-square, was well known in continental cities, where the pleasant sound of Sir Joshua, of Leicester-fields, was, we fear, unknown, despite "The Infant Hercules," which Catherine, Empress of Russia, commissioned for St. Petersburg.

We shall not take the examples numerically, but shall group them in a way more convenient for our purpose. And, first, the ladies.

Observe Elizabeth Farren (the catalogue calls her "Eliza," the fascinating Countess of Derby. This is a full length (858 in catalogue), in Lawrence's sketchy, half Sir Joshua half Gainsborough manner. The Earl of Wilton is the fortunate owner. It was at the Manchester Exhibition of 1857 (No. 183), and was there, with all its dexterous lightness of treatment, much admired. What does the catalogue tell us? Here it is:—

"Eliza Farren, Countess of Derby (1759-1829).
Earl of Wilton.
Daughter of Mr. Geo. Farren, of Cork; b. 1759; successful comic actress, and succeeded Mrs. Abington in her principal characters; marr. (his wife) Edward, 12th E. of Derby, 1797; d. 22 April, 1829.
Full-length, walking in landscape, with fur-lined white satin cloak, muff in l. hand. Canvas, 84 x 58."

Let us add to this that it is capably engraved by Bartolozzi. Further, that Mrs. Damer made a bust of her as "Thalia"; that Zoffany painted her at full length (engraved by Fisher) as "Hermione"; and that there is a good coloured print of her (A.D. 1795) at the theatre, in a box, with a large muff and an opera-glass. Lord

Derby is with her. This fascinating lady played *Nimney Pimney*, in General Burgoyne's "Heiress;" took final leave of the stage on the 8th of April, 1797; and married the Earl of Derby the 1st of May following.

We now turn to the Lawrence men, twelve in number. 1. The third Prime Minister Duke of Portland (780), lent by the Corporation of Bristol; 862, First Marquis of Salisbury, lent by the Marquis of Exeter,—full-length, and "bad," such is our note on the spot; to 773, the First Marquis of Bath; to 673, the Thirteenth Earl of Derby, who died in 1851; to 856, the First Lord Crew, lent by the poet-statesman, Lord Houghton; to 853, the First Lord Auckland, lent by Christ Church, Oxford,—it is very fine,—the finest Lawrence in the exhibition, and is properly protected by glass; to 757, the First Earl Grey, and 860, the Prime Minister Earl Grey,—very fine, a companion in merit to the Auckland already mentioned. Four portraits yet remain to be specially pointed out:—850, Warren Hastings; 864, Dr. Johnson's Mr. Windham, the statesman and diarist. Compare with the Sir Joshua of Mr. Windham in the National Gallery, 761, John Philip Curran, lent by Earl Grey, and very fine,—admirably described by Allan Cunningham, in his "Life of Lawrence," p. 193; and 805, James Watt, the great engineer, lent by Mr. M. P. W. Boulton, and meriting close examination by all who delight in studying Chantrey's fine head in marble of the man. Allan Cunningham, who well remembered Watt sitting to Chantrey, and had many anecdotes of him, says of this portrait, "I believe painted after death."

An anecdote which the late anecdote-relating Mr. John Wilson Croker told the writer, during a pleasant visit to him at West Moulsey, in April, 1853, relates to Sir Thomas Lawrence. "That fine full-length of the Duke of Wellington, 'the Peel portrait'" (said Croker), "the one so finely engraved by Cousins, was first represented or painted holding his watch, as if waiting for Blücher to come up at Waterloo. 'I had no watch in my hand then,' said the Duke to Lawrence, impatiently. 'It was something else than time with me at Waterloo!'"

Years ago we were permitted by Mr. Pickersgill, the well-known portrait-painter, to take a copy of the following letter, addressed to him by Sir Thomas Lawrence, on, to artists and printers, the all-important subject of a painter's copyright in an engraving from one of his pictures:—

(Private.) "Russell-square, January 4th, 1836.
My dear Sir.—In answer to your question, I beg you to understand, that where there is not a remuneration paid to me for the use of my pictures, it is when they are obtained without my consent, or when the mere legal power of the proprietor, from the purchase of the work, is considered by him as exempting him from the necessity, or rather propriety, of any reference to me upon the subject."

"I acknowledge and assert the right of every artist to remuneration for that use of his labours which is intended to be the source of profit to others, although the picture itself may have passed from his possession. The approval will even be made in vain by him to any proprietor of enlightened mind or gentlemanly feeling.—Believe me to be, my dear Sir, most truly yours,
THOS. LAWRENCE."

I ought to have added, the right of choice of the engraver, and of direction of the work."

This letter is imperfectly printed in Allan Cunningham's "Life of Lawrence," p. 205; its reproduction here, as written and in full, will not therefore be out of place, especially at this time, when the copyright question again engages the attention of painters, engravers, and print publishers.

This letter, from Mrs. Forster to Allan Cunningham, contains interesting information:—

"Paris, May 2, 1831.
Sir,—I must apologise for having so long delayed complying with your request, but hope I may yet be in time for your work, if the little I have to communicate be of any interest; for I find, on referring to my letters from Sir Thomas Lawrence, that I have already quoted so much from him, when sending you materials for the sketch of my father's life, that but little remains beyond what relates to individual concerns."

My acquaintance with him dates from a very early period of my life, when I was in the habit of meeting him at the house of Mrs. Siddons, with whose daughters I was intimate, and his manners at that time appeared to me so friendly, that I neither sought, nor supposed I obtained, his notice."

After I married I had but few opportunities of seeing him; but the high respect he entertained for my father, both as an artist and as a man, was in a certain degree transferred to his family, and thus proved how strongly his whole nature was imbued with a sort of enthusiastic devotion to superior talents and abilities, which extended itself even beyond the immediate object of it."

When he visited Paris in 1825, happening to meet me at one of Baron Gerard's weekly conversations, he requested to be presented to me, and to renew an acquaintance which had been neglected for so many years."

Nothing could exceed his politeness at the time, and

when I went to England, the following winter, I called at his house to see his works.

On his name he immediately came out to me, invited me into his painting-room, and devoted nearly two hours of his valuable time to showing me his pictures and various drawings; and, as my stay in London was to be but short, suggested me to pass the next evening at his house with some friends with whom I was staying, and the subsequent mornings also, which time was employed in looking over his magnificent collection of drawings by Raphael and Michael Angelo, with him by my side, observing and pointing out the excellences of each.

I mention these particulars not from the idle vanity of having received such flattering attentions from so distinguished a man, but in illustration of his respect for departed genius, and in explanation of his motive for commencing a correspondence with me.

Knowing that my father's collection of drawings by the early masters was a valuable one, he wished to possess it, and made it, as all his portraits are, a most exquisite faithful resemblance of the original. I have reason to believe that it was nearly, if not the last small drawing he finished, unless that of Miss Fanny Kemble was done (in his own hand) June 1829; for he told her he should not attempt any more in that style, as it was becoming too trying on his eyes.

I have also in my possession a little drawing done by him when he was a child, with his name 'Thomas Lawrence, Devizes,' written under it, and on one side 'Done when three weeks old, I believe,' written at the time when he sent it to me in 1828.

After the death of my husband, in 1828, having accidentally heard that I was about to publish two volumes of his German letters, I wrote to him how he could forward to me the sum of £10, the amount of the descriptions which he had collected for me (see Letter VI.).

This act of liberality and friendship, so delicately conceived, and so kind and feeling, was immediately executed; and when I afterwards applied for the names of the 'subscribers' for the publication, he gave me only two or three, stating that he had lost the list, and begging that I would excuse his carelessness.

On hearing of his death, which my friend Mr. Hardwick [Philip . . . 'R.A.'], communicated to me by the first post after it occurred, I sent to Baron Gerard to request him to inform me of the melancholy event, on which he wrote me a letter expressive of his feelings on the occasion. The friend who brought it mentioned that M. Gerard was anxious of sending some testimonial of the high regard he entertained for his deceased friend to England, if I would get it inserted in some of the public journals in that country; but he afterwards thought that it might bear too close the appearance of a studied panegyric, which would come better from the pen of some literary man, and therefore requested that I would send only a copy of the short notice he had already addressed to me in the first effusion of sorrow for so eminent a character; and this was inserted in the accounts published at the time of Sir Thomas's death.

If the mention of my name as connected with any of the foregoing particulars can give them authenticity, I have no objection to your using it. To have it combined with any wish that of so illustrious a character can only be productive of evitable distinction to me who obtained it, not for his merits, but from the respect her mother's worth had reflected on her.

You estimate too highly my judgment or ability to criticize when requesting my opinion of his works. From my long residence in England, I have not seen many of his productions, on which, I believe, his fame was principally founded; and of his earlier ones I have not a sufficiently accurate recollection to venture any observations upon. I am not in the least inclined to admire all the pictures I have seen of his, for I think some of his portraits of females are affected and *manière*, and a sort of forced effect is sometimes attempted, which destroys the harmony of the picture.

Those which struck me as specimens of the highest kind of attainment in portrait-painting when I visited his studio in 1826, were the portraits of Mr. Canning and Lord Byron, of Fuseli, and some of the heads of men whose names have now escaped my memory. The actual thoughts of the man before him were transferred to his canvas, and the mind breathed through every feature.

In the portrait of the Duc d'Angoulême he was peculiarly successful, and contrived to give a gentlemanly appearance throughout the whole countenance and figure, which the original certainly did not possess, and the general effect of tenderness was excellent.

His portraits of children, of Mr. Lock's son, of young Umbert, of a girl with flowers in her frock or apron, are quiet, and, as unfinished pictures of Lady Nugent, painted some years since, in which the one of the most illustrious heads he ever painted.

The taste, the delicacy, the elegance of his drawings are unrivalled and unique, and rendered them deservedly prized and admired.

I cannot, perhaps, close this letter better than by repeating Baron Gerard's opinion, which I heard him give me a few days before he died, however great and powerful, and distinguished were his abilities as a painter, he was even more eminent and remarkable for his drawings in his pictures; and that, since the time of Holbein, no artist has ever attained such perfection in delicacy of tint and finish of execution as Sir Thomas Lawrence.

LATINIA FORSTER.

A passage about Lawrence in a letter from Anthony to good Mrs. Hughes, the friend of so many poets and the mother of the author of 'Tom Brown's School Days,' will appropriately close what we have said:—

"When next I may be in town I am to sit to your friend T. Lawrence, for Mr. Peel. I have been with different artists to look like a Methodist preacher, like an ass, like a fool, like a pig, like a sensualist, like a Jew who sells oranges, and like a fellow on his tin trappings uttering false notes. What will Sir Thomas make me look like?"

We must add a quotation relating to a love-episode or two in the life of our *Lady-killing* Lawrence. The letter from which the quotation

is now made was written, some thirty and odd years since, by Captain Henry Siddons, of the Bengal Engineers, to Lieutenant Joseph Davy Cunningham, of the same corps, the well-known author of "A History of the Sikhs."—

"Do you remember a notice of the Misses Siddons in your father's 'Lives of the Poets'?" Sir Thomas Lawrence, where your father excused the president, and said the young lady probably died in the usual way, of *sickness and a doctor?*

I have often wished to say to you, that your father had not got the whole story in his wish to stand up for Sir Thomas. What the young lady died of I will not dispute; but Sir Thomas behaved very ill in first making love to the eldest, then shifting his affections and proposing for the youngest. Well, after this was settled, the little man again saw something more attractive in the eldest, and wavered again; but this brought on an explanation between the two sisters (who mutually consulted each other's happiness), and neither would have anything to say to him, and, in fact, he was forbid the house.

They both died very young (twenty-one and nineteen), and, I have heard, were very, very beautiful.

I have often met Sir Thomas at the Kembles' (for he never visited the Siddons afterwards), and he appeared to me then most devoted to Mrs. Butler, and every young lady, though a confirmed old bachelor by that time. This page is *apropos* to nothing; but never mind that."

A final memorandum, Lawrence's charming portrait of Lady Blessington, was sold at the Gore House, Kensington, sale, to Lord Chesterfield for 420 guineas. Lord Byron's fine lines on seeing this picture render just homage to either and to painter. At the same sale Lawrence's exquisite pencil drawing of the famous Mrs. Inchbald (who is buried in old Kensington Churchyard—the grave unmarked) sold for 48l. 6s. to Mr. Birch, of Tipton.

ON THE INFLUENCE OF SOME CONTEMPORARY WRITERS ON ARCHITECTURE OF THE DAY.*

To revert to what I was urging on the subject of decoration: ornament in a building is analogous to finish in a picture. It should not be equally or thoughtlessly spread over the whole surface, but concentrated upon certain spots, especially upon one principal point, to which others should be kept subordinate. This is not only Nature's law, but also the law of states and civil governments.

We confer dignified ornament mainly on the person of the sovereign, surrounding him with the paraphernalia of pomp; and military functionaries follow in due order, but so that each, as it were, should add to, not detract from, the dignity of the chief magistrate. Hence, it would seem a great fault in any style (as in the later Perpendicular and what is termed the Flamboyant) when decoration is equally spread over the whole surface and every minor part of a work. It is like a dinner all desert, or a gown covered with furbelows or furbelows. Who has not felt the repose, after wandering in a garden full of flower-beds, of coming out upon a velvet sward; and analogous exactly to this is the pleasure to the eye, after wandering through intricacies of ornament, of coming out upon a quiet wall space, an unbroken veil of stone or marble, like a flat bit of blue sky surrounded by the points and waving outlines of innumerable clouds.

I am inclined to think that Mr. Ruskin is quite correct in defining ornament to be, either directly or indirectly, the imitation of some natural object,—leaves, fruit, flowers, or animals. Even the somewhat stiff forms of Greek ornament can be traced to such common objects as the honeysuckle or the egg; and the same is the case with the earlier styles,—the Assyrian and the Egyptian. It is two-fold: either free, by which we mean the complete and accurate representation of any natural object, which is rare in architecture, all representations being more or less confined by the outlines of the structure; or, "in service," when it is strictly and closely so bound. The Lions of Sir Edwin Landseer, and the sculptures in the pediment of the Parthenon, are good examples of architectural ornament, free in their general effect, i.e., perfect representations of nature, yet kept subordinate in their general form to the architecture of which they form a part. This must be held to be a very high merit, on the one hand, to carry out perfectly the invitation of nature; on the other, to have sufficient modesty to place the ornament in the second rank and the general structure in the first. Had Sir Edwin's lions been standing up or in active movement they might have afforded a more signal opportunity for display of skill; but kept in repose, with

a consciousness of quiet power, they impress the mind not merely with the noble nature of the royal beast, but with a proper sense of the artist's good taste, who has not forgotten that the ornament at the base of the column should be secondary to the column itself.

I think, with regard to the remarkable names I have mentioned, as being upon the whole those of men who have most influenced us, it may be said that Pugin has most influenced us in structure; John Ruskin in ornament.

Pugin is quite right in selecting the Middle Pointed style as that which upon the whole combines most elements of beauty in Gothic art. Its forms are structurally as fine as anything which has been produced in any age. They are arranged according to the strict laws of geometry, and comprise every possible variation of the circle, the triangle, and the square.

The monkish architects who carried ecclesiastical art to such a pitch of perfection, not only loved fertile field and lovely flower, but must also have felt the great truth, that law reigns supreme over all the natural world. Perhaps very imperfectly instructed in science, they must have guessed by a kind of instinct that both plants and animals were formed according to a finite plan, and that the very rocks out of which they framed their lofty minsters crystallize, with angles, which can be clearly foretold. Nothing short of such ideas would have enabled them to design the decorated window,—that triumph of architectural skill,—to rear the slender shaft, and to frame those marvellous vaults, of which Sir Christopher Wren used to say that if he knew how to place the first stone aright he could do all the rest.

While, however, we do all homage to the Decorated or Middle Pointed style, Pugin's preference for it may be rather narrow in some respects. The Transitional styles, from the Norman to the Early English, of which we have a fine example in Canterbury, and the Transition from the Early English to the Decorated, of which Yorkminster presents in some parts a noble example, have elements of beauty which are not found in matured, or what an architect would call "perfect," styles. By a perfect style, I mean a style in which every conceivable case is met by a precedent, some important canon which it would be treason to violate. My answer to this is, that precedent may be a fine thing, but that progress is still better. Now in what we call the Transitional styles, which I hold up, not as precedents, but as examples of true public spirit in the builders, we find less adherence to law, but a greater degree of ingenuity in adapting means to ends; less perfection, I admit, in the result, but more novelty and bolder design. I love that architectural courage which, securing regularity, would not hesitate to introduce (as is the case in the triforium at Canterbury) a pointed arch between two round arches, which would raise a clearstory of lancet windows over the ponderous columns of a Norman nave, or introduce a triple lancet under a rose window. The eastern transepts of Canterbury are fine examples of what I mean.

There remains another question. Supposing the Middle Pointed style to be all that it is represented. Shall we make a servile copy of it? Shall we adhere to our models closely? On this point I am aware that great differences prevail even among the best judges. Mr. Parker, of Oxford, than whom nobody has done more for the true interest of architecture, would say,— "Yes, walk ye in the old paths. At all events, stick to English examples, and don't spoil the true breed of English Gothic with a cross of any kind."

I confess I think the works of Mr. Ruskin are an excellent answer to this kind of reasoning; for no author has better explained, both in painting and architecture, that if a great deal has been well done, fortunately there yet remains a great deal more to do. Again, many I know regret the introduction of colour into our ecclesiastical buildings; others, the marbles and alabasters, the mosaics and the gilding, which are gradually finding their way into our churches. Up to a certain point, while we adhered to precedent, we did well; lately, it is said, to be perfectly frank, the young men have been running a little "wild," even "extravagant," and this wildness and extravagance is thought specially applicable to our decoration and colour. Mr. Scott, indeed, has happily combined prudence with considerable novelty; for his introduction of colour has always been sparing and judicious, and in any change of our Gothic forms he has usually confined himself to precedents, from the

* By Sir Walter C. James, bart. See p. 461, ante.

neighbouring country of France, and not gone so far afield as Italy or Spain, to seek for that infusion of novelty which must always be an element of importance in any architectural work, desirable at least, if not necessary. Mr. Scott has taken special pains in improving our architectural sculpture. The floriated capitals in many of the new churches erected by him are of exquisite workmanship.

Perhaps Mr. Ruskin can hardly be said to be in any respect a perfectly safe guide; but if in any, it is in colour and in his exquisite knowledge and judgment with regard to the effects of painted glass. No doubt, beauty of colour is entirely lost when it becomes garish or over-gaudy. Now this is the result of large masses of bright colour,—squares, oblongs, or what you will,—in large surfaces of nearly equal size. Variety in the surface itself, contrast in the material (as in the surfaces of stone or marble), and variety in the size of surface, as contrasting large round forms with those smaller and squarer, are essential to procure harmony. One of the brightest skies ever painted by Turner will be found upon examination hardly to contain in it any admixture of positive blue, but to acquire its extraordinary beauty and radiance by the skilful interweaving of every variety of tender grey. Hence he lays down the axiom that we should have in our coloured decorations large masses of neutral tone, enlivened here and there by bright spots of colour, or intermingling with each other in delicate intermediate hues of orange, violet, and tender green. As a school of colourists, I fear it may be affirmed that our English school is rather gaudy.

With regard to glass the same principle holds good. Our modern glass is, as a rule, abominable, because it consists of a number of patches of the same size and the same materials. Our ancient glass, on the contrary, is composed of large masses of violet brown, of pale olive, of lustrous grey, with here and there a speck of bright crimson or ultramarine blue. Another point put in the clearest view by Ruskin is the nature of the material itself. Glass, says Ruskin, is transparent. It is therefore unfit for true pictorial representation, few objects in nature, if any, having that translucent effect which it is the object of the glass-painter to give. The principal aim, therefore, of painted glass is to produce, not a representation of a natural object, but a jewelled effect, intermingled, if you please, with quaint and grotesque imagery, with gorgeous heraldry, with interesting designs. The nature of the surface is in itself sufficient to forbid pictorial representation in its modern aspects.

This language is just, and, although it goes far to condemn a very interesting school of glass painting; that of Germany, and especially Munich, I have little doubt that posterity will pronounce the verdict correct. Oil painting and fresco painting represent the art of matter-of-fact imitation. In these you may come as near to Nature as you are able. You may approach her, and the closer the better. In mosaic and glass-painting your object, from the very beauty of your materials, is not to represent Nature as she is, but to see her, as it were, under a spangled veil, radiant with all the colours of the rainbow.

Before coming to the conclusion of this lecture, I venture to say that, as on the one hand it is intended by the Almighty that the reasonings of the philosopher should largely influence the course of the artist, so it is on the other that external objects should influence for good or evil the thoughts, words, and actions of each succeeding generation. Art is a creative power, most seductive in its charm to those who can use it well, but productive of good or ill accordingly as it is rightly or wrongly used. In the early times of the world ingenuity and skill were required to secure a fair supply of even the necessities of life; but, as civilization advances, the apprehension is, I think, in an opposite direction, namely, lest ingenuity and skill, having done all that can be required to satisfy our real wants, should turn their energies not to the promotion of what is great and good, noble and generous, amongst us, but to the cultivation of luxury and the indulgence of the eye. This, rely upon it, in our time, is a real danger. I mean a want of simplicity and a frittering of ornamental beauty through the whole domain and surface of society, rather than the reservation of it for those things which are truly great and noble.

I stated at the outset that, while I mainly

directed my attention to the influence of contemporary writers upon art, I should not hold myself shut out from offering a few remarks on the opposite or counterpart of the problem,—the effect of external art upon the mind: its elevating and useful influences; its dangers and excesses.

Architecture, indeed all art, may be classed under three heads, as exercised (1st) upon the temples of God; (2nd) upon public buildings; (3rd) upon private dwellings.

The ornament and splendour of magnificent temples set apart for the worship of the Deity has been an object of just pride even with heathen nations. With the advances of civilization, and the consequent multiplication of wants, this natural sentiment is, on the whole, perhaps rather enfeebled. The temples of the Assyrians and Egyptians were more magnificent, I apprehend, in their way, than those of the Greeks, though, of course, more barbaric. Heathendom, as a whole, probably expended as much as, if not more, in the organization of public worship than Christendom. I mean, of course, taking into account the disposable income of each. Modern society, in like manner, spends less than those ancestors of ours who raised such glorious piles, York and Durham, Lincoln and Canterbury.

But, though we fall short of the religious zeal of the Middle Ages, let us not on that account depreciate their noble efforts, nor deny the utility (I purposely use the word) of their aims. It argues a spirit of noble disinterestedness to perceive that ought dedicated to the use of the Supremacy should be in every way worthy of Him, and better, both in material and workmanship, than things set apart for our own daily use. Some relation should be observed, I think, between the character of a church and the neighbourhood in which it is built. A wealthy congregation, for example, should have a splendid church; not merely from the suitability of such things, but as typifying the sacrifices of worldly things to God, as the very essence of a religion of sacrifice. "Shall I give to my God," says the pious man, "of that which costs me nothing?" The principal difference in church-building between this and former eras is, that whilst they were restoring and building cathedrals and monastic institutions, we are beautifying and erecting parish churches: there is, arising mainly from our social system and the dearth of labour, a smallness of size in all we do in this way. With some few noble exceptions, fresh in the memory of all, it may be said that we have no purely modern church of very large span or size.

Not a few of these, conceived in a purely English style, have developed a large liberty of action in a direction where even the greatest artist must allow liberty to be highly desirable, viz., in the introduction of new materials. London is a brick-built city, and we have therefore brick churches. Indeed, it may be questioned whether the assumed superiority of stone over brick is anything more than a mere prejudice. Some men think that whatever is most expensive must necessarily be best. Our country contains marbles, too, less known, perhaps, but quite as beautiful as those of Italy. Among these we may specially name the granites of Scotland and Cornwall. These are employed with great judgment in some of our latest metropolitan churches, and contribute much to enhance the beauty of colouring for which they are so remarkable.

But if, as I think is reasonable, we cannot but admit our noble feelings of reverence and faith to be augmented in no common measure by the sight of a church; so must we admit, also, that patriotism and public spirit are increased by the sight of grand and noble public buildings—buildings for official and municipal purposes, and for the halls of the Legislature. To these we may add public museums and national galleries for the exhibition and due preservation of works of art. England has hitherto been very much behindhand in these important matters; but we have recently had from the skilful plans of Sir G. Barry a noble pile erected—"the Houses of Parliament,"—as fine in execution and as dignified in sentiment as any building of the kind in any age or in any country. I am not here to deny or palliate its defects. Its most obvious faults, I may venture to indicate, are a want of bold and irregular projections in the river front, and a general overlaid ornamentation. The too great ornamentation may be fairly assigned to the style rather than to the architect. Perpendicular Gothic is remarkable for the sameness

and constant repetition of its ornaments, adding one more proof that uniformity is almost always connected with monotony and variety with a pleasing and picturesque effect in architecture. Indeed, I may mention, in corroboration of this, that a friend of some talent as an architect told me,—"I was brought up in the Italian and Greek school, and always taught to believe that, if a doorway in the centre of a building had five windows on one side, it would be right that it should have five windows on the other. Experience," he added, "has confirmed me in this idea diametrically the reverse of this. I am now of opinion that the law of general symmetry should give way to a higher law,—that of a general adjustment and balancing of parts, such a balance as is produced by the two western towers of Lichfield Cathedral, counterpoising the central spire and the eastern end. The general balance of parts is the Gothic, the exact symmetry is the Roman or Greek principle."

The British Museum deserves a passing word of sincere respect for the memory of its architect, "Sir Robert Smirke." Practising at a time when true taste in architecture and love for Greek forms were supposed to be identical, it is not to be wondered at that this able man adopted the Greek style, and that, too, with an earnestness which might put to shame many of the Gothic professors of the present day. In addition to the pure taste which marks Sir Robert Smirke's buildings, I must specify his peculiar merit of really "constructing well." Of what avail, I would ask, the fairest elevations, and the most beautiful ornaments, if a building be not well constructed, if it do not answer the very end for which it was designed?

Between buildings of a public and private nature we have a class which are a peculiar ornament to our city: I allude to the clubs. They have transformed Pall-Mall, which many of us recollect as the dingiest of streets, into a noble thoroughfare, which may not inaptly compare even with the Corso at Rome. I think that their moral effect, with some inevitable drawbacks, has been good. Those who can remember the times,—which few of us now can,—when a young officer turned loose upon the town was obliged to seek a dinner in a reeking tavern in Covent-garden or in Swallow-street (where Regent-street now exists), will think that we owe a large debt of gratitude to that spirit of combination which enables the young man to dine at his club, not only well, but with economy.

Passing on to private houses, both in town and country, I may observe that it is on private patronage that art in a free country must in the main rely. Not only has the taste for magnificent churches and public buildings become in a great degree obsolete, but it is to be observed that we are for the most part furnished with them. Here and there a great work arises,—Houses of Parliament and courts of law, which require a special exercise of talent; but these opportunities are few and far between. Comfort has taken the place of magnificence, and a well-studied convenience and propriety are demanded of the architect. An aristocratic country must have aristocratic dwellings, and we may point, besides the most magnificent country palaces, whose name is legion, to dwellings like Sutherland House, Montagu House, and Dorchester House, as evidencing a great and notable step in domestic luxury and splendour. It remains a question whether this is a healthy state of things, and whether it develops the highest taste for art in the best way. Perhaps not altogether so; but if it does not in all respects do this, it develops enormously the taste for freedom and liberty. I have before alluded to the deadness and monotony of uniformity, and the picturesque beauties of variety. The rationale of this seems to be, that uniformity is the product of centralization; variety of individual freedom. Every man's home is his castle, and he ought to be able to build it as suits his individual taste. This is the great charm of our old Mediaeval buildings, extending down to Elizabethan and even to Jacobean times. In many of these old houses you will not see two windows alike, and yet every window will tell its own story.

From the lattice in the lofty tower denoting the lady's retreat, to the broad oriel, the glory of the banqueting-hall, each aperture has its own meaning,—one might say, its own features. The heraldry tells its own tale: the house is the house of a particular family, and for ages will indicate to whom it belonged. It is a thing endowed with certain moral attributes and

having a definite character. In our towns it is used to be the same thing, for it is not till within the last century that the monotony of our large squares and long streets has offended the eye of accomplished taste; the sameness of the stucco verandahs of Belgravia, and the heaviness of the brick houses of Harley-street. A friend of mine, who is both an artist and a judge of art, told me that some years ago he met Rauch, the celebrated German sculptor, who is well known for his works abroad, and especially his celebrated colossal statue of Frederick the Great. Rauch said to him: "Thirty years ago and upwards I visited your country, and was much impressed with the works of your countryman, Sir Joshua Reynolds. In him you truly have the foundation of a great school of national painting; for, while he conscientiously devoted himself to the study of the best masters, he preserved the individuality of a great and original mind."

If art be, as I believe it is, a unity, and that the partition walls set up between the various arts, between painting, sculpture, and architecture, are only partitions removable at will, Rauch's remark would apply, I think, with force to the architects and architecture of this day.

In the works of many noble minds we have abundant evidence, at the present day, that the study of ancient works has been combined with a successful appreciation of the real needs of modern society. The combination of the old with the new, of the spirit of reverence with the love for reform, is a remarkable characteristic of the Anglo-Saxon race. With many failures and shortcomings, we have much to be thankful for, and not the least in this, that in our free constitution the same ideas which govern one class pervade all, and are accepted as an axiom by the rich and by the peasant, by the man of property and by the artist. What is this great idea—this fertile source of England's power? It may be described, I think, almost in two words, which, though apparently inconsistent with each other, involve no real inconsistency,—reverence for the past, and for the future "progress;" or architecture, a respect for the great styles, whether Greek or Mediæval, combined, however, with an ever-varying and ever original mode of applying them.

COMPETITION DRAWINGS FROM THE SCHOOLS OF DESIGN.

In what is known as the Competition Gallery, at the South Kensington Museum, the gallery upstairs, wherein was held the Exhibition of miniatures, the drawings submitted from the various Schools of Design throughout the country, in competition for the national medals, are now on view, and (what is more) deserve to be viewed; and the Architectural department the examples exhibited are mostly superior to those that have been sent before. The design for a cathedral, by H. C. Gribble (South Kensington), to which the gold medal is awarded, is a very creditable design, exceedingly well drawn. We should like to have seen the plan. The silver medal is awarded to (design for a small State Railway Station, by B. Samoiloff (South Kensington). The interior is well designed and drawn: it is suggestive rather of foreign than of English ecclesiastical architecture. A design for Cemetery Chapels, by A. Wade (Reading), to which the bronze medal has been given, is not so well set forth. Arthur Peter (Lincoln) receives the bronze medal for a measured drawing of the Chapter House, Lincoln; and Ellen Miles one for a design for a bronze door for a library, containing reliefs illustrating the works of eight poets of different countries. The ornamentation in the spandrels is too large for the groups in the panels. In reply to the premiums offered by the Plasmers' Company for the best designs for a frieze or ornamental diaper nine or ten competitors appear. The first premium has been properly awarded to W. E. Mackerness (South Kensington), and the second to T. Longmore, Stoke. Other premiums offered by the company for modelled ornamental angles appear to have been gained, the first, by R. J. Morris, and the second by R. Lunn, both of South Kensington. The bronze medal has been awarded for a frieze or ornamental angle in plaster to G. Broomfield (Sheffield). W. Orr (Glasgow) has a gold medal for a clever design for surface decoration; L. Maria Brooks (South Kensington) the gold medal for some admirably painted porcelain. E. Mackerness (South Kensington) has the silver medal for a design for a ceiling; Thomas

Cox (Birmingham) one for a design for a metal screen, with Gothic outlines filled with natural forms; and Anne Baxter for a drawing of an Early English spandrel.

The gold medal is given to John F. Orr (Glasgow) for a design for a hall-floor. H. Hood (Nottingham) gets the bronze medal for some conventional borders, well designed; E. Fitch (Lambeth) a prize of books for a choir-screen of mosaic and metal; W. F. Randall (Stroud) books for designs for capitals; and Peter Kirkby (Nottingham) a similar prize for decorations. A design for a mosaic altar-piece, by H. Olden (Birmingham), though not rewarded, deserves mention; and we may add, that some of the pictures of fruit and still-life are excellent.

THE WEATHER AND THE PUBLIC HEALTH, TO THE 29th OF JUNE.

APRIL sustained its character this year. Rain fell on nearly every day in that month. The severe gales in the second and third week are unprecedented for April in these records. The first eleven days of May were remarkably hot:—May 8th, 82° in the shade; mean of week ending May 11th, 61½°, 11° above the average. As this month advanced we had a succession of strong north-easterly winds and cold nights, but no frost until the morning of the 22nd, when we went into mid-winter weather. That day was remarkable, frost and frequent snowstorms from morning till night. On the 22nd and 25th, 7° and 6° of frost respectively. There was nothing in previous years in the present century to equal it in severity in the fourth week of May. The range of temperature between the 8th and 23rd of May was upwards of 50°. It is a significant fact that hitherto all excessive heat in the early part of May was followed by cold weather in the same month, as in 1807, 1820, 1828, 1833, 1841, 1843, 1864, and 1867. The last six days of May were very hot. June opened with great heat and heavy rains. The weather was remarkably erratic in this month:—June 10th, 118° in sun; June 11th, 82° in shade; June 14th, 41°; June 11th, nine a.m., 73° in shade; June 17th, 9 a.m., 49° only! Polar winds prevailed from the 12th to the end of the month. 26th, 27th and 28th, barometer above 30½ in. The mean temperature in each of the three months, when compared with the average in eighty years was as follows:—April, 2° in excess; May, 0·9° in excess; and June, 0·8° in deficit. Rainfall in the three months, 6·19 in., being 0·19 in. in excess. In April and May the barometrical values were 0·23 in. and 0·09 in. below the average respectively, and in June, 0·12 in. above the average.

Spring Season, 1867.

TABLES FROM NINETEEN YEARS' OBSERVATIONS, showing in parallel Columns the Earliest, the Latest, and the Average Dates on which the Foliage or Blossoms of each of the Trees therein named has commenced expanding, compared with the same Observations in 1867:—

	Earliest.	Latest.	Average.	1867.
Balsam Poplar (<i>Populus balsamifera</i>)	March 6	April 19	March 31	April 15
Larch (<i>Abies larz</i>)	March 21	April 14	April 2	April 14
Horse Chestnut (<i>Aesculus hippocastanum</i>)	March 17	April 19	April 8	April 19
Sycamore (<i>Acer pseudo-platanus</i>)	March 29	April 25	April 14	April 25
Damson (<i>Prunus domestica</i>) blossom	March 28	May 13	April 13	April 17
Lime (<i>Tilia Europæa</i>)	April 6	May 2	April 21	April 30
Beech (<i>Fagus sylvatica</i>)	April 19	May 7	April 28	May 1
Spruce Chestnut (<i>Castanea vesca</i>)	April 20	May 30	May 9	May 4
Oak (<i>Quercus robur</i>)	April 10	May 28	May 9	May 3
Ash (<i>Fraxinus excelsior</i>)	May 13	June 14	May 30	May 16
Mulberry (<i>Morus nigra</i>)	May 12	June 23	June 1	May 18

In the beginning of April nature showed no signs of animation. Everything bore a wintry aspect. The severe weather in March, with the frequent heavy depositions of snow, partially melted in the day time, but coagulated by the intense frost every night, pressed hard on the rose-trees and laurels, which had been prematurely brought forward by the fine warm weather in February. The check was so great many of these trees were killed.

There was not the slightest dawn of spring until the second week in April. The poplar and the larch did not come into leaf till the middle of the month. The damson was not in blossom before the third week; and it was the last week of April ere the sycamore expanded its leaves. This was later than ever before known.

But the progress of nature then made such rapid strides that everything burst into life as if by magic. The oak was in full leaf early in May; and the ash and the mulberry expanded their foliage by the middle of the same month, or, at least, a fortnight earlier than their average dates. The short space of one month only sufficed to accomplish what usually takes from eight to ten weeks in the development of these beautiful

works of nature. The splendour of the pear, damson, and apple blossoms were, under the influence of bright sunny skies with alternate genial rains, so quickly followed by the formation of their fruits, firmly knitted and unchecked by frost, that we forgot for a time the usual precarious nature of our climate.

But in the latter portion of May we were once more assured of its vicissitudes. The north-easterly winds, which became the order of the day and night, brought intense frost. The progress of the spring was retarded by the long persistence of the harsh polar currents and low temperature. The wheat and barley and other cereals looked sickly and withered. They were starved by the cold nights; but the great heat at the end of May and beginning of June, with plenty of rain, refreshed the pastures and roots. The cereals recovered from their unhealthy appearance, and there was every promise of excellent and abundant crops.

Still the weather was not favourable in June. Temperature varied considerably. There was great absence of sun. Rain was of two frequent occurrence. The crops of grass were heavy; but in the Midlands we had passed the middle of the month before hay-making commenced, and even then under the non-auspicious circumstances of either rain or threatening skies. Dull cloudy weather kept the wheat-plant from coming into ear till the end of June.

The most productive harvests have been when hot weather of appreciable duration did not set in until after the summer solstice. In 1869, 1863, and 1864 there was no summer weather before July, and excellent harvests followed. If great heat prevails in June, as in 1836, 1846, and 1858, the grain does not arrive at its proper growth. The ripening is premature. The yield then becomes small.

What hot weather we had in May and June was of short duration, with twelve months unprecedented in these annals for excessive rainfall, there is abundance of moisture in the ground for the roots and pastures on most lands for some time to come. Wheat wants no more rain till harvest. This year the cereal plants are not close on the fields; but the ears are large, and promise to be well filled.

There is every reason to expect, in the event of a fine hot July and August, that we shall be blessed with a good and bountiful harvest of every description of grain, room,—indeed, of the earth's produce generally.

Before commenting on the public health for the past three months, I wish to impress the fact that it is only when the mean temperature is below 40°, in the absence of cholera or fever, the death-rate is seriously affected. Hence it is

Spring Season, 1867.

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that the winter interferes with our vital statistics. The following table will demonstrate this fact:—

Annual Mortality per Thousand of Population Twelve Months ending June 3rd, 1867. (London, Birmingham, Bristol, Manchester, Liverpool, Sheffield, Newcastle, Salford, Hull, and Leeds).

	Mean Temperature.	Death Rate.
July	51°	25·8
August	62°	30·3
September	64°	29·1*
October	51°	25·9
November	42°	20·8
December	41°	28·0†
1867.		
January	32°	32·4‡
February	33°	28·4§
March	36°	28·1||
April	48°	24·5
May	53°	23·9
June	59°	22·5

* Great mortality in Liverpool and London from cholera.

† Much fever in Newcastle-on-Tyne and other towns.

‡ Mean week ending January 5th, 25°; January 19th, 25°; hence the great mortality from intense cold.

§ Death-rate high first half of February, owing to severe weather in January.

|| High mortality in consequence of severity of the weather.

The high rate of mortality in January was owing to the intense frost. Even the cholera, which carried off so many thousands of human lives in Liverpool and London in July, August, and September last, was not so destructive as to bring up the general death-rate of the ten large towns in the January standard. The Polar currents in the spring months are always very trying. After the Tropical heat early in May, the severe weather in the third and fourth week, when the searching north-east winds blew with great force, did not however materially disturb the public health. At least fifteen per cent. of the mortality in February was in consequence of the cold in January. The moderate temperature in April had the effect of reducing the death-rate in that month, which was considerable in March from the inclemency of the weather; and notwithstanding the vicissitudes of temperature, in May the ranges were compatible with our endurance so far that the mortality was lower than any other period of the year, June excepted. Never was the death-rate so low since registration began as in June 1867. We had extreme heat at different periods of the month, at other times cold winds and low temperature ruled in our sea-girt island. Sometimes a range of 40° was recorded in two or three days. Whatever may be the atmospheric changes, the mortality is not affected so long as the temperature keeps within the limits above defined.

The public health for the quarter just ended has been very satisfactory. In the corresponding quarter of 1866, Liverpool returned an annual death-rate of 34 per 1,000 in one week, 35 per 1,000 each week in eight weeks, and 40 per 1,000 each week in four weeks. There was no cholera in Liverpool last year until July, excepting in isolated cases. In the quarter now terminated, the annual rate of mortality in Liverpool did not reach 30 per 1,000 in any week.

There is a decided improvement in the health of all the ten large towns, with the exception of the borough of Newcastle-on-Tyne, to which place I shall refer before I close this inquiry.

The average death-rate in Edinburgh is about 25 per cent. more than in London, Birmingham, Bristol, and Hull. The miserable abodes of the people in the old towns are much to be deplored. The system of dividing the houses into flats, each tier being occupied by a separate family, precludes a proper mode of drainage and ventilation so essential to the promotion of health, and should be condemned and abolished.

VITAL STATISTICS.

Death-rate per Annum per 1,000 of Population.

	Quarter ending June 29, 1867.	Quarter ending June 30, 1866.
London	20.4	26.2
Liverpool	25.9	37.9
Manchester	27.8	30.2
Birmingham	19.8	24.5
Leeds	25.3	33.6
Sheffield	32.2	30.7
Bristol	21.0	25.3
Newcastle-on-Tyne	27.3	28.6
Salford	26.0	30.4
Hull	22.3	24.7

Death-rate per Annum of the Ten Large Towns, irrespective of Classification.

1866, Quarter ending June 30	29.1
1867, Quarter ending June 29	23.7

Decrease in 1867

The mortality in Newcastle-on-Tyne is very large. No wonder at it. The deficiencies in ventilation, drainage, water-supply, and privy-accommodation in this dilapidated, over-crowded, and ill-constructed old town, compel the structural alteration, wherever practicable, of such places, and a large reduction in the number of inmates, so as to bring them within the contingencies needful for the maintenance of health. New thoroughfares should be opened, so as to admit light and ventilation, and proper and sufficient conveniences for the observance of sanitary law.

Of 55,366 people, or nearly one half of the population within the borough of Newcastle-on-Tyne, whose dwellings were inspected in the beginning of this year, one-eighth of these houses had not, at the date of inspection, the means of good ventilation. One-eighth of the houses were without even water supply, either from the water company or other legitimate sources. One-fifth of the houses were without any privy accommodation. The drainage of two-thirds of the houses only was good; and of the remaining third, more than a third or an eighth of the whole number, were without any drainage. A

member of the town council of Newcastle-on-Tyne, in a letter to me on this vital question, says, "It is our intention to begin the experiment of building dwellings for the poor at once, as till we provide accommodation for this people we cannot turn them out of their miserable hovels."

In towns, as London, Birmingham and Liverpool (where there are active medical officers), manufacturers for non-consumption of smoke, also persons responsible for bad drains, foul and neglected sewers, or for offences against the Lodging-house Act, likewise purveyors of meat or fish for exposing such for sale in a decomposed state and unfit for human food, are summoned before public court. They are disgraced and fined. Their names and offences are published in the newspapers for the information and protection of the public, and in order to deter others besides themselves from offending in the same manner. By these precautions the health of places having efficient officers has been, and will continue to be, improved.

London, with its three millions of people, is one of the healthiest of our large towns. The drainage is good,—the water is excellent. Over-crowding is prevented as far as practicable. Nothing is permitted in any street within the limits of the metropolis, nor in any yard, court, or premises calculated to interfere with the public health in the metropolitan boundaries, if it is either removed immediately, or (if suffered to remain) under risk of exposure, fine, and disgrace to the responsible person. A fine sturgeon was caught near Westminster Bridge on the 11th of May. Thus far good for the waters of Old Father Thames. The prohibition of sewage passing through rivers in populous places cannot be too strongly enforced.

The sanitary supervision of Liverpool has so improved the health of that great seaport that instead of being the largest in mortality, as formerly, Liverpool now ranks among the healthy of the ten great towns. As one proof of the many important efforts made for the sanitary improvement of Liverpool, I may mention that the last great municipal project in this direction is the conversion of middens into waterclosets, with passage into the main street sewer; one half the cost of such conversion being at the expense of owners of the property, and the remainder borne by the corporation.

In an article on the "Town Death-rates in the first three months of 1867," the *Builder* says, "Birmingham is naturally one of the healthiest towns in England, and there is little doubt but that with some sanitary activity to which less favoured towns have been stimulated, the death-rate might be reduced nearly to the healthy district standard." The average mortality in Vienna is something like 50 per cent. more than in London.

THOMAS L. PLANT, F.R.S.

ARCHES.

"Ut pendet continuum flexile, sic stabit contiguum rigidum inversum."

I must premise that I make no pretension of treating didactically upon the intricate subject of the equilibration of arches. My object, in this communication upon that theory, is to elicit information, rather than to impart instruction.

Consulting a practical work, the other day, containing two or three articles upon arches, I was led to the consideration of working out mathematically, instead of finding experimentally, the weight required at each point of the catenary to make it coincide with any other curve equal to it in length; and, in thinking upon this, there occurred to me, also, a simple method of constructing an arch so as to support any weight, on any part of it, less than that which would actually crush the materials composing it. Having in earlier days worked a little, that I might not be quite *ἀνεμπέριτος*,—"Silicet ut possem curvo dignoscere rectum."

I have been able to arrive at some results respecting the former of those propositions; and I give them here, because it may happen that, in the working, some consideration may have been omitted, or some error have crept in, which may render them of but little practical use; and, in this case, I hope that some scientific reader of this journal will—thinking his time not unworthily occupied in so doing—contribute an article upon the interesting subject which I have taken, by way of correcting or extending mine,

which will be at once strictly accurate and practically useful.

The investigation of the latter proposition is added on account of the simple and practical nature of the result obtained.

The equation to the catenary—that is, to the curve in which a heavy inextensible string, of a chain, of uniform density and thickness, hangs when suspended from two given points,—is

$$y + c = \frac{c}{2} \left(e^{\frac{x}{c}} + e^{-\frac{x}{c}} \right),$$

the origin being the lowest point of the curve.

The law of the vertical forces or weights which must be applied to this curve that it may coincide exactly with another curve equal to it in length has to be determined. Let the other curve be the circle, and assume that the catenary and the circle coincide and have a common origin.

The equation to the circle, the origin being a point on the circumference, is

$$y^2 = 2ax - x^2,$$

and the length of the catenary is

$$s = \int \sqrt{1 + \left(\frac{dy}{dx}\right)^2} dx, \\ = \frac{c}{2} \left(e^{\frac{x}{c}} - e^{-\frac{x}{c}} \right) + C,$$

where $C = c$ when the arc is measured from the origin; therefore

$$s = \frac{c}{2} \left(e^{\frac{x}{c}} - e^{-\frac{x}{c}} \right),$$

or, expressing it intrinsically, $s = c \tan \phi$, $\tan \phi$

in this case being identical with $\frac{dy}{dx}$ of the circle.

$\frac{1}{2} \left(e^{\frac{x}{c}} - e^{-\frac{x}{c}} \right)$. Now, since the curves are assumed

coincident, the $\frac{dy}{dx}$ with respect to the catenary

corresponds to the $\frac{dx}{dy}$ with respect to the circle,

as the axis of y for the catenary corresponds to the axis of x for the circle.

Therefore, $s = c \tan \phi = c \left(\frac{1}{\frac{dx}{dy}} - \frac{1}{\frac{dx}{dy}} \right) = \frac{y}{c - x}$.

But s also represents the force or weight acting vertically on the catenary, to make it coincide exactly with the assumed curve; therefore,

$s = c \frac{y}{c - x}$ is the pressure required at every point

x, y of the arch, that it may be in equilibrium. Now, suppose the values of s at a number of points on the curve to be proportionally represented by vertical lines, the locus of the equation

$s = c \frac{y}{c - x}$ will be a curve passing through the

origin, and extending to infinity on both sides of it; for y and s vanish with x , and if $x = c$, $s = \infty$. Thus each of the two lines s at the distance $c = x$ is an asymptote to the curve represented by these vertical lines at their extremities, as described.

From this result it is obtained that a circular arch must not be weighted at the crown; that the weight must increase continually towards the springing; and that when the arch is a semi-circle, the weight at the springing is infinite.

Suppose the curve of the arch to be equilibrated be the parabola; then

$$s = c \frac{y^2}{a^2}$$

similar curve, a parabola whose latus rectum is $\frac{a^2}{c}$.

For this curve, then, the result gives the weight at the crown $= 0$, and the weight varies as x^2 .

By similar methods, the law of weights for other curves may be found.

$$\text{Since } s = \frac{1}{2} c \left(\frac{e^{\frac{x}{c}}}{e^{\frac{x}{c}} - e^{-\frac{x}{c}}} \right) = \frac{1}{2} c \left(\frac{e^{\frac{x}{c}} - 1}{e^{-\frac{x}{c}}} \right),$$

$$\log_e s + \log_e \left(\frac{2e^{\frac{x}{c}}}{e^{\frac{x}{c}} - 1} \right) - \frac{x}{c} = \log_e s + \log_e 2,$$

from which equation, s and x being known, the numerical value of the constant c may be approximately found. The value of y , however, in any case, can be found by actual experiment, and then the exact value of c determined from the equation $c = \frac{s^2 - y^2}{2y}$.

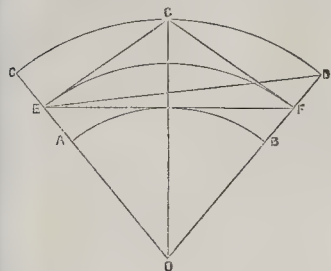
In examining the result obtained for the law of the weights, it is seen that

$s = c \frac{dx}{dy}$; therefore, expressing $\frac{dx}{dy}$ or $\frac{1}{\psi'(x)}$ by F , there is obtained for the equation to the curve assumed for the arch

$$y = \int \frac{dx}{F} = \phi(x) + C.$$

This suggests the method of dealing with the proposition converse to that just considered,—that of finding the form of the curve of an arch for a given locus of vertical forces.

I come now to the construction of an arch having the property predicated in the latter of the two propositions enunciated at the commencement of this article.



Let $ABDC$ be a circular arch; E, F , the middle points of AC, BD ; then if the straight line EF , joining the points E, F , do not cut the arc AB , the arch $ABDC$ will support any weight on any point of it less than that which would crush its voussoirs.

Let the straight line EF touch the arc AB . Now, suppose the figure inverted, and that a heavy string of the length of the arc EF be suspended at the points E and F , and weighted so that it would hang in any two straight lines; then, since the straight line EF does not cut the intrados AB , neither of these straight lines will cut it.

Again, neither of these straight lines will cut the extrados CD . For it may be shown that the two straight lines EG, FG , drawn from the points E, F , to G , the middle point of the arc CD , are together greater than the arc EF , but less than any other two straight lines drawn from the same points E, F , to any other than the middle point of the arc CD ; and that the two straight lines drawn from the points E, F , to either extremity of the arc CD , as the straight lines ED, FD , are together greater than any other two straight lines drawn from the same points E, F , to any point whatever in the arc between its extremities C, D . Hence no two straight lines in which the string can hang will cut the extrados CD ; and it has been shown that they cannot cut the intrados: therefore the arch cannot be broken by any weight less than that which would crush the materials composing it.

From this theorem, then, the construction of a circular arch having the property predicated may be determined; and the same construction would most probably apply when the curve of the arch is any conic section whatever.

In deducing the results here given, the effect of friction has not been considered.

Cambridge.

A. J. TOMPKINS.

THE FRENCH EXHIBITION.

THE great ceremonial in honour of successful exhibitors has taken place in Paris, and has been recorded in one of those remarkable descriptive articles that have made the *Times*, and its special correspondent, famous in that direction. We have no disposition to go into any particulars as to the prizes just now. The undertaking commenced with a fraud on English artists (the appropriation of their design for an Exhibition building, and for the organization of the Exhibition), throughout its progress the English commissioners have been fleeced, and slighted at every opportunity, and it culminates in the greatest possible injustice to English exhibitors. It seems to us that the English jurors should be called upon, if not for a defence of their proceedings, at any rate for explanations,—but of this another time.

The contemporary we have already quoted, in an eloquent leading article accompanying the description referred to, says, and naturally,—

"The speech of the French Emperor is conceived in a spirit worthy of the occasion and the theme. He would be justified in claiming for France an eminent position in connection with this great work. It is true that the Exhibition, being universal and international, is the production of all nations. It is true that some of the most important contributions have been made by foreign exhibitors. If some nations have in certain departments not done themselves justice, while every variety of French art and industry is fully represented, it is no less true that in many particulars foreigners have shown incomparable originality and skill, and their labours are among the chief attractions of the Exhibition. But the *empire of the French mind is on the whole, The disposition of the building, the arrangement, at once simple and scientific, of the departments or classes, the central court, the girdle of restaurants, the surrounding park, with its wonderful buildings of all kinds, are undeniably French; and foreigners have paid a tribute to the excellence of the conception by the readiness with which they have fallen in with the conditions imposed, and the general acceptance which these conditions find now that they are understood and their principles appreciated. It is universally admitted that, though the building has no architectural pretensions, yet, arranged as it is without and tastefully arranged within, the effect is most pleasing, and that no building has been easier to pass whither one wishes and to see what one wishes to see. Perhaps no other shape and disposition of building would have allowed such an immense number of objects to be seen to equal advantage. We must do the French, then, the justice to say that they have by their taste and power of organization made the Exhibition successful, and that the praises it receives from every visitor are principally due to themselves."*

In truth, however, all this for which the praise is being given is not due to themselves, and does not belong to them. We have on more than one occasion felt compelled to point out that the plan as carried out by the French Commissioners, with its central garden, radiating avenues, double classification, and so on, was published in our pages, February 16th, 1861, and that from that time to this, though no French architect has ventured to claim to be the designer of the building erected, the obligation to England has been resolutely denied. We republished the plans side by side in our volume for 1866,* and showed that even where departures had been made from the plan originally given in the *Builder*, the desirability of these departures had been pointed out in the letter-press accompanying it. From first to last, we do not hesitate to reiterate, injustice has been done to Englishmen.

LEICESTER CASTLE.

THE town of Leicester stands upon moderately high ground, and on its western side is divided by a narrow valley from the opposite elevations of Glenfield and Braunstone. This valley gives passage to the Soar, the river of the county, which, flowing northwards, meanders through the meadows of the Abbey of St. Mary de Pratish, and thus before agriculture had drained these lands, securely covered the western and northern fronts of this very ancient and once well-fortified place.

Down the western valley, but outside the stream, and along the edge of the higher ground, was carried a branch of the Fosseway, or as some think, the Fosseway itself, which thus, on its passage from Bennoves or High-cross towards Lincoln, left the old Roman "Ratae Coritanorum," known to us as Leicester, about a furlong to its east.

Leicester, a town of British origin, was taken possession of and fortified by the Romans. The line of the wall, on the usual rectangular plan, has been traced upon the north, south, and east sides, the western defence being formed by the river. There is, however, some doubt as to whether the wall actually reached the water at the south-west angle. If, as is supposed, the fragment of Roman masonry known as the Jewry wall was really a part of the town wall, it follows that the wall was present on the west side, and there was a space between that defence and the river, and that the castle, which occupies the south-west angle, was outside the town.

Leicester was also a town of great importance among the Saxons, and was nearly central in the kingdom of Mercia. It is mentioned in a Saxon charter of 819, and is said to have given the title of earl to Leofric, A.D. 716, to Algar in 838, and to other Algar and other Leofrics, and to Leofwin, the Saxon line ending with Earl Edwin, who was slain in 1071. The town, during the Danish interregnum, was one of the five burghs; and the castle, like those of Tamworth and Tutbury, is said to have been either

founded or restored by Ethelfreda in 913-14, though for this solid evidence is wanting. Nevertheless, that Saxon Leicester was the seat of a very important earldom is very certain, and the residence of the lords was most probably the castle.

The town and castle were placed by the Conqueror in charge of Hugh de Gretnamail, lord of the neighbouring honour and castle of Hinkley, and whose son Yvo was vice-count of the county under Henry I. The actual property of the Gretnamails in Leicester, was one-fourth of the town; but it does not appear how this and much of the other parts were acquired by Robert Earl of Mellent, who became Earl of Leicester, and died 1118, in possession of the castle and honour, "*justa et infra castellum*," which may conveniently be rendered, "Outside, but just beneath the castle wall," was a collegiate church, of Saxon foundation, dedicated to St. Mary. This Robert Bellomont rebuilt and enriched very considerably in 1103, and he is thought also to have completed the castle.

Robert Bosen, the second earl, took the part of Henry I. He also strengthened and enlarged the castle. He was the founder of St. Mary de Pratish, outside the town; and, to endow this, he diminished the ecclesiastical staff, and diverted some of the lands from his father's foundation by the castle. He died 1167.

Robert Blanchmains, his son, the third earl, married Petronilla, the heiress of the Gretnamails, his predecessor at Leicester, and with her obtained Hinkley and other possessions. He also is reputed to have enlarged and strengthened the castle, and his constable, Anklet Mallory, held it against Henry, the second lord, in 1175, unsuccessfully. Both castle and town were taken, the town wall was demolished, and, it is said, between the north and east gates was never rebuilt.

Robert Fitzpennell, the fourth earl, died childless in 1201, when Leicester Castle, and in 1206 the earldom, came to Simon de Montfort, who had married Amicia, his sister and coheir. Upon the death at Evesham of their son Simon in 1264, and his attainder, the earldom and castle were granted to Edmund, second son of Henry III., Earl of Leicester and Lancaster, and the castle has since descended with the Lancaster property, and is still a part of the duchy of that name.

Henry, Earl of Lancaster and Leicester, founded the Hospital of the Newark contiguous to the castle in 1322, and the works were completed by Henry, his son, Duke of Lancaster, in 1354. The hospital contained four acres. It reached the river, and covered the castle on the south side, and at this time one approach to the castle is across the Newark, through its larger and smaller gates.

The earls and dukes of Lancaster must have restored the castle, as they resided here very frequently, and with their usual display. When John of Gaunt granted certain privileges to the city in 1376, he reserved the castle and its mill, and the rents and services of the castle court and its office of porter. In the castle he entertained Richard II. and his queen with great splendour in 1390.

In 1414, when Henry V. held a Parliament in the Hall of the Grey Friars, he resided at the castle, and it was in the great hall of the castle that was held the Parliament of 1425-6, the Commons meeting in an apartment below it, which, however, could scarcely be the case as regards the existing hall, which is on the ground level.

Henry VI. was here in 1426, and in 1444 the castle and honour were included in his marriage settlement. In 1450 a third Parliament was held at Leicester, but whether in the castle hall is not recorded. Edward IV. was here in 1463 and 1464, but from this period the castle seems to have been neglected, and to have fallen into great decay.

Leland, who visited Leicester about 1512, says,—"*The castle standing here the west bridge is at this time a thing of small estimation, and there is no appearance other [either] of high waulles or dykes. So that I think that the lodgings that now be there were made since the time of the Barons' war in Henry III. time, and great likelihood there is that the castle was much defaced in Henry II. time, when the waulles of Liercester were defaced.*" (Itin. i., p. 16.)

Speed gives a rough perspective view of the castle and town, which, however, is very indistinct as regards the former. In 1633 Mr. Herriock, of Beaumont, was directed by the king to re-

* Vol. xxiii., p. 723.

move the ruinous parts and sell their material; to repair the castle house, which contained the records of the Honour of Lancaster, and to preserve the vault and stairs leading to it, for the use of the keep of the castle. Upon this an inquisition was taken in 1633-4, and the value recorded of the materials, "excepting the Sessions Hall and the vault under the old castle, and the stairs leading to it." This inquisition gives several details, chiefly of parts now removed; and mentions as to be repaired "John of Groat's kitchen, divers outhouses belonging to the Great Sessions Hall, and the ruinous pieces at the south end of the same hall; also the south gate, and the wall from this gate to the Soar, which divides the castle from the Newark; also a wall next the porch of the church."

In the civil wars the castle was held for the king. It then fell to the Parliament; was retaken by the king in 1645, and finally yielded to the Parliament after Naseby. In these struggles the south gate was destroyed. This is supposed to be a gate placed due south, and therefore outside the mound, or between it and the river.

In 1781, Mr. Rogers Ruding had a lease of the premises from the duchy, which specifies the south gate, probably that remaining towards the Newark, the castle house, several tenements, the mount, and the appendages to the castle, and stipulates for the holding of sessions in the great hall.

The castle stands at the south-western angle of the town, upon ground close to, and about 20 ft. above, the right bank of the Soar, the three channels of which unite below the castle. The nearest of these streams is the least which supplied the castle mill, and does still supply its modern representative. From the line of the castle wall the ground slopes rapidly, and terminates in a strip of level land that forms the margin of the mill leat.

The castle seems to have been composed of a mound on its south-west quarter; a hall and other buildings on the west or river front; the church of St. Mary, opposite to the hall; and on the east side, a gatehouse between the church and the mound; and, rather east of both, another gatehouse close north of the church, and a wall which runs behind the church, and forms a part of the eastern boundary of its churchyard. There is also the mill which, though modern, covers the ancient site.

The area within which these remains are included is known as "The Castle View." This evidently represents the precinct of the Norman, and probably of the Saxon castle, and has been preserved as a distinct and, in part, extra-parochial district, vested in the duchy of Lancaster. The Castle View is nearly square, and may include four or possibly five acres. In 1861 it was returned as "The Liberty of the Castle View," and contained 29 houses and 131 persons. The boundaries are the line of the ancient wall, or nearly so. On the south they divide the castle from the Newark, just including the mound. On the east they take the line from the present gatehouse, by the old wall, and thence by the edge of the road down to the mill, including the house and garden attached to the Sessions House. The ditch is everywhere filled up.

This line includes St. Mary's, which was once the collegiate church or chapel of the castle. If it be that the castle was enlarged by Robert Bossu, it is probable that the older defence just excluded the church, and took the line of the present upper gatehouse, cutting off the churchyard and church, and placing the latter "*juxta et infra*" the castle wall. St. Mary's was made parochial in 1400, the rest of the View remaining extra-parochial, and it is not impossible that this was a restoration to the church of its ecclesiastical position before it was included within the military precinct.

The mound, though broad, is less lofty than is usual in the more important Saxon castles. It is about 30 ft. high and 100 ft. diameter upon its circular top, which is quite flat, without a trace of old building upon it. It has no ditch, and is connected with no ancient wall; so that, though probably within the ancient *encinte*, it may, as at Warwick and Tamworth, have formed only a part of it.

The hall formed a part of the castle building, or castle proper. It is an oblong structure, about 60 ft. north and south by 25 ft. east and west, with gables at either end, and an open high-pitched roof. Since 1633, and perhaps earlier, it has been used for judicial purposes, and divided into three parts—civil and criminal

court, and between them an entrance lobby, and above it a grand jury-room. To enlarge the courts, the east wall has been removed, and a building added on that side, so that the hall is much mutilated. Its older parts also are concealed by panelling and partition-walls. The original south gable remains. In it are two round-headed windows, resting upon a string-course, or set off in the wall, marked by a plain chamfered moulding. The windows are small and plain, and the recesses have but little splay. These are flanked by two slender detached octagonal shafts, possibly replacing cylindrical ones, and the heads of each recess is surrounded by a single bold band of chevron moulding. There is a third and small window above, near the apex of the gable, with a recess of about 2 ft. opening, all quite plain. Below is a small Norman door, but apparently a very recent insertion. It may, however, represent a way into the kitchen, which was at this end.

The opposite or north end wall, forming the side of the civil court, appears also to be old, but is so plastered and pointed as to be inscrutable. It contains a large round-headed window, probably a modern insertion.

On the west side of the hall, between it and the river, is a sort of aisle, the base of which is old, and the wall flanked at each end by a buttress, probably of Decorated date. In drawings of the last century this building is shown as an aisle or lean-to, but it has been raised, and now forms a judge's retiring-room behind each court, and a staircase between them. In the basement are offices. This building contains one original window near the south end, flat pointed, with plain jambs, and a head adorned by a single chevron band. The jambs have been renewed in brick.

The hall-floor is on the ground level, but it has been largely excavated, and now contains a number of cells and vaulted passages to them beneath the court. These excavations show nothing ancient.

Until recently there were some small inferior buildings at the south end of the court. These are now replaced by a barristers' room. The kitchen stood here till 1715, when it was removed.

A modern building, north of the hall, no doubt represents the principal apartments of the old castle. It is said that a vault is still to be seen in this direction, but the premises are private. Here was the Castle House of the seventeenth century, and if there was a Norman keep it must have been here. There is or was a vaulted cellar of considerable size on the side towards the mount. Possibly it may remain beneath some cottages there standing.

The Gate House towards the Newark, opens from the castle, its front being outwards. It is small, having a portal passage and two lodges, and on the upper floor, now a ruin, a portcullis chamber, and two other rooms. Its arches are four-centred. It has the broad hollow moulding of the Perpendicular period, and a square portcullis groove behind the outer entrance. The arch opening inwards was closed by a gate only. The central part of the portal was boarded over. The structure is good Perpendicular, the work, no doubt, of the Earl of Lancaster.

The upper or north gate-house is framed of timber, and probably of Tudor date. It stands close north of the west end of the church, with which it was, until recently, connected by certain timber houses, used by the prebendaries. These have been in part pulled down.

Parts of the church are Norman, and the north aisle seems of the date of the hall of the castle, and, therefore, a part of the work of Robert Bossu. There is a small door in the west wall of the aisle, that may very well have opened from the base court.

Should the courts of the county of Leicester ever be lodged in a more central or more convenient building, it is to be hoped that the castle hall will be divested of its unseemly additions, and restored to its original dimension and pattern, when, probably, some correct information would be discovered as to the vaults and foundations of the buildings of the eleventh century.

Leicester Castle, mutilated as are its remains, is yet a good example of the Norman practice of placing the castle proper on the level ground, and treating the mound as a part of the external defences.

OLD MACHAR CATHEDRAL IN SCOTLAND: PROPOSED RESTORATION.

THE proposal to restore the ancient cathedral of St. Machar, as far as is now possible, to something like its original grandeur, has called forth considerable interest in Aberdeen and the north of Scotland. For some time the proposed restoration was in danger of being allowed to go to sleep; but now, seeing that an arrangement has been arrived at between the heritors of the parish and the voluntary subscribers, there is every prospect of the scheme being proceeded with. Mr. Scott, of London, was selected to report on the subject; and, along with Mr. Matthews, he went over the buildings some weeks ago. After a careful and minute examination, Mr. Scott has just given in his report, which enters at great length into the history of the fabric, and gives suggestions for its restoration.

The first step, he suggests, is to clear the building, not only of its galleries and sittings, but of every portion of the internal casing of lath and plaster, by which its walls have been encrusted. Then, and not till then, can the interior be seen to be what it has really been, and can judge with accuracy how to deal with it.

At present, it can only be said that all the ancient stonework, whether pillars, arches, windows, or doorways, must be cleaned and repaired, but without the touch of an iron tool or chisel. The intermediate surfaces, which have been always plastered, must remain so. The triforium must be restored to its original form, the deal frames and canvas filling-in being removed, and the whole, in fact, brought, as nearly as may be discovered, into its original state. There can be no doubt, he thinks, of the desirableness of the introduction of stained glass.

EDINBURGH.

All Saints', Brougham-street.—This church, which is erected as an auxiliary to the large and fashionable congregation of St. John's, for the purpose of accommodating the poorer classes of the district, was consecrated by the coadjutor bishop of the diocese, on Wednesday, the 19th inst. The design of the building was prepared by Mr. Robert Anderson, architect, and is of the thirteenth century Gothic style, and consists of nave, with aisles and clearstory, transepts, and apsidal choir. The west end is incomplete, for want of funds, but when finished, it will comprise a cloister, baptistery, and tower. The upper part of the west gable is pierced by a wheel window; the aisles are lighted by coupled lancets; the clearstory by single lancets; the transepts have windows of two lights, with a single multi-foil at the head; and the chancel has plain single lights, without tracery or mullions. The whole treatment of the exterior is simple and severe, being devoid of ornament, and the architect has sought his principal effect in the interior; the most notable features of which are red-coloured stone columns dividing the aisles (the caps of which are still in the rough), and the roof, which is of open timber, plastered between the rafters. Three of the windows in the chancel have been filled with stained glass, by Weale, of Newcastle. The building is very awkwardly placed at an angle with Brougham-street, and as this does not appear to be necessitated by the form of the ground, it may possibly arise from an ultra orthodox notion of Orientalism; be this as it may, the effect is very displeasing. Mr. Anderson has conscientiously sought after truthfulness, and has not aimed at too much where little was at his disposal. The masonry struck us as being defective, a fault not common in this city.

Hope Park United Presbyterian Church.—This church is in the Lombardic style, and exhibits at the west end a low-pitched gable, with a cross at the apex, a wheel-window, and a round arched door under a pediment, divided into two square-headed openings. At each side of the door are small coupled round-arched windows, and part of the gable to the south is marked off by a buttress and pinnacle into a *quasi* aisle. A tower is placed at the north-west angle, which rises up plain and unadorned for about 100 ft., where there is a cornice, and above this is a two-light window with circular piercing at top. The four sides of the tower are finished by gables, and a high-pitched slated roof with an iron finial. The side elevations consist of three gables, each with wheel-windows above, and coupled round

THE NEW STANDARD THEATRE.—The first stone of the new theatre upon the site of the Standard Theatre, burnt in October last, was laid on the 3rd inst.

arched windows below them. There is a hall or schoolroom situated in a sunk basement. Why this arrangement was adopted we cannot conceive, as the foundation was quite sufficient without getting below the street level, and the edifice has a painfully depressed look, which might have been obviated by placing the whole structure above ground. The situation is a very fine one, and occupying a conspicuous position at the east end of the meadows, so that it is seen from a great distance; but we cannot say it holds its place worthily. It is one of the least successful efforts of the architects, Messrs. Peddie & Kinnear, and contrasts very unfavourably with the adjoining church of St. Peter, the spire of which dominates over it in a manner calling to mind Landseer's well-known picture of "Dignity and Impudence." The side elevations, too, are disagreeably suggestive of railway-sheds upon the ridge-and-furrow principles. The interior is fitted up with galleries in a plain and commonplace manner.

The same gentlemen are architects for new offices in George-street, for the Crown Insurance Company. The elevation is of three bays and four stories. The ground-floor has three similar arched openings, with piers between; one of these is to serve as the doorway, but has no distinctive feature to mark it as such. This floor is separated from that above it by a moulded cornice, with double consoles at the head of the piers. The windows of the first-floor are also round-headed, and a plain moulding runs, without break, from sill to key-stone. The third story has square-headed windows, with moulded architrave and cornice, and the fourth has square windows with panels between, the wall-end being finished with regulation cornice. The front is made to project considerably beyond the line of street front, which makes it conspicuous, and gives some additional accommodation; but the result is very detrimental to the general effect of this fine street, which depends greatly upon its breadth and continuity.

THE MUSEUM IN GOTHA.

IN the beginning of the year 1864 it was determined to remove all the art collections from the ducal castle of Friedenstein at Gotha to a single building to be constructed especially for this purpose. Mr. Franz Neumann, architect to the Duke of Coburg and to H.R.H. Prince Augustus of Saxe-Coburg Gotha, was commissioned to prepare plans for the building. Other architects also sent in designs, but those of Mr. Neumann were adopted. The ducal Government trusted him with the entire superintendence of the building, and the work was to be carried out in his sole responsibility.

A site, near the kitchen-garden of the castle, as selected by the architect, with the Duke of Coburg's approval, and the building was commenced on the 1st of July, 1864.

It is necessary here to describe the site, as it considerably influenced the design, and the architect endeavoured to adapt the plan of the proposed building to the formation of the ground.

The Castle of Friedenstein stands on slightly rising ground, formed partly by Nature and partly by art, and thus commands an extensive view over the surrounding country. A terraced garden surrounds the castle. The road to Sibardsbrunn lies on the first level about 10 ft. from the castle, and is bounded on one side by the park and on the other by the ancient and modern buildings of the castle. In the centre of the space before the castle, and 31 ft. below the level of the castle, was used as a site. The kitchen-garden was in a direct line with the centre of the castle, and 47 ft. below it. There was thus a difference of level between the castle and the kitchen-garden of about 16 ft.*

The architect has extended the plateau of the site towards the kitchen-garden, and on this new ground the museum was commenced parallel with and midway between the towers of the Castle of Friedenstein.

The difficult problem of the difference of level between the museum and the park was thus partly solved by means of terraces. By taking advantage of this difference of level, the architect was enabled to build rooms of different heights on the ground-floor, which greatly diminished the cost of the building.

Throughout this account, and in the illustrations, the Gotha foot is used. The Gotha foot is equal to 0.2831 of the French metre.

The museum was to contain the following collections, and the plans were drawn up accordingly:—A picture gallery, a collection of plaster casts, a collection of engravings, a collection of Chinese objects, a general collection of objects of art, and many other collections illustrative of zoology, mineralogy, conchology, entomology, &c. It was also requisite to provide rooms for the officers of the museum, workshops for the repairs of the collections, store-rooms, &c.

In order to diminish the cost it was thought advisable to build the museum in three stories, so as to avoid an extensive ground-plan. This was the more difficult as some of the collections required a large surface of floor, and others a large surface of wall space; and in the latter case, as a matter of course, objects can only be exhibited at a certain height.

The superficial area required for each collection was fixed before hand, and the architect was, therefore, bound to provide it. The systematic arrangement of the collections, and their connexion with each other, also had his consideration.

The different floors were constructed to contain the following objects:—

The Basement Plan.

The basement of the left wing has a superficial area of 4,409 square feet, and contains the collection of plaster casts. The rooms on this floor are of different heights, owing, as mentioned, to the slope of the ground on which the museum is built; and this fact has been taken advantage of to exhibit on this floor the more or less lofty objects in the museum.

The system of separate recesses, formed by large circular openings, has also been adopted. By this arrangement it is possible to divide the different objects into their several classes, and yet to allow the collections to be viewed as a whole.

The windows at the back of the recesses for lighting the store-rooms have been placed close to the ceiling, so that there is an available wall-space of about 8 ft. below the windows.

The arrangement of the right wing has been carried out on the same principle. Here are located the collections of minerals and woods,—the former occupying a superficial area of 2,119 square feet, the latter 536 square feet.

Space has also been reserved for apartments for the attendants; two rooms right and left of the cabinets for the servants; two rooms for the restaurant; and four warming chambers, immediately below which space is reserved for fuel. Next to these are the stores of fuel and other necessities required for the house.

The public gain access to all the collections by the principal entrance on the park side, which is connected with the next floor by a double staircase. There are also two stone winding staircases leading to the roof, at the opposite ends of the main wing; but these are only for the use of the staff of the museum. It should be noticed here that the whole of this floor is vaulted, the treads and risers of the stairs are of stone, and the rooms are warmed by means of stoves. All the rooms containing the collections are paved with stone: the store-rooms are paved with tiles.

The rooms on the two upper floors are warmed by means of hot water.

The Ground Floor.

The four central rooms, containing a superficial area of 4,976 square feet, are devoted to mammalia. This collection was placed here in order to protect it from the direct rays of the sun, and thus avoid, if possible, the destruction of the specimens by moth. There will be quite sufficient light, as all the windows are planned on a large scale, and the circular openings in the middle walls are of large size. The birds will be exhibited in the left wing round the mammalia. This collection will occupy a superficial area of 3,600 square feet. In the same manner the space round the mammalia in the right wing will be devoted to the collections of corals and skeletons, occupying 1,508 square feet; reptiles, 682 square feet; studies of horses, 361 square feet; and conchology, 1,148 square feet. The beetles and butterflies are placed right and left of the entrance-hall, occupying 513 square feet. Near the grand staircase there is one room for the director and another for the superintendent of the museum.

This floor is reached from the outside by a flight of steps, which lead through an open colonnade of columns to the portico, whence the

visitor can step into the rooms containing the collections.

There is another entrance to this floor through the vestibule, from which a view can be had of the whole of the main wing, glass doors being placed between all the rooms.

The principal staircase is of stone, and is situated on the park-side of the vestibule; it is so arranged that the visitor can pass into the basement floor, under the centre of this staircase, by a door corresponding to that on the double staircase; entrance to this floor is, therefore, always possible from the park side. With the exception of the central rooms, the vestibule and the staircase, all the rooms are vaulted. The ceilings of the central rooms and of the vestibule are constructed of wood and covered with stucco. The floor is throughout of marble mosaic.

Upper Floor.

The principal staircase terminates here in a noble landing, and a large doorway leads into the historical collection. This room is an octagon, and has a superficial area of 1,213 square feet. The roof is in the form of a dome, with a skylight in the centre. It is 47 ft. in height.

This room will be decorated with frescoes in the dome and on the walls, the leading idea being to commemorate, by means of pictures, the different Sovereigns of the country, and the principal events in its history.

The picture galleries are situated on the right and left of this historical room, and are lighted from above. They contain together a superficial area of about 5,000 square feet, and a wall space suitable for hanging pictures, of 10,836 square feet.

The general collection of objects of art is placed round the picture galleries in the left wing, and in the recesses of the main building: it occupies about 4,480 square feet.

The Chinese collection, occupying 2,323 square feet, and the collection of engravings with 1,015 square feet, are placed in the same manner in the right wing. On the right side of the principal staircase there is a room for the director; and on the left side there is a similar one for the attendant.

The recesses on this floor are vaulted. The ceilings are of wood, stuccoed. The floors are of oak parquetry.

Turning now to the exterior of the building, the front is, of course, opposite the castle. The steps leading to the museum rest on a perron five steps high, and two lions to be cast in bronze will decorate the pedestals. An allegorical figure of Germany will be placed in the centre of the steps, and two other figures, representing History and Architecture, will decorate the colonnade of this floor.

The top of the colonnade will be embellished with the Saxon arms in the centre, having two lions rampant for supporters. On each side of the arms there will be a vase and a group of figures; one of the groups representing Sculpture and Painting, and the other Mineralogy and Zoology.

Great care was taken to find a good foundation for the building, and every part has been carried out, we are told, in the most durable materials. The front is built of tooled stone and brick, and the roof is covered with blue-black slates with zinc fastenings.

The whole building is 265 ft. (Gotha) long, and 120 ft. wide in the centre, without the portico or colonnade; the ends are 85 ft. wide. The dome in the centre is 106 ft. in height to the commencement of the lightning conductor. The whole building covers a superficial area of about 24,000 square feet.

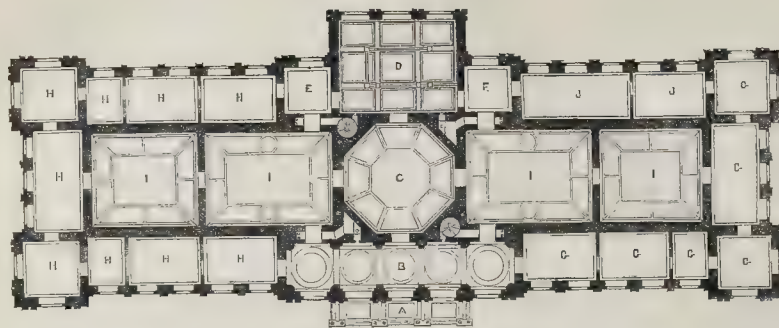
Both difficulty and delay have been experienced in getting the building materials. The collections cannot therefore be moved into the museum until the year 1868.

The final completion of the museum, however, depends on the internal decorations, which especially in some of the rooms must take years to finish.

The cost of the building, without taking into account any special internal decorations and fittings, will, it is thought, in consequence of the difficulty in obtaining the materials, amount to more than 200,000 thalers (about 30,000*l.*), as the alteration of the surrounding ground and part of the park is included in the external completion of the building.

It is a cause of much satisfaction to us that we have been enabled to place before our readers illustrations and particulars of this interesting work, due to the liberality and wisdom of the Duke of Saxe-Coburg Gotha.

THE MUSEUM IN GOTHA.



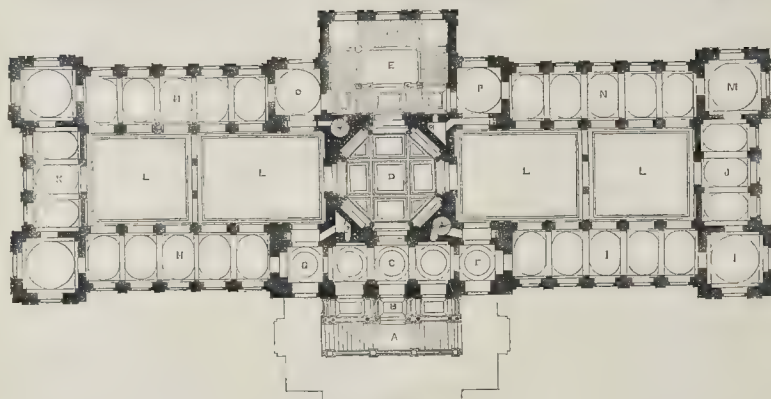
FIRST FLOOR PLAN

A. Balcony.
B. Objects of Art.
C. Historical collection.

D. Staircase and landing.
E. Attendant's room.
F. Director's room.

G. Chinese collection.
H. Objects of art.
I. Oil paintings.

J. Copper-plate engravings.



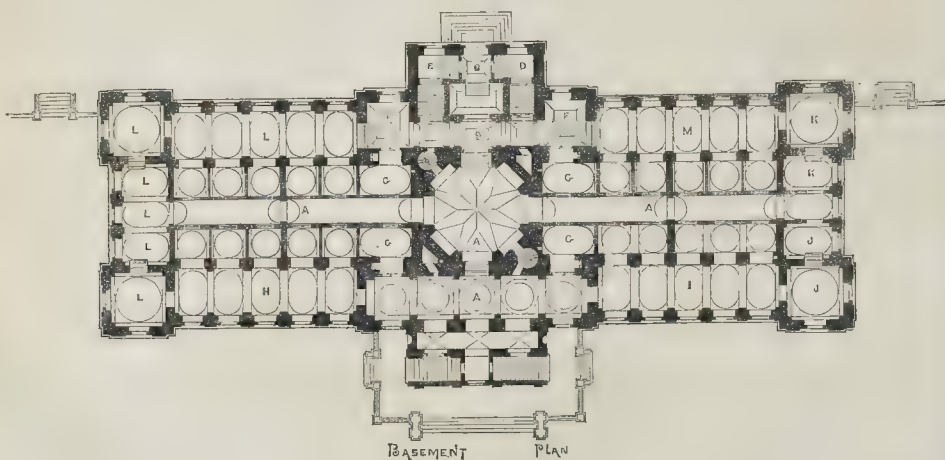
GROUND PLAN

A. Entrance steps.
B. Colonnade.
C. Outer hall.
D. Vestibule.

E. Principal staircase.
F. Butterflies.
G. Bees' nests.
H. Birds.

I. Corals, skeletons.
J. Reptiles.
K. Birds.
L. Mammalia.

M. Horses.
N. Shells.
O. Superintendent's room.
P. Director's room.



BASEMENT PLAN

A. Depot.
B. Corridor.
C. Entrance.

D. To pictures.
E. To statues.
F. To servants' rooms.

G. Warming apparatus.
H. Restaurant, &c.
J. Collection of woods.

K. Minerals.
L. and H. Sculpture gallery.
M. Minerals.

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- SCALE OF GOTHA FEET -

MUSEUM OF HR.H. THE DUKE OF SAXE-COBURG GOHA, IN GOTHA.—MR. FRANZ NEUMANN, ARCHITECT.



COMPETITIONS.

Bristol Assize Courts.—The committee advertised for designs for "altering the present Guildhall so as to afford more accommodation for the transaction of public business, with better light and ventilation; and also for the erection of a second court, for the purpose of civil business, on ground the property of the Corporation, adjacent to the Guildhall." Three premiums were offered: For the best plan, 100 guineas; for the second best, 50 guineas; for the third best, 25 guineas; and competitors were given to understand, that in selecting the plans for premiums, the cost of the proposed buildings and alterations would form an important consideration. In reply to this invitation, ten designs were sent in, and these having been referred to Mr. Street, he reported, as entitled to the first prize, the plan with the motto "*Usui civium decori urbium*" (the work of Messrs. Pope & Bindon); the second prize he awarded to the plan with the motto "*Quis*," sent in by Messrs. E. Godwin & Crisp; the third prize, to the design with the motto "*Dos à Dos*," by Mr. C. F. Hanson. In Messrs. Pope & Bindon's design, the style of architecture is intended to be that of the period in which Colston's House was originally erected. It shows the present Assize Court enlarged to 70 ft. in length, and 12 ft. higher than at present, and that the new civil court shall be 50 ft. long and 34 ft. wide. It is to be placed between the present court and Small-street, with ranges of large windows on both sides. The judges, by this plan, enter on the Broad-street side, passing along the present corridor and gaining access to their respective courts through their private rooms, which are so arranged that they can obtain interviews with each other perfectly free from any interruption. There is a distinct entrance for the barristers and attorneys, with a corridor on the Small-street side, and the consulting and robing rooms, &c., are conveniently arranged. The juryman and witnesses have also a distinct entrance on the Small-street side into a corridor commanding both courts, immediately between their several rooms and the Courts. There are also separate rooms for male and female witnesses, with lavatories, &c. The design is so arranged as to preserve the remains of Colston's House (now used as the *Times* and *Mirror* printing offices), the large hall being made available as a vestibule.

The Nottingham Mechanics' Institution.—There were twenty-four sets of drawings sent in to the committee of this Institution. At first, five of these plans were selected; afterwards that number was reduced to three, viz., those of Mr. T. Simpson, Messrs. Clarke & Son, and Mr. R. C. Sutton. On further voting taking place, Mr. Simpson's plan, we understand, was selected as the best, and he will therefore be entitled to the 100l. premium. A local paper says,—"It is stated, though we cannot vouch for the accuracy of the report, that the three sets of plans will be merged into one." A note on this competition appeared in our last.

The Gateshead Town-hall.—Friends of some of the competitors are writing long notices in the local *Observer*, well calculated to perplex the committee. It is to be hoped they have called upon proper professional advice.

ARCHITECTURAL SOCIETIES.

Lincoln.—The annual meetings and excursions of this society have taken place, and attracted a numerous gathering, at Grantham, of everyman and laymen interested in archaeology. The weather was unfavourable nearly all the first day, and it was not until late in the afternoon when the last two churches were visited that the rain entirely ceased. At half-past nine proceedings commenced with divine service; the western end of the church, which is awarded off from the part where the restorations are being actively carried on. A sermon, appropriate to the occasion, was preached by the handsome lecturer, the Rev. C. Smith. Immediately afterwards the Ven. Archdeacon Trollope, hon. secretary, commenced an elaborate description of the principal architectural features of the church of St. Wolfram, Grantham, for which purpose he stood about fifty yards before the western front, but it rained so heavily that he soon desisted, and gave the rest of his remarks within the building. The excursion started from the church in a cavalcade of twenty vehicles. The party num-

bered nearly 120, and included about a score of ladies. The excursion was more than usually popular, perhaps owing to the fact that it included a two hours' detention at Belvoir Castle. But it was also interesting for the fine array of beautiful churches which were visited, all of which were described by the venerable secretary, in what we might term a series of object lectures on ancient and modern architecture. The places visited were Harlaxton, Lenton, Belvoir Castle, Woolsthorpe, Muston, Sedgebrooke, and Barrowby; and the evening meeting was held in the Exchange-hall, Grantham, under the presidency of the Bishop of Lincoln. The proceedings commenced by an address from the town council to the members of the society being read by the town clerk, expressive of the gratification of the burgesses at the visit of the society, and their desire to give them a hearty welcome and show them every attention in their power. The Ven. Archdeacon Trollope, the secretary of the society, read the reply of the members, which in very courteous terms reciprocated the good feeling which had been manifested to them, and alluded to the objects of interest in the ancient borough. Mr. Trollope next read a paper on "The proper Treatment of Stained Glass Windows" in churches, and the Rev. B. Street one "On the ancient Buildings of Grantham." On the following day an excursion was made to Manthorpe, Belton, Syston, Barkston, Honington, Carlton, Normanton, and other places.

Worcester.—The members of the Worcester-shire Architectural Society have had an excursion to Feckenham, Hanbury, and Hadsor, a district containing some interesting old mansions. The party went by train to Droitwich, and thence to Merehall, Stock and Bradley, to Feckenham. By invitation they had luncheon with Mr. Vernon, M.P., at Hanbury Hall, and thence to Hadsor. Returning to Droitwich some of the party took tea at the Royal Hotel, and others at the residence of the Rev. W. Lea (St. Peter's), in the neighbourhood of which they inspected extraordinary cracks or crevices in the land, occasioned by the subsidence of the soil; and from nine to ten o'clock the party arrived at Worcester by coach and rail.

MANCHESTER SOCIETY OF ARCHITECTS.

The annual general meeting of this society was held on Monday, 24th ult., at the Council Chamber, Royal Institution, at which the report of the council on the business transacted during the past year was read, the most important points being the action of the society in regard to the principles to be observed in building contracts, the method of taking out quantities in such a manner as to ensure uniformity of practice, and the steps taken by the society in conjunction with the corporation in drawing up their new building bye-laws that have now come into force. The president (J. Holden) and vice-president (J. Charlesworth) retire from office, in accordance with the rules, and the meeting elected the following gentlemen to the council for the ensuing year:—Messrs. W. B. Corson (president), J. Stevens (vice-president), W. H. Brakspear, C. Clegg, J. Holden, P. Nunn, E. Salomons, and J. Murgatroyd (hon. sec.).

BUILDING PROGRESS IN MONTREAL.

The result of last year's architectural progress in Montreal is a goodly show of buildings of more or less importance, including a church, a bank, and a public hall, but more especially business premises. The style is, as usual, mostly Italian, except the church.

The offices of the North British and Mercantile Insurance Company, at the corner of St. François Xavier-street and Hospital-street, now in course of completion, has a frontage of 45 ft. 6 in. on the former and 114 ft. 6 in. on the latter street. The site is wedge-shaped, but the apex has been cut off, making a splay forming the principal entrance. Upon a moulded and rusticated limestone base course of about 6 ft. in height, the superstructure is executed in the finest quality of Ohio sandstone. There are many carved enrichments. The roof is in the form of that of the Louvre, and covered with galvanized iron tiles. The total height of the building is 66 ft.

The whole of the works are being carried out from the designs, and under the superintendence, of Mr. J. W. Hopkins, architect. The contractor for the mason-work was Mr. Forsyth, at whose stone and marble mills all the stone was carved and prepared. Mr. P. Nicholson, builder, having erected the building; Mr. John Bulmer, brickwork; Mr. Brush, wrought-iron girders; Mr. Melville, carpenter's and joiner's work; Messrs. Prowse, Brothers, galvanized iron work and roofing; Mr. Millen, painting and glazing; Mr. McKenna, plumbing; Messrs. R. Mitchell & Co., steam-heating; and Messrs. Aitkin & Morrison, plastering.

The Merchants' Bank, forming the corner of the Place d'Armes and Notre Dame-street, has been erected from designs by the same architect. It has a frontage on the Place d'Armes of 35 ft. 6 in., and on Notre Dame-street of 72 ft. 6 in. The building is of Ohio sandstone from the level of the plinth to the top of the enriched frieze of the main cornice. The height from the street to the top of the cornice is 67 ft. The main entrance is on the semicircular corner forming the angle of the two streets. The banking-room is 38 ft. by 32 ft., and 18 ft. high. The walls are panelled in scagliola, in imitation of various marbles, and the ceiling is frescoed.

St. Paul's Church, at the corner of Dorchester and St. Monique streets, is still in progress. The design (Early English) was selected in a limited competition, Messrs. Lawford & Nelson being the architects. Mr. Lawford is since dead, but the work is being carried out under the superintendence of Mr. J. W. Hopkins and Mr. James Nelson, his associates in the profession. The church will seat 1,000 persons, and there are no galleries. The plan is cruciform, and the nave is 102 ft. by 59 ft., transepts 45 ft. 7 in. wide, with projection from the nave 16 ft. 7 in. The side walls in the body of the building are 24 ft. 3 in. high, and from floor to apex of roof (an open-timbered one) 58 ft. The walls, to the level of the base, will be of Montreal limestone. The superstructure will be faced with similar material in their courses, having the natural surface of the stone exposed to view. The weatherings, quoins, pinnacles, and all the ornamental portions of the work will be of Ohio stone. The roof will be covered with slate from the Melbourne quarries. The windows will be filled with stained glass of a comparatively plain pattern. The walls are already up to the ground level. The total expenditure, exclusive of the cost of the ground, will be about 45,000 dollars. The contractors are:—for the masonry, Mr. P. Nicholson; carpentry, Messrs. Wright & Hutchison; plastering, Messrs. Phillips & Wand; painting, Mr. Henry Millen; stained glass, Mr. J. C. Spence; roofing, &c., Mr. G. W. Reed; ironwork, Messrs. Rogers & King; plumbing, Mr. Robt. Mitchell.

St. Patrick's Hall is also in progress. The building will have a frontage of 140 ft. on Victoria-square, and 100 ft. on Craig-street and Fortification-lane. It will be entirely isolated. The height from the street level to the cornice will be 72 ft., and to the apex of the roof 92 ft. The style of architecture is an adaptation of the Norman, suitable to the modern requirements of the present day as regards shops and show-rooms—library and reading-rooms, lecture and concert rooms, &c. The details are assimilated to those still to be found in certain portions of Ireland among the ruins of monasteries and chapels. On the ground-floor there will be eight first-class shops, six on Victoria-square and two on Craig-street. They will vary in depth from 40 ft. to 94 ft. On the third story will be the Grand Hall of St. Patrick, which will be 134 ft. long by 94 ft. wide, and 46 ft. high to the centre of the segmental-shaped ceiling. The stage, or platform, will be 52 ft. wide and 25 ft. deep. The building will be of Montreal limestone. A large number of wrought-iron girders will support the floor timbers where the bricks walls are not carried up to the third-floor level. The principal portions of the roof will also be of wrought iron. The entire works, with the exception of the iron girders, roof, &c., are being carried out by Messrs. Howley & Sheridan (Messrs. Payette & Perrault being sub-contractors for the stone-work), from the designs, and under the superintendence, of Mr. J. W. Hopkins, architect.

Among the various new business premises or stores, &c., are Muir's new block, corner of Place d'Armes and Notre Dame-street East, Mr. Alexander C. Hutchison, architect; I. & T. Caverhill's, St. Peter-street, Messrs. Thomas, Brothers, architects; and Notre Dame-street, Mr. H. M. Peralte, architect; Tiffin's, corner of

Notre Dame and St. Peter streets, Mr. M. Laurent, architect; and Great St. James's-street, Mr. William T. Thomas, architect; Gibb's, Notre Dame-street, Mr. J. W. Hopkins, architect; Merrill's, Notre Dame-street, East, Mr. T. Fahrland, architect; Alexander's, Notre Dame-street West, Mr. H. M. Perrault, architect.

Messrs. Caverhill's block in St. Peter-street, however, was built in 1865, but its extent and importance induce us to refer to it here. The building covers a large space of ground, is five stories high, divided into three first-class wholesale warehouses, extending from St. Peter-street, in front, to St. John's-street, in rear.

Muir's block has a frontage of 63 ft. on Notre Dame-street, and 45 ft. on Place d'Armes. The building is of four stories, with detached columns to its numerous windows, with carved capitals. The fourth story contains a lodge-room of the Freemasons, 52 ft. long by 34 ft. wide. The second story is occupied by a "Business College."

Gibb's stores in Notre Dame-street have a frontage of 47 ft., and the height above the street line to the top of the main cornice is 58 ft. There will be two shops on each side of a centre entrance leading to the upper floors. These are of the depths of 60 ft. in one case, and 100 ft. in the other. The centre entrance by means of a wide staircase, gives access to the three upper stories, which are divided into show-rooms on two, and a masonic lodge-room, with all the requisite preparing rooms, &c., attached, occupies a large portion of the top story. This lodge-room is 48 ft. long, 26 ft. wide, and 15 ft. high. The building externally, on the street, is of Montreal stone, but with ornamental iron pillars forming the divisions between the shop windows and doors. Those to the centre entrance are in limestone. The several contractors are Messrs. Perrault & Perrault, stone-work; A. Wand, brick-work; George Roberts, carpenter's and joiner's work; Phillips & Wand, plastering; Prowse, Brothers, roofing, &c.; Alex. Craig, painting and glazing. The iron-work was supplied by Messrs. Ives & Allen. The whole of the several works were executed under the superintendence of Mr. Hector Munro, from the drawings, &c., of the architect.

HOUSES FOR THE LABOURING CLASSES.

The Society for Improving the Condition of the Labouring Classes has held its twenty-third annual meeting at Willis's Rooms, St. James's, the Earl of Shaftesbury presiding.

The report stated that the house in George-street, Bloomsbury, for the accommodation of single men, had, 100 inmates, producing a rent of 715*l.* 6*s.* 6*d.*, which, after deducting 455*l.* 17*s.* 1*d.* for expenses, left a balance of 269*l.* 9*s.* 5*d.*; the house in Streatheam-street had 54 families, consisting of 237 persons, producing 794*l.* 17*s.*, and leaving a balance of 432*l.* 13*s.* 4*d.*; the model buildings in Gray's-inn-road had 190 occupants, yielding a rent of 478*l.* 12*s.*, and leaving a balance of 288*l.* 19*s.* 4*d.*; the number of washings at the public washhouse was 13,653, producing 326*l.* 18*s.*; but in consequence of repairs, the washhouse was closed for several weeks, so that the return was less than it would have been. The Hutton-garden house accommodated 54 single men; the rents amounted to 39*l.* 4*s.*, and after deducting expenses there was left a balance of 24*l.* 9*s.* 8*d.*, an exceptional outlay for painting having been necessary. The renovated lodging-house in Charles-street, Drury-lane, had an average of 81 single men lodgers; the rents were 409*l.* 4*s.* 1*d.*; and a balance was left of 136*l.* 6*s.* 6*d.*. Clark's buildings, Broad-street, St. Giles's, had a population of 261; the rents being 578*l.* 3*s.*, and leaving a balance of 101*l.* 18*s.* 8*d.*. The building in Wilde-court, Drury-lane, had 360 inmates; the rents amounted to 631*l.* 8*s.* 2*d.*, leaving a balance of 102*l.* 9*s.* 1*d.*. At Tyndall's buildings, Gray's-inn-road, the occupants were 361, and the lodging-house had 25 inmates; the rents were 698*l.* 3*s.* 3*d.*, which, after deducting expenses, as in the former cases, left a balance of 350*l.* 13*s.*

The secretary then read an abstract of the cash account up to December, 1866, which showed the receipts to be 6,120*l.* 10*s.* 6*d.*, which, with the balance in hand, made a total of 6,421*l.* 13*s.* 1*d.*. The expenses during the year amounted to 3,580*l.* 12*s.* 8*d.*. Loans repaid and interest on other loans, 1,607*l.* 5*s.* 5*d.*; salaries, rent of offices, printing, &c., 759*l.* 11*s.* 11*d.*; leaving a balance in the hands of the treasurer of 474*l.* 13*s.* 1*d.*. The value of the real property belonging to the society (at cost) was 44,524*l.* 14*s.* 9*d.*, and the general liabilities amounted to 20,446*l.* 12*s.* 4*d.*, leaving assets in the hands of the society to the amount of 24,078*l.* 2*s.* 5*d.*. The report was received and adopted.

Lord Shaftesbury, while expressing his regret at the little progress which had been made in mitigating the evils which it was the object of the society to lessen, said, that bearing in mind that the main object of the society was to provide dwellings for the large masses of the

people who lived from hand to mouth by their daily labour, and who do not realize more than from 12*s.* to 14*s.* a week, it was perfectly clear that 1*s.* 3*d.* a week was as much as such people ought or could pay for their lodgings. The duty, therefore, as well as the principal object of the society was to do everything it could to facilitate the adaptation of existing buildings to the accommodation and means of that large portion of the community.

In respect to the Act of 1866, which insisted upon a certain number of cubic feet to each inhabitant, his lordship observed that if the working population were compelled to observe it, they could only do so by holding a perpetual feast of tabernacles, a state of things not very well suited to the climate of England. There was great difficulty as to the kind of houses to be built so as to let the tenements at a low rent for the poorer class of labourers. On the other hand, he had been recently in a court at the East-end, which was several hundred yards in length, and which he could touch at both sides by stretching out his hands. To live in such a court was like living in a tobacco-pipe. His lordship further detailed some of his experiences, showing the great improvements effected by rendering old buildings comfortable in different localities; and said that 7,000,000*l.* might be collected and expended in thus improving the metropolis without sensibly diminishing the comforts or even the luxuries of those who might contribute to such a fund.

LURKING-PLACES FOR INFECTION IN DWELLINGS AND TOWNS.

In a paper under this heading, recently printed, Mr. Alfred Higginson says,—"Connected with a mine are, it may be, old workings, blocked off more or less imperfectly, and natural cavities or fissures in the strata, always giving off more or less of combustible gases. The atmospheric pressure being suddenly diminished, this cozing of gas is greatly promoted, and, if not counteracted by increased ventilation, an explosive atmosphere is produced in the mine, and waits only the contact of an open light to cause the dread result. Assuming, then, this principle, as clearly proved in the mine on a large scale, I think it admits of being carried usefully into the consideration of other cases, particularly those of our sanitary arrangements in hospitals, private houses, ships, &c. What is true of the old workings of the mine is true of any cavity whatever, which is not closed hermetically from the air, be it a well or cesspool, a vault or coffin, a roof cavity, floor or ceiling, a cavity wall, lath and plaster partition, shut-up closet, cupboard, drawer or box, or even the sewers and drains in our towns and houses. In every one of these instances, a rise of the barometer will cause air from without to be condensed into the interior cavity through all the cracks and crannies; and on the fall of the mercury it will coze out again, pure and simple, or fetid and poisonous, as the case may prove.

My object in this paper is to draw attention to the probable importance, possibly the great importance, of keeping this idea present to the mind of the architects of our houses and hospitals, and to all who are brought in contact with disease of an infectious nature. Let us for a moment picture to our minds a bad case of scarlet fever, in a house where there are many children: all but the sick child are sent away, and when the case is ended the room is fumigated, white-washed, and papered, ere the family return; but, alas! the disease attacks perhaps another, and another, and we dare not say the issue. Where did the infection lie hid? May it not have lurked in some shut-up cavity, from which a low state of barometric pressure caused it to come forth?

In attempted explanation of the spread of disease, we find terms used—"atmospheric influence," "contagion," "infection," "epidemic," "zymotic," "cholera cloud," "fever cloud," "typhus wave,"—all implying that morbid influence has been lurking somewhere, and has shown itself in localities ready to receive it. Whether, in such hiding-places as I have pointed out, morbid matters may gain a greater potency I know not. I am simply desirous that, in our future hospitals and dwelling-houses, these possibilities shall be banished as far as may be.

I have been led into these remarks, in consequence of my attention having been of late directed much to hospital construction, with a view to the building of the new Southern Hos-

pital in Liverpool. Two plans may be adopted to remedy the supposed evil: to have open ceilings and roofs, &c., or to make all such cavities communicate freely with the outer air;—at all events, let them not be shut up, which means, communicating by chance openings with the apartments adjoining."

These observations deserve consideration.

THE HOUSES OF PARLIAMENT.

SIR CHAS. BARRY being blamed for the insufficiency of the size of the House of Commons on special occasions when the attendance is large, the Rev. Alfred Barry properly writes to say the architect had really nothing to do with determining this, and merely followed orders:—

"The dimensions proposed for the House of Commons in Sir Charles's original design were enormously in excess of those eventually provided. The authorities of the House, who knew its practical working, and under whose direction everything was done, were inclined to contract more and more the accommodation proposed, both for the members and for the public, and so reduce the House to a size convenient for the average attendance of members (somewhere about 250) by whom the main bulk of public business is done. Of the two acknowledged evils it was thought that occasional hardship was preferable to constant inconvenience, and on this principle all was carried out under official authority."

Claims for merit as the designer of much of the Houses of Parliament have been again made for the late Mr. Pugin. Persons making this claim (a sort of claim always to be looked at with the greatest suspicion, especially when death has removed the chief person concerned) should refer to the statement made in our pages by Mr. Pugin himself on a similar occasion; to which we could add the recollection of an indignant personal denial by Sir Chas. Barry and Mr. Pugin both.

THE CAPITOL AT ALBANY, CANADA.

Out of three premiums of 1,000 dollars each, offered for the best architectural designs for the proposed State Capitol, at Albany, two have been awarded to Canadian architects,—Mr. Augustus Laver, the architect for the departmental buildings, and Mr. Thomas Fuller, the architect for the parliament buildings, Ottawa. If we remember correctly this last success of Mr. Laver, if he is to carry out his design, will make the third legislative building obtained by him in open competition, viz., Ottawa, Sydney (Australia), and Albany. The nominal cost estimated for the latter building is spoken of as from 12,000,000 dollars to 15,000,000 of dollars! An appropriation was made during the last sitting of the State Legislature for the commencement of this large structure.

GREAT FIRES IN LONDON.

A FIRE, accompanied by a large destruction of valuable property, has taken place in a lofty and extensive pile of buildings in Guildford-street, York-road, Lambeth, in the joint occupation of Messrs. Nickells & Co., india-rubber manufacturers, and Messrs. Myers & Sons, the builders and contractors. The premises, which were five stories high, occupied almost the entire of the west side of Guildford-street, but were connected with the principal works of Messrs. Myers on the east side only by a bridge thrown across the street. The lower portion was used by Messrs. Myers as joiners' workshops, store-rooms for joinery work, and for the machine department of their business. In the rear and at the side of the building were extensive and numerous stacks of timber, some of rare and costly description. Before any engines arrived the whole building, owing to the inflammable nature of the contents, was on fire from basement to roof, and floor after floor kept falling in until nothing but the bare shell of the building was left standing. The origin of the fire is at present conjectured, but it is said to have broken out in the india-rubber works. The loss of property will amount to, it is said, from 50,000*l.* to 100,000*l.*. Amongst Messrs. Myers's property was a large quantity of costly work just prepared for the fitting up of the Guildhall for the reception of the Belgian volunteers and the Sultan. About 100 of the joiners have also lost the whole of their tools, the total value of which was about 2,000*l.* The same factory was destroyed by fire just seventeen years since, and partially destroyed about five years back. The

association of two such combustible businesses in the same premises is unfortunate. Messrs. Myers state that their main works are uninjured, and that the business will be carried on as usual.

The most extensive conflagration that has happened on the Surrey side of the river for many years has taken place in the Old Kent-road. Amongst the premises involved were those of Mr. J. Mason, a cabinetmaker; Mr. Ell, a wheelwright; Mr. Smith, window-blind maker; Mr. Lewis, furniture dealer; the extensive stores of Messrs. Weston & Westall, and several others—the whole forming a block of buildings at least 100 ft. square. These premises were encircled by those of Mr. Carter, a hat factor, and were adjoined by large business premises in the Old Kent-road, and many small tenements in Castle-court, occupied by poor people. The origin of the fire, or whether the sufferers were insured or not, could not be learned.

CHURCH OF ST. LAWRENCE, READING.

The entire restoration of this beautiful old church is contemplated, and the works have been already commenced, under the guidance of Mr. Jos. Morris, of Reading, architect. The church is a fine specimen of Perpendicular architecture, with earlier portions, if we remember rightly. The tower is remarkably well proportioned, and, from its advantageous position at the end of Friar-street, and facing the Market-place, is the most attractive architectural feature in the town. The stonework of the tower is much decayed, and its restoration will cost about 1,000l. It is expected that at least 4,000l. will be needed properly to carry out the whole work of restoration; but as the committee have only a little more than half that amount already promised, the work to the tower has not yet been commenced. The restoration will probably occupy about a year. A curious piece of sculpture, representing "The Adoration of the Magi," has been found imbedded in the north wall. The contract, as we mentioned last week, is taken by Mr. H. Lovatt, of Wolverhampton, who is now engaged upon the railway works at Reading.

CASES UNDER METROPOLITAN BUILDING ACT.

OPEN AREAS.

On the 26th ult., the district surveyor of the hamlet of Mile-end Old Town summoned Mr. Dunk, the builder of four houses in the Burdett-road, before Mr. Partridge, the sitting magistrate, at the Thames Police Court, for erecting the said houses with open spaces in the rear of less than 100 ft. superficial to each (in one case less than 50 ft.), the said houses having rooms back and front, and not being all lighted and ventilated from the street.

The district surveyor contended that under the 29th section of the Building Act the buildings should have in the rear or on the side an open space exclusively belonging to each house of at least of 100 square feet. The defendant pleaded that although the areas were not of the required size, yet in consequence of the back addition being only one story high, and the shops on the ground floor being at present without any partition forming any back-parlour, that every room in each house was lighted and ventilated from a space of upwards of 100 square feet, excepting the said back addition, which, by being altered, and lighted from a skylight above, could be brought into the same category.

The magistrate decided that the 29th section of the Act was not complied with in the erection of the said houses, and ordered the defendant to take down so much of each of the back additions as was necessary to give an open space to each house of at least 100 square feet, such a alteration to be made within a fortnight from the date of the order.

PLAN FOR CLEANSING RIVERS.

SIR,—As you are a great advocate and promulgator of sanitary measures, I venture to send you for publication in your columns, for the consideration of all river conservators, the following description of a plan by which the cleansing of our rivers, and, more especially, the amelioration of the waters of the upper Thames, may be effected by and at the expense of the river-side parishes, which, in greater part, cause their pollution.

I propose that a screen should be fixed along the top of every weir, so as to strain the descending water, and retain all floating matter above. The screen should be little deeper than the sheet of water flowing over, and should extend along the whole length of the weir, less an interval of about 20 ft. At this interval, on the lower side below the edge of the weir, a strainer or filter, in the form of one or more bag nets, or of one or

several perforated boxes, should be placed in such manner as to catch all matter falling over the edge of the weir.

The lock-keeper or a person specially charged with the service should be required to pass along the weir once a day and rake all the floating refuse caught by the screen along and over the edge of the weir into the net or boxes, which should be removed, emptied, and replaced daily. He should also be instructed to rake out the floating matter from the entrance to the lock and collect it with that from the weir, and the parishes on either bank above the lock should be bound proportionately to dispose of the matter extracted.

This daily operation will be found wonderfully efficacious in cleansing the water, and by this simple means all floating refuse would be precluded from descending to pollute the river below. Each river-side parish would collect and utilize the greater part of its own off-scourings, and would not then as now inflict the evil without the good of them on its neighbours.

The screens which it is proposed to erect along the weirs would be little or no impediment to the passage of fish in salmon rivers, as they travel only during freshes, when the screens would be far under water.

CHARLES E. AUSTIN.

CONCRETE BUILDING.

SIR,—I read in the *Builder*, some few weeks ago, of a concrete system of building houses. I have built a house with concrete lumps, which I think far beyond solid concrete walls, because I have a current of air passing between the walls, being in thickness 3½ in. for inside wall, and 3½ in. for outside wall, leaving a space of 5 in. for air-chase, and making my walls 1 ft. in thickness. My lumps are 1 ft. square, well bonded, as header and stretcher. I build all my woodwork in as I go on, as if brickwork. This system will supersede solid concrete walls,—so you would say, were you to see it,—because you can build up quicker, and there is not half the trouble in constructing the walls. This house may be seen already built, near the railway-station, Northfleet, and we are now about more, better than we have already built. They will perhaps look as well as any brickwork fronts, as we intend striking our joints as brickwork, making the blocks smaller, so as to imitate a first-class front of brick.

W. MAY, JUN.

* * A very good house may doubtless be built of concrete blocks; but it would not be a "concrete house" for all that. Moreover, we advise our correspondent not to give himself the trouble of trying to make the front look like anything but what it is.

TAR CONCRETE.

SIR,—I have been laying a quantity of tar-concrete paths lately, mixing boiling tar in certain proportions with gravel; but I find it takes some time to consolidate properly.

Will some of your correspondents be so good as to tell me if putting a quantity of Seyssel or other asphalt with the tar would improve the binding qualities of the concrete; and, if so, how much asphalt I ought to use say in a hoghead of tar?

A SUB.

THE TRAFFIC OVER LONDON BRIDGE.

HAVING seen in your valuable columns at various times accounts setting forth the necessity of further accommodation for the still fast increasing traffic over London Bridge, also suggestions for its accomplishment, and not being aware that the following plan has ever been made public, I ask the favour of its insertion in your paper.

In the first place, the stone parapet to be removed; the paved pavement of footways on each side taken up, and stoned to form part of the roadway, making space for six vehicles instead of four, leaving where the parapet stood to form part of new footway, which may be formed in the following way.—At each pier the masonry projects some feet to form the piers of a new bridge. On the side of these piers place two cast-iron columns, the foundations being already carried up above high-water mark sufficient to receive them. On the top of the columns and piers lay plates of iron, having a bearing also on the side of the bridge, the whole to be properly tied together, and the paving raised, presenting the same finished surface as at present, with an open iron parapet in the place of the existing one.

The approaches at both ends may be made to the required width without any buildings being removed, which, in point of economy, is favourable to the widening of the present structure.

EDWARD J. DUNNAY.

* * The general proposition has been often made before. We insert the letter for its specific proposition of means.

WORKING MEN IN WREXHAM.

SIR,—I should like to make a few remarks with reference to a paragraph in a recent number of your paper. Wrexham, although a town of only about 8,000 inhabitants, is, on the whole, a thriving and a prosperous place, having in its immediate neighbourhood iron, coal, and lead mines, as well as valuable stone quarries; and to prove our past prosperity, I can vouch that upwards of 25,000l. were expended in the building trade within the town during the last twelve months; yet, although so much was done in time past, at the present time there is not a prospect of one-fourth the number of buildings to be erected this year as last year. There is not a contract of 500l. in the hand of any builder in the town. During our unusual prosperity, or rather at the close of it, the joiners, or somebody on their behalf, issued a printed notice, that on the 1st of June they would leave off at one o'clock on Saturdays, instead of four o'clock, the usual hour; it was signed "Carpenters and Joiners of Wrexham." As the masters knew that three-fourths of the carpenters and joiners of Wrexham were non-union men, they did not take any notice of the message sent them, treating the matter as others did. "The Three Tailors of Tooley-street,—We, the People of London," particularly as the non-union men declared that they neither would take, nor wanted, what was asked for. Up to the 1st of June not a word was said to the employers by the men as to what they would do; all believed that even the union men, under the present circumstances, would never be so unwise as to attempt a strike for what they wanted; however, it is now a fact, and Mr. Last, of Manchester, who came here to harangue the men for their heroism and pluck, made them believe that they were all right, and the masters all wrong; and, from their actions since, we judge that he gave them private instructions to stay all the union men, which they do as many as they can for 14s. per week. It is rather ridiculous to see that many men who do not care for work at any time, and would almost rather starve than work, by going to the union men and saying that they will go to work, are bought up at once at the regular price. It is true that those who are partly masters and jobbers or journey-men, just as it happens, have consented to the men's requests; but the leading master-builders hold out, and are not much inconvenienced, for there are plenty of non-union men about; only just at present they are rather timid and afraid of having any disagreement with their fellow-workmen. What has been done will gain nothing for the men in the end, but will bring poverty and distress on their families.

HUGH DAVIES.

THE ARCHITECTURAL ASSOCIATION.

The concluding meeting of members for the session 1866-67, was held on Friday evening (21st ult.), at the House, in Conduit-street; Mr. Edis in the chair.

On the motion of the chairman, votes of thanks were passed to the Dean and Chapter of Rochester, for their kindness in allowing the members of the Association to inspect the cathedral; and to Mr. F. Cookerell, the architect, and Mr. Dudley, clerk of the works at Freemasons' Hall, Great Queen-street, for a similar privilege in respect of that building.

The report of the scrutineers in reference to the nomination of office-bearers for the session 1867-68, was brought up, and the following gentlemen were found to have been elected:—President, Mr. R. Phene Spiers; Vice-presidents, Mr. E. G. Tarver and Mr. Laoy W. Ridge; Committee, Mr. R. W. Edis, Mr. G. H. Birch, Mr. E. C. Lee, Mr. J. Tarvernor Perry, Mr. L. C. Riddett, Mr. Rowland Plumbie, Mr. Henry Jarvis, Jun.; Mr. T. H. Watson, Mr. C. Henman, and Mr. R. H. Carpenter; Hon. Treasurer, Mr. J. Douglass Mathews; Solicitor, Mr. F. Truett; Auditors, Messrs. Banker and C. W. Brooks; Curators and Librarians, Mr. L. C. Riddett and Mr. W. Frower; Hon. Secretaries, Messrs. J. D. Mathews and J. S. Quilter.

Professor T. Hayter Lewis then read a paper "On Mosaics," printed in our last number. At the conclusion,

Mr. Spiers observed, that the subject of the paper was of especial interest at the present moment, in consequence of the more general introduction of mosaic work into our ecclesiastical architecture. If the principles, too, which Mr. Lewis had laid down were followed, the rising generation of architects might learn to avoid the mistakes and extravagances which often disfigured the modern style of mosaics. The mosaics produced at Rome and at Florence were of a very superior description, and an immense amount of labour was thrown into them. A series of portraits of all the popes was now in course of execution for a church just outside the walls of Rome, but as they were shown at a height of 50 ft. from the ground much of the labour expended in the production of them was thrown away. In England, however, we appeared to go to the opposite extreme in economising labour and care, as some of the mosaic displayed in the reredos of new churches was so coarsely executed that the joining could be seen at 250 ft. from the floor. He hoped the necessity of good drawing would be kept steadily in view, for all architects, whether they belonged to the Gothic or the Classic school, must be agreed that perfection in this respect was abso-

Intely essential if the art of mosaic decoration were to be revived in this country.

Mr. T. H. Watson observed that, although in very early mosaics the outlines of the drawings might be crude and formal, it should be recollected that in those days there were few if any capable artists. The motive and intention were, however, good, and in many instances the straight lines referred to by Mr. Lewis were very effective.

In reply to questions from Mr. Tarver and others, Professor Lewis explained the manner in which the early artists got the outlines of their figures, and observed that he had seen some modern mosaics in which the jointing was so rough that the cement appeared in lumps as big as the mosaic itself.

The Chairman considered it matter for congratulation that the subject of wall decoration, whether by means of frescoes or mosaics, was receiving so much attention, and that the members of the Association had been enabled, through the kindness of erudite persons, to hear so much that was useful, practical, and interesting on the subject. He feared it would be difficult to get as good drawing for our modern wall decorations as the ancients appeared to have had; but it was gratifying to think that in proportion as the arts of fresco and mosaics were encouraged, good draughtsmen would be induced to turn their attention to them, so that eventually something approaching to perfection might be reached. The public were indebted to Signor Salvati, and to Mr. Powell, for their exertions in the promotion of glass mosaics. Much had already been effected by their exertions in improving and elevating the public taste, and in eliminating the vulgar trading notion that mosaic and other wall decorations were to be obtained for so much per foot super.

PROVINCIAL NEWS.

Hartlepool.—A new temperance-hall and reading-room have been opened at Seaton Carew, near West Hartlepool. The building has been erected from the designs of Mr. G. G. Hoskins, architect, Darlington. The style of the building is Early English. The founder is Mr. Edward Backhouse, of Sunderland, who gave the site, and has subscribed nearly the whole of the cost.

Nottingham.—The memorial stone of a new Congregational Institute, on Nottingham Forest, intended for the use of the Independent denomination in the midland district, has been laid. The building will overlook the great valley leading to Annesley, Newstead, and Mansfield. The site is upon an eminence on the south side of Forest-road, not far distant from Mount Vernon. The building will accommodate from 80 to 100 students. The committee having invited architects to compete, selected the design of Mr. R. C. Sutton, of Bromley House, from which the building is now being erected. The frontage to the building will extend about 130 ft. Mr. Sutton has adopted the Gothic style of the fourteenth century. The materials are red bricks with stone dressings. On the ground floor the Institute will contain a large entrance-hall, staircase, reception-room, two large class-rooms, and library. On the second-floor will be the lecture-hall, a large room, 60 ft. by 30 ft., with open timbered roof. The houses for the principal and tutor will be situated at either end of the building. According to the plans the front will be well broken up, and the Gothic windows deeply recessed. Bands of black brick are carried at intervals along the brickwork. A porch stands out at the entrance to the main building; on either side are two Gothic tracery windows, and above a band of ornamental brickwork, surmounted by five upper windows. The centre one is a three-light tracery window running into a gable, which forms the central feature of the building. The high-pitched roof is surmounted by a bell-turret of ornamental design. The total cost, exclusive of land boundary walls, is about 3,000l. Messrs. Bell & Wood are doing the stone and brick work, and the woodwork is entrusted to Messrs. Stevenson & Weston, both Nottingham firms.

Nynehead.—The foundation stone of a new vicarage-house has been laid in this parish. Nynehead has hitherto been without a resident minister, and to remedy this disadvantage a new house is to be erected for the Rev. W. H. Walrod, vicar. It is to be built by Mr. Davis, of Tamton, and plans prepared by Mr. Hayward, of Exeter.

CHURCH-BUILDING NEWS.

Redhill.—It has been resolved at a public meeting that the district church of St. John, Redhill, shall be enlarged. Subscriptions amounting to 1,184l. were given at the meeting. The total cost of the work will be 3,000l. There will be 536 additional sittings obtained by the alterations. Mr. Heskeith is the architect employed, but his services will be gratuitous, and he subscribed 100l. towards the work.

Blaisdon.—The parish church has been re-erected and opened for divine service. Mr. Kempton, of Horsford, was the architect; and Messrs. Collins & Collis, of Tewkesbury, the builders. The new church consists of a chancel, nave, north aisle, organ chamber, and vestry, and is 14 ft. longer than before, extending over several of the gravestones. The length of the nave is 42 ft. 6 in., that of the chancel 24 ft. Tiles, bearing the initials of those buried in the tombs included by the increased length, are to be placed in the chancel floor. The material of the building is red Forest stone, with Bath stone dressings, and there are buttresses of the same material. The roof is covered with grey Cornish slate. A spiral roof, surmounted by a weather-cock, has been added to the tower. The porch has freestone seats, windows, and a double foliated iron gate. Inside, there are an open roof of stained deal and a floor paved with encaustic tiles. The chancel arch is moulded, and has carved terminations, executed by Mr. Purday, who has had this department throughout. On one side is the convolvulus leaf, on the other are birds and fern-leaves and other foliage. The screen dividing the chancel from the organ chamber consists of a column and two arches with carved capital and corbels. In the nave there is an arcade of four bays; the capitals of the columns are sculptured in ferns, ivy-leaves, and passion-flowers. The columns are of a hard lead-coloured stone. There are three windows on the south side of the nave, five in the north aisle, two side-lights for the chancel, and two for the organ chamber, on the north side of the chancel. The east window consists of three lights, with tracery; and it has pillars with carved capitals. The seats are oaken and open; those of the aisle are the old ones restored. The seats are free. The church is heated by hot-water pipes beneath the floor, provided by Mr. Magness, of Stoke Edith. The organ was given by Mr. Edmund Boughton, of Birmingham (formerly Mayor of Gloucester), whose family name appears upon many of the tablets. The floor of the belfry has been renewed and lowered, and all the old tablets have been removed to the walls beneath.

Ozenhall (Gloucestershire).—The body of the church has been rebuilt from a plan in keeping with the original structure. The parishioners, great part of them day labourers, agreed to a rate for the repair of the tower. The work has now been accomplished: the contract has been carried out by Messrs. Spring & Son, of Painswick. The amount spent has been 925l. The building consists of nave, chancel, and a vestry on the north side of the chancel. The style is the Decorated of the fourteenth century. Inside, the roof is of open timbers of varnished red deal. The deal pews are low and open, with double ledge, and hat-pegs beneath the sloped seats. The number is twenty-one, and each will accommodate six persons. Seats are also to be placed in the chancel. The seats for school-children are under the tower. The flooring of the nave is now common Forest stone—that of the chancel, tombstones: both will be covered with ornamental tiles when funds are provided. All the windows are Geometrical. There are three on one side the nave, two on the other, and also a baptistery window, filled with rolled cathedral glass, with green margin: each has two lights. There are also three windows in the chancel, besides the large east window: the minor arches are of Forest and Painswick stone alternately, and in the centre of each is a block for carving. The chancel arch springs from two caps carved with passion-flower and water-lily, supported by serpentine columns resting on carved corbels of Osen stone. The sculptor was Mr. Poulton, of Worcester. The walls are stained with a brown wash. Outside, the roof is of Broseley tiles, black and grey intermixed. All the dressings, except the weatherings of the buttresses, are of Painswick stone. The new building is several feet longer than the old one. The east window is a memorial of the late Mrs. Onslow. The stained glass was supplied by Messrs. Hardman, of Birmingham. The stone

work was carved by Roddis, of Birmingham. The church is dedicated to St. Anne, and the subjects of the three lights of the window illustrate her life.

Clapham.—St. Stephen's Church, Clapham Park, has been consecrated by the Bishop of Winchester. The church, which has cost 6,000l., will provide sittings for about 600 persons.

Bristol.—At an influential meeting held in Bristol, a resolution moved by the bishop of the diocese, adopting reports for the adding of a nave to the cathedral, has been passed, and subscriptions have been announced amounting to nearly 14,000l.

Clifton.—The chapel which has been erected within the grounds attached to the Clifton College has been opened for divine worship. This chapel has been built chiefly by the late Mrs. Guthrie, who was engaged in raising it as a memorial of her deceased husband, Canon Guthrie, when she herself died. The architect of the building was Mr. C. Hanson. The whole of the stained-glass windows are gifts. Mrs. Guthrie gave 4,500l. for the erection of the building; the college will spend about 1,000l. upon the tower; and the additions to the structure will bring the total cost to near 7,000l.

Brompton, near Northallerton.—The church here, one of the oldest in the neighbourhood, has long been in a dilapidated state, and it has been decided to restore and enlarge it, under the direction of Mr. Ewan Christian, of London, architect. The inhabitants are chiefly handloom weavers and unable to contribute much to the funds, but over 800l. have been already promised towards this object: it will require about 1,300l. if the alterations contemplated are fully carried out. The foundation-stone, having been displaced in carrying out the extension, has been relaid. After which the committee, the contractors (Messrs. Metcalfe & Thompson, Northallerton), and the workmen partook of a dinner in the Mechanics' Institute.

Birmingham.—The foundation-stone of the new church, hereafter to be called St. Lawrence's, and to be erected in Dartmouth-street, St. Matthew's parish, has been laid by the Bishop of Worcester. This is the first church to which a grant has been made out of the Ryland Fund, and the amount voted by the trustees is 4,000l. The contract cost of the building is 3,199l., but the purchase-money for the site, architect's fees, and other expenses, will absorb the whole of the present available funds, and leave a deficiency of about 1,500l. The church will comprise a clearstoryed nave, side aisles, a small chancel, and a saddle-back tower over the vestry at the north-east corner of the building. The length of the church will be 95 ft. 6 in., and 55 ft. 8 in. across the nave and aisles. There will be a small west gallery. The building will be of brick, with the tracery of the windows of Corsham Down Bath stone. Externally the bricks will be the ordinary red, with blue bricks, strings, &c., and internally faced with white bricks, with red bricks disposed in patterns. The church will accommodate 753 adults, 403 of the sittings being free. There are schools to be erected at the west end of the church. Mr. J. A. Chatwin is the architect, and the church is being erected by Mr. Charles Jones, of Birmingham.

Upton.—A new church, which is dedicated to St. James, has just been built in this parish, and consecrated. The church has been erected almost entirely at the expense of Colonel Ferguson Davie, of Bittescombe House, and the site was given by Sir Henry F. Davie, bart., of Creedy Park, near Crediton, who is the chief landowner. The building consists of a nave, chancel, and vestry, and is capable of accommodating about 180 persons. The style adopted is Early Decorated Gothic; there is a bell-turret over the chancel arch, and a deep wooden porch on the north side facing the road. The stone of the neighbourhood has been used for the walls, with Bath stone dressings. The floor is laid with Minton tiles; and the windows are filled with stained glass of various designs, supplied by Mr. Wailes, of Newcastle. The entire cost has been about 1,400l.

Dunston.—The parish church had fallen into such decay that it was determined, on the suggestion of the rector, either to restore the building or thoroughly to rebuild it. The advice of an architect being taken upon the subject, the latter course was advised, and it was determined to rebuild on the old site a church similar in size and in character, retaining in its construction the old windows, arches, and other architectural features, as well as using, as far as possible, the old materials. Accordingly, the

building, excepting only the tower, has been entirely taken down, and the foundation-stone of the re-built edifice laid by Lady Saye and Sele. The floors will be entirely new; the seats will be of wood; the passages between being paved with encaustic tiles from the manufactory of the Messrs. Godwin, Lugwardine. The seats in the nave, the pulpit stalls in the chancel, and the altar-table will all be new, as also will the roof. The latter will be open from within, and having plaster between the rafters; outside, it will be slated; and at the east end will be a gable, surmounted by a Greek cross. The wood-work in the interior of the church will all be of red deal. The walls will be finished with stone ashlar, from the quarry of Sir Edwin Stanhope, at Bullingham. New windows will be placed in the tower, and it is hoped that the funds will allow of the erection of a new arch dividing the tower and nave. There will be a new triple lancet window in the east end of the church, and an organ-chamber and vestry on the north side of the chancel. The church will be heated with Birmingham's heating apparatus. The style of the architecture is Early English, or of the period of the thirteenth century, about which time, it is supposed, the old church was erected. The architect is Mr. F. B. Kempson, of Hereford, and the work is being carried out by Mr. J. Stone, of Fownhope.

Seal.—A new church has been erected in one of the most isolated parts of the parish, the hamlet of Underderriver, by Mr. J. R. Davison, Q.C., of Underderriver House. Mr. Davison engaged the services of Mr. Scott, architect, who prepared plans, and a site was chosen upon the estate in immediate proximity to the old school-room. The contract was taken by Mr. Constable, of Penshurst, builder. The little church is Gothic in style, of Kent rag-stone with Bath dressings. The roof is open, with the rafters stained and varnished, and the chancel arch is of Bath stone. There are sittings for about 130 persons, the choir being placed in the chancel. The seats are open, of stained deal, and the total cost has been about 2,500l.

Droitwich.—The foundation stone of a new mortuary chapel has been laid on a site purchased for the enlargement of the burial ground. Mr. John Smith is the architect, and Mr. J. Priddy the builder.

Mayland (Essex).—A new church has been consecrated here. The edifice, which stands on an elevated site, is a small building in the Early English style, with accommodation for 200 persons, and has been erected at a cost of 1,500l., from designs by Mr. Hardwick, of London; the builders being Messrs. Hill & Son, also of London. The building consists of nave and chancel, with south porch and vestry attached to the north side of the chancel. The nave has an open timber roof, that of the chancel being boarded. The church is lighted by lancet windows with trefoiled heads. The triplet at the east end of the chancel is shafted internally, in order to give a somewhat richer effect to this portion of the building. A bell-gable rises above the chancel arch, and forms the most prominent feature of the exterior of the church. A little memorial east window has been presented by Miss Tatham; the chancel windows by the churchwardens; and a window by Mr. Arthur Powell, almoner of St. Bartholomew's Hospital; while the gift of the west window has been defrayed by small contributions in the neighbourhood.

Fremington (North Devon).—The parish church has been restored. On removing the debris from under the seats portions of the ancient stone pulpit were discovered. These were collected and put together again, and the missing portions replaced. The east windows have been filled with stained glass by Messrs. Ward & Hughes, of Soho. The chancel window is the gift of the Rev. T. B. Robinson. The subject is the Ascension. The font is of Caen stone, the gift of the Vicar, the Rev. J. T. Pigot (by whose exertions the restoration has been effected); it is carved with the emblems of Baptism and lifted, by Puleford, who also executed the pulpit and stone-work generally. The seats are of fir, stained and varnished; they are all open and unappropriated. The total cost is about 1,700l. The work has been carried into effect by Messrs. Dendle & Puleford, of Barnstaple, from the designs of Mr. G. G. Scott; Mr. Thos. Leigh was the clerk of the works.

Moughtrey (near Newton).—The parish church being in a dilapidated condition, it was decided to shore up and prop the fifteenth-century roof during the process of rebuilding

the walls, which was satisfactorily accomplished. The roof has been restored where necessary, cleaned, and related. A red sandstone perpendicular three-light window on the south side of the chancel has also been repaired, a vestry and south porch have been added, and a stone bell-turret erected at the west end of the nave. The stone used for the new windows and dressings was from Cefn and Pecknall. The east and west windows are filled with stained glass, by Messrs. Clayton & Bell, and Wailes. The open seats, pulpit, and altar-rail are of oak; the chancel fittings are temporary. The floor of the chancel is paved with encaustic tiles. The accommodation is for about 140 persons. Mr. E. Haycock, jun., of Shrewsbury, was the architect, and the works have been carried out by Mr. Davies, of Newtown, and Messrs. Morgan, of Llandinaw, at a total cost of about 1,100l.

Eton.—St. John the Baptist's Church, Eton-wick, has been consecrated by the Bishop of Oxford. The site of the edifice is on the road leading from Eton to Dorney. The architect was Mr. Arthur Blomfield, of London; and the church has been erected by Mr. Giles Holland, of Thame. It has cost about 1,500l., and will seat 200 persons. The church, the architectural style of which is the Second Pointed, consists of a nave, choir, and chancel, with small south transept. The roof of the nave and choir is open timbered; the chancel is sealed. The edifice is brick built; black bricks are used in ornamentation; and there are stone dressings to the windows, doorways, &c. The windows are filled with neutral tinted glass; the east and west windows are each of three lights. Beneath the east window and above the altar, there is a stone structure, carved, in the form of an arch with pediment, enclosing a large golden Cross of Calvary, at the intersection of which there is a representation of the Lamb of God. This is the most prominent feature in the ornamentation of the church, and upon entering at first sight it appears as though the cross stands upon the altar.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Thirsk.—In this town a new Catholic chapel has been opened. It is in the Early English style, with nave and apsidal chancel; the former 64 ft. by 25 ft., and the latter 19 ft. by 17 ft. The roof is an open-timbered one, stained and varnished. The benches are of stained deal, and are uniform in design with the roof. In the centre of the west gable a bell-turret is carried up from the ground; iron finials surmount the turret, porch, and apsidal roof. The chancel ceiling displays panelings formed by moulded plaster ribs. On the south side of the chancel is the sacristy, between and connected with the presbytery and church. The altar is of Painswick stone, the front showing three panels, divided by columns of Devonshire marble; alabaster caps crown the columns. The gallery, which is on the west end, has a perforated panelled front; the canopy and pinnacle are also of Painswick stone. The tabernacle is of iron, highly gilt and ornamented. North of the altar stands a statue of the Virgin, of Painswick stone, with marble columns. Two stained-glass windows are in the west end of the church, and one on the east end, the gift of an inhabitant. Exclusive of the gallery, the church will accommodate 300 persons. The materials of the building are local brick, with stone facings, and bands of red brick and black brick, and a moulded brick cornice. The iron finials were supplied by M'Farlane, of Glasgow. The entire cost of the structure, fittings included, will be about 1,600l. Mr. W. A. Bourne, of Thirsk, was the architect; and Messrs. Wright & Son, of the same town, were the builders.

Liverpool.—The New Catholic Chapel of St. Joseph has been opened. The building is of Gothic character, light in style. The materials are of brick, with stone dressings, and is flanked with buttresses alternated with narrow lights. The gable is lighted by an oriel window with eight quatrefoils around the circumference of the central light. The presbytery is in course of erection, and is square in form, and a small corridor will connect it with the sanctuary and vestry of the church. The principal entrance is from the west. The mean thickness of the wall is 18 in. A centre and side door open into the porch, which have two windows looking into the church. There are no aisles or screen to the sanctuary. The ceiling is lofty, and is sup-

ported by pentagonal beams. The walls are relieved by six windows on one side and five on the other, on which are represented the Stations of the Cross. A choir is provided for on the left of the entrance. The seats are of pitch pine, and are of light construction. Ventilation is secured by the usual appliances in the roof, and hot-air pipes are laid under the entire length of the nave. At the opening of the sanctuary on the left is placed a small pulpit platform; and on the opposite side are doors leading to the vestry and presbytery. The altar is simple, and is approached by three steps. It has pilasters, and the whole is done in imitation of marble. A tabernacle, large brass candelabra, and an altar-lamp, complete the altar ornaments. The western gable is surmounted by a belfry-spire, containing a large bell, the gift of a former pastor of the district. The building was erected from the designs of Mr. E. W. Pugin, and is in close proximity to the Birkdale Park railway-station.

Gloucester.—The chapel in this city, designed by Mr. Gilbert R. Blount, of London, was opened about four years ago. It was then in an unfinished state. Since that time additions have been made, and the completion of the building, as originally designed, has now been commenced. It is intended to add two additional bays to the aisles and nave, and to erect a tower 70 ft. high, with a spire of 80 ft., at the street end of the south aisle. The nave will be lighted by a large wheel window, and the new works will extend in a line with the adjacent houses. The entrance will be under the tower, and the organ-gallery will be at the end of the nave facing the chancel. The work is being carried out by Messrs. Wingate & Sons, who built the church.

SCHOOL-BUILDING NEWS.

Irthlingborough (Northamptonshire).—The new schools just completed have been opened by the Bishop of Peterborough. They are of a simple design, and consist of boys' and girls' schools, each 42 ft. by 20 ft., arranged to form one large room; an infant school-room, 30 ft. by 18 ft.; and two large class-rooms, with detached residence for teacher. They are situated in the centre of the village, the site, of large area, being about 6 ft. above the level of the road. They are built of the local stone, with Ancoaster stone quoins and mouldings, the roofs being of open timbers, stained, and covered with grey tile made in the district, with a lofty bell spire. The cost of the whole was about 1,400l. The building has been erected by Mr. Allen, from the designs of Mr. Joseph Peacock, of London.

Hertford.—The new Green Coat School-house, adjoining the Cowper Testimonial School, is approaching completion. It is a simple Tudoresque structure. The building contains a school-room, class-room, &c.; and there is also a house for the master. The whole is enclosed by a wall. The cost of the building, including stoves and school furniture, will be about 800l. The architects are Messrs. T. Smith & Son, and the builders, Messrs. Ekins.

Nottingham.—A new school has been opened in the populous district of Sherwood-street, on a plot of ground which faces Colville-street. The school has been erected from plans by Messrs. Jackson & Heazell, architects, Nottingham, the builder being Mr. Daunt. The building consists of one good-sized room, 45 ft. by 20 ft., and a class-room, 21 ft. by 16 ft., the latter being connected with the principal room by a folding-door, so as to increase the space when required for meetings. It is a plain Gothic building, with high-pitched open roof, and will afford accommodation for about 120 children. The cost of the land was about 300l., and the total outlay, including that sum and the cost of the necessary fittings, is about 850l.

DISSENTING CHURCH-BUILDING NEWS.

Bally.—The memorial stones of a new Wesleyan chapel have been laid. The edifice will present an end elevation to both the Sheffield and Tickhill turnpike roads. The entrance to the school-room is 37 ft. by 30 ft. by 12 ft. high; also to two class-rooms, 13 ft. by 10 ft. each, will be from the low-level or Tickhill-road. The chapel will be entered from the high-level or Sheffield-road, and will be 42 ft. long by 37 ft. wide, and 25 ft. high to the collar. The edifice is of Classic

character, and built of red bricks, with white brick bands, arches, and other ornamental architectural features, and with stone dressings. All the constructive timbers in the interior of the building will appear to view, and will be stained and varnished. The pewing and fittings of the interior will be of red deal, also stained and varnished. There will be staircases to communicate from the chapel to the school-room and vestries or class-rooms. The chapel will accommodate 230 persons. The entire cost of the whole when completed will be about 775*l.*, and is being carried on by Mr. Harold Arnold, of Doncaster, builder, from the drawings and specifications, and under the superintendence of Mr. William Watson, of Wakefield, architect.

Blandford.—The memorial stone of a Congregational chapel, with schools, class-rooms, and vestries, has been laid on the site of the old chapel. Mr. Street, of Warminster, is the architect; and Mr. W. Walden, builder, of Christchurch, the contractor. The design is Early English.

Cannock.—The Wesleyans of the district have erected a much more commodious place of worship than the one hitherto used by them, and it has just been opened for divine service. The building, which has been erected from plans of Mr. S. Johnson, of Wolverhampton, architect, is Gothic in design and a parallelogram in form, and is of red and white pressed brick, with buttresses, and Attleborough stone dressings. The central window is filled in with tracery and stained glass, and there are three double and two single lancet-headed windows on either side. The internal dimensions are, 63 ft. long, 36 ft. wide, and 30 ft. high, the main timber of roof, as also the fittings throughout, being of deal stained and varnished. The seating on the ground-floor (all open stalls) will accommodate 290, and a gallery at the back will seat 116 more. The vestry is underneath the gallery, with store-room and stairs to heating-vault. The chapel is lighted with gas by star-lights from the roof, and is heated with hot-water apparatus, provided by Mr. Jellyman. The builders were Messrs. Reynolds & Peake, of Cannock. The cost of the building and land amounted to nearly 1,200*l.* The old chapel, which is but a short distance from the new building, will be used for schools, &c.

Wombwell.—A new Congregational Chapel has been opened at Wombwell. The total cost of the building, including the site, was about 2,000*l.* The building comprises, besides the chapel, a large school-room, vestries, &c., underneath. There is sitting accommodation for about 600 persons.

Cardiff.—The foundation stone of a new Congregational chapel, in Hannah-street, has been laid. The building is to be in the Grecian style. It will cost about 8,000*l.*, and, besides giving accommodation to about 700 people, will contain two school-rooms beneath.

Chester.—The foundation-stone of the Catholic Apostolic Church in Upper Northgate-street was laid on the 17th ult. The building will comprise nave with baptistery, lower choir with organ-chamber, and chancel with upper choir and sanctuary. The vestries will be on the north side of chancel, and the tower at the south-east angle of nave and chancel. There will be a narthex to the entrance at the west, and space is left on the site for the future erection of the sacristan's house. The nave will be divided externally into five bays, the lower spaces between the buttresses being filled in with sloping brickwork, forming a base to the whole building. There will be tracery to the east and west windows, those to the nave being coupled lancets. The dimensions of the nave, internally, are 33 ft. wide by 72 ft. long. The roofs will be open timbered throughout, that to the nave in single span, with curved ribs to the trusses. The style of architecture is Early Gothic, and the material red brick and stone, with bands of blue bricks. The architect is Mr. Oliver Ayliffe, of Manchester; and the contractor Mr. Thomas Hughes. The present contract is for the nave and entrances only.

Nottingham.—A new chapel for the Swedenborgians has been opened for public worship in Blue-coat-street, Nottingham. It is a brick and stone structure, of Early Pointed character, with open timbered roof and stalls of stained deal, and will seat upwards of 200. Underneath is a school-room, of the same area as the chapel, both being heated by hot water. Mr. James Acton is the builder, and the works have been carried out from the designs of Mr. John Smith Norris, architect. A three-light stained-glass window at the chancel end of the building, to

the memory of deceased relatives of certain members of the church, has been carried out by Mr. B. Wheeler, a local tradesman, to whom, with the aid of his foreman, James Humphrey, the arrangement and execution are, we believe, due. The works have been carried out at a cost (exclusive of the site) of about 1,100*l.*

Driffield.—The new Congregational Church, erected on the site of the old Independent chapel built in 1803, has been opened. It is from the designs and plans of Mr. H. J. Paull, architect, Manchester. It is in the Italian Gothic style. The front elevation terminates in an acutely pitched gable, surmounted by a St. Andrew's cross. There are two entrances, with stone porches, and six windows, three and three. It is built of red brick, relieved with white brick string-courses and stone dressings. The shafts of the stone columns are of red Mansfield stone, and have carved capitals. On the ground-floor are three rows of open stalls. A gallery extends the whole circumference of the chapel, and has circular ends with low fronts, and relieved by the insertion of open ornamental ironwork under the top rail. The seats in the gallery are all open, and at the end facing the pulpit ascend to a considerable height. At the opposite end is a recess for a new organ, which is in course of building. In consequence of the site of the church being blocked up on both sides by existing buildings a difficulty presented itself in obtaining the necessary lights. This has been overcome by the architect, who has introduced eight ornamental lights in the roof. Gas has been introduced, and the gallery is lighted by four gaseliers. The church is capable of seating 600 persons, and has cost nearly 15,000*l.*, of which 900*l.* have already been subscribed.

Books Received.

Studies from the Antique, and Sketches from Nature. By CHARLES MACKAY. Second edition. London: Virtue. 1867.

THE power of the true poet over a people,—may, over all peoples in course of time,—is immense, for good or for evil. The cheering strains of Dr. Mackay rouse the backwoods-man of Canada like the Voice of inspiration, and in our own country have often created a *furor* of popular favour. The power of the Legislature—may even of the preacher—is, indeed, as nothing compared with this power when happily exercised for good as it has been by Dr. Mackay. The present volume is not quite of that stamp which is destined to so excite the popular mind, although it does contain amongst the songs appended one or two which may yet become popular, if not so much so as "Cheer Boys, Cheer," or "There's a Good Time coming, Boys, wait a little longer." The *Studies from the Antique* are not quite mythologically orthodox, but we dare say no one will look for the true meaning of ancient myths in the pages of the poet who modernises them. They have afforded Dr. Mackay themes for many happy thoughts, and increased the debt already due to him.

Miscellanea.

A MONSTER BLAST.—A few days ago Messrs. Briggs, of the Salt Lime Works, Clitheroe, fired an immense blast. Two tons of gunpowder were placed in the mine prepared by the men, and the explosion which followed the lighting of the train resulted in the displacement of about 20,000 tons of stone.

THE SIDDINGTON STAINED GLASS IN CIRENCESTER CHURCH.—The Vestry of Cirencester have resolved to restore to the church of Siddington the Langley memorial stained glass, which was taken by licence from Siddington church, and has now been partly removed from the east window, where it was placed.

DEATH OF HORATIO McCULLOCH, R.S.A. OF SCOTLAND.—Mr. Horatio McCulloch, the chief of Scottish landscape-painters of our time, has died at his residence, St. Colm Villa, Trinity, near Edinburgh. All who knew his works will read this announcement with regret. Mr. McCulloch had, in course of the last fifteen years, four shocks of palsy, the last of which killed him. He was born in 1805, in Glasgow, of poor parents, and was named Horatio on account of his birth taking place on the day of illumination for Nelson's victory at Trafalgar.

THE METROPOLITAN DRAINAGE WORKS.—In the Commons, recently, the Marquis of Townshend moved for a select committee to inquire into the petition of Mr. J. J. Morewood with respect to the piracy of his plans for the main drainage of the metropolis by the engineers of the Board of Works, and praying for compensation. The Duke of Marlborough said that Mr. Morewood had not established a case for an inquiry. The matter had occupied attention for some years, and if a committee were granted, 130 other persons might bring forward similar complaints as unfounded as those of Mr. Morewood. The motion was rejected by a majority of 42 to 8.

ARCHITECTURAL EXHIBITION SOCIETY, CONDUIT-STREET.—On Tuesday evening, the 25th ult., a lecture (in connexion with the Architectural Museum) was delivered at the galleries of the Society by Mr. Edmund A. Freeman, M.A., entitled "Notes in Normandy." After a few introductory remarks by the chairman, Mr. F. H. Dickinson, the lecturer commenced by noticing some striking points of resemblance between English and Norman buildings of early date. He then gave a rapid account of most of the important churches and other buildings in the country, and illustrated his remarks by a large number of sketches. In conclusion, he impressed upon his audience the necessity of understanding the political history of the country if they wished thoroughly to master the architecture.

GAS.—In his recent lectures on coal gas, Dr. Frankland said: "Representing the London gas by 12, that of Birmingham is 15, Manchester and Liverpool are 22, Inverness is 25, Edinburgh, Glasgow, and Greenock are 28, Paisley and Hawick are 30, and Aberdeen is 35. From this it appears that the illuminating power of London gas is the lowest of all, and that in some towns and cities in Scotland the gas gives twice as much light as in London. Besides, the more the Londoner tries to increase his light the more does he contaminate his atmosphere. Dr. Frankland says that London gas was better sixteen years ago than at present: the new system of purification used by the companies leaves the gas weak and deleterious, and he warns them to amend their practice."

KNIGHTSBRIDGE BARRACKS.—An influential deputation of the inhabitants of Knightsbridge has had an interview with Sir John Pakington, to urge upon him the necessity of removing Knightsbridge Barracks, as an intolerable nuisance to the locality. Mr. Lowe described the head-quarters of the Household Brigade as an isthmus of barbarism. Lord Alfred Spencer Churchill followed, with two weighty memorials. Sir John, in his reply, said that the residents had come to the barracks, and not the barracks to the residents, and expressed his belief that, although now architecturally an eyesore, they were susceptible of improvement. He alluded to the Hyde Park affair as constituting a sufficient reason why cavalry should be within easy reach of the authorities. He professed himself struck with a suggestion made by Mr. Lowe that Chelsea Hospital should be converted into a barracks, and the pensioners sent into the country like their brethren at Greenwich. Finally, he said that, while the Government were disposed to retain Knightsbridge Barracks, they would reconsider the matter.

PHOTOGRAPHIC PROGRESS IN SAN FRANCISCO.—The San Francisco *Morning Call* says that Dr. Isaac Rowell and Francis E. Mills, of that city, have been granted a patent for a new mode of mounting photographs for exhibition. They have given the name of "anthroposcope" to their new invention. The nature of it consists in carefully divesting the likenesses of all those portions of the card, paper, or other opaque substances representing background, and not essential to the image which it is desired to preserve, and substituting therefor a background placed on another plane, diverging upward from the plane of the likeness, and intersecting the latter at the feet. The effect of this arrangement is that when viewed with both eyes through a magnifying lens, the receding landscape, the approaching foreground, and the double image, corresponding to the view of the natural objects, are obtained, consequently conveying a most vivid impression of life. By means of a little cog-wheel, the pictures may be arranged into groups, and the scenery in the background may also be varied. The inventors say they can manufacture them at a cost of from 10 to 50 dollars.

A BALLAD CONCERT.—The Ballad Concert given by Mr. Sims Reeves at Exeter Hall, on the last inst., was a rich treat, at small cost, to a large assemblage. The experiment was entirely successful.

ST. NICHOLAS'S STEEPLE, NEWCASTLE.—We are told that the principal supports of the well-known tower of St. Nicholas's Church, Newcastle, have been found to be in a most dangerous state. Steps are being taken to remedy the evil.

TESTIMONIAL TO MR. MARK ANTONY LOWER.—With a view to assist the testimonial proposed to be given to Mr. Lower, for his antiquarian and literary labours, Mr. Charles Roach Smith, F.S.A., has been reading the tragedy of "Hamlet," and the Rev. R. H. Barham's Kentish legend, "The Smuggler's Leap," with great success.

THE FALL OF A PORTION OF A FACTORY.—At the extensive premises in Cirencester now in course of erection at Pitcares for Messrs. Cole & Lewis by Mr. Barrett, builder, of Swindon, a man was engaged in removing the centres of the large cellar arch, when a considerable portion of the brickwork gave way. He was completely buried; and four men, who were putting down the flooring in the room above the cellar, fell with the debris, each being more or less injured, and some of them severely so. This is the same arch that fell in a short time since. That accident entailed a considerable pecuniary loss, and this second disaster may prove a still more serious matter. Great blame evidently rests somewhere.

A FRIGHTFUL ACCIDENT.—At Conisborough Castle, Lieutenant Brown, a young officer of Militia, ascended the walls of the keep by the frail, narrow, and always dangerous footway, so well known to all who have visited the castle,—a stone ledge a few inches in breadth at the most, with no protection whatever on the outside, and simply a light iron handrailing on the inside, attached to the fast crumbling masonry of the tower. Mr. Brown slipped and fell down through the dungeon. The utmost consternation was created amongst his party, and the unfortunate and greatly-injured gentleman was removed to the inn at Conisborough. His back and one of his legs were broken, and he was otherwise greatly injured.

ARBITRATION IN THE BUILDING TRADE IN THE POTTERIES.—The carpenters and builders of the Potteries and Newcastle have, instead of striking or locking out, adopted the sensible plan of submitting their difficulties to arbitration—any arbitrator chosen by each side, with Mr. Forbes, architect, as umpire. The result is a series of rules just issued. The working hours are to be 56½ hours per week, except in the winter months, when they will number 54½, at 6½d.; superior workmen to be rated; overtime to be reckoned 1½ hour per hour till eight, and 1½ hour per hour afterwards. Within a mile, the workman is to walk in his own time; beyond a mile, an hour per three miles, to be paid in going only; beyond three, a sum to be agreed. Disputes are to be settled by six masters, six men, and an umpire. Objections to a rule or rules are to be specified on the 31st of December, by requisition of six men to six masters, or vice versa, and a settlement thereof to be effected before March 1st.

THE CATACOMBS, ROME.—At the annual meeting of the Oxford Architectural and Historical Society when the president of Trinity College was elected president of the Society, Mr. J. H. Parker, who had just returned from Rome, gave a lecture upon the Catacombs. He had been able to employ the magnesium light with success in several of the chambers, and to represent, therefore, accurately, by means of photography, the varied forms and figures which appeared in the painting and decoration. He laid especial stress upon the late date to which some of the catacombs owed their decorations, because, after they had ceased to be used as burial-places, they were a constant resort of pilgrims down to the eighth and ninth centuries, and at these periods many of the paintings were renewed. In some of the earliest the construction of brickwork of the first century was visible, made in the sandpit roads, which were therefore of earlier date. Some were as late as the fifth century, and even in those which are of the earliest dates, it often happens that later interments had taken place, from the fact of the vaults belonging to families, and so used from generation to generation. After the lecture there was some discussion on the question of the vestments as exhibited in the photographs.

THE CATHEDRAL ORGAN AT ELY.—On St. John Baptist's Day, the dedication of what might almost be called a new organ took place. The additions just executed by Messrs. Hill consist of a new swell of noble proportions and thirteen stops, five of which are reeds, also six additional stops to the pedal.

THE TRIANGULAR LODGE, RUSHTON.—A description recently given of this building at an archaeological meeting and mentioned in our columns having led to some inquiry concerning it, we may as well point out that a view of it, the windows at large, and some descriptive particulars will be found in Vol. III. of the *Builder* (1845), pp. 538, 539, 540, and 550.

A NEW HOSPITAL.—A morning paper says that Baron Ferdinand de Rothschild, whose young wife died in childbirth a few months ago, has determined to found a hospital to her memory. Direct action to this end has already been taken; and a site for the projected building has been purchased on the east side of Southwark Bridge-road. The establishment will be a lying-in hospital. It is the baron's intention to spend 10,000l. on the building; the site costing probably as much more.

THE HOUSES OF EMINENT MEN.—The Society of Arts, continuing the work they have properly commenced, are about to affix a tablet at No. 3a, King-street, St. James's, occupied by H.I.M. the Emperor of the French when in this country; one at 141, New Bond-street, on the house in which Nelson resided previously to his departure for Trafalgar; at 47, Leicester-square, the residence of Sir Joshua Reynolds; 7, Craven-street, Strand, where Franklin lived; and 36, Castle-street, Oxford-street, where James Barry had his abode.

RUSSIAN TIMBER.—It is computed that there are 400,000,000 acres of land in Russia producing valuable forest-grown timber, the right of felling which rests, for the major part, in the hands of the Government. Latterly the enormous wealth represented by these forests has attracted attention, and means have been taken to prevent the loss occurring partly from conflagrations and partly from the predatory habits of the population. Recently these vast resources have been opened up by the introduction of steam saw-mills, by the construction of small railways, tramways, and canals. There are abundance of fire in Southern Russia 400 years old, with a diameter of 2 ft.

BRISTOL FINE ARTS ACADEMY.—The annual meeting of the members and subscribers of this institution was held on Thursday. The Rev. J. Heyworth occupied the chair, and stated that he hoped the exhibition just closed would leave a balance in favour of the society. The report for the year 1866 was then read by Mr. Haythorne. It stated the exhibition of that year entailed a loss of 13l. 15s. 7d., and the graphic meeting of 12l. 2s. 6d.; a winter exhibition of sketches, which it was hoped would prove attractive, entailed a further loss of 18l. 18s. 3d. Alterations in the building to the amount of 16l. 16s. were made. The loss upon the year amounted to 78l. 3s. 3d. The report was adopted, and thanks were voted to the president, vice-presidents, and committee for their services during the past year.

PENZANCE (CORNWALL).—The Wesleyans of Penzance have determined for some time to complete the buildings connected with their chapel, by erecting new Wesleyan schools for the accommodation of upwards of 400 children. The school will consist of two principal rooms, with class-rooms attached. The school-room for boys and girls (mixed) will measure 62 ft. by 33 ft., height 20 ft.; and the infant-school will measure 40 ft. by 26 ft. There will be a large sewing-room for girls, 33 ft. by 16 ft., and three class-rooms. There will be a front and side elevation of the height of 30 ft., consisting of cut granite (two courses corresponding to one quoin), cut granite ashlar dressings to doors, windows, and main corners, and circular-headed windows, like those of the chapel, the whole to cost about 1,300l. Mr. Philip Thomas has undertaken the mason's work, and Messrs. Jenkin & Hill the carpenter's work. Mr. J. Trounson is the architect.—The tender of Messrs. Freeman & Co., of Penryn, of 500l., for the repairs of the pier, damaged during the winter gales, has been accepted, and the work will be done forthwith. A slaughter-house and shed are to be erected on the pier at this place, for the reception and slaughter of foreign cattle.

THE ANCIENT ART OF HARDENING COPPER.—A correspondent of the Cincinnati *Gazette* reports that a Mr. Disman, of Upper Sandusky, Ohio, has discovered a process of hardening copper, an art which has been lost for nearly three thousand years.

THE RESTORATION OF THE ELEANOR TOMB.—We are reminded, with reference to our notice of the late S. Cundy, that the figure-sculpture in the restored version of the Eleanor tomb, as exhibited in Hyde Park in 1851, and now shown at the South Kensington Museum, is the work of Mr. J. B. Philip, whose name we gladly add.

SUSSEX ARCHAEOLOGICAL SOCIETY.—The General Annual Meeting of this Society is appointed to take place on Thursday, August 8th, at Midhurst. The objects of interest to be visited are the ruins of Cowdray House, Eastbourne Priory, Midhurst Church, &c. The dinner will take place in the grounds of the ruined mansion of Cowdray.

ROMAN REMAINS AT ANDOVER.—A Roman villa has just been dug out at Andover, in Hants, by the Rev. E. Kell and other Hampshire archaeologists. It is 65 ft. long and 45 ft. broad. The roof had been supported by massive pillars. Two fireplaces have been discovered, also a quantity of fragments of Roman pottery, glass, and iron articles, and coins. The Roman station of Vinodunum is believed to have been in the neighbourhood.

NEWSPAPER PRESS FUND DINNER.—A dinner, with Mr. W. E. Gladstone in the chair, supported by forty-two members of Parliament and seventy other men more or less distinguished, is not an every-day meeting, and this was what the Committee of the Newspaper Press Fund succeeded in getting on the 29th ult. The Chairman made a great speech, the other speakers were wisely short and sharp, and the whole passed off most satisfactorily, producing a subscription-list of some 900l. Excellent as the singing was, a little less of it on another similar occasion may be desirable.

GIFT TO THE TOWN OF DERBY.—Mr. M. T. Bass, who for twenty years has been one of the members for Derby, has presented a public recreation ground to the inhabitants. It consists of six acres, and is situated on the banks of the Derwent, on the east side of Derby, being part of the Holmes, and is not distant more than 500 yards from the market-place. The subsoil is dry, and the surface of the greater portion of the land quite level, and admirably adapted for racing, cricket, and other sports. Mr. Bass purchased the land from the corporation at a cost of 3,000l., and has since defrayed the cost of fencing and levelling, which has been 850l. more, making the total value of the gift 3,850l.

THE LABOURERS' DWELLING QUESTION AT LIVERPOOL.—At a meeting of the Health Committee, Mr. Robinson moved that the council be asked to rescind its resolution with regard to offering a premium of 200 guineas for plans. The object was to replace those plans already prepared, and which were said by Mr. Whitty to violate the letter of the law while carrying out its spirit, and which did not seem well adapted to afford a fair prospect of returning a proper per-centage of profit. Mr. Robinson's motion was carried, only two members voting against it. It was also resolved by a similar majority that the proceedings of the Labourers' Dwellings Sub-Committee be referred back, with instructions to the sub-committee to prepare plans for dwellings in accordance with the Act of Parliament and the bye-laws.

ALBERT ORPHAN ASYLUM.—On Saturday in last week the inauguration ceremony of laying the foundation-stone of a dining-hall and chapel for the Albert Orphan Asylum for Destitute Children, situated at Collingwood Court, near Bagshot, Surrey, was performed by her Majesty the Queen, in the presence of a large and fashionable assembly. On the southern side of the main building of the asylum, over the spot where the ceremony of the day was to take place, a dais, covered by a marquee capable of seating some 2,000 persons, and a second marquee affording accommodation to an equal number invited to the *déjeuner*, had been erected. The grand approach to the dais was from the main building, in which a suite of rooms had been fitted up in the Louis XIV. style, as refreshment, sitting, and retiring rooms. A carved and gilt chair, in which her Majesty sat during the ceremony of presenting the purses, was provided. There was no inscription on the stone.

RISE IN THE VALUE OF PROPERTY AT BAYSWATER.—A plot of land, &c., situated near Lancaster-gate, purchased by the late Mr. Edward Orme some years since for 1,600*l*, has been recently sold by Messrs. Edwin Fox & Bousfield, by the direction of his trustees, in lots, realising altogether the sum of 21,980*l*.

ETCHINGS AND DRAWINGS BY REMBRANDT.—A fine collection of works by Rembrandt, brought together by the Burlington Fine Arts Club, of which Mr. R. N. Wornum is the honorary secretary, is now on view in the room of the Club, 177, Piccadilly. They include examples of his best etchings. An opportunity to see so many together may not occur again for some time. Wonderful works they are.

INAUGURATION OF THE SALFORD CORDEN MEMORIAL.—The ceremony of unveiling the statue of the late Mr. Corden, erected in Peel Park, Salford, has been performed by the Right Hon. C. P. Villiers, M.P., in the presence of a large concourse of spectators. The statue is in the immediate vicinity of those of the Queen and the late Prince Consort. It is the result of public subscription. With the committee appointed to carry out the scheme, the workmen of the district united, and the total amount raised was about 1,450*l*. The Memorial Committee commissioned Mr. Matthew Noble, of London, to execute the statue. It is of large proportions, chiselled out of a block of white Sicilian marble, and stands on a pedestal of Aberdeen granite. The deceased is represented in an attitude of thought, with the fore finger of the left hand touching the corner of the mouth; the right arm hangs loosely by his side, and the hand holds a scroll of paper. Peel Park is one of Manchester's chief treasures.

THE SHEFFIELD ATROCITIES AND LONDON TRADES.—A meeting of the London Trades' Council has been held, to consider what course should be taken with respect to the Sheffield outrages by the trades of London. Mr. Barrow (Amalgamated Engineers) occupied the chair, and there were present representatives of the Operative Bookbinders, Amalgamated Engineers, Amalgamated Cordwainers, Iron-workers, Zinc-workers, and other societies. The delegates from the various trades expressed themselves in strong terms of condemnation of all those who were associated with the perpetration of the Sheffield outrages. Mr. Odger remarked that it was the duty of every operative tradesman in London to attend the great trades' meeting at Exeter-hall, and show by his presence that the Sheffield atrocities had none of his sympathy. That was a duty not owed solely to the trades with which the men were connected, but to each man's individual character, which to more or less extent was compromised by what had taken place in Sheffield.

TENDERS

For covering a portion of the Borough Market, South-west, for the trustees. Quantities not supplied. Mr. Henry Jarvis, architect:—

Dixon	£3,500 0 0
Lloyd, Foster, & Co.	3,245 10 0
Thames Ironworks Company	2,988 0 0
London Engineering Company	2,835 0 0
Henshaw	2,300 0 0

For the erection of a public-house, Little Titchfield-street, Mr. W. A. Baker, architect. Quantities supplied by Messrs. Richardson & Waghorn:—

Manley & Rogers	£1,577 0 0
Cooper	1,557 0 0
Kelly	1,492 0 0
Katon & Chapman	1,480 0 0
Ennor	1,459 0 0
Saunders	1,475 0 0

For ironwork of cattle stalls and pens, for the Southampton Cattle-market, according to plans prepared by the borough surveyor, Mr. James Lemon:—

Baylis, Jones, & Baylis	£267 15 0
Reading Ironworks	697 10 0
Norton	428 0 0
Hernulewicks & Co.	475 0 0
Cottam & Co.	462 0 0
Jukes, Coulson, & Co.	423 0 0
Fry	420 0 0
Cornell	400 0 0
Ford	399 17 6
Hill & Smith (accepted)	357 0 0
Godden	345 15 6

For alterations at No. 47, Charles-street, Berkeley-square, Mr. Philip B. Lee, architect:—

Morris	£1,094 0 0
For alterations to Burreigh, Chesnut Common, for Mr. J. Levick. Mr. F. G. Widdows, architect:—	
Hunt	£1,068 0 0
Rivett	1,060 0 0
Palman	968 0 0
Chessum	960 0 0

For erecting a house, on Lot 19, the Ellington estate, Ramsgate, for Mr. Pullen. Mr. John R. Collett, architect:—

Wade	£300 0 0
Elgar	470 0 0
Newby (accepted)	420 0 0

For erecting a shop, on the forecourt of 56*1*/₂, High-street, Ramsgate, for Mr. Hope. Iron shutters not included. Mr. John R. Collett, architect:—

Wade	£335 0 0
Duckett (accepted)	318 0 0

For alterations, No. 4, Dean-street, Park-lane. Mr. Philip B. Lee, architect:—

Potter and Bywaters	£354 0 0
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For No. 110, Cannon-street, E.C. Mr. Philip B. Lee, architect:—

Bywaters	£27,843 0 0
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For alterations and additions to Spring Grove House, Isleworth. Mr. Philip B. Lee, architect. Contract No. 1.

Bywaters	£2,330 0 0
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For proposed Albert-buildings, Victoria-street, Westminster, for Mr. John Caseloduck. Mr. Philip B. Lee, architect:—

Bywaters	£910,000 0 0
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For proposed north aisle, Holy Trinity Church, Hove, Brighton:—

Sawyer	£1,373 0 0
Parsons	1,163 0 0
Chesmore & Co.	1,350 0 0
Nightingale	1,124 0 0

For erecting new house and carriage repository, for Mr. W. Richardson, at Hitchin. Mr. J. Shilcock, architect:—

Brucklayer's Work, &c.	£212 10 0
Butterfield (accepted)	207 12 0

For erecting a new house, at Shillington, Bedfordshire, for Mr. M. Mason. Mr. J. Shilcock, architect:—

Lightfoot	£450 0 0
Harvey	368 0 0
Richardson (accepted)	287 10 0

For erecting a new lodge, for Mr. Alfred Ransom, at Benlow-hill House, Hitchin. Mr. J. Shilcock, architect:—

Brucklayer's Work, &c.	£320 0 0
Warren & Son	307 10 0
Jeeves (accepted)	272 13 0

Accepted for the Kent County Lunatic Asylum, for 100 inmates. Mr. Martin Bulner, architect. Quantities by Mr. G. Buck and Mr. T. Ladd:—

Contract No. 1.—Builder's Work.	Anscomb	£36,300 0 0
Contract No. 2.—Smith and Founder's Work.	Butchard	1,554 0 0
Contract No. 3.—Plumber and Glazier's Work.	Hyles	3,493 9 0

For new sewers, at Clapham, for the Wandsworth Board of Works. Mr. W. R. Lucy, surveyor:—

Pickering	£34,593 19 3
Stiff	34,000 0 0
Pearson	31,400 0 0
King	29,725 0 0
Morton	26,476 10 0
Hill & Keddell	26,245 0 0
Wainwright	26,800 0 0
Morris	26,500 0 0
Micox & Williams	26,500 0 0
Avis & Sons	26,950 0 0
Hubbard	24,350 0 0
Blackmore	23,344 0 0
Dickenson & Oliver	23,613 0 0
Trowsdale	23,000 0 0
Wignmore	23,000 0 0
Thackerab	22,900 0 0
Harvey	22,797 0 0
Robinson	21,200 0 0

For building a public-house, in Battersea Park, for Mr. Mellish. Mr. J. Tanner, architect:—

Beale	£2,867 16 6
Marr	2,648 0 0
Stimpson	2,548 0 0
Baton & Chapman	2,385 0 0
Wignmore (accepted)	2,180 0 0

For erecting a warehouse, at Clapham, for Messrs. Clarke & Co.:—

Esato	£656 10 0
Wignmore	531 0 0
Shuckford	600 0 0
Gates	590 0 0

For new mains for the Aldeburgh Gas Company, Limited, and relaying old ones:—

Mason	£394 0 0
Child	349 0 0
Barker	344 10 0
Newby	335 0 0
Smyth & Wells (accepted)	330 0 0

For alterations and additions to workhouse school, Horseay-road. Mr. C. Higgins, architect. Quantities by Paim & Clark:—

Wills & Son	£1,135 0 0
Bradley	1,109 0 0
Crockett	1,064 0 0
Lamble	1,005 0 0
Gill	885 0 0

For new Magdalen Hospital, at Streatham. Mr. Henry Curry, architect:—

Holland & Hannen	£29,198 0 0
Lawrence & Sons	28,987 0 0
Lucas, Brothers	28,774 0 0
Simms & Marten	28,731 0 0
Myers & Son	28,730 0 0
Gannon	28,376 0 0
Piper & Wheeler	28,227 0 0
King & Sons	28,180 0 0
Troilope & Sons	26,920 0 0
Henshaw	26,631 0 0
Hill & Keddell	26,481 0 0
Downs	26,393 0 0
Higgs	26,123 0 0
Hart	25,890 0 0
Perry	24,667 0 0

For new receiving wards, at the North Surrey District Schools, Anerley. Mr. J. Berney, architect. Quantities supplied by Messrs. Franklin & Andrews:—

Bowles	£2,409 0 0
Munday & Hutchinson	2,031 0 0
Little	1,931 0 0
Simms	1,799 0 0
West	1,734 0 0
Hart	1,668 0 0
Godbold	1,680 0 0
Nightingale	1,647 0 0
Loe	1,615 0 0
Jarrett	1,590 0 0
Chappell	1,540 0 0
Poson & Smith	1,483 0 0
Hollidge	1,495 0 0
Hazell	1,320 0 0

For new warehouse, at the corner of Essex-street and Southwark-street, S.E. Mr. John Wimble, architect:—

Ramsey	£8,294 0 0
Adams & Son	7,993 0 0
Arbuthnot	7,779 0 0
Colls & Son	7,735 0 0
Wills	7,667 0 0
Ennor	7,640 0 0
Kilby	7,570 0 0
Piper & Wheeler	7,330 0 0
Browne & Robinson	7,287 0 0
Newman & Mann	7,165 0 0

For public-house, at Upper Holloway. Mr. M. C. W. Horne, architect:—

Marshall	£1,825 0 0
Harding	1,757 0 0
Taylor	1,748 16 11
Furnell	1,694 12 6
Shurranoff	1,666 0 0
Ravencroft	1,630 0 0
Lamble	1,623 0 0
Langmead & Co.	1,589 0 0
Warne	1,552 0 0
Niblett & Son	1,547 10 0
Robson	1,544 0 0
Blackmore & Morley	1,542 0 0
Nightingale	1,478 0 0
Cressell (accepted)	1,438 0 0
Steady	1,400 0 0

For restoring, reseating, and building new vestry-room, at the Wesleyan Methodist Chapel, Broad-street, Spalding, Lincolnshire. Mr. W. East, architect:—

Dawson	£247 0 0
Jepson	216 0 0
Goodhand	187 12 0
Stanger	138 0 0

For villa residence, at Carshalton, Surrey, for Mr. Charles Turner. Mr. A. J. Dyer, architect:—

Alchor	£838 0 0
Buck	636 0 0
Hayden	467 0 0

For Alexandra Orphanage for Infants, Hornsey Rise. Messrs. W. G. Habershon & Pitts, architects:—

	Cottages	Schools	Central Buildings	Eastwork, &c.
Williams & Son	£. 5,781	£. 3,025	£. 6,557	£. 2,206
Patman & Fotheringham	5,742	3,041	6,359	2,206
Ham	5,198	2,953	6,272	2,520
Cowland	5,143	3,044	6,267	2,204
Forrest	5,141	2,950	6,260	2,200
Carter & Sons	5,261	2,770	6,140	2,210
Hider & Son	4,820	2,735	6,215	2,205
Manley & Rogers	4,420	2,498	5,500	2,300
Moreland & Burton	4,327	2,436	5,369	2,208
Southcott & Wigdry				

For new roofs, reseating, and restoring the nave and aisles of the parish church of Edlesborough, Bucks. Mr. Withers, architect:—

Robinson	£1,943 16 4
Chappell	1,935 0 0

For the partial rebuilding and refitting of the parish church of North Restin, Lincolnshire. Mr. Withers, architect:—

Clark	£570 0 0
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For the rebuilding, on same site, the parish church of Lampeter-Pont-Stephen, Cardiganshire. Mr. Withers, architect:—

Roberts	£2,357 5 8
James & Co.	3,073 0 0
E. & L. Thomas	2,950 0 0
J. & D. Jones	2,655 0 0
Davis & James	2,698 0 0

For alterations and additions to a house at Bideford, for the Rev. R. O. Vincent. Mr. Edwin Dolby, architect:—

First Portion.	
Ching & West	£225 0 0
Howard (accepted)	242 0 0

The Builder.

VOL. XXV.—No. 1275.



Art Education for Artizans in Paris.

IF there is one conclusion which is forced upon us in examining the purely artistic features of the manufactured articles in the French Section of the Paris Exhibition, it is that whether in surface or sculptured ornament there is a freedom of handling, a beauty of outline, and delicacy of finish, such as is seldom, if ever, characteristic of similar works in our own English department. Perhaps the best workmanship of both countries may be nearly equal in technical execution, but there is a wide gulf between the second or third rate work of France and England, which is almost equivalent to dividing the good from the bad, and in this division France certainly has the better part. In the most elaborate and costly objects, such as painted porcelain and cabinet-making, we can compete with credit with French manufacturers; but in the cheaper pottery, or common furniture for the million, they very far surpass us in taste and design. There is hardly an object exhibited by France which does not display some grace of constructional form, or delicacy of ornamentation, contrasting strangely with the rude and coarse shapes and vulgar ornament of our own productions, where a special effort has not been made to ensure an exceptional quality of design. Comparing the cheap furniture exhibited in the French Furniture Court, with what we may see in Tottenham-court-road, one thing strikes us very forcibly. In the former there is little ornament, either carved or painted; but when either is applied, it is simple, refined in form, or well drawn,—differing from the decoration of the costliest gony work, for which thousands of francs are demanded, only in the extent of the ornament applied, or the degree of richness of its design, not in the quality, so far as it goes, of the great element in its execution. We see the same good drawing, the same graceful curves in the simple terminal of the post of a twenty-franc distated cat in pine or lime tree, as in the carving in mahogany or ebony of a masterpiece of Fourdinot or Lemoine. And this sort of delicate grace is not confined to furniture, but pervades all branches of industrial production, in which art may be introduced, whether it be in pottery, earthenware, glass, cutlery, iron work, or even in the details of personal costume or decoration. Now, in England, there is absolutely no common element in the best works of Jackson & Graham, Hill and Son, and the Messrs. Trollope, on the one hand, and the common furniture we have referred to as Tottenham-court-road work, on the other hand. Who has not been disgusted with

the lumpy, putty-like carving on cheap furniture in England, or with the atrocious drawing of vulgarly-painted green and yellow surface-ornament, when the chisel gives way to the paint-pot? Even where the forms used give evidence of having been related by distant ancestry to well-designed shapes, yet in the reproduction the good drawing becomes distorted and vulgarised, the relief coarse and heavy, and all grace of outline is utterly lost. That this is so, however disagreeable it may be to us to allow, needs for confirmation only an appeal to our eyesight. The general superiority of the French industrial art to the English is now too much recognised to be brought in question, and what is seen in the Exhibition in the Champs Elysées is but a reflex of that which is seen outside it, in Paris, and indeed in all France. There seems to us to be but one explanation of this superiority, and that is, that the French workman has received, as a necessary portion of his education, some instruction in drawing, and that when the workman becomes especially an art-workman, his instruction in secondary schools is both general and effectual. It is only upon this hypothesis that the all-pervading taste in French workmanship can be accounted for. Instances of a high order of design in any special manufacture, whether in France or England, may be traced to special causes, and we fear that in the latter it is not seldom due to the employment of foreign designers; but that every French workman should, as a general rule, produce graceful and refined work, whether the eye of the master be upon him or not, is due rather to systematic education of a general nature than to special instruction in particular cases. We know that success in art, a knowledge of the beautiful from the ugly, and power of facile execution, do not come by accident, nor are they, except in rare instances, the gifts of nature; for, if it were so, then all civilized nations would be nearly on a par with each other in art-manufactures. Our experience is that, where we sow education we reap intelligence, and if we plant art, we grow refinement; but if we permit ignorance, we encourage brutality, and if we utterly ignore art-education, the fruits become visible in a general want of taste. There is a consistency of cause and effect in these matters, and it is a shallow and worthless begging of the question to say that some races or nations are by nature more tasteful and artistic than others. Art-power is acquired power, the result of educational processes of one kind or another: it may be of instruction obtained in the class-room or workshop, or the influence of ever-visible taste in the streets, in public buildings, in art galleries and national collections, or monuments,—these acting as cultivators of taste which may lead to self-education. The French and English workmen differ artistically from each other precisely in the ratio of their opportunities and the demand which exists for art-workmanship in the two countries; and this demand is regulated by the amount of taste generated in the public mind according to the degree of art-instruction received by the public.

We cannot believe that there is any inferiority of race in the English to the French workman, though there is a material difference in the sort of education they receive, quite sufficient to explain why the former as a rule does not possess art power, and the latter as a rule does possess it. Much of the national tendency to art may, doubtless, be traced in France to the sensible influence of public collections of art, galleries of painting and sculpture, museums of antiquities, and of industrial masterpieces, and to the almost universal habit of adorning the façades of buildings with sculpture, all these together creating an artistic atmosphere in which the incipient art-workman draws in taste with his breath. But more direct is the explanation afforded by

the numerous Schools of Art abounding in Paris, as well as in the more important provincial towns of France. Something also may be attributed to the general instruction in drawing given in the Primary Schools, as well as to the efforts so long made by the Government to popularise art-education by the aid given to the production of good examples to be used for instruction, and their dissemination at a nominal cost to the schools. This prepares the way for the action of the schools in which art-instruction is alone given, and in which the young workman studies as a part of his necessary trade education, and the part he is taught to recognise as by far the most important.

It is worth while to examine for ourselves the nature of the instruction given in the municipal schools of Paris, in order that we may discover, if possible, the means by which so general an art-power is communicated to the Parisian artizan. As before remarked, these municipal schools of art are very numerous; but no two of them are exactly alike in range of study. This is accounted for by the fact that the masters or professors conducting them are professional artists, either painters, sculptors, or architects, and that no conditions whatever appear to be imposed upon them, either as to subjects or systems of education; each man therefore develops those branches of art in the school in which he himself is most successful or practises professionally. We will refer to this feature of management again; at present it is our intention to describe the method of study pursued in one school, where a large number of workmen were engaged in the study of drawing and modelling, at the time of a recent visit paid to this school, among others, for the special purpose of the present article.

The "École Municipale de Dessin et de Sculpture," of the 10th Arrondissement of Paris, situated in the Rue des Petits Hôtels, is conducted by M. Lequien, fils, whose father has long been engaged as master of a municipal school in another part of Paris. M. Lequien, fils, is professionally a sculptor, and his school has a high reputation for drawing and modelling. From information concerning the principal schools we are justified in regarding M. Lequien's as a good representative of its order, and especially so of the peculiarly characteristic method of teaching drawing, alike in all the schools, which was to be seen there in operation. The students varied in age from fifteen years to thirty, and seemed to be clad in the ordinary costume of the workman, no effort being made to appear in best clothes, as is usually the case in English schools of art. Beginning with a pupil who had been but a few days in the school, and had not previously studied in an art school, and going on through the various stages until we came to the work of young men who were drawing from the living model, and who were employed in the daytime as designers for the great French manufacturing firms, at large salaries, the whole of the students' drawings were carefully examined, in the presence and with the explanation of the professor. Afterwards, all the works produced during the past year, some of which are now in the Exposition, and many others still in the school, were displayed by M. Lequien, and information concerning the ages, occupations, and length of time occupied in study, and production of the drawings, was communicated by him also.

It seems, then, that in teaching drawing, but one medium is used,—carbon, chalk, or charcoal,—and from first to last the drawings are made upon a coarse, cheap paper, of a grey colour, very much like what English grocers wrap their moist sugar in, only that the drawing-paper is not of quite so good a quality. There are three stages of study:—

1. From lithographed shaded copies, or original drawings.

2. Shading from the cast, of figure and ornament.

3. Shading from the living model.

The examples used by beginners were simple bold details of ornament, drawn with thick lines, and having little more than half-tint shadows; perhaps there were as many as three degrees of shade, all being boldly expressed by lines. The point used was such as a boy of fifteen would be able or willing to keep on a stick of charcoal; and the means of erasure was a piece of wash-leather. The student is placed at a distance of perhaps a yard from his copy, which is hung on a screen or the wall in a glazed frame, and which he is not allowed to touch or measure from. Painful was the mess made by the first two or three boys, with their blunt points making such heavy black lines, and their still blunter eyesight, which betrayed them into such doleful errors. "But," said M. Lequien, "they soon tire of this black mess and these frivolous lines, and get to cleaner habits and more accurate observation of form. This boy, fifth up the line from the bottom of the school, has been here two months, and has done twenty drawings, and you see he is already using his charcoal in an economical manner, and putting shadow in only where he sees it in the copy." The pupils attend five nights in the week for two hours, and it is commonly in the indentures of the young apprentice that he attend a municipal school of art, for which his master pays the fee. At the first about two of these simple rough drawings are made in a week; imperfect many of them, but each showing some advance on the last. Thus the interest of the pupil is kept up by a change of examples, and he is never allowed to form a habit of slow or monotonous work. A little further on in the school the examples used are larger and more elaborate pieces of ornament, in which either the human or animal form is partially introduced. This takes the student as many evenings as his earlier copies occupied hours, and some of them as many weeks as the more elementary examples took evenings to copy. But by this time his work has lost all traces of blackness and messiness, the shadows become delicate and transparent, the free outlines made by the soft and willing charcoal are firm and expressive, the white chalk begins to express light and direct reflection, and the workman appears to be getting master of his medium. The improvement appears to be startling, and M. Lequien says it is not exceptional. He objects to outline-drawing with lead pencil as a commencement, and thinks more power is got by regarding drawing as the imitation of masses of light and shade, from the first to the last. Judging from what we saw, there certainly appears to be a corrective influence in adding the shadow to the outline, which mere outline cannot have by itself. By adding shadow to bad form, you intensify the errors, mistakes of proportion become evident, and bad lines become uglier still.

The middle stage is drawing from the cast, the same medium being used. Good specimens of drawings made by previous pupils, are displayed for the student's guidance in his first efforts, and the casts are very simple in form, sometimes a section of the echinus moulding, one acanthus-leaf from an antique capital, a cast of the eye, mouth, or chin from heroic busts, or mask of a smooth face. By the time the student arrives at this stage, he has mastered his vehicle of expression partially, not so completely as he will when he gets to the living model, but it no longer gives him trouble and vexation of spirit by doing in his hands just what he wishes not done. The process of drawing from the cast may thus be stated. The large forms are, firstly, indicated by faint outlines, and the lines dividing masses of light from shadow are touched in. The shapes of shadows are drawn, but shade is not at first expressed.* When a sort of map of the form has been thus obtained, the cast shadows are rubbed in flatly with wash-leather and soft chalk, and deeper tints in these shadows drawn in, as it were, with the blunt point of a leather stump. In this condition the drawing looks exactly like a faintly-printed photograph, and it seems to us that is some recommendation of the system, which is natural, effective, and simple. Then the student, having obtained the general effect of his subject, proceeds to add the shades, whether faint or deep, of the half tints, blending them into the shadows, and afterwards taking out by means of a clean cor-

ner of his wash-leather, the reflected lights in the shadows, and by the use of white chalk, adding the high lights, used thickly or thinly according to the amount of brilliancy of the light. The grey paper stands for the natural colour of the cast; or sometimes much white chalk is used, and the colour of the paper then becomes a half tint to express the lighter shades. This mode of drawing from the cast is a rapid one in comparison with our own English method of stippling shadow with the chalk point, and it is very much more effective. A week or even a month may be spent on a subject from the cast by M. Lequien's pupils, seldom more, and the drawings made are varied in size according to the pupil's powers, from a foot square representation of a hand or a leaf to a cartoon on strained canvas some 5 ft. or 6 ft. square, of the Apollo Belvidere or the actual size of a section of the Panathenæic frieze. Very lovely in feeling and truth of *chiaroscuro* were many of these large drawings from the cast—absolute imitation of natural effect being the aim of the student, and every detail of form was carefully rendered, either by the sharp bits of forcible shadows occurring where the light was strongest, or by delicate modulations in the broad shadows, or in the play of reflected light on the prominent portions of the nonilluminated parts of the cast. The subjects used for study are similar to those in use in our Royal Academy and schools of art, with the addition of a few good modern French busts and figures. The Greek and Roman antique and French renaissance are the styles of ornament which exclusively supply the ornamental casts, no example of Gothic being apparently used.

The final stage, after the practice of figure-drawing from the antique, is drawing from the living nude model. In this stage only the more advanced students study, and a very considerable power in drawing has been acquired previously to commencing from the living subject. A longer time is given to each model than we are prepared to expect, three hours each evening for five nights a week being allotted to each study. A very great amount of care is expended on the form of the figure, and the degree of finish is expected to be higher, though even in this the effect and truth of drawing are considered of more importance than finish. Stump and leather are used also in drawing from the life: they may, in fact, be considered as universal in teaching drawing in France. Besides drawing, modelling is practised in the school, in similar stages as already described for drawing, alto-relievo being the general method adopted for studying the antique and living figure. Ornament appears rarely to be copied, though original designs for special purposes of ornamental treatment were exhibited to us as the work of the students, and these were well designed and very spiritedly modelled. French art masters appear to believe that figure practice includes the study of all kinds of form, and that a good draughtsman of the human figure can draw ornament or design decoration in any style as a matter of course. The evidence is rather in favour of this view,—at any rate, so far as drawing goes. In another class a few students were drawing from examples architectural line drawings, and projections of geometric solids; but there was nothing in this portion of the school studies in any way remarkable.

It seems to us that in this system of teaching drawing in light and shade with charcoal and leather, and the effect it appears to have of giving facility of drawing and readiness to reproduce effects of light and shade, lies much of the secret of French skill in art. The medium is simple and easy to manage after the first few drawings have been made, and afterwards the student occupies himself solely in the study of form and its reproduction. Drawing is the first thought, drawing the second, and drawing all the remaining thoughts of the French professors in art schools. For the English systems of teaching drawing with outlines in pencil, and going on afterwards to the study of light and shade with the point, they profess to have the greatest contempt. The first, they say, cramps the hand instead of giving freedom and power, and the second only leads to the mechanical power of making fine dots, and neither has anything but a distant connexion with generating art power. There is a good deal of force in this opinion, and the very great superiority of French workmen to English in the matter of drawing, when both have been students in art schools, ought to lead to some further consideration of the two systems by the masters of our schools of

art. We trust that in the reports which may be written on the subject of art education by the teachers of schools of art who visit the Paris Exhibition, and for which prizes are offered by the Science and Art Department, this contrast of system may be referred to, and that we shall hear what can be said on both sides of the question. Nothing can be more directly opposed than the two methods by which the French and English Governments seek to develop the art power of working men. It is not a mere question of detail; it is one of principle, and if we are to judge of a tree by its fruits, the judgment is not a difficult matter. The real question is, are the twenty or thirty stages of art instruction doing for English industrial art what charcoal and wash-leather are doing for France? We must shut our eyes to the facts of the case, and look inwardly to the beauties of a perfect theory before we can answer this question in the affirmative.

Feeling interested in the pecuniary part of the matter as to how the schools in France are maintained, we learnt that the Government grants a subsidy of 3,000 francs per annum towards the support of the School of the Tenth Arrondissement. This pays the rent, and covers all expenses of maintenance. The master is paid by the fees of the students, and these are fixed at 4 francs a month. It is obviously the master's interest to fill his classes, and he is allowed free scope to do so, no limitations being placed upon him, no dictation as to methods or systems, and no tests are applied to his students. The State gives him nothing, but it provides a fit place for the working men of Paris to study in, and it takes nothing from him. It neither pays him for accidental cleverness in his pupils, nor stops payment if they are stupid and cannot pass examinations. It simply says to him,—Here is provided for the public good a studio for artisans, which you may take charge of. If you can teach soundly and well, and make it worth the money of working men to pay for your instruction, you will find yourself surrounded by pupils. If so, the better for you; if not, a more popular teacher, whose instruction will be sought for, will take your place. The greater your pecuniary success, the better for the public, for then the larger number of artisans will be instructed. If you cannot fill your classrooms, it will not pay you to carry it on, and it will not suit the public to be without instruction.

This seems to us by no means an unfair view of the question, for, whilst not ignoring the responsibility of the State, it does not waste the ratepayers' money. It places the art-education of working men on a somewhat similar basis as middle-class education in England has been placed in our endowed grammar schools and universities, by either private or public generosity.

The educationalist visiting the Paris Exhibition, at any rate if he is interested in art-education, should examine the French collections in group 10, class 90, the works of the French art-schools. Here we may see not only the productions of the school we have described, but of many others of equal, if not greater, reputation. These collections will well repay any time that may be spent on them; and we would warn him not to be content with looking only at the displays on the walls of the court,—for the wall-space is limited, but to open the portfolios of drawings, which are very numerous and highly interesting. They will show the same style of drawing as we have seen at M. Lequien's,—generally, with the addition of some branches of study added, here and there, according to the particular qualifications of the masters of the schools. The drawings do not look so well in an exhibition, as we may frequently see at a school of art exhibition in England; there are but few works in colour, or monochrome, or original designs. There are no pretty works at all, nothing to attract the public gaze amid all the glitter surrounding. All that can be seen, and that need be sought for, are sound and serviceable evidences of useful education, presented in a manner which shows that there has been no effort to make it appear better than it is. But there are proofs on all hands of good instruction and powerful drawing, and the visitor who chances to examine these works at an early period of his visit, will have no difficulty in understanding all the grace and good art in the French department, and of detecting its origin and primary cause.

Perhaps the best description that can be given of these carbon drawings on sugar paper is, that they are evidently regarded as the means to an end, and not the end itself. We often feel in an

* Shade is the partial absence of direct light on an object; shadow, the total absence.

exhibition of the works produced in English Schools of Art, that the elaborate drawings which must have taken many months to produce, are treated as pictures, and are themselves the end of study. They point no further, and between them and the design and execution of art-workmanship in industrial manufactures, there is no connecting link. In our own schools there is certainly a greater breadth of subject taught, but we are justified in believing that what the art-education of our country gains by comparison in breadth of subject, it loses positively in depth of direct usefulness. We cannot conceal from ourselves the fact that French workmen possess great art-power, and are successful draughtsmen, and that it is not the case with English workmen. We see no more direct means of accounting for this than in the more rapid, simple, and effective method of teaching drawing in France than in England, as a primary, even if not the only explanation of their superiority. Let an unprejudiced person glance at the list of prizes awarded at the Paris Exhibition to the co-operators or workmen of English firms, who have been successful in obtaining the grand prizes or medals. How frequently the names are foreign, and what does this suggest, but that either we are unable to supply our own demands for art-power, or that we supply only the inferior branches of manufacture, whilst in pottery, the precious metals, and in cabinetwork of a high class, the better education of foreign workmen fits them for the highest positions of designers?

That this will not always be the case we fervently hope and believe; but that an improvement which will place our workmen on an equal footing with their foreign competitors will occur without a thorough remodelling of our system of art education, we as thoroughly disbelieve. The art progress of the age and our backwardness in many branches of industrial manufacture demand that this shall be done. We have all the means and appliances, and do actually spend the money every year, sufficient to supply good instruction in art to every town in the empire. Our artisan population is an intelligent one, and the demand for art-power in our manufactures is great: all that is wanted, therefore, is that some attention should be paid to our systems of instruction and national expenditure of grants for art. The results we now obtain are not commensurate either with our talent, our intelligence, or our demands; and, as we are disposed to believe, is the fault, not of the public, or the capabilities of our art students, but of our system.

From the Exhibition of 1851 we derived great impulses to art education. From that of 1862 we obtained less advantage, because a greater success in it made us more callous and better satisfied with ourselves. The lesson we now have to learn is that it will not do to rest upon our oars, or be betrayed into a fool's paradise of self-satisfaction. We are far from the parades we were in 1851; and the disease we suffer from requires as prompt action to remedy it as those we were then compelled to adopt. Our art-schools were then placed on an entirely new basis, which had some good in it, and has lasted long enough, outliving in many points its own good qualities. Fifteen years of experience have taught us something, and we cannot do better than repeat our experiment of 1851, and, with the additional light we now have, place the art education of the country on a new and improved basis.

A SORE IN THE BODY POLITIC.

The surgeon whose skill is appealed to in a serious case of accident, such, for instance, as a gunshot wound, knows the importance of ascertaining the worst at once. Before attempting any sanitary process he makes use of the probe. To bind up the wound may be useless, or even achieve, until the cause of injury is discovered and removed.

It is not otherwise with the body politic. In those diseases of society that take the form of current convulsions, and present the symptom of extreme excitement, amounting to mania, dowered by collapse, little can be done to restore healthy tone without a severe application of the probe to discover the cause of disturbance. It is not, however, always necessary to probe deeply. The cause of disturbance may at first have been subtle and unperceived, or it may have been evident to the dispassionate observer; in the progress of the evil that cause fre-

quently comes to light. At least, a cause does; and it then not unfrequently happens that the patient, or the quack, points out a determining symptom as a primary mischief.

In the long and severe prostration of public confidence, from which recovery seems as slow and as doubtful as from the most serious disturbances of individual health known to surgery or to medicine, there has been of late no need to probe very deeply in order to detect sources of mischief. The evils have come to the surface with a vengeance. Unfortunately, they are neither few nor small; nor are they confined to one rank or section of society. We find them in the commercial world, we find them in the ranks of labour, in the man whose dealings are measured by so many shillings a week, and in those whose operations amount to so many millions a year. And, unfortunately, they are so widely different, at least in their first aspect, as to be liable to classification under the two main divisions of evil, force and fraud. The symptoms of the social evil from which we are yet suffering are apparent in that scientific form of swindling which is euphemistically termed finance, and in that simple form of terrorism which goes by the plainer name of murder.

In the higher circles of mercantile or speculative occupation the last month or two has been fruitful in scandals. Three great railway companies have been paraded before the public disreput in unenviable rivalry. One has thrown away three times the amount of its original capital in supplementary works that have had the result of entirely absorbing the dividends of the primary proprietors. One has come to a dead lock from sheer indebtedness. Earning a large revenue it has so managed as to be unable to avoid the inconvenience of "a man being put in possession." A third has achieved the most magnificent case of disputed account that has yet been presented to the attention of students of arithmetic. The divergence of opinion between the parties in the case is as complete as was that recorded by *Æsop* as existing between the wolf and the lamb. The public will look with some interest for the solution of the question, "Which is the wolf?"

The contractors of a line of railway which, by the aggressive direction of its course and of its branches, no less than by the lavish magnificence of its works, had long occupied a prominent position in the country, were compelled some time ago to suspend payment. There was a good deal of sympathy felt for these contractors, as it was evident that a bad or irrecoverable debt of the amount of 380,000*l.*, which sum it was stated that the company owed them, was sufficient to disturb the finances and even to affect the solvency of the most respectable firm. So amicable arrangements were made for the liquidation of the accounts, and perhaps the chief result of the suspension was the removal of anxiety from those whom such a danger no longer menaced.

Meantime the defaulting company wallowed in an ever-enlarging slough of financial and legal difficulties. Complication supervened upon complication; interest divided itself against interest; shareholders, preference shareholders, owners of stock distinguished by half the letters of the alphabet, debenture holders, Lloyd's-bondholders, judgment creditors, all rose fiercely one against another; and so dire and hopeless became the confusion that the injured creditor arose in his place in Parliament with the meek request that the House of Commons should bring its unrivalled power of discrimination to bear on the seething chaos.

At last, by methods inconceivable to the external world, the vast puzzle of account shook itself into definite form. How accurate and how truthful that form may have been is yet a question for the distant future. But in the provisional state, at all events, the liquidators of the contractors looked in vain for their 380,000*l.* No such item was there; nothing that in any way resembled it. The first impression must have been that there was an error of the press, an omission of this trifling item; perhaps a total forgetfulness of the existence of the injured contractors. A further inspection of the gigantic balance-sheet dispelled these delusions. Messrs. Peto, Betts, & Crampton had not been forgotten. But there was this difference of opinion between the two views of the case,—this illustration of the hazardous nature of reckoning without the host. Disclaiming a debt of 380,000*l.* towards the contractors, the accountant of the London, Chatham, and Dover Railway, *per contra*, makes the demand of some six millions

seven hundred thousand pounds on the estate of the contractors. The effect of this counter-charge was as immediate as the amount was amazing. The liquidation instantly collapsed; the contractors surrendered as bankrupts.

We are no advocates of colossal contractors. On the contrary, we attribute to the formation of "contractors' lines" the destruction of the property of railway shareholders, and the ruin, for the time, of the profession of Civil Engineers. But there is such a thing as justice. The fortunes that sprang up in a night have for the most part perished in a night, and the fragments of the industrial Colossi, like the bronze limbs of the Colossus of Rhodes when overthrown by the earthquake, lie scattered "many a league." And if there is one impulse which more than another distinguishes the English gentleman, and manfully appeals to the good feeling of the Englishman of every class, it is that which leads one *parcere subjectis*, the meaning whereof is—*not to hit a man when he is down*. With this feeling we must remark that the report on the accounts between the London, Chatham, and Dover Railway Company and their contractors which has recently been issued "by order of the Board," has two sides. Dealing with this document alone, and excluding any extraneous information, we cannot but hold that the contractors are not the persons most seriously affected by the publication. Let us suppose, for the sake of argument, that Messrs. Peto, Betts, & Crampton are all that their worst enemies, if they have enemies, can assert; still, as regards the shareholders of the London, Chatham, and Dover Railway, their misdeeds are those not of principals, but of accessories. They were not the elected guardians of the interests of the shareholders. We use not a word to extenuate wrong, if wrong there be; but let the saddle be put on the right horse. Messrs. Peto & Co. entered into certain contracts with the representatives of the shareholders for the purpose of making profit. Fair profit, it may be,—more than fair profit, it may be urged,—miscalculated profit, at all events; but the relation as between contractor and company is one that is clearly understood. The object of the large expenditure incurred by every company for the staff of the engineer is to control and ensure the efficiency of the work of the contractor, who undertakes, for a fixed sum, or at an agreed scale of prices, to execute these works cheaper than the company could do if themselves the paymaster, but with a handsome margin of profit to himself. Now, if any directors so contract with a person in this position as to make him the virtual master of the undertaking, they betray their duty to their constituents. They expose the contractor to a series of temptations which it will require no ordinary virtue to resist. They give him the means, at every step, of taking advantage; and in all public works contingencies are so heavy, that the most straightforward tradesman will be likely to take every opportunity in their power of "hedging" against them. So obvious is this fact, so small the knowledge of human nature that is requisite to enable a man to arrive at it, that it is difficult to see how it can be ignored by any persons of sufficient experience of life to be named as directors of a railway.

Now whether the finance arrangements of the London, Chatham, and Dover Railway were such as to make the contractors, who are the persons naturally interested in swelling the expenditure of the Company, the virtual dispozers of that expenditure, the report before us does not enable us to say. But one thing is clear, whether this were the case or no, the directors are the persons primarily responsible to the shareholders for expenditure and for finance. How they have discharged this responsibility the report bears witness. The "state of the accounts" shows a total issue of stock and shares to the amount of 11,591,551*l.* It states the expenditure on works at 2,993,264*l.* It may be presumed that land is not included in this sum, but no mention is made of either land or working stock in that document. Two items in the account require explanation, as they appear to have been entered in their present form rather with a view of swelling the balance claimed from the contractors than for the sake of simplifying the balance-sheet. One of these is the fact that the sum of 4,171,150*l.* received by the company from the public is stated as a credit to the contractors; while the stock corresponding to this amount, and of a nominal par value only 36,550*l.* above it, is debited *per contra*. The other point is that the company state that they have paid to the contractors in cash nearly 232,000*l.* more than

the cash received from the public. But this difficulty is probably met by allowing for certain large counter payments from the contractors. If we balance the two cash payments stated between the parties, we come to the following stupendous result.

The London, Chatham, and Dover Railway Company, on their nominal capital of 11,826,543*l.*, admit receipts from the public to the amount of 4,171,450*l.* Out of this, or rather against this, they have to place an expenditure on works, as certified by the engineers, of 2,993,264*l.* Deducting the cash paid by the contractors to or on account of the company from the cash paid by the company to or on account of the contractors, we find that the latter have received in cash the sum of 2,232,105*l.*, leaving a balance due from the company on certified work, including profit, of 761,159*l.* To provide for this three-quarters of a million's worth of works, and for such further expenditure of the company as is not specified in the "state of the accounts," stock, and debentures, to the nominal value of 7,423,101*l.*, or just ten times the amount of the balance due for works, have been handed over to the contractors. This is financing with a witness, and, as we said before, whatever be the demerit of the contractors, we are utterly at a loss to imagine what defence the directors have to offer for such a mode of dealing with the property entrusted to their charge.

In each of the three great disasters to which we have referred the same features are apparent. Large power has been committed to persons who proved incompetent to exercise it. As far as directors are concerned, no charge of peculation or of corruption has been urged. But the inconceivable mismanagement, in each case, of the funds and of the powers of the companies, if not corrupt, is liable to the charge of profound incompetence, and of reckless waste. Nor can it for a moment be supposed that the mere blind fury of competition has been the sole, or even the main cause, of the waste of millions after millions. In every contest the rank and file, the officers and the contractors, had to be duly paid. Whence the money came they did not regard as their affair,—the point was to do the thing handsomely, to stick to the colours, to meet aggression by aggression, and to post millions against millions. So with the threefold division of labour,—lawyers, engineers, and contractors to do the work and to pocket the profits,—directors and secretaries to sign the checks, to look big, and to enjoy constant "moral triumphs," and shareholders and bondholders to pay, the work went merrily on. Adam Smith would have been delighted at the result, for it would never have been attained except by such a division of labour. If directors had been expected to sign checks on their own bankers, or if lawyers had been paid in original shares at par, the total capital accounts of the Brighton, the South-Eastern, and the London, Chatham, and Dover railway would probably have been at least some 18,000,000*l.* sterling less than the present united amount.

While this method of dealing with the money of other people by millions has been sanctioned by men in the responsible position of chairmen and directors of such important public companies, we find the desire of living at the expense of others to be no less energetic among the operative classes. There, too, peculiar principles of political economy have been called into full play. The principle on which the action of the railway companies was conducted appears to have been this. Certain persons desire certain profits. To ensure these, certain lines, more or less unproductive, of railway must be made. Drive the scheme for these railways through an ever-subservient Legislature, and the public must find the money; and it has done so accordingly.

The principle of the operative unions has been this,—“We require a certain amount of wages. Unfortunately this involves the performance of a certain amount of work, but it shall be our care to make this work as little as possible. We shall, therefore, impose on the members of the trade a code which will so limit the work to be performed by each man as to make the day labour of the least efficient and industrious workman the normal maximum for all hands. We will force the masters to pay our own rate of wages for our own amount of work by the penalty of strikes, and we will force the body of workmen to obey our committee rules by picketting, by rattening, and by yet more vigorous steps.” That a small body of men should have been able, in so many instances, to impose so

fatal a burden on the industry of their respective crafts, is a social phenomenon of the most extraordinary kind. Eighteen pence, two shillings and sixpence, even as much as five shillings out of each pound earned by the workman have been exacted from him by the requisitions of the unions. That is to say, that a workman earning twenty shillings a week has been compelled to pay for the support of a system which is doing its utmost to limit the amount of work done, and which is actually driving work out of the country, more than three times the amount paid per head of the population for the support of the entire government and defence of the country. John Brown, saw-grinder, having paid in taxes direct or indirect an annual amount of not less than two guineas (supposing, which is not the case, that he pays the average taxation of the country) is called on to pay to the murderer Broadhead and his committee the further sum of six pounds ten shillings, which is liable to be doubled in case of need, for their mode of protecting his interests. When it is considered how large an amount of work is left undone in consequence of difficulties between masters and men, it is obvious that John Brown is not a political economist, and that his faith in the protectors of his trade is not justified by the result.

We shall extend our remarks to an undue length if we go on to show the moral from the above instances of social demoralisation; much will suggest itself to our readers. One thing is pretty clear, permanent prosperity is not attained by outrages on morals, however promising may be the original plan. Another thing is no less obvious, and that is, that unless we not only detect but extirpate the latent causes of these monstrous evils, these impositions on society for the exclusive benefit of designing individuals, who are not even competent to keep their ill-gotten gains, the New Zealand of Macaulay, who is to look over the ruins of what once was London, may not be a purely imaginary personage, nor even one in the very distant future.

TERRA-COTTA ARCHITECTURE OF NORTH ITALY.

THE revived manufacture of Terra-cotta in the shape of vases, fountains, friezes, and other ornamental works has been carried on in England for the last forty or fifty years, and to a considerable extent; indeed, we might go back to the time of Wedgwood, who established a factory for its production, and say nearly 100 years. The frieze of Her Majesty's Theatre, in the Haymarket, produced by Bubb, the sculptor, and the external decorations of “New St. Pancras Church,” London, are amongst the larger examples that occur to us. Little, however, had been done with it amongst us in architecture until recently. It was used, our readers know, in the Royal Horticultural Society's buildings at South Kensington. It is being largely used in the new building for the Museum there, and we have mentioned large specimens of the material exhibited by English manufacturers in the Palace of the Champ de Mars, for which more recently medals have been given to Blanchard, Blashfield, Palham, and others. In some parts of Germany, Saxony, and Northern Italy this revived use of it as a building material has been going on longer. In England it is evident there is now a tendency to employ it to a greater extent. In several buildings in the City, some of them illustrated in our pages, and in the front of one, scarcely finished, at the corner of Surrey-street in the Strand, terra-cotta is extensively employed.

This movement will, doubtless, be much promoted by a fine book that has been recently produced by Mr. Gruner on the “Terra Cotta Architecture of North Italy,” dating from the twelfth to the fifteenth centuries, and which contains forty-eight illustrations, engraved, and printed in colours, from careful drawings and restorations by Frederigo Lese, with wood-cut sections, mouldings, &c., and descriptive text by V. Ottolini and F. Lese.*

In the introductory chapter Signor Ottolini rightly dwells upon the methods used in Italy at this time to produce terra-cotta, especially by Andrea Boni in Milan, and the necessity for the greatest care in the manufacture to obtain terra-

cotta that will last. That some of the terra-cotta lately produced in this country will not last there is already evidence.

Plasticity and homogeneity, says Signor Ottolini rightly, are the two conditions essential to the composition of any ceramic paste. Plasticity is the property of clays which contain only aluminum, silica, and a little oxide of iron; and depends mainly on the water contained in the clay, which cannot be evaporated even by the drying power of 100 degrees. But although plasticity be an all important condition of this manufacture, its excess entails grave inconvenience. Objects formed of over-plastic clays are dried unequally and with difficulty, which renders them liable to lose shape and crack. Such defects are developed at the stove, and in the furnaces they increase further. Hence arises the necessity of introducing into the composition of the paste powdered quartz, calcareous earths, and sands, to diminish this excessive plasticity, increase porosity, and thus facilitate the expulsion of the water; which, although it serves merely to mix the materials and give them the needful softness, demands weighty consideration and precautions, because the wrought portions, however they may sometimes seem dry, never are absolutely free from water.

We have already observed that the liquid is strongly attracted by the clay, or, more strictly speaking, so combines with the clay as to require an intense heat for its total elimination. It has been stated that sandy substances make an easy channel for the water to pass from molecule to molecule, thus securing to all parts an equal density. Now, to the end that the desiccation of the largest pieces may be effected uniformly and without cracking, care must be taken to diminish the density at the centre; because, if the outside density did not exceed the inner, the evaporation of water must naturally proceed more slowly at the centre, the clays would from the first remain in an unavoidable state of dampness, and a separation of their molecules must ensue.

Rapid drying gives rise to another serious defect,—the work becomes coated superficially with a dry thick crust, impervious to internal moisture, and thus appears dry when only partially so: the result is, that the imprisoned water, constrained in the furnace to evaporate by the high temperature, acquires an elastic force, sufficient not only to crack the piece that contains it, but even to split it to fragments. This is the reason Signor Ottolini points out why Boni, of Milan, adheres to the system of applying the paste in small pieces to the moulds, and leaving spaces at intervals; thus endeavouring to obtain an equal, slow, and thorough expulsion of the water from the modelled paste. For this reason, having studied the proportions of the disjunctive materials, he finds it needful to protect his works from the direct and too forcible action of the wind, and to watch that they be always accessible to the steady and beneficial influence of heat and light. As soon as the modelled objects have attained the proper degree of dryness, to obtain which various arrangements are made, they are polished by hand, and consigned to the furnace, where the burning is effected by means of combustibles calculated to emit flame.

“Yet all this care in drying and firing would fail to ensure solidity to the work if the conditions essential for obtaining perfect homogeneity and compactness of the earths were not first observed. In ceramic pastes two kinds of homogeneity must be aimed at,—one of parts, the other of masses. The first consists in equality of nature, uniformity of volume, invariableness of density, in each constituent of the paste, and is attained by working, by kneading, by sifting, finally by mixing the ingredients and, finally, pulverising. The second, and more important, results from a uniform blending of the dissolved earths, so that the inevitable modifications produced by desiccation and burning may affect alike every portion of the mass, which renders it highly advisable that, before moulding, the earths be subjected to much kneading with hands and feet.”

If the paste be not thoroughly homogeneous, it fails to sustain equally in all parts the influence of heat. Hence neither judicious choice and just balance of ingredients, nor washings, grindings, mixings, slow desiccation, will suffice to render the paste homogeneous. Homogeneity is brought about by minute processes carried on through a lengthened period. Large depôts are formed, where the excavated materials, before being reduced to a paste, are submitted to atmospheric influences, and where large masses of the damp paste may remain for some years before undergoing moulding or modelling, and being exposed to the action of fire. These arrangements are indispensable for the production of a perfect material.

* “The Terra-cotta Architecture of North Italy.” Edited by Lewis Gruner. London: John Murray, Abbe-marie-street, 1867.

TERRA-COTTA ARCHITECTURE OF NORTH ITALY.

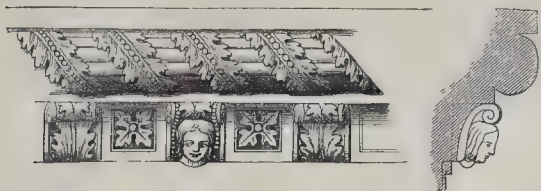


Fig. 11.

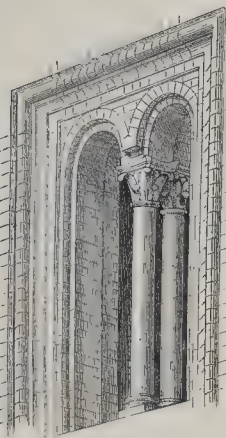


Fig. 2.

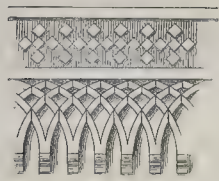


Fig. 3.

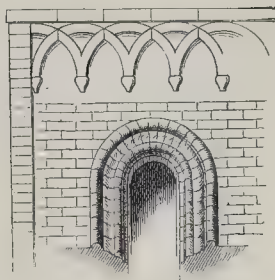


Fig. 5.



Fig. 4.



Fig. 6.

"The way in which terra-cottas were introduced into walls was not unlike that commonly used for inserting stone, marble corbels, and jambs of stone. It is evident that the general skeleton of the wall was first constructed, keeping some bricks protruding; so that afterwards the casts, figures, heads, cornices, and such like, might be introduced into the interstices left between brick and brick out of the redundant material beyond the substance of the wall itself. Such pieces, if flat or slightly salient, were fixed in simply with lime and plaster; at the most, or greater strength, hooks of iron, or mere nails, were used. Large blocks were secured in the same way as corbels or stone cornices: they took, however, the precaution to hollow out by hand such figures as required to be fixed to the bricks that jutted beyond the wall level; sometimes also in order to lighten them, or to promote the uniform burning of large pieces such as large heads and statues. The utmost care to strengthen them was bestowed on the first row of cornices, and on such architectural members as had to sustain others; these upper portions, on the contrary, being borne by the lower and fixed to the wall as best might be without any extreme care, but never made salient by excessive or abrupt protrusion. They are always graduated and pitched, so that rain-water may never flow down behind, but invariably along their fronts. Here, in Italy, through the sudden changes of temperature, frost will soon split the hardest marbles; nevertheless, although those terra-cottas are not attached to the wall in a very elaborate fashion, yet, a consequence of the builder's precautions to prevent water standing on them, they appear little injured by frost."

Mr. Gruner's work aims at supplying a series of specimens, commencing with simple and pro-

ceeding to more elaborate forms, as examples for imitation, he says: we would rather put it, for study and suggestion. The illustrations commence with Santa Eufemia, Pavia, a work assigned to the eleventh century, and come up to the Certosa, near Pavia (commenced 1396), the sanctuary of Crema, 1500, and various charming residences round about Milan, belonging to the sixteenth century. The views are beautifully drawn and coloured, and form a storehouse of decorative detail. It must not be supposed that the artist found all these remarkable fronts as we now see them set forth by his drawings. We remember to have looked on several of them which presented indication of what they had been only to the practised eye. With care and knowledge, he has gathered bit after bit, and reproduced them in all their original completeness.

In addition to the views in colour, engravings are given of details, and some of these we are enabled to reproduce.* Figs. 1, 2, 3, 4, 5, and 6, are details of the Campanile of San Gottardo, in Milan, fourteenth century, and a personal study of it enables us to speak satisfactorily as

* See p. 510.

to the general correctness of the delineations. This tower has stood remarkably well, a result that may be ascribed to the excellence of material, and to great care in adjusting the bricks. Several writers have noticed the skill with which, in these days, bricks were arranged and fixed. The cement used for binding them together was of quick lime mixed with very fine sand, taken from the river bed. This lime was dissolved in plenty of water, so as to flow in a thin liquid upon the bricks, forming itself so slight a stratum that the seam between the bricks is now barely discernible. The bricks were of varying form and structure, according to the different parts of the edifice in which they were placed.

In rectilinear parts, the dimensions of each brick were about 1 ft. in length, 3 in. in depth, and 6 in. in breadth. When circular walls were in question, each brick presented a proportional part of an arch, more or less curved according to the expansion of the wall's circle. Figs. 7 and 8 show other parts of the campanile, fig. 8 being the arcade on the fourth story of the tower, the pillars of marble resting on projecting brackets.

A modern discovery gives the name of the architect: on a slab anciently inserted in the wall towards the base of the tower has been deciphered,—"Magister Franciscus de Pecoraris de Cremona fecit hoc opus."

From the well-known and magnificent church and convent of the Certosa, near Pavia, several illustrations are obtained, including the apse of the Certosa and the arcade from the cloisters. We give a general view of the church (commenced 1396) cornices, figs. 9 and 10, and pilaster, fig. 11.

At the church of San Lafranco, in the outskirts of Pavia, are found replicas in terra-cotta of some details in the cortile of the Certosa, and in the Church del Carmine, of Pavia, some of which are marked "Abbas Lucas F. F. 1464" (Abbot Luke caused to be made), from which our authors infer that the terra-cottas of the period all originated in one workshop. Another opinion arrived at is that the more recent terra-cotta is of a deeper shade of red than the ancient, and, being more liable to atmospheric oxidation, allows of the encroachment of damp and wet, and so presents in many cases an aspect of greater age than its ancient predecessors.

We may not, however, pause longer over this book. Suffice it to add to our previous encomium that it is a work of very great value and beauty, and is likely to have a considerable influence on the movement in favour of the employment of terra-cotta amongst us in architectural works now going on.

REFERENCES.

- Figs. 1, 2, 3, 4, 5, 6, 7. Details of Tower of San Gottardo, in Milan.
Fig. 8. Arcade on fourth story of San Gottardo.
Fig. 9. General view of the Church of the Certosa, Pavia.
Fig. 10. Terra-cotta pilaster, Certosa.
Figs. 11 & 12. Cornices of terra-cotta, Certosa.

THE HEALTH OF NEWCASTLE-UPON-TYNE, WITH REFERENCE TO ITS CONDITION.

The condition of the town of Newcastle was referred to by a writer in our columns last week, and the subject is of so much importance that we revert to it. The weekly publication by the Registrar-General of the vital statistics of other large towns in addition to those of London, which was commenced in 1865, has already done good service in awakening local as well as general interest in the health of our urban populations. The inhabitants and local authorities of the different cities and boroughs are beginning to be stirred by a commendable emulation as to the position of their town in the list periodically published in the order of their rates of mortality, and to acknowledge that the apathy which acquiesces in a continually excessive death-rate will no longer be tolerated.

A few weeks ago we noticed the report of the Medical Officer of Liverpool for 1866, which not only entered fully into the causes which have so long contributed to make that town notable for its waste of life, but bore conclusive evidence that in Dr. Trench the town has the advantage of the services of an officer fully competent, if cordially supported with the weight of municipal authority, to materially raise the standard of health in that town. Indeed, the death-rate

which has prevailed in Liverpool during the past half of this year shows a remarkable improvement upon recent years. Leeds, during last year, appointed a medical officer of health, and is at present enjoying a rate of mortality far below what has there prevailed for many years. Among the ten large towns of England furnishing weekly returns, and arranged in the order of their death-rates in 1866, Liverpool and Leeds showed worst with 11.9 and 32.5 per 1,000 respectively. Newcastle-upon-Tyne, however, stood next with 32.1.

It is satisfactory to find that this condition of the health of Newcastle so early as last October, engaged the earnest attention of the Local Public Health Committee; and that on the 4th of that month a sub-committee was appointed fully to inquire into the causes of this high rate of mortality, and to "report generally upon the sanitary state of the borough, and the means of improving it, but especially upon the advisability and practicability, under the direction of the Corporation, of opening up new streets in crowded districts; of sweeping away old, dilapidated, and unhealthy dwellings; and of erecting in their stead better and healthier houses, and lodging-houses for the labouring classes." We have now before us the report of this sub-committee, which is, perhaps, on the whole, one of the best publications on this subject which has ever been brought under our notice. We can not only congratulate the town upon possessing so much valuable information bearing upon its sanitary condition, but its treatment and arrangement are so essentially practical that we shall fully hope to see most of the suggestions embodied in the concluding chapter carried into effect without loss of time. It needs but a slight knowledge of sanitary science to feel entire confidence in a vastly beneficial effect from these reforms.

In the opening of the report, the loss of life in Newcastle from the excessive death-rate which there prevailed last year is dwelt upon at some length. This fact is now so generally known that we shall content ourselves with comparing it with the death-rates in one or two of the healthier towns. In Birmingham, for instance, the rate during last year was only 24.1, against 32.1 in Newcastle, showing an excess in the latter town of eight per 1,000, or equal to a loss of close upon 1,000 lives over the number that would have died had the death-rate not exceeded that in Birmingham. Calculated upon the death-rates of last year, the average lifetime in Birmingham would be 41 years, in Hull 40½, in Bristol 40, in London 37, and in Newcastle only 31. These few figures alone sufficiently prove the need of an inquiry, and of something being done after the inquiry. We may here remark that this difference between the health of Birmingham and Newcastle has been still more remarkable since the beginning of this year. In the first six months of 1867 the annual death-rate in Birmingham averaged only 22.6, while in Newcastle it was 32.4, or rather above the high rate in 1866, which gave rise to the report now before us.

The various diseases which contributed most largely to make up the excessive mortality last year in Newcastle are severally treated of in the report, which contains diagram maps of the town with coloured indications of the fatal cases of typhus and scarlatina in the different streets. The conclusion which appears to be drawn from a thorough investigation of the subject is that, although a considerable portion of the excess is to be ascribed to that class known as zymotic or epidemic, all the other diseases were also proportionately far more fatal than in most other towns, and in England generally. Diseases of the respiratory organs, including phthisis, convulsions, atrophy, and debility, and all infantile complaints, were far more fatal in Newcastle among a population enfeebled by so low a standard of health than in other towns; but of the 3,950 deaths returned during the year in Newcastle, 1,145, or 29 per cent., were attributed to diseases of the zymotic class. Scarlatina was epidemic in Newcastle last year, causing 500 deaths; typhus and typhoid fever were fatal in 224 cases, diarrhoea in 123, cholera and choleraic diarrhoea in 51, measles in 105, and whooping-cough in 59. The All Saints sub-district, or eastern and lower portions of the town, where the want of sanitary reform is greatest, suffered most severely from these diseases, but a reference to the maps above alluded to will show that their fatality was very general throughout the borough.

Having most fully dealt with the statistics of the mortality from particular diseases in the

various portions of the town, the report proceeds to inquire into the general causes of this mortality, which has been excessive during a long series of years, but was strikingly so in 1866. The evidence collected proves the old story of bad drainage and sewerage, indifferent and insufficient water supply, and overcrowding in unhealthy houses from an insufficient supply of suitable dwellings for the working classes. A few of the facts, however, here set forth are new and instructive, and will be invaluable to other towns anxious to account for and to mitigate high rates of mortality. It is stated that in no other large town in the kingdom are there so many unpaved, unflagged, and unsewered streets as in Newcastle. In 1862 there were 219 of these unpaved streets, and the present rate at which their paving is being carried on scarcely more than keeps pace with the new streets built year by year, so that the arrears remain pretty nearly as great as in 1862. In unpaved streets effective scavenging is all but impossible, so that in summer "the accumulated filth sends forth poisonous exhalations." In Westgate and Elswick 155 of these streets are to be found, and it is shown that of 123 deaths from diarrhoea in the borough last year 68 were there recorded, or at the rate of 149 to 100,000 persons living; while in the other parts of the town, with far fewer unpaved streets, it varied from 41 in St. Nicholas and St. John, to 90 in All Saints, where the next highest number of these neglected streets are to be found.

The sewerage of the town has been much improved since 1857, 16 miles of new sewers having been constructed in those ten years; it is, however, still far from complete, and both the sub-soil and surface drainage is very defective. The effectual drainage of a town is almost as important as the satisfactory removal of its refuse by the system of sewerage. The registrars of Newcastle, more especially in the eastern portion of the town, continually have to report deaths from typhus, scarlatina, and other zymotic diseases, occurring in families living in houses, the basements of which contain several inches of liquid, black filth.

The overcrowding in dwellings, to which may be attributed so large a proportion of the excessive mortality in all our large towns, appears to be even greater in Newcastle than in other towns. At the census of 1861 there appear to have been 7.8 persons to a house in Newcastle, and although there is abundant evidence that the rate of increase of population since 1861 has been even greater than between 1851 and 1861, the supply of newly-built houses has not been maintained in anything like the same proportion. Only 1,300 houses have been built since 1861 to supply an increase of population estimated at over 13,000; and but a small proportion of these houses are suited to the wants of the labouring classes, who can only afford one, or, at most, two rooms to live in. In 1862, the number of houses built and building was 387; in 1863, 220; in 1864, 187; and in 1865, only 108. The report says, "various circumstances—differences between masters and workmen amongst others—have combined to limit building operations in the town during the past few years." This lull in house-building has not stopped the continual demolition of houses occupied by the labouring population, for railway purposes, town improvements, and conversion into warehouses and factories; so that house-room in Newcastle has declined below the insufficient supply of 1861. The result of this process is that by a recent estimate there are 9,639 families occupying single rooms, and 6,191 families occupying two rooms; about 47,490 persons, or more than a third of the entire population, are thus herded together at the present time.

The latter part of the report naturally contains suggestions for the improvement of the health of the town based upon the information derived from the thorough investigation into the causes of the high death-rate. By far the most important of these is contained in these words:—"The provision of more house-accommodation has become a matter of the first importance; and the case, not having been met by private enterprise, demands the prompt and energetic action of the corporation." The sub-committee strongly urge the erection by the corporation of model lodging-houses in different parts of the town, proving by most satisfactory evidence that such buildings have paid handsome dividends in other towns, and would probably result in no eventual loss to the municipal treasury in Newcastle. It is shown that the mortality is always lower in common lodging-houses, than in ordi-

nary tenements, which are not subject to the same inspections, and it is beyond doubt that in new dwellings, built with a due regard to the health and comfort of the inmates, the mortality, more especially of infants, among the labouring classes in Newcastle, would not only be reduced, but almost halved. The other suggestions include the vesting of more power in the hands of the Health Committee, the appointment of an efficient Medical Officer of Health, a more complete and frequent system of scavenging, which they believe would be more satisfactorily performed by contract, as in most other towns, the rapid paving of the 200 unpaved streets in various parts of the town, a better system of surface and sub-soil drainage, the creation of open spaces and playgrounds, the consumption of smoke, and many other improvements which are required in other towns besides Newcastle.

In conclusion, under the heading, "Encouragement to Proceed," the effect of a vigorous prosecution of sanitary reform in other towns is set forth. It is stated, that within the last thirty years the death-rate in London has been reduced from 50 to 24 per 1,000, and that whereas the annual mortality in English towns in 1840 was 44 in 1,000, it does not now average more than 24.25. We have good grounds for believing that the improvement in the health of our towns is here considerably over-stated; but at the same time it is beyond all doubt that the spread of general intelligence upon sanitary matters has already lowered the general death-rate in England, more particularly in towns, and the improvement may be taken as a proof of what may yet be done. Gloucester, Berwick, Cheltenham, Salisbury, and Worthing, are among the towns which have most benefited by sanitary reform. In a question which probably involves the saving or loss of nearly 1,200 lives per annum in Newcastle, it is scarcely to be imagined that the expense would prevent the suggestions embodied in the foregoing report from being carried out; but the sub-committee have done wisely in showing the intimate relations existing between a high rate of mortality and its inevitably attendant train of sickness and enfeebled health, with heavy poor-rates. It is to be hoped that this consideration will not be without effect, when the time comes for the corporation to grant the necessary means for carrying out the improvements. Money so spent should be looked upon as capital invested in a manner to produce a never-failing dividend, in the shape of improved health for the borough at large, without counting a more than probable reduction in the poor-rates. We shall look with much interest for sanitary intelligence from Newcastle, but more especially for the carrying out of that portion of the report which recommends the building of model lodging-houses by the corporation, for the labouring classes, to occupy the ground now covered with dwellings unfit for human habitation, and forming the principal haunts of fever and other zymotic diseases, whence the whole town becomes infected.

ARCHITECTURAL DRAWINGS IN THE PARIS EXHIBITION.

We have before us Professor Donaldson's report on the architectural designs and models. The circulation already given to it makes it unnecessary for us to reprint it. We cannot avoid, however, recording a portion of it. We take mainly the introductory passages, and the report on the drawings exhibited by Austria.

"In the review to be submitted of the architectural drawings of the great International French Exhibition, it is of course impossible to notice all the works exhibited. The remarks must necessarily be limited to those which may serve as types of the state of the architectural taste of the several peoples. Some of considerable merit may be omitted, or only generally alluded to. But susceptibilities must not be wounded, nor the position occupied by great names in the public estimation be interfered with. It is a mere general sketch of the subject, which may give an impartial idea of this important branch of the fine arts in Europe and other parts of the globe, as presented in the objects exposed in this magnificent collection of the natural products and intellectual creations of the whole world.

It is a remarkable circumstance that, in France and most of the Continental schools, except the Austrian, Gothic architecture seems

to be ignored for modern buildings, unless for some churches. And (with the same reservation of Austria) the principles of that style are not thoroughly understood; and, consequently, the treatment of the parts evidences an absence of knowledge of the principles which directed the Mediæval artist. Very frequently, in Northern Germany and in France, there is in the modern architecture a vagueness of ideas and an attempt to produce novelty; but then, in the former, it is the adoption of the Lombard or Byzantine as a basis; or, in France, the piling down of the leading features, as cornices, strings, and dressings, and the introduction of a profusion of florid decoration, or a coquetting with the past times of the country, still with gracefulness of composition. In England Gothic architecture has assumed, under clerical influences, the possession of the churches and of the ecclesiastical buildings connected therewith, such as the parsonage-house and the schools; and in provincial towns, from a certain reverence for tradition, frequently with the town-halls. But there is with us another class of pretentious art—if art it may be called—a wild ideal of Italian Gothic and assumption of Mediæval sentiment, grotesquely exaggerated—heavy masses and vegetable carvings, not idealised in treatment so as to become monumental nor adapted to the material; and in some instances there is a wildness for brick, unrelieved by stone dressings, producing baldness and heaviness. The commercial architecture of Paris and London is generally Italian, modified according to the taste of the people; rarely, if ever, Gothic. Still, it will be observed, that there are noble conceptions of noble-minded men in this collection, whose ideas cannot be fully appreciated by drawings alone; for it is only in the building itself, when carried out, that all the capacity of the architect for his work can be thoroughly realised. Hence the reluctance of many able men to imperil their hard-earned reputation by mere drawings, in which so much depends upon the technical skill of the draughtsman.

All these circumstances in modern architecture are evidenced in the French International Exhibition; and the result shows an unsettled state of thought and intent throughout Europe, a transition; but to what end or purpose it is impossible to say. Whole nations and states have recently had their political transitions, and apparently must continue to have them. These may be ruled and decided by some determined self-will and resolute mind of a sovereign or his minister. But there is no such dominant physical power to direct the intellect of art; and unfortunately, under capricious influences, the pure seems to yield to the fantastic; and the sound, well-informed, and well-directed frame of mind is thrown upon the wild waves of the rage for novelty.

"Austria deserves especial notice for its architectural designs and drawings, and it has its notabilities in the study and illustration of antiquities and architecture, as also some important buildings carrying out, which seem to indicate a great movement in the art, although probably we have before us only a limited number of the edifices actually in the course of erection or projected. The display is not confined to works at Vienna, but reaches to distant parts of the empire—Pesth, especially, contributing very important examples.

Vienna presents us, in the catalogue, with the names of three men among her architectural hierarchy, to whom may be assigned a European reputation; and, taken alphabetically, they are Ferstel, Hansen, and Schmidt; and Henselmann also gives proof of deep archaeological research and careful design.

Ferstel's votive church at Vienna, which is much advanced in construction, may be cited as a happy adaptation of the elaborate Gothic of the later periods reflecting many of the beauties of the Cathedral of St. Stephen, and of Cologne Cathedral as in the towers. Its exterior is full of sparkling effect, with all possible varieties of shadow and breadth. His Akademie der Wissenschaften in Pesth is also a very fine design; and he shows that he can handle also Italian architecture with success in his palace for the Grand Duke Ludwig Victor, in Vienna, and in a design for the Commons House in the same city; and he exhibits a castle in Bohemia and a country-house, which are clever.

Professor Schmidt has an able Gothic church in the Vorstadt Weissgärber, Vienna. There is, also, a novel and fine design for a polygonal

Gothic church, having a central dome, well conceived and well adapted to the style. There is by him, also, a very fine hall for the Gymnasium Academy of Vienna, with the roof framed in the character of our wooden hammer-beam trusses, well proportioned in size, and appropriately coloured. The professor has a very quaint and original design for the Commons House (Herrenhaus) at Vienna, with a well-conceived plan of pentagonal form, having in the centre a vast decagonal hall, which rises out of the surrounding lines of halls and official chambers, under a lofty false dome, the chamber itself having its ceiling running up only half the height. In the adoption of such an important feature it should, as in the *Therma* of the ancient Romans, be brought to the outside, so as to be seen in its whole size. The style is that of many of the Rathhaus or Townhalls of Germany and Belgium, in brick; but it is deficient in nobility of aspect in the exterior, and the style is rather domestic than monumental. Nevertheless, it is the production of a man of striking ability,—of one who thinks for himself, and has the capacity to realise his conceptions with power.

Hansen embodies what may be considered the pure Classic style in his Commons House and Menzer Erbsaende Abgeordnetenhaus in Vienna; but both are too dry in treatment, and we could desire more boldness and courage. They present, however, some graceful points of sentiment and detail.

Carl Fietz has many able designs in the Cinque-cento style also. They are beautifully drawn, and would be more satisfactory if they were less academic.

Robener has a church of Lombard character, bearing more strongly the impress of German features, in the Cathedral of Diakovar, in Slavonia; and it may be regarded as the patriotic adoption, successfully treated, of a fine broad style of art peculiarly their own.

Haseanauer must be noticed for his very fine design for the restoration, or rather completion, of the facade of the Cathedral of Florence,—the stumbling-block of so many centuries and the puzzle of so many architects, the subject of innumerable competitions, with some faint glimpse of a prospect of termination, if the spirit of the times be not counteracted by party jealousies. It carries out the style of the old cathedral and of the adjoining tower of Giotto. It combines much of the spirited outline of the Siena and Orvieto cathedral, picturesque and characteristic. The whole subject is, of course, a conventionalism. Haseanauer's projects for edifices are varied in character, effectively conceived, and principally in the Renaissance style.

Austria exhibits some fine drawings of Gothic buildings by draughtsmen of the very highest merit. Lantz has a bold, firm, and precise drawing of the Bridge Tower of Prague; and Banks, with Willmann, have illustrations of the Mediæval monuments of Wiener-Neustadt,—evidence of a like mastery of outline, with light and shade; and there is a wonderfully bold, large, elaborate drawing of the rich altar of the village of St. Wolfgang, about seven leagues from Vienna.

After noticing generally the drawings sent by England, the Reporter says:—

"This collection exhibits more completely than that of any other country, as a distinct individuality, the works either recently executed or in progress in the British empire; and it proves an active movement in individual or combined enterprise, and a very scanty attempt on the part of the Government to meet the wants of its administration, to promote the progress of art, or the embellishment of the capital or provinces by noble monuments. In an artistic point of view, this Exhibition also shows the unfettered liberty of the artist, unrestrained by any educational considerations or accepted canons of taste. Egypt, Greece, Rome, and the Middle Ages—nay, India and China, present their national types. But with us there is no recognised principle of design, no impress of a fixed national thought. The fanciful and the picturesque too often supersede the positive and serious; the object with many being not to advance and improve upon the past, but to create a new sphere of invention by a spasmodic effort for originality. It may, however, be claimed that there is a noble spirit of independence in the English architect, a daring to meet his difficulties, and often a very successful realisation of fine design and elegant detail; a desire to do something noble and worthy.

Only two models of buildings are exhibited in the English section, and rarely any in the foreign.

One is Mr. G. G. Scott's model for the memorial now in course of erection to the memory of the late Prince Consort and the Kensington Hall of Science, both of like origin. The memorial is illustrated by a very fine drawing, by the model, and by a portion of one of the bronze gables to the full size, with its inlay of precious stones.

The fate of all great works of art in the fantastic imitations to which they may be subjected, and the acceptance in public opinion of this memorial, are already realized in the cotton-stand of Messrs. Waters & Co., of Manchester, where the outlines and proportions of the original model are preserved, and in size exceeded, and its various polychromatic decorations are imitated with great success by reels of various coloured cottons, so as to deceive many a casual observer, and make them consider it the thing itself, instead of a pretentious rival and caricature."

Had the excellent Professor read his *Builder*, he would have avoided an error, and known that this clever model in cottons is a reproduction of the Manchester Memorial, not of Mr. Scott's.

Speaking of Italy, he says,—*"The architects of Italy are not, in the designs here exhibited, apparently animated by the same energy and brilliant qualities as distinguish their colleagues in the other departments of the fine arts. In their best drawings they look back upon the past, and only scantily produce works now in course of erection."*

Leopoldo Lombardi has two effective and large drawings of the Tabernacle of Oragui, in the Church of Or San Michele, at Florence, and of the northern doorway of the Cathedral of Santa Maria del Fiore, drawn with powerful effect.

Mengani, of Milan, displays a plan of the contemplated alterations at Milan carrying out by the Milan Improvement Company, which will be a vast benefit to the city; but the elevation of his gallery Vittorio Emanuele is too profusely ornamented.

The graceful screen inclosing the Italian Court shows that Italy has still its able and wise artists, men of capacity and imagination; for this inclosure of its courts is rich in effect, varied, and still well adapted for its purpose."

Of Prussia,—*"How is it that the architects of ambitious Prussia have been so little careful to vindicate the prestige of their school? Have they quailed before the idea of meeting the able draughtsmen of the French capital? Why is there here an almost total absence of the names of their leading men in the art? And why are illustrations of the buildings recently executed or drawings for those contemplated so scanty? This is said in no unfriendly strain; for their men of renown deserve all honour: their Schinkel and their Stüler of the past; and one could wish to honour their able architects of the present day, and here they do not allow as hardly the opportunity to do so!"*

The Zion's Kirche at Berlin, by Orth, is a bold conception, with some novelty in the plan, which is that of a Greek cross. The exterior is of the Lombard character, and the interior is gracefully conceived, in taste similar to the uppermost church of S. Francesco at Assisi.

Walsenan's Hôtel du Ville at Berlin is a vast brick building, with three tiers of semicircular headed windows, macabre cornices, and massive square tower. There is no relief of stone dressings to any part; and the whole forms a huge elephantine mass of red, imposing in effect from its scale, yet without grace and repulsive. What the Palazzo Pitti is to Florence, such is, apparently, the Hôtel du Ville to Berlin. *'Informe, ingens.'*

Schmitz, of Cologne, gives the project of a Gothic church, full of right feeling, masterly drawn, and equal in design to anything recently executed in England. His twelve sheets of views of architectural monuments of the Middle Ages are very fine."

SALISBURY CATHEDRAL.—The capstone of this cathedral's spire, immediately under the vane, having been discovered to be in a very decayed state, workmen are now engaged in its repair. In order to enable them to do it effectually, it was necessary to surround that part of the spire near the weather-door with a strong platform, from which a series of five others have been erected at certain distances above one another, the last being at the summit. The ascent from the weather-door to the top is accomplished on the outside by means of about twenty iron handles firmly fixed in the spire.

DIGGINGS ON THE PALATINE.

THE works that have been in progress for several months on the Palatine, on the grounds external to that part purchased by the Emperor of France, and which belong to the Papal Government, have been carried on by that Government with some vigour, and have obtained some valuable results, though not, indeed, so important as those that have rewarded French activity. These works extend along the southern and western heights, and also the grounds sloping towards the north-west, and therefore comprise all those ruins which present the most imposing aspect as we approach the Imperial Mount from the valley once occupied by the Circus Maximus; and we are glad to hear of the intent to include also the gardens of the convent, to be purchased from the Visitandine nuns who reside in that very ugly "Villa Mills," built by an English proprietor on the summit of this hill. In order to consider the undertaking now in progress under Papal authority, we may enter within its arena from the road that winds up the Mount, ascending near the Arch of Titus. Here we find a doorway that leads us into a valley laid out as a vineyard and orchard, bounded at the western end by lofty ruins, with arched openings, and on the southern side by different ruins, amidst which rises prominent a lofty and spacious hemicycle; here being recognised the site of the hippodrome, or stadium, of Domitian (550 by 170 feet), once surrounded by porticoes with double file of Corinthian columns, restored by Septimius Severus after the great fire under Commodus. Strikingly picturesque is the aspect of that valley, where vines and fruit-trees flourish under the shadow of majestic ruins; but before long a change must come over the pleasant scene, for it is intended to reduce the whole to its ancient level, of course with the sacrifice of all that culture has here effected. Along one side, under the boundary walls which divide this from the convent-garden, where that level is now laid open, we see several massive brick pilasters and some immense shafts of granite columns, now prostrate, referable, no doubt, to the peristyle of Severus; two other similar shafts having been found deeply imbedded at a point near the centre of the valley. More noticeable is the discovery of a flight of marble steps, descending from the modern level into a large chamber, now roofless, but retaining colour on its walls, and a single figure painted in Pompeian style; at the foot of the stairs being seen the entrance into a corridor, now filled with soil. Not far from this spot, on a surface of ruined wall, we see three arched openings, one above another, perhaps conduits for water, brought hither from the Neronian Aqueduct. The lofty ruins bounding the stadium at the western end, and curving outwards, open at the centre in the form of a wide hemicycle, divided into two stories, the upper with coffered ceiling, supposed an Imperial loggia for enjoying the games of the Circus Maximus, hence fully seen; the lower, which has the peculiar arrangement of a platform in the midst, small compartments at each side, and a staircase in front (all recently exhumed), believed to be a bath, though called by the custode a temple. Not many days ago (in June) an enormous pile at one side of this hemicycle, fell in with a thundering crash that terrified all within hearing, but fortunately did no injury. From the stadium we enter, at the southern side, a vast labyrinth of chambers, for the most part vaulted, and ornamented in coffering in that style so much preferred by the ancient Romans, both for palace and temple. In some of these interiors the walls are covered with stucco, firm and compact, in part adorned with painting, though but few figures, one a Bacchante, of graceful and spirited design, remain perfect. The dim, receding perspective of halls, communicating by ruinous entrances, lighted only by the custode's torch, is highly impressive, though at times we have to guide us the light of day, admitted by apertures in vaults, evidently formed to serve that purpose. Some of these interiors are lofty; but in others it is evident that we are not treading on the original pavement, but on a level formed by soil or debris. Here and there we reach the brink of some cavity, affording a glimpse into a lower story just opened, but not yet cleared out. A subterranean passage, deep under the floor of one chamber, is said to communicate with the arena of the Colosseum,—for what purpose it is difficult to understand, as we might, indeed, doubt the whole report of the custode respecting the

direction and extent of this hypogee. In those chambers first reached, and seen by daylight, has been formed a new continually increasing museum of fragmentary antiques found on the premises. We need not detail all the wealth of marbles and alabasters, friezes and cornices, encurtations, stone and glass vessels, painted stucco and marble baths (one entirely of *giallo antico*) seen here as, more or less, in all similar Roman collections; but we may notice for especial beauty a headless female figure seated on a rock, probably a nymph or Naiad beside her fountain, and a torso of a young Cupid, most graceful and natural. The absence of windows and of every arrangement for illumination from without in most of these halls justifies the inference that such Roman interiors were intended to be lighted by the lamp or torch alone, and probably so defended from the sun in order to suit the purposes of summer residence. Alike do we find the evidence to other arrangements that seem incompatible with our notions of comfort, in the absence of fire-places and chimneys, and though windows are in a few examples seen, there is no trace of their having been provided with glass. Emerging from these buildings, we find ourselves among those loftier ruins so conspicuous from below, ascribed to Septimius Severus, and probably the last important addition to the imperial residence. Here have been laid open several chambers and baths, one entirely paved with purple-veined Phrygian marble, and still provided with its hypocaust, into which we may look through a low channel. On one lofty front of ruin we see the specus of an aqueduct with six conduits,—probably a part of the Neronian construction. The abundance of precious marbles, both in architectural fragments and on pavements, everywhere strikes the attention; and as to construction, we see much that is good, though hardly the best in antique Roman masonry, the usual compact brickwork and large tiles, but nowhere the *opus reticulatum*, which is known to have been abandoned before the decline of empire. A pleasant and picturesque garden, which extends along the western slopes, is traversed before we reach several roofless chambers, near the foot of the hill, supposed to have served as a guard-house, and the walls of which are in part covered with graffiti, names, and rudely-scratched figures; most extraordinary amongst which is that caricature of the Crucifixion, referred to the times of Septimius Severus, here found some years ago, and now in the museum of the Roman College. Near to this spot are some fine granite shafts, marble capitals, friezes, and cornices, set into a modern wall for better display. Passing hence to the north-western slopes we reach an extent of walls in enormous blocks of square-hewn lithoid tufa, unquestionably pertaining to the very oldest fortification on the Palatine, of which aught remains to the city—namely, of Romulus, or of whomsoever was actual founder of primeval Rome. A long winding passage, excavated in the living rock near this wall, has been identified by Mr. J. H. Parker as the conduit for supplying water to the Acropolis of that perhaps pre-historic city.

It would be suitable to class with other late discoveries the much more important remains of fortifying walls, beyond comparison the most considerable and complete yet known, among similar local antiquities, reached by works undertaken some years ago under S. Anastasia, a church at the foot of the Palatine near the north-western angle; where, after descending to some depth, and passing through several dark interiors, buildings both of Republican and Imperial periods, we see by torch-light those stupendous constructions from which at intervals advance, at right angles, walls that must have flanked quadrangular towers, a proof that such were known in the military architecture of old. We are glad to hear that Government is resolved on resuming the excavations, long left in suspense, below S. Anastasia. Near that church's front has lately been, not for the first time entered, but for the first time discussed by savans, an arched channel that passes, at the depth of 732 metres below the street, and along whose floor is carried, through brick channels, the stream of purest water that gushes forth, near the entrance of the Cloaca Maxima, and is by some writers identified with the classic *Fons Juturna*. One Roman antiquary of repute advances the theory that in this hypogee we behold the veritable cavern of the Tupperal, that primitive sanctuary of Pandean worship; but it seems impossible to make this accord with realities. Having descended through the narrow orifice that opens on the street pave-

ment, by a ladder placed perpendicularly, we may speak from experience as to the rude character of what is not in fact construction, but more excavation of the rock, supported to some extent by buttress walls of brick, and with remains of cement on the roof, the ground we tread along being encumbered with moist clay, and the low vault obliging us to stoop as we advance. No thing assuredly is there here to remind of a scene sacred to religious observances.

Taking a general view of these recent discoveries on the Palatine, and assigning due importance to what is manifestly of high antiquity, we may allow that the evidence they bear to the character and strength of the city first built, or at least to the oldest of which remains are extant, on this hill, suffices to modify certain theories as to the credibility of ancient Roman history.

EDINBURGH.

Extension of the City.—A further extension of the city is projected in the attractive vicinity of the Meadows, at the west end, and the plans for the first three tenements are being prepared by Messrs. Brown & Wardrop, and by Mr. R. Thornton Shiells. The property on which the new houses are to be erected is part of the estate of Drumdryan, extending to about five acres, lying between Brougham-street and Chalmers-street. All Saints' (Episcopal) Church and Brougham-place are already built upon this property, and three new streets are now in course of formation. The three tenements already planned are expected to be ready for occupation on Whitsunday next. A tenement at Tollcross will give a finished and greatly-improved appearance to this locality. The building is harmonious in plan with the tenement already erected on the north side of Scott's Riding-School. The chief feature of it is the prominent and ornamental corner elevation, towards Earl Grey-street. This has been designed by Mr. Shiells in the Palladian style, freely treated. The building is to be of four stories, the three upper flats being dwelling-houses. The estimated value of the building is about 4,000l. The tradesmen for the works are,—Mr. John Wilson, mason; Messrs. W. & J. Brodie, joiners; Mr. Andrew Slater, slater; Messrs. Main & Gardner, plasterers; and Mr. Alex. Dixon, plumber.

* *The New City Poor-House at Craiglockhart.*—The chief stone of this edifice has been laid with Masonic ceremonial at Craiglockhart, about 2½ miles from the city, in a fine locality. The new buildings will cover, with their enclosed airing-courts, an area of about 16 acres. The parochial board propose to devote about 36 acres of the estate entirely to poor-house purposes; and such portion of this as is not required for the buildings and enclosed courts will be cultivated by inmates fitted for agricultural work. Two quarries have been opened upon the board's estate for the erection of the new buildings. One of these is the old quarry on the low ground at the side of the Colinton-road, and from this is procured a stone of a red colour similar to that of which the old keep was built. The other quarry is at the upper end of this site, and from this a superior stone, of a bluish tint, is got. This stone, which the *Scotsman* describes as being of a hard, compact, and homogeneous nature, and exceedingly durable, will be used for the external face of the walls of the various buildings; and the contractor has laid down a railway from the quarry to the spot. The hewn work for dressings is from Redhall Quarry; and its rich yellow colour contrasts pleasantly with the bluish hue of the Craiglockhart stone. Sand and clay have also been found in abundance upon the site. The new poor-house, which faces the south, has a frontage of 1,200 ft. It consists of three entirely distinct buildings, viz., the main poor-house in the centre, the infirmary to the east, and the lunatic asylum to the west. The style adopted is the Scottish, which, besides being national, harmonises well with the surrounding scenery. The whole is treated in a plain and simple way, without expensive or ornamental details; and the architectural effect such as it may be, is obtained by the arrangement of the plan and the breaking up of the building into blocks. At the centre of the main poor-house, a corbelled tower, octagonal in form, rises to the height of 105 ft.; and a picturesque and varied outline is given to the long fronts by numerous bold projections, finishing with crow-stepped gables. The main poor-house is designed

upon the block-system, the building being subdivided into a number of separate blocks, connected only by a service corridor. The pavilions are all two stories in height. The poorhouse will be supplied with water from a fine spring in the hillside. To make this available, a reservoir will be constructed to hold 800,000 gallons, and the water will be pumped up by a steam-engine to a large cistern in the upper part of the central tower, at a level considerably above the roofs of the buildings. From this point it will be distributed at high pressure to the various blocks. It is probable that a small gaswork will be erected. The total cost of the poorhouse, infirmary, and governor's house at present contracted for is 35,000*l.*, in addition to which about 2,000*l.* are required for roads, &c. Messrs. George Beattie & Son are the architects. The contractors are Mr. Robert Hutchison, for the mason work; Messrs. Kemp, Murray, & Nicholson, for the joiner work; Mr. McCalman, for the plumber work; Mr. Anderson, for the glazier work; Messrs. J. Young & Co., for the iron work; and Mr. John Mellon, for the roads, &c. The whole is to be completed for occupation by the 1st April, 1869.

The Caltan Jail Rock.—The rock on which the Caltan Jail stands is, it seems, in a dangerous state, and has been examined by two engineers, Mr. John Geddes and Mr. David Stevenson, appointed by the sheriff for the purpose. The overhanging and loose rock, it was found, though not dangerous to the jail, threatens a brewery and other property below, but a warning to the occupants that they ought to quit the premises appears to be all that the sheriff can order under the circumstances. It is hoped, however, that the magistrates will look to the safety of the buildings.

THE TRADES UNION MOVEMENT.

The Sheffield Trades Union inquiry, which had been slightly interrupted by the indisposition of the commissioner, has been resumed. A lo-grinder named Renshaw confessed that he committed the crime known as "the Accorntree murder." He said he confessed because he saw in court the individual who hired him, and he thought he was going to anticipate him. He was hired to do "the job" in the fashion with which the disclosures of Crookes, Broadband, and others, have made us too familiar. A man named Thompson was tried for this crime, and narrowly escaped conviction. Renshaw completely exonerated Thompson, and declared that he was alone at the time he flung the grenade into the house. Some of the trade society agents paid they paid for the defence of Thompson, but had he been convicted, and he had a very narrow escape, they should have allowed him to be hanged rather than reveal who had committed the murder! They had promised secrecy, and would have kept their word though an innocent man were hanged. It was Thompson's misfortune to be charged with the crime, but they could not interfere. After blowing up the house, the villain Renshaw concealed himself for a few minutes in a chapel burying-ground, and when the police arrived, "they always come too late," he coolly said, he returned and assisted some of the sufferers from the house!

It is stated that an inquiry will shortly be commenced into the operations of the trades unions in Manchester, Stockport, and the surrounding districts, and principally into the workings of the bricklayers' societies in this neighbourhood.

A correspondent of a contemporary says:—

"If Mr. Overend were to go to Manchester, he would soon find that the stigma is not confined to Sheffield, nor the precedents to thirty years ago. Outrages have been made recently against both property and person for trades' association purposes, and such outrages have ceased in this neighbourhood—simply because the outrages already committed have been persistent and effective enough to deter masters from recklessly risking property and life in carrying on their trade, if not in compliance with trade rules."

At a meeting of the Hull United Trades' Council, a letter was read from the Bricklayers' Society, stating that if Mr. Anderson, a delegate from that society to the council, continued longer to occupy his seat at the council, the Bricklayers' Society would withdraw. The reasons assigned for this withdrawal were, that Anderson had, as a plasterer, done piecework, which was contrary to the society's rules; that he had infringed other regulations; and that he had done all he could to injure the society. Upon this letter being read, Anderson expressed his

determination to quit the room, saying that he had done piecework, and that, as he considered it was his duty to do the best he could for himself and family, he should repeat the offence, if offence it was. It was also stated that Anderson was about to commence business on his own account, and that appeared to be displeasing to the delegate. Anderson confessed that such was his intention, and asked the complaining delegate what the society meant to do. The reply was, that they would prevent union men working for him. Anderson said he did not think they could; but, if they did, he could get non-union men to do his work.

Some masons in Bristol have struck work, but the matter in dispute has been referred to arbitration. It is, therefore, hoped that a general turn-out may be avoided.

The strippers and grinders at Messrs. Reynier's mill at Ashton-under-Lyne are on strike for wages, and it is expected that the strike will extend. Mr. Oldham Whittaker, a manufacturer, of the same town, has received an anonymous notice in which the following passage occurs:—

"You had better withdraw your foolish discussion, for so sure as you are a living man you will be put an end to in some way yet to be thought on. Don't expect to survive long after this warning; assassinated you must be as others have been whom you would expect had not been your (signed) Assassins."

ST. PETER'S, BROMPTON.

The new church in Ouslow-gardens, recently consecrated by the Bishop of London, has been built by Mr. C. J. Freahe, of Cromwell House, from drawings prepared in his own office and at his own cost, with the exception, we believe, of the organ, for which a subscription was raised. It is a cross church (with an apse for chancel), nearly 140 ft. long and 115 ft. in width at the transept. The style is fourteenth-century Gothic. The width across nave and side aisles is about 70 ft., and the tower (containing a bell, by Mearys) with spire is nearly 160 ft. in height. The walls are of Kentish rag, with freestone dressings. The interior is lined with cream-coloured brick, with some few bands of black and red brick. The roofs are open; the seating is of deal, varnished. The carving was executed by Mr. Sanson; that of the pulpit might be improved.

Mr. J. Brown acted as clerk of the works and general foreman. The church is so spacious, commodious, well built, and, in some respects, handsome, that it is impossible to avoid regretting just the dash of true art which is absent.

This is not the first good work performed by Mr. Freahe, "founder and patron" for the neighbourhood he has so materially helped to create. An inscription at the west end of the church, north side, records that the first stone was laid on the 21st of July, 1866, by "Eliza Pudsey Freahe," to whom also the neighbourhood has been long indebted for intellectual hospitalities of a not common kind.

MONUMENTAL.

Memorial of King Leopold at Windsor Castle.—Shortly after the death of the late King of the Belgians her Majesty gave instructions for the erection of a suitable monument in St. George's Chapel, Windsor Castle. The site adjoins that occupied by the cenotaph erected to the memory of the Princess Charlotte. The designing and modelling of the monument were entrusted to Miss Durant. It is of a whitish description of marble, the total length being upwards of 7 ft. and the height a little over 8 ft. The effigy is sculptured in a recumbent position upon the top of the tomb, and attired in a military uniform, with decorations. His head reposes on the Belgian lion. The various portions of the monument have been forwarded to Windsor.

Statue of the Earl of Derby.—Mr. Theod has been commissioned to prepare a statue of Lord Derby for the Liverpool council.

Pannure Movement, Brechin.—A meeting of the subscribers to the fund for the erection of a monument to the memory of the late Lord Pannure has been held in Brechin. It was reported that the subscriptions amounted to about 100*l.* A number of plans were submitted to the meeting, and it was resolved to erect a granite obelisk, to be combined from the various plans submitted, the height to be about 18 ft.

above the base; and it was submitted to the former committee to employ Mr. Baxter, mason, Brechin, to get a proper plan, and submit the same to Lord Dalhousie for his approval.

Great Statue of the Virgin Mary.—M. Lequesne, a French sculptor, has just received a commission to execute a statue of the Virgin Mary, nearly 30 ft. high, for the bell tower of the sanctuary of Notre Dame de la Garde, at Marseilles. There is to be a staircase within the statue leading to the head itself; and the eyes, which will serve as windows, through which to view the prospect around, will measure 10 in.

THE CHURCHES OF ANGERS.

FRANCE contains few more interesting towns than Angers; its ancient streets, churches, and frowning castle give the place quite a Mediaeval character, and fortunately the rage for "boulevards" has not yet found its way to this quaint and historical city.

Angers is prettily situated on the Main, about 216 miles south-west of Paris. From a distance the town has a very picturesque appearance, owing to the number of church towers and spires which break the horizon. Three of these churches are most remarkable buildings. La Trinité is, in point of date, the earliest of these churches, and is probably not later than the middle of the twelfth century. The plan is very uncommon; the nave, which is large and lofty, is in one span, without either aisles or side chapels. There are transepts and a shallow apse, flanked by two smaller apses, opening into the eastern sides of the transepts. Over the junction of the nave and transepts is a tower, crowned by an octagonal lantern. As the square of the tower is much less than the width of the nave, the arch at the east end of the nave does not occupy the whole space, but is flanked by two smaller arches leading into the transept. The arrangement is very picturesque and equally uncommon. The whole church is vaulted. The vaulting may, perhaps, be fifty years later than the main walls of the building.

The next church in point of date is that of St. Serge. This church is quite as singular as the one we have just described, but is in every respect so different from it, that it is difficult to conceive their being in the same town. Here there is a very short nave, with very wide aisles, the shell of which is evidently of early work, but like the nave of Winchester Cathedral, it has been thoroughly re-constituted during the latter part of the fifteenth century; so that were it not for the immense solidity of the piers, and the thickness of the walls, one would at once put it down as a Flamboyant building.

The transepts and the crux at the junction of the latter with the nave retain more of their original Romanesque character; but the most remarkable portion of the church is the choir, of which we give a view. The outer walls appear to be partly Romanesque, and are evidently of an earlier date than the internal portion of this part of the church. The choir is very long, and is separated from its aisles by columns, so tall and slender that at first sight they seem incapable of supporting the roof; when, however, one examines the construction of this roof the wonder ceases, as it is seen that there are no lateral arches, or any wall space resting upon these columns, and that all they have to do is to bear a most beautifully constructed groining, the ribs of which are in section a simple half-round, without any kind of moulding or ornament. The capitals are decorated with some very pure and beautiful sculpture, and the responds (fig. 2) have very rich abaci. The columns are 15 in. in diameter, and about 30 ft. high; the shafts are monolithic. This portion of the church bears a strong resemblance to the lady chapel of Salisbury Cathedral, and both buildings seem to offer suggestions which would be remarkably useful for modern churches, particularly as to the propriety of using very thin columns, and covering a large space without occupying room by heavy and solid supports.

The cathedral or church of St. Martin at Angers we may speak of in a future number.

We should mention that our illustrations are from sketches made upon the spot by Mr. G. Goldie, architect.

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Fig. 2. Plan of the Church of St. Serge, Angers.
Fig. 3. Respond from Interior of the Choir of ditto.

TERRA-COTTA ARCHITECTURE OF NORTH ITALY.

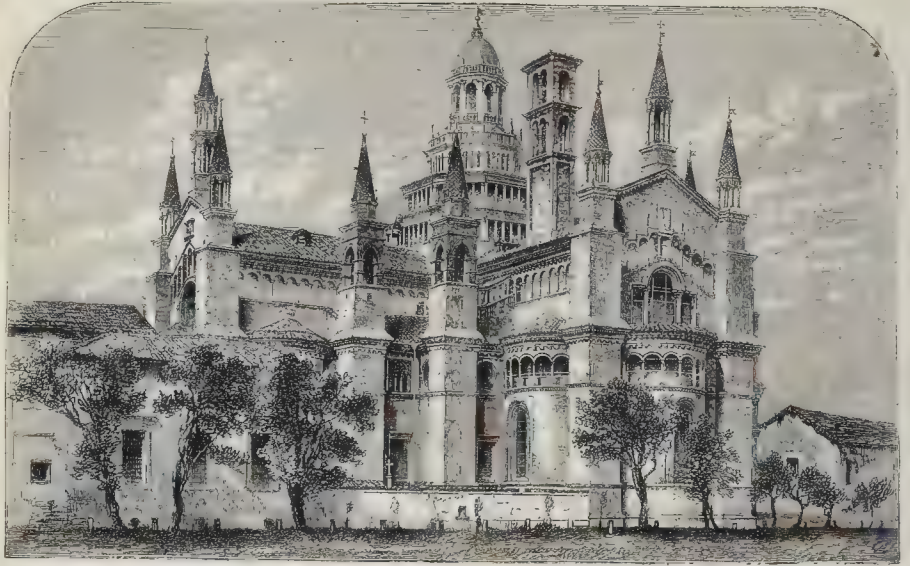


Fig. 9.

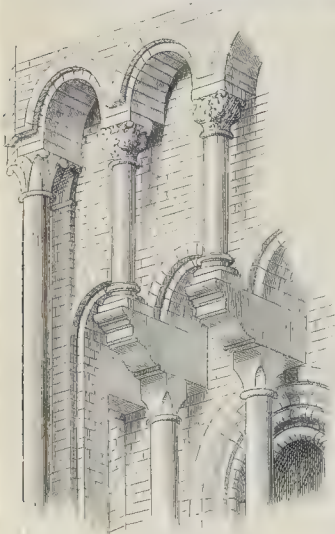


Fig. 8.

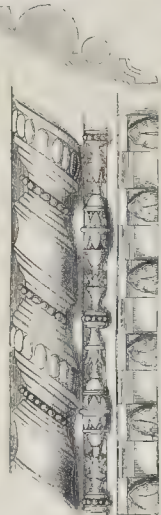


Fig. 10.



Fig. 7.

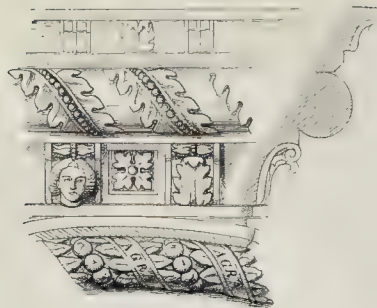


Fig. 12.



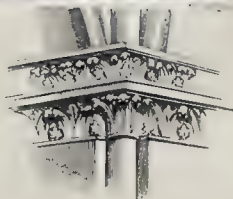
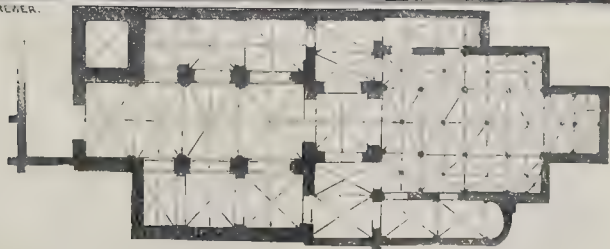
Fig. 1.

[See page 504.]

INTERIOR OF THE CHURCH OF ST. SERGE, ANGERS, FRANCE.



H. BREWER.



HEALTHFUL DWELLINGS CHARACTERISED BY CHEAPNESS.

We have before us Mr. Edwin Chadwick's report written for the English Commissioners on this subject, as illustrated by plans and models exhibited in the Champ de Mars. It is no reproach to the thoroughly well-informed writer to say that his report, being intended for persons who know comparatively little of the matter, contains much with which careful readers of the *Builder* are perfectly well acquainted. We print some portions of it, and may add that the whole of it, with illustrations, as well as that by Professor Donaldson on the Architectural Drawings exhibited, to which we have elsewhere referred, will be found in the *Illustrated London News*, where all the reports are to appear, by arrangement:—

"His Majesty the Emperor, in his continued interest in the question of the improvement of the dwellings of the wage classes, about two years ago directed some new dwellings to be built, as is stated, on a plan of his own. They are erected in the Avenue de la Bourdonnaye, in the Champ de Mars, not far from the Exhibition building.

His Majesty recently directed forty more new dwellings to be erected (in the Avenue Dumesnil, near the Bois de Vincennes) on this plan, and with a very important change in the principle of the wall construction, to be hereafter described.

I went over these buildings with some of the international jury, when I requested that the experience and feelings of the occupying housewives might be consulted as to the dwellings; and they were consulted separately, when they were found to be in unanimous and passionate disagreement with His Majesty's arrangement of the rooms. He had placed the living-room and the bedroom in the front; and they complained strongly of having always to go through the bedroom to the kitchen, where they have their principal occupation. Perhaps the mistake arose from following the common English arrangement, which is to place the scullery in the rear of the house, the cooking being done by the English housewife in the front living-room, at the common fire.*

The associated workmen of Paris, whilst they bowed reverently to his judgment in the great arrangement of the position of States, yet ventured to assert their own in the position of their *cuisine*, and of the rooms in which they were to live, and declared that they could themselves make improvements in them—as they would show if they only had the money. Whereupon the Emperor benignly said they should have the money to show what best suited them, and granted them an allowance of 20,000*fr.* to make their own trials, and the first result is the model dwelling of the workmen of Paris, which is constructed close by that of Mulhouse, within the Exhibition. In their building, which they conspicuously proclaim is designed and constructed by themselves—*sans architecte et sans entrepreneur*, they have reversed His Majesty's arrangement, and placed the *cuisine* in the front part.

On the whole, this house, on examination, it will be agreed, is, under the circumstances, a decided success. Some ventilation, though I deem it imperfect, is provided for the living and the sleeping rooms; but the window space is small.

They have preserved an open ornamental grating for the front door, and the stair space is large; but with that front-door aperture it will serve for aération, and contribute to make the whole house one which will be of good, or comparatively superior, aération. The elevation is cheerful and in good taste, and the papering and maintenance decoration (without saying that Mr. Owen Jones or Mr. Crace could not improve it) are superior to any real workmen's effort that I have seen in their dwellings in England. Allowing that the occupants of model dwellings in Paris, as well as with us, are mostly of the foremost of the wage classes, it was observed, in visiting a new set of model dwellings erected by M. J. J. Renaut, at the Rue de Cailloux, and others, that the style of the decoration, the

large mirrors, and the taste of the pictures, as well as of much of the furniture, is greatly in advance of those in dwellings of the same class in England. Of its superior *batterie de cuisine* I shall make separate mention.

The workmen, in refusing to be, as they expressed it, 'casernés,' had been influenced by a feeling of repugnance to being dissociated from the middle or other classes of society. I have observed similar feelings manifested in England, and I must submit that they are right. A *cité ouvrière* exclusively—a dead level of society—is not good for them. Their wives prefer to have high instead of exclusively low neighbours, and to see, and have their children see, what is going on about and above them. It will be observed that the lower part of the dwelling of the *ouvriers* of Paris is laid out as shops. I gathered that this arrangement was of a policy entertained by the wage classes to associate themselves with the middle classes, or the shopkeepers; and to do this as associated owners or as landlords, and in that position to obtain in reduction of their own charges as rent somewhat out of the shopkeepers' profits. This would be to reverse the conditions which prevail in some parts of London and other certain districts, where the smaller and poorer shopkeepers reduce their own charges by letting out (reserving to themselves only a back room as a living-room) the upper parts of their houses in lodgings to artisans.

The Cottage-wall Question.

Those who visit the common crowded dwellings of the wage class in our towns, even when they are unoccupied, are aware that the walls have a peculiarly depressing, musty, or fœtid smell. On visits after severe epidemic visitation attacks, in some of these dwellings a peculiarly offensive smell has been perceived; and on inquiry what that could possibly be from, the answer has been that it was the 'dead man's smell': the dead body had been too long kept near the wall, in a state of decomposition, before it could be removed for interment, and the fœtor adhered to the wall. In the course of the service, under the Public Health Act, when the occupiers were nearly all struck with fever, we have, in some cases, ordered all to be removed and the walls and ceilings to be limewashed. But it has occurred that the performance of this service has been obstructed or neglected with respect to particular houses, and in those uncleaned houses, and those alone, and with fresh occupants, the fever has broken out again, thus demonstrating the condition of the "leprous house" and the efficiency of the work of purification. Walls lathed, plastered, and papered, are even worse for such tenelements. The laths rot; the size of the paper decomposes, and the paper itself harbours vermin. The condition of some houses of this construction is horrible. To admit of the cleansing of the walls by lime-washing in Miss Burdett Coutts's, in the Peabody, and in other model dwellings, the walls have not been plastered or papered. In some instances the sanitary orders are that the walls shall be limewashed twice, and in other instances as often as four washings a year are deemed necessary. The occupiers greatly dislike these bare brick walls. In new hospitals the evil is in a great measure prevented by facing the interior wall with some hard and smooth surface, generally of the best non-absorbent and washable cement. As a principle, all interior cottage walls should be made washable. Besides the evil arising from absorbency of the animalised gases by walls of the common construction, there is another great source of evil attaching to walls of the common brick and the common soft stone construction—the absorbency and retentiveness of water or damp. In England, the common bricks absorb as much as a pint or a pound of water. Supposing the external walls of an ordinary cottage to be one brick thick, and to consist of 12,000 bricks, they will be capable of holding 1,500 gallons, or 6½ tons of water. To evaporate this amount of water would require nearly a ton of coal, well applied. The softer and more workable stones are of various degrees of absorbency, and appear to be more retentive of moisture than common brick. Professor Ansted states that the facility with which sandstone absorbs water is illustrated by the quantity it contains both in its ordinary state and when saturated. He states that even granite always contains a certain per-centage of water, and in the dry state is rarely without a pint and a half in every cubic foot. Sandstone, however, even that deemed fit for building purposes, may

contain half a gallon per cubic foot, and loose sands at least two gallons. When water presents itself in any part of such material it readily diffuses itself by the power of capillary attraction, by which, it is observed on some walls in Paris, it ascends 32 ft. from the foundations. Walls of such absorbent constructions are subject to rising wet by capillary attraction, as well as to the driving wet of rain or storm. To guard against the driving wet on the coast expensive external coverings of slate are used. But these do not stay the rising wet. This wet, having to be evaporated, lowers temperature. Damp walls or houses cause rheumatism, lower strength, and expose the system to other passing causes of disease. In London it is admitted that houses, even of the better class, cannot safely be inhabited in less than nine months. Indeed, registrars of deaths are aware that an extra death-rate is, after all, usually attendant on their first occupation. The majority of bent figures in our villages are due to the infliction of rheumatism from damp.

In Paris, notwithstanding its particularly dry subsoil and its drier climate, the sanitary, or insalubrious, evils of the common architect's constructions appear to be even greater than in London. I was assured by a Parisian builder of considerable experience, that it was unsafe to occupy any new house in Paris in less than a year after its construction, and that there were houses in Paris which would never be dry 'in their lives,' and would always afflict their occupants. In going over the new model dwellings constructed for the Emperor, we observed marks of damp upon some of the walls, though they had been erected nearly two years. The concierge who showed them to us was suffering from a grievous rheumatic affection; and I was informed that the occupants had had much illness amongst them, from having occupied the houses too soon.

Complaints, I found, were made in another set of the model dwellings, to which the jury had proposed to award a medal, of the inferior quality of the tile pavement of the rooms. And certainly, the common tile or brick floorings,—especially absorbent tiles and tiles which conduct heat rapidly, as some of them do,—are detrimental to strength. A cook, who suited her master, an eminent manufacturer, gave him notice to quit, as she found that she could not work so well, or without detriment to health, on the brick or tile floor of his kitchen as she had done in a kitchen with a wooden floor. He found that a number of his female workers made the like complaints of the bad influence of common tile floors. He could not be persuaded of these different results; and, to try them, he had a wooden floor laid down in part over a tile floor, so as to enable him to walk up and down for a length of time, with one leg on the tile and the other on the wood, when he found that the leg on the tile floor sooner became cold and tired; and he was convinced. He had a wooden floor laid down in his manufactory, and his benevolence was rewarded, and his expenditure repaid, by more steady, longer, and better work from his people. If the tile, however, be of good quality, dense, and non-conducting, or if the floor be hollow and warmed, which would be practicable in large buildings, the conditions are altered in favour of tile floors.

In one set of model cottages, to which a prize had been awarded (for advances on other points), complaint was made to me by the housewife of another set of inconveniences to which the common absorbent and permeable wall-constructions are exposed; and that is, that, although they are comparatively thick, they are permeable in a high degree to sound, as well as to damp and the mephitic gases. The housewife stated that as they lay in their bed they could hear through the wall what was said in the bedroom of the next house. In consequence of this annoyance they paid an extra rent for an end house, in which the inconvenience would be confined to one side. These sorts of constructions generate angry passions and inflict much misery, as a person of feeble health and susceptible nerves of another condition of society might appreciate by taking up his abode in such a dwelling.

In view of the first class of evils of insanitary condition, those of absorbency of damp and miasma, it occurred to me some years ago that an improved brick would be the preventive, if it were made hard and non-absorbent. It appeared to me that the drain-tile making machine, which produced cylindrical forms so rapidly and cheaply, might turn out equally well rectangular forms or hollow bricks, which, having less clay in them,

* * * We are able to say that Mr. Newton is not responsible, either for the internal arrangement of the houses, as shown on the Emperor's plan, nor for the external architectural ornamentation. All these have been designed by the Emperor, and he would not allow any alterations to be made in them. Mr. Newton is responsible for laying out the land, and for the manner in which the works are carried on. All the floors are fireproof, and are covered with parquet flooring. Each square block, comprising two houses, forming dwellings for six families, is to cost 500*fr.*—Ed. or "Builder."

would absorb less moisture, and might, indeed, be burnt hard and made impermeable. The first machine-made hollow brick ever made, as far as I am aware, was made, at my instance, by my friend, Lord Fortescue, with his tile-machine, and used in 1847 for the construction of some of his new cottages. Lord Shaftesbury also had some made and used, undoubtedly with the advantages contemplated of increased dryness and warmth. Subsequently I submitted the plans of cottages with hollow impermeable brick walls to his Royal Highness Prince Albert, who considered and approved the principle of the impermeable wall, and applied it for his model cottages in forms varied from those I had suggested, but with glazed, impermeable, and washable interior wall-faces.

It is this important and established sanitary principle of construction which appears to have been overlooked, and that there is a falling off displayed in all the model dwellings. None of them have a washable wall. All in due time will be infested with vermin, which, I am informed, is frightfully the case with the houses of the wage classes in Paris. It is the fact, however, that in several of the wall constructions in the Exhibition there is an advanced application of hollow brick. Instead of lath-and-plaster dividing-walls they have improved hollow-brick walls, which are economical, less sonorous than the old walling, and answer very well; but their facing is of porous plaster, papered. In the annex of class 65, of materials of architecture, will be found examples of hollow brick in common use for walling beyond any that have yet got into common use in England, though not in advance of scattered examples to be found there. The further improvement which the French bricks require is in the qualities of greater density, greater non-absorbency, which it is found may be imparted to them by an improved machinery at an inconsiderable extra expense. If the sanitary knowledge were wide, and the appreciation of the importance of the sanitary qualities and the demand were extensive, smooth and coloured brick or tile surfaces might be produced on large scales at rates that would render them available, at prices no greater than papered or coloured walling. The best specimen of a sanitary wall-surface, as I deem it, will be found in class 24 of the Prussian department of the Exhibition, in the white pottery, large exterior surfaces of stones manufactured by T. C. F. Feilner, of Berlin. In them the joints are almost imperceptible. I am assured by Mr. Scrivenor, the engineer of the potteries, that by machinery, if there were a sufficient demand, ornamental terra-cotta or impermeable tile surfaces may be produced at a charge below that of unglazed stone for architectural constructions."

We will look to this report again in our next.

CHICAGO WATER-WORKS.

THE Lake Tunnel for supplying the city of Chicago with pure Lake Michigan water, was, in March last, thrown open, and the undertaking, once ridiculed as an impracticable project, has already been pronounced a success, and has established the reputation of its projector, Mr. E. S. Chesbrough, the city Engineer. Chicago has been hitherto supplied with water drawn from a point about one mile north of where the Chicago River empties into Lake Michigan. The sewers of the city discharged themselves into the river, and consequently the refuse of the city found its way to the water-works, and was redistributed through the pipes, causing much inconvenience and ill-health.

In October, 1863, the contract was let to Messrs. Dull & Gowen, of Harrisburg, Pennsylvania, the price being \$16,137 dollars. The work was to be completed in two years, but the term was subsequently extended. Ground was broken on the 17th of March, 1864. A shaft was sunk, in the shape of a well, to the depth of 69 ft. The tunnel was then commenced. The tunnel, when bricked up, was 5 ft. in width, and 5 ft. 2 in. in height; the top and bottom arches being semicircles. Two miners worked at the excavation, and the brick-work, 8 in. thick, followed. The tunnel was to have a slope from the lake terminus of 2 ft. to the mile.

In July, 1865, the "crib" destined for the lake terminus of the tunnel was launched and towed to its place. It is composed of huge timbers and iron, and is 40 ft. high and 93 ft. in diameter. It has three walls, making as many separate structures, one within the other. When

finished it had fifteen water-tight compartments. In the centre was the well through which the shaft was to be sunk. When the destination was reached, the gates were opened, and the huge structure settled upon the bottom of the lake, in a depth of 30 ft. of water. It was then firmly anchored and secured. It has since been covered, and a fog-bell and light mounted upon it.

An iron cylinder was then sunk for the lake shaft; it being forced to a depth of 27 ft. into the hard, blue clay. On the 1st of January, 1866, the work of tunnelling, from the crib, commenced. At that time the tunnel from the shore had been extended 4,815 ft. The work then progressed steadily from both ends, and on the 25th of November, 1866, there was but a thin wall of 2 ft. of clay separating the workmen. On December 6th the last stono was laid, with appropriate honours, by Mayor Rice.

A new pumping-engine, capable of pumping eighteen millions of gallons per day, has been purchased at a cost of 112,350 dollars.

Just before the water was let into the tunnel a final tour was made by Mr. Chesbrough and three newspaper reporters of Chicago.

VISIT TO THE LODGE FARM, BARKING.

On the 29th ult., Sir John Thwaites, accompanied by members of the Board, paid a visit of inspection to the model farm, which the directors of the Metropolis Sewage and Essex Reclamation Company have leased with the view of showing the value of sewage applied on the ordinary irrigation system. The members of the Board were conducted over the farm, and witnessed the mode in which the beds of Italian ryegrass were flooded, and the heavy crops of grass these beds produced. They saw flax, mangolds, and potatoes, all successfully treated, and, above all, an experimental patch of wheat. The newly-erected cowsheds, each capable of holding sixty cows, were also visited. There are at present upon this farm of about 210 acres (of which only fifty or sixty are under irrigation) over 250 cows in milk; and besides the daily consumption of grass by them, there remains a large surplus for the supply of horse-keepers in the metropolis.

After luncheon, Sir John Thwaites stated that he had viewed with the deepest interest the success of the application of the sewage. That he was glad that the operations were not confined to the production of grass, which established results proved could be obtained in large quantities, but that attention was directed to other crops, especially to wheat, where they had witnessed the manifest distinction between that which was under the influence of sewage and that which was manured in the ordinary manner in the same field. He had no doubt that success would follow the application of sewage to other crops, and he hoped that the present results might satisfy both the company and the public that the application of sewage was not only a proper thing, but a profitable application of that which had hitherto run to waste.

COMPETITIONS.

Nottingham Mechanics' Institution.—The design selected, that by Mr. Simpson, has a hall 117 ft. in length, its width in the gallery 94 ft. 6 in.; its clear height in the centre, 43 ft. The arena will seat about 920 persons, and the gallery 650. The old hall, with orchestra, contained an area of 4,850 ft., whilst this will contain 11,056 ft. 6 in. A smaller lecture-room, at the south-west corner (56 ft. long and 39 ft. 6 in. wide), is intended for various purposes. It will accommodate 520 persons (on the ground-floor, 328; gallery, 192). On the ground-floor it will be accessible by one front entrance, and two private ones at the back, the gallery being reached by three geometrical staircases. The reading-room is octagonal in shape, with an elliptical ceiling, and contains 1,265 superficial feet. It is lighted from the top and recess, is 24 ft. high at the apex, and the sides pierced alternately with triple arches, resting on columns, the two to the west being angular, and fitted with seats and tables, whilst the main floor is furnished with tables running parallel with the walls. The library, elliptical in shape, will contain 1,847 superficial feet. The cost in stone is estimated at 8,000l., and in stone and brick at 7,600l.

Workhouse at Hertford.—From the six which had been previously chosen, the plans of Mr. Blessley and of Messrs. Messenger & Grundy were successively rejected; after which three other plans were balloted out. Mr. Bresssey's plan was rejected by 10 votes to 7 against Messrs. Smith & Son's; and on a fresh ballot Messrs. Smith's plan was rejected by 12 votes to 6 against Mr. Hooker's. There then remained only two competitors—Mr. Peck and Mr. Hooker. The plan of Mr. Peck was finally accepted.

Gateshead Town Hall.—The Town Hall Committee of the Gateshead Council have decided on recommending Mr. Thomas Oliver's design to the Council as the most suitable; Messrs. Austin & Johnson's, and Mr. John Johnston's coming next in order of merit.

PREMIUMS AWARDED BY THE INSTITUTION OF CIVIL ENGINEERS.

The Council of the Institution of Civil Engineers have awarded the following premiums for papers read at their meetings during the past session:—

1. A Telford medal and a Telford premium, in books, to J. T. Chance, M.A., for paper on "Optical Apparatus used in Lighthouses."
2. A Telford medal and a Telford premium, in books, to E. Byrne, for paper "Experiments on the Removal of Organic and Inorganic Substances in Water."
3. A Telford medal to G. Biddell Airy, Astronomer Royal, for paper on "The Use of the Suspension Bridge with Self-acting Roadway for Railway and other Bridges of great Span."
4. A Watt medal to Colonel Sir W. T. Denison, K.C.B., for paper on "The Suez Canal."
5. A Watt medal and a Telford premium, in books, to John Bourne, for paper on "Ships of War."
6. A Telford premium, in books, to Captain Henry Whistler Tyler, for paper on "The Working of Steep Gradients and Sharp Curves on Railways."
7. A Telford premium, in books, to W. H. Preece, for paper on "The best Means of Communicating between the Passengers, Guards, and Drivers of Trains in Motion."
8. A Telford premium, in books, to W. A. Brooks, for paper on "The River Tyne."
9. The Manly premium, in books, to C. Douglas Fox, for paper on "Light Railways in Norway, India, and Queensland."

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

At the closing meeting of the session, Mr. Parker Neville, C.E., in the chair, a dessert service in silver, and an address, were presented to Mr. Jas. H. Owen, architect to H.M. Board of Public Works in Ireland, for his services as honorary secretary during the last five years. In the course of his reply Mr. Owen said:—

"Our Institute has certainly taken a wonderful stride forward in recent years. From being a very respectable but rather effete body, it has started up into new and vigorous life; with a new character—it has gained force and energy, and is already telling on the profession and the outer world. For this you have to thank, not your honorary secretary, but those, which has brought forward a new generation of architects, and, with new men, new ideas, and the younger and more vigorous life which we all feel and rejoice in. When I first joined the Institute, its ruling idea was more that of a 'trader' union of the profession than that of an institute for the development of our arts, and the exchange of ideas and knowledge; and the only credit I can take to myself in the happy change that has taken place is, that I have not been an impediment to its progress. That I should endeavour for the future to be something more, you have bound me by the event of this day in a manner and to an extent which I never can fulfil, and I hope I may have many opportunities of proving in a more substantial manner than these few flattering words."

Mr. Owen, we are very glad to learn, has found more grateful constituents than are sometimes met with by honorary workers.

BOROUGH SURVEYORS.

The committee appointed at Newcastle to inquire into the working of certain departments find a state of things existing that calls for an instant remedy. There are three sets of officials to do the work of one, with no clear allotment of duties, and as a consequence discharging their functions with very little responsibility. There is, first, the department under the supervision of Mr. Bryson, the town surveyor, who has a staff of six subordinates, including his son; and which entails an annual charge of 853l. 12s. Then comes the engineering department, of which Mr. Lamb is chief, who, with his four subordinates, draws upon the borough revenue yearly to the extent of 920l. 8s. Lastly, there is the road

* Have previously received Telford Medals.

surveyor, Mr. Dawson, whom the committee treat as a department in himself, and who receives a salary of 200l. for duties that the committee profess themselves at a loss to discover. In all, there is an annual expenditure, under the heads of Borough Engineer, Town Surveyor, and Road Surveyor, of 1,974l. Mr. Lamb, the borough engineer, according to the committee, does not act as engineer, but as land-agent, the engineering work being done in the town surveyor's office; and several of the officials are in the habit of undertaking private work. Thus Mr. Bryson, jun., prepares plans for builders; and occasionally superintends the erection of houses as architect. And Mr. Robinson, in the engineering department, likewise carries on a private practice as architect. An assertion that "allowances" are granted to contractors is admitted to be true, but it is denied that these allowances are made by putting down more work than has been performed.

With these facts before them the committee recommend a concentration of all the surveying and engineering duties into one department under one directly responsible head; and they lay down the axiom that divided allegiance in corporate officials, "by servants seeking to advance themselves by serving a plurality of masters, is alike objectionable in principle and practice." They propose to call the head of the amalgamated department the "Borough Engineer."

CASES UNDER METROPOLITAN BUILDING ACT.

NOTICE TO DISTRICT SURVEYOR.

At the Clerkenwell Police-court Mr. Alexander Wright, of Penton-street, appeared in answer to a summons issued by the district surveyor of South Islington, for neglecting to give notice before commencing works to and upon No. 64, Hulton-road, Canonbury. The front porch, made of brick, cemented, was taken down and rebuilt. It was maintained by defendant's solicitor that it was only "necessary repairs, not affecting the construction of the party or external walls," exempted by section ix., and said it was now exactly as it was before it fell down. The district surveyor (Mr. Godwin) considered that the porch was part of the external wall, and affected the construction of the wall, acting as a buttress. It would have been illegal if the builder had made it of wood; and, unless the surveyor had notice, he could not see that the Act was carried out. Sec. xxviii. required that two days' notice should be given before "any work to, in, or upon, any building" was commenced.

The magistrate (W. Cooke, esq.) adjourned the case for a week, that he might give it consideration, rightly deeming it of importance; and enabled defendant to prove that the porch was exactly the same now as it was before.

At the adjourned hearing, a witness for the defendant being asked if he had repaired the porch, said he had rebuilt it. The magistrate, without hearing the district surveyor again, said he had given the Act further consideration, and had arrived at the conclusion that notice should have been sent. Section xxvi. provided how much architectural projections should be removed, and the district surveyor could not know that this was complied with, unless he had the required notice. The builder was fined a nominal penalty (with concurrence of district surveyor), and 12s. 6d. costs.

At the Marylebone Police Court.—Thomas Williamson, of St. John's Wood-terrace, was summoned before Mr. Mansfield, for that he, long the builder engaged in doing repair work, at 15, Henry-street, had neglected to give notice to Mr. Peebles, district surveyor of the Northern division of Saint Marylebone, before commencing, as required by Sec. 35. Surveyor stated, when he discovered a work upon the 19th ult., the ground beneath the house had been excavated to the depth of about 1 ft.; one party laid the external walls, which are 14 in. thick at the base, and 2 ft. 3 in. at the lowest, course of footings, had been ascertained with work only 9 in. in thickness, and but 1 in. of that were under the walls. Sec. 35 placed any brick affecting the construction of an external or party wall under his supervision. He at once sent a notice to the builder, which was complied with. Mr. Payne, for the defendant, contended that this was a work done for the purpose of necessary repair, not requiring a notice, for it did not affect the construction of the walls until Mr. Mansfield required it to be underpinned the whole thickness. The magistrate was of opinion that it did affect the construction of the walls. Mr. Peebles pointed out that every building shall be incased with walls of a minimum thickness; the part added was insufficient, and indicated the other clauses of the Act affecting work of this nature. Sec. 13 required walls to be constructed of such substances, and of such thickness, and in such a manner as are mentioned in first schedule annexed thereto. First Schedule, Preliminary Clause 1, required

every building to be enclosed with walls constructed of brick, stone, or other hard or incombustible substance. Clause 2. No part of any wall shall overhang any part beneath it. Clause 3. The thickness of every wall shall be minimum in thickness; and Clause 3 required footings: the work when found had none. He made no complaint of the work as amended. Mr. Payne submitted even were it a work of which notice should have been given, his client had acted unobjectionably, and that also this was a case of emergency provided for by Sec. 44, for the drainage works and removal of the soil were ordered by the sanitary inspector, who caused its removal from below the walls; and immediately his client heard the surveyor had called, he wrote him a letter explaining the mistake. Defendant was ordered to pay 12s. costs.

Charles Thomas, of York-place, High-street, was summoned for a similar offence at 49, Cochrane-terrace. Upon the 25th ult., Mr. Peebles, discovering two story-pods had been removed and brick ones substituted, immediately sent a memorandum to defendant, reminding him of the omission to give notice, and requesting one. Not receiving a reply, these proceedings were taken. The work affected the construction of an external wall, and by Sec. 9 was subject to supervision. In addition Sec. 15 contained requirements for bricksummer and story-pods, placing them under special survey. Defendant's clerk appeared, and stated it was a necessary repair; did not require a notice, as it was merely a temporary repair, and he would give notice when the other alteration commenced; and that sometimes the customer gave his own notice. The surveyor stated, of the works which came under his notice about 30 per cent. were discoveries, which rendered it more difficult for him to discharge his duty, and he was afraid he would require to trouble the Court frequently. Mr. Mansfield said the district surveyor was a public officer responsible for the safety of the buildings, and should have notice of works. Defendant was ordered to pay 12s. costs.

BLUNDELLSANDS SEWERAGE.

The sewerage of the Blundellsands estate, respecting which there have been some contests between Major Blundell, the owner, and the Crosby Local Board, has just been completed by Messrs. Beade & Goodison, architects and civil engineers, of Liverpool, according to the plan submitted to Mr. Morgan, the Government inspector at the time of the great Crosby sewerage inquiry.

The works consist of an outlet sewer of 18 in. glazed socket drain-pipes, manufactured by Messrs. Brooke, of Huddersfield, commencing at the stream called "Pormby's Pool," in Dible-lane, and extending at a gradient of 1 in 1,000 to the Crescent-road, which forms the central line of the estate. Thence it is carried up Crescent-road at the same inclination, and branches off with a 15-in. pipe at an inclination of 1 in 800 up Benbo Bank-road, and turning sharply to the eastward up Blundellsands-road, terminates at the railway station. A branch sewer is now being constructed up Nicholas-road, commencing directly at the main sewer in the Crescent-road, and terminating at Blundellsands-road. The total length at present laid down is about two miles, and, as other roads are being proceeded with rapidly, contracts for Victoria-road and the Serpentine having just been let, the system will be extended to meet the requirements of this rapidly increasing neighbourhood. Through nearly the whole course of the outlet-sewer, running sand has had to be contended against; that portion under the railway and westwardly through very high sandhills from this cause, and the depth of the cutting, creating very great difficulty on the proper laying of the pipes which, from the small inclination of the sewer, it was of the utmost importance should be laid to accurate levels.

The work was very much facilitated by the flushing valves, of a simple construction, contrived by the engineer, and built at intervals in the manholes which, by creating means for regular flushing with the subsoil water, enabled the contractor to wash away the large quantity of sand which necessarily entered the sewer during the course of the works.

The flushing power, obtained by the subsoil and sewer waters, being suddenly liberated upon the opening of the valves, is very great, and the sewer, otherwise from its small diameter and inclination liable to be silted up, can be kept, we are told, free and clean. Another peculiarity in the drainage of the estate is the placing of the branch sewers on the parapet, which obviates the necessity of disturbing the asphaltic roads, many of which were completed before the sewerage could be commenced.

Much of the house drainage has already been connected with the sewer, and the beneficial effects accruing from the drainage of the subsoil, which from its sandy nature is affected to a considerable distance on either side of the sewer, flashes of water having disappeared at a distance of 200 yards from its course, is very apparent.

The contractor for the works was Mr. Abraham Thomas, of Liverpool, who has carried them out in a manner satisfactory to the engineers.

PROPOSED NEW SYNAGOGUE, LONDON.

In a recent select competition, invited by the Council of the West London Synagogue of British Jews, for the erection of a new synagogue at the corner of Upper Berkeley-street and Edgware-road, the designs of Messrs. Davis & Emanuel, of 22, Moorgate-street, City, were unanimously selected. Five other gentlemen were invited to compete, three of whom sent in designs,—viz., Mr. Cookerell, Mr. H. H. Collins, and Mr. Wyatt Papworth. The unsuccessful competitors each received an honorarium of fifty guineas. The building is contemplated to cost between 12,000l. and 15,000l. The entrance, which is from Upper Berkeley-street, occupies the frontage of an ordinary house, and this will be the only street façade of the new building. Mr. P. C. Hardwick acted as Consulting Architect to the Building Committee.

SURVEYORS AND DRAUGHTSMEN.

Str.—A correspondence is going on relative to the formation of a society for the welfare of assistant engineers, surveyors, and draughtsmen.

Now that the subject is once more brought to the notice of the profession, I think the matter should be fairly tried, in order to test the practicability of such an undertaking. I am therefore induced, in consequence of the extensive circulation which the *Builder* has amongst the class interested in this movement, to solicit a small *g. s. s.* for the purpose of calling the attention of the profession to the movement that is now being made, and to strongly urge them not to let the matter fall to the ground for want of proper energy.

The subject was mooted some time ago, but unfortunately was allowed to drop. The present depressed state of the profession will, no doubt, open the eyes of many to the advantages to be gained by such a co-operation.

I am acquainted with many assistant civil engineers and draughtsmen who are most anxious for the formation of such a society.

Draughtsmen, as a class, are not a very provident or careful race, owing no doubt to the uncertainties to which they are subject, and I feel quite assured, that were a society of this description once fairly started, there would be very few members of the profession who would fail to devote a small quarterly subscription for such a purpose, the advantages of which would be gained hereafter.

P. S.

SURVEYORS AND LOCAL BOARDS.

Str.—It is true surveyors began to act on the defensive. In a district near here, a certain Local Board recently advertised for a surveyor, stating that he must devote the whole of his time to the office. Before the election took place, and without giving notice to the different candidates, the gentlemen of this Board met, and rescinded a former resolution, as to the surveyor's whole time being required; and, at the same meeting, elected a local man who is carrying on a business of his own.

I have been to many elections, and am quite sure that seventeen out of twenty are mere matters of form,—an affectation of fair play to cover favouritism and local prejudice.

SURVEYOR.

PROPOSED TYTHING CHURCH, WORCESTER.

Mr. J. SEVERN WALKER, hon. secretary to the Worcester Diocesan Architectural Society, writes us directing attention to letters in the Worcester papers by himself and Mr. W. J. Hopkins, consulting architect to the Church Extension Society, rebutting "Mr. Alsop's" insinuations respecting the conduct of the consulting architect to the Worcester Church Extension Society in the matter of the Tything Church plans. It did not require a professional eye," says Mr. Walker, "to detect the glassing defects, both in design and arrangement, of the plans approved of by the Building Committee, and which defects no youth who had been a few months in the office of an experienced church architect would be likely to embody in a design for a new church at the present day."

That the majority of the committee who are said to have "heartily approved" of the plans should feel annoyed at their being condemned by the Architectural and the Church Extension societies is not to be wondered at; but the opinion of persons who acknowledge that they know nothing of plans can, of course, have no weight with the public; and, had not the facts of the case been misrepresented, and were not a wrong impression likely to be conveyed by the notices that have appeared in the local papers, as well as in a recent number of your widely-circulated publication, no notice need have been taken of such discreditable proceedings.

VALUE OF LAND: FRESHWATER, ISLE OF WIGHT.

A GOVERNMENT ROAD.

On the 27th of June last, at the Albion Hotel, Freshwater Lake, the vacant land opposite the hotel was sold by auction in twenty lots. Sixteen plots of villas went at the rate of 400l. per acre, the purchasers having to pay for the roads by which the plots were reached.

The four remaining plots nearest the sea fetched nearly a thousand pounds an acre, the purchaser having to maintain any sea defences.

This land is situated in the Valley of the Yar.

between Afton and High Downs, and intercepts the communication. The old road next the sea, and, indeed, a portion of the land sold, has been swept away by the encroachment of the sea during the last two years. And this leads one to make the inquiry, What was the object of the Government authorities in making a military road, at immense cost, from Chale to Freshwater without any means of communication with the forts at the west side of Freshwater Gate? At all events, it is quite clear that the communication cannot now be made, except by the purchase of a portion of this land which is about to be covered; or by the reconstruction of the old road, with a sea-wall to protect it.

Until something is done, the said military road affair is rather an expensive practical joke.

AN OBSERVER.

ANCIENT ALTARS.

SIR,—In your interesting article on "Ancient Altars" in a recent number, you remark on their scarcity in France and elsewhere, and say, owing to the Reformation, few are to be expected in England.

It may interest some of your numerous readers to know that, in the spacious chancel of St. Nicholas's Church, Arundel, all the altars remain, the east end of the south aisle being fitted up according to the ritual of the Church of England, an altar having stood there previously.

The altars in the chancel are quite plain. The top of the high altar, and that in the choir, formerly part of a convent on the north side, are covered with a wooden frame, the Dukes of Norfolk having always been careful to preserve them from desecration.

There are also several chantry altars, one, in a very small space behind the high altar, very much dilapidated.

J. ROOR.

CHURCH-BUILDING NEWS.

*Leire (Northampton).—*The foundation stone of a new church has been laid here. Mr. W. Smith, of London, is the architect; and Messrs. Laws, Lutterworth, the builders; Mr. James King, overseer of the works.

*Lutterworth.—*The restoration of Lutterworth church has been commenced. Mr. Scott is the architect employed, and Messrs. Laws are the builders; Mr. King clerk of the works.

*Winterborne Dauntsey.—*The foundation-stone of a new church, which it is proposed to substitute for the present small and dilapidated churches of Winterborne Dauntsey and Winterborne Earls, has been laid by the Bishop of Salisbury. The site is a portion of what was formerly known as the allotment gardens, sufficient land being attached for a churchyard, as well as for the erection of a parsonage-house and a school, which, it is hoped, may hereafter be built there. The new church, which is being dedicated to St. Michael, will be practically a combination of the two old ones, the building materials in both being as far as possible used in the rebuilding. The architect is Mr. T. H. Wyatt, of London, and the builder, Mr. Till, of Romsey; Mr. Harding, of Salisbury, acting as clerk of the works. Essentially it will be in the Perpendicular style, with an Early English chancel, the old windows being used again, as will also be the old roof from Winterborne Dauntsey. There will be a tower at the south-west angle of the building, with an entrance underneath. It is intended to afford accommodation for 303 persons, of whom 193 will have sittings in the nave, 33 in the chancel, 30 in the south aisle, and this, with accommodation for 47 children, will give a total of 383 sittings. The contract, we understand, is a little below 2,000*l.*, the builder having permission to use the old materials.

*Fynone (Swansea).—*The church of St. James, at Fynone, near Swansea, has been consecrated and opened for divine worship by the Bishop of St. David's. The building has been erected from the designs, and under the superintendence, of Mr. Thomas Nicholson. The contractors for the work were Messrs. Thomas, Watkins, & Jenkins, builders, Swansea. The church is in the Decorated style. The plan comprises a nave, with north and south aisles, north and south transepts, chancel chapels, a vestry, and a porch. The aisles are separated from the nave

by four arches on each side, standing upon columns finished with carved capitals. An arch separates the nave from the chancel. The west front, the transepts, and the chancel are filled with large windows of geometrical tracery, that in the chancel being of five lights, and those in the transepts of four lights each. A series of three-light windows decorate the aisles. All the windows are glazed with thick cathedral tinted glass. The roofs are open-timbered, of an interlacing pattern: they are stained and varnished. Godwin's tiles are used throughout; plain in the body of the church, and ornamental in the chancel. A glazed tile reredos embellishes the wall behind the communion-table. The seats throughout are all open, stained, and varnished. The chancel is stalled, and is elevated above the nave. The materials used in the construction are native stone for the walling, and freestone, both inside and out, for all the dressed work.

*Enderby.—*The church of Enderby, which was built about five centuries ago, having fallen in some measure into decay, and having become completely inadequate to accommodate the increased population of the village, the owner of the Enderby estate, Mr. C. Brook, resolved to undertake the work of rebuilding and enlarging it, on a scale commensurate with the wants of the present day. The church, as it recently existed, consisted of a tower at the west end, a nave of four bays, and chancel. The last has been pulled down, and the remainder of the church is left standing for use during the progress of the new building. The tower is to be retained and incorporated with the new church, which is to be built outside the old one, and to consist of a nave of five bays, with side aisles, and a chancel of three bays. There is also to be a vestry on the south side of the chancel, and adjoining it an organ chamber. The style is to be as far as possible a reproduction of the original church, and the stone principally used is granite from a quarry on Mr. Brook's estate. The work, which was planned by Mr. E. Birchall, of Leeds, architect, and intrusted to Mr. J. Firn, builder, Leicester, for execution, having progressed sufficiently to show the extent of the alterations, the laying of the foundation or memorial stone, took place on the 24th ult., St. John the Baptist's day.

*Canterbury.—*St. Mary Bredin, Canterbury, built to supply the place of a very small and inconvenient structure formerly on the same site, has been consecrated by the Archbishop of Canterbury. The design, commenced by the late Mr. William Lightly, has been completed and carried out by Mr. Frederick Wallen. It is of Early Pointed character. The shape of the site, broader from north to south than from east to west, and so small that it required to be quite covered by the building, has caused the architects to design an unusually wide nave, and the necessary shortness of the chancel has been compensated for by equal width and height with the nave, and a bold chancel-arch. The only access to the ground was at the east side; the entrances are therefore at the east end of the aisles, the chief or south-east porch having an external door placed angularly, to meet the requirements of a bend in the street, and the motif of an octagonal tower and spire thus given is adopted. The upper story of the tower opens into the church by an arch in continuation of the clearestory. The tower is carried up to the base of the timber spire, which is to be covered with shingles. Funds are lacking at present for this and for a small sum still unprovided for the church. The old reredos, reading-desk, and pulpit are at present retained. The total cost, including the spire, will be a little over 4,000*l.* The accommodation is for 520, in open benches. The builders were Messrs. Gasken & Godden, of Canterbury.

*Stour Provost.—*The foundation-stone of a chapel-of-ease in this parish, which is to accommodate a number of inhabitants belonging to the outlying districts, and is estimated to cost 1,200*l.*, has been laid. Mr. J. Hicks, of Dorchester, is the architect; and the building is to be erected by Mr. Miles, of Shaftesbury, builder. The work will be completed in December.

*Grimsby.—*Several tenders for the building of the chancel of the new church have been opened, and that of Messrs. Brown & Son, of this town, builders, has been accepted. The work will be commenced forthwith.

*Gloucester.—*The dean and chapter have resolved that the general restoration of the cathedral shall be commenced almost immediately, the choir being the first part taken in hand. The chapter will shortly hold a special meeting to make final and definite arrangements. About

a third of the estimated cost of the entire restoration of the sacred fabric has been promised.

*Bournemouth.—*Arrangements are in progress for erecting a new district church at Bournemouth. The church will be built by Mr. Ewan Christian, and will be designed to accommodate 1,000 persons, 350 seats being free, and 650 will be rented. A district will be assigned to the church. The site has been granted gratuitously, in perpetuity, by Mr. Robert Kerley, and is situated in Madeira-vale, on the upper part of the old Christchurch-road. The cost of the building is estimated at between 5,000*l.* and 6,000*l.*

SCHOOL-BUILDING NEWS.

*Mere.—*According to the *Macclesfield Courier* the foundation-stone of a new school and house for the master has been laid at the village of Mere. The school is to be erected at the expense of Mrs. Langford Brooke, from designs of Mr. W. Owen, of Manchester, architect.

*Rhayader.—*The foundation-stone of the new Girls' School has been laid on the Maes. The school and class rooms, which will be 40 ft. by 20 ft., and 13 ft. by 10 ft. respectively, will accommodate 120 children, and the former, when arranged for meetings, &c., will contain upwards of 250 persons. The general style of the structure will of course be Gothic, the walls being brick on a stone base. Internally the timbers of the roof will be exposed to view, and externally they will be covered with Major's patent tiles. A bell cot will be added if the funds should permit. The contract has been taken by Mr. William Evans, and will be executed under the superintendence of the architect, Mr. E. H. Lingen Barker, of London and Hereford.

*Fleetwood.—*At the Rossall School new baths have been opened by the Marquis of Hartington, M.P. The building was designed by Messrs. Garlick, Park, & Sykes, of Preston, architects, and consists of a swimming-bath, 120 ft. long and 24 ft. wide. The east end of the building is fitted up with two-story dressing-rooms, water-closets, urinals, and a large raised platform. The west range comprises ten private baths, superintendent's house, committee-rooms, and bath-house. The building has a south frontage of 176 ft., an east frontage of 56 ft., and a west frontage of 55 ft. The swimming-bath contains 100,000 gallons, and is supplied with salt water pumped from the Irish Sea by an eight-horse engine and double-action pumps, constructed by Mr. John Stevenson, of Preston. The foundation-stone of the new buildings for convalescents was also laid by the Marquis of Hartington. The building, when completed, will comprise convalescent wards, porter's residence, board-room, additional class-rooms, studios, and dormitories, and is designed to harmonize with the main features of the buildings adjoining. It has a west frontage of 115 ft. to the court-yard, thereby completing the easterly side of the quadrangle, and on the east a frontage of 145 ft. The main entrance will be flanked by four octagonal towers, rising 60 ft. high, one at each angle, surmounted by slender turrets. Between each tower and over the pathway there will be an oriel window running two stories high, which forms the most prominent feature in the design. Messrs. Garlick, Park, & Sykes, of Preston, are the architects; and Mr. R. Saul, of Preston, is the contractor.

DISSENTING CHURCH-BUILDING NEWS.

*Kettering.—*The new Wesleyan Church here has been opened. Its site is in Silver-street, about the centre of the town. It was erected from a design by Mr. G. Woodhouse, of Bolton-le-Moors, architect. Mr. J. Watkin, of Northampton, was the builder. The building is of brick, with ornamental facings of freestone, on which some carving has been bestowed. It is capable of seating 630 persons. The chapel is galleried all round in a circular, or rather oval manner, the segment in front and opposite to the pulpit swelling into tiers of seats eight pews deep, opposite to which, in the centre of the choir, an organ (from the manufactory of Messrs. Bevington & Son, London,) is placed in a commanding position. The seats in the chapel are of deal, varnished, and are contrived so as to face the pulpit. The outside of the galleries is painted of a light green and white, with a polished mahogany ledging. The pillars which support the

galleries are light and slender, with Corinthian capitals. The pulpit is of carved work. An ornate frieze, wrought in plaster of Paris, surrounds the walls just under the ceiling, which is plain, and from which depend five stary gas-pendants, by which at night the interior will be principally lighted. The original estimate of cost was 2,100*l*. The building is enclosed by a low wall mounted with palisades.

Taunton.—Extensive alterations are about to be made at the Wesleyan chapel in Upper High-street. It is proposed to take down the whole of the buildings, except the chapel front—which was added but a few years since—and to enlarge both chapel and schools, so as to cover the whole ground belonging to the trustees. In the new chapel the upper end will be towards the west instead of the north, as now, and the size will be increased one-third, the area being about 70 ft. by 60 ft. Instead of a pulpit there will be, within an apsidal arched recess, a rostrum over the Communion-table. On the right and left will be the vestry and the trustees' room. The organ is to be placed in the east gallery, at the opposite end of the chapel. Ten light iron pillars, with carved capitals, from which spring moulded wood arches, will support the galleries under roof. The fronts of the galleries around both sides of the chapel will be composed of masonry wood framing and ornamental iron-work. The timbers of the roof, wrought, moulded, and slightly stained and varnished, will be open interiorly. The seats throughout are to be low, with moulded and chamfered solid bench-ends, and the backs sloped; they will form on the ground-floor what may be called a nave, 30 ft. wide, and two aisles. On the eastern turret, to the right of the entrance, will be added a light spire, the final stone of which will be about 70 ft. above the street level. The front elevation of the schools will be built out on a level with the chapel, parallel with the street, and correspond in style. The new school-room, on the same level as the chapel floor, will measure 61 ft. by 37 ft., and be 17 ft. high, with seven class-rooms, and a ladies' working-room over. The design and plans were prepared by Mr. S. Shewbros, of this town. The materials mentioned in the present buildings are to be used, as far as practicable; and the whole works are to be carried out under the direction of Mr. S. Shewbros.

Books Received.

The Pyrenees: a Description of Summer Life at French Watering-places. By HENRY BLACKBURN. London: Sampson Low, Son, & Marston. 1867.

A volume from the picturesque pen of the author of "Travelling in Spain in the present day," illustrated by more than 100 engravings, some sketches by Gustave Doré, cannot be an every-day book, and that is what we have here. Some of the landscapes are charming; take, for example, the sketch illustrating the lines—

"The sultry summer day is done,
The western hills have hid the sun;
But mountain peaks, still rising higher,
Retain reflection of his fire."

Still, there is a want of variety in the subjects,—not the artist's fault,—and where we fall on his piggy, little groups of people, or a German band, the change is agreeable.

Some of the towns on the way to the Pyrenees are dull, to use a mild term; Dax, for example, concerning which a friend wrote home,—“A funeral procession passed us in the street, and I think I envied the occupant of the bier. He, at least, was leaving Dax, whereas I had to wait near the seven o'clock train!” Our author has said all that can be properly said in favour of the Pyrenean towns, but he cannot disguise the fact, that in travelling in the Pyrenees there is a want of that sustained interest which in Switzerland never flags. Nevertheless, there are delightful spots, and his account of them will send many visitors that way. *Eaux Bonnes* he highly praises warmly. Concerning this fashionable little hotel village, we would make a protest against the frightful over-crowding that periodically occurs there. It consists of about fifty houses, and these in the season give accommodation to a thousand people!

Mr. Blackburn rightly denounces the wholesale encouragement given to begging in the Pyrenees generally, and the consequent wine-selling everywhere for “*quelque chose; quelque chose pour l'amour de Dieu!*” The inhabitants are

everywhere demoralized. A girl of sixteen, well dressed, and evidently well to do, comes up with a bouquet of wild flowers: she asks 10 sous for it (about the wages of a day's work), and will not take less for it; but on receiving the money immediately asks for the bouquet back again, to sell to some one else! Indiscriminate almsgiving is a vice full of evil results. Anyhow, Mr. Blackburn's elegant book needs no “charity”; it can trust to “justice.”

VARIORUM.

“A HANDBOOK of Practical Telegraphy.” By R. R. S. Cully, Engineer to the Electric and International Telegraph Company. Second Edition, considerably enlarged. London: Longman, Roberts, & Green. 1867. This is a more elaborate and extensive volume on this subject than any of those recently noticed by us. It is intended to give information to members of the telegraph service and to those interested in telegraphy concerning the electrical laws upon which the system depends; the method of discovering faults; the practical management of apparatus; the construction of a line; and the leading principles of submarine telegraphy. The work is published with the sanction of the Board to whom Mr. Cully is engineer; and has been adopted by the Department of Telegraphs for India. — “Arithmetic Simplified.” By Neil Arnott, M.D., F.R.S. London: Longman, Green, Reader, & Dyer. 1867. This thin volume is intended for general use, and adapted to aid students engaged in any departments of science or art; also to serve as a supplement to the author's “Elements of Physics,” published in 1865, and other works on popular science.

Miscellaneous.

THE WALLACE MONUMENT.—At a meeting of some of the more prominent Scottish residents of New York city, held there on the 1st ult., the feeling was unanimously in favour of zealous co-operation with those at “home” in completing the Wallace monument. A large and influential committee was formed to carry out this resolution, and twelve gentlemen put down their names for 100 dols. each. Up to the 15th ult., subscriptions continued to come in. The central committee in New York have made up their minds, it is said, to send over, if possible, a sum of 10,000 dols.

PROPOSED INTERNATIONAL ARCHEOLOGICAL SOCIETY.—A Russian archaeologist, M. Filimonoff, who is now in Paris, on a visit to the Exhibition, is urging the establishment of an international archaeological society. The project has been favourably received by several other archaeologists, and M. Mandergreen, of Stockholm, has assisted M. Filimonoff in drawing up a set of regulations for the new society, which have been already submitted to the French Government. It is proposed to admit archaeologists of all nations to the society, and to hold congresses in the principal capitals of Europe.

WINDOW-GARDENING.—In past years window-gardening was pioneered by the *Builder*, and we are glad to see that it now no longer needs pioneering. Another flower-show has taken place in the garden of the Middlesex Hospital, kindly lent for the occasion by the authorities. The flowers exhibited had been grown in the rooms or on the window-sills of very poor persons living in the district of St. Andrew's, Wells-street, and Christ Church, St. George's. Prizes had been awarded to the most successful growers, and were distributed by the Lady Mildred Beresford-Hope and the Hon. Mrs. William Cowper. The flowers were quite remarkable for beauty when the circumstances under which they were cultivated are considered. They consisted principally of musk, geranium, and fuschias in full bloom, and they came from crowded courts, close alleys, or steaming mews. One chief prize was given to a deformed girl. In another instance the flower had been cultivated by the bedside of a little boy in one of the hospital wards. The Coalbrookdale Company, we observe, manufacture neat iron frames for window-gardens, which fit on to the usual window-sill, and have, if desired, a light wiring for creeping plants, which also affords protection for children when engaged in the window-gardening.

THE LONDON BRIDGE TRAFFIC.—At the last Court of Common Council in the City, a petition was presented by Mr. Medwin, praying the court to take some steps to relieve the foot traffic upon London Bridge, and suggesting that a footway might be erected at the side of the bridge. Mr. Medwin proposed that the petition should be referred to the Bridge-house Estates Committee for them to consider the statements made in it, and report thereon to the court; but an amendment was carried to the effect that the petition lie on the table.

BRICK BURNING.—The suit *Evans v. Smith* was to restrain the continuance of a nuisance arising from the burning of bricks within 112 yards of a dwelling-house. Vice-Chancellor Wood observed, in reference to an argument adduced on behalf of the defendants, that whatever might have been the case formerly, when there was considerable conflict of opinion as to whether the smoke and vapour arising from brick-burning were to be considered as prejudicial to health and comfort, it was now clearly settled that the fumes of a brick-kiln, if they reached dwelling-houses, were a nuisance to the inhabitants, without the Court of Chancery would restrain without requiring any scientific evidence upon the subject.

FALL OF A MOUNTAIN INTO A VALLEY.—At Feldkirch, Switzerland, according to a letter, part of a mountain has set itself in motion, and is sliding down into the valley. The inhabitants of a village at its foot are in great consternation at the occurrence. Every few minutes a new crack shows itself: at first as broad as a piece of thread, it becomes gradually broader and broader, and one piece of the mountain rapidly follows another. At present a very large surface is in motion to the depth of perhaps more than 1,000 ft. A river and all the brooks which flowed down the mountain have disappeared in the cracks. Paths which were formerly nearly level, have been separated into little pieces, of which some are 20 ft. higher than the next one; and large forests have been wrenched out of the earth and thrown away in all directions.

THE LARGEST BLAST FURNACE IN THE WORLD. The extraordinary development of the iron manufacture in the Cleveland district has led to the building of the largest smelting furnaces in the world. One of these, and the largest hitherto built, is at the Norton Ironworks. It was put in blast a few weeks ago, being previously charged with upwards of 500 tons of mineral. The inside diameter is 25 ft., the height 85 ft., and the capacity 26,000 cubic feet. It was expected that it would produce about 450 tons of pig-iron weekly, and this expectation seems to be in a fair way of being realised, as the furnace has hitherto proved a complete success, both as regards quantity and quality of metal produced, and quantity of coke used to the ton of pig-iron. The fourth week after the blast was put on the make of the best foundry pig was 365 tons, or equal to 50 tons per day; and during the sixth week the make had increased to upwards of 92 tons in 24 hours, or at the rate of 434 tons per week, and the furnace has neither its full “burden” nor full blast on yet, so that its producing powers have not been fully tested.

ALLEGED INFRINGEMENT OF A REGISTERED DESIGN.—At the Public Office, Messrs. H. & T. Kendrick, 158, Hockley-hill, and 129, Great Colmore-street, summoned Mr. James White, 62, Porahore-street, for fraudulently imitating the design of a registered stove-grate. Mr. Fitter appeared for the complainants, and Mr. Cutler for the defendant. The subject of the complaint was a small gas stove, standing on three ornamental legs. These legs, it was alleged by the complainants, had, until recently, been fastened to the main part of the stove by a screw, a hole being drilled in the body and in the leg to receive it. Their plan was to cast the leg with a rivet fastened to it, and cast the body with the holes ready-made, so that the rivet fitted in the hole, and only required hammering down. This, it was alleged, saves a great deal of time. Evidence to this effect was given on behalf of the complainants. The defence was, that the idea was known before it was registered by the plaintiffs; and, besides, the plaintiffs had themselves made and sold the article, which rendered the registration according to the Act null and void. Evidence was given to prove this, and Mr. Fitter said, of course he could not then go on with the case, as the complainants had thrown themselves out of Court. The case was therefore dismissed.

INTERNATIONAL COLLEGE, SPRING GROVE, MIDDLESEX.—This building, recently illustrated in our pages, was opened by H. R. H. the Prince of Wales on the 10th inst.

RATING OF LITERARY INSTITUTIONS.—The Lords of the Treasury have, on the recommendation of the Board of Inland Revenue, issued an authority for the limitation of the assessment of public buildings devoted to the culture of science, literature, and art, to such portion of the building beneficially occupied as a dwelling, when such portion is of the annual value of 20*l*. or more.

THE CLERKENWELL MORTUARY.—This building, which was erected recently at considerable expense, has been closed in consequence of certain representations made by parishioners in the locality to the legal advisers of the lord of the manor. A deputation of the inhabitants waited upon them, with a numerously signed memorial against the re-opening of the mortuary. The representative of the lord of the manor promised to bring the matter under his notice at the earliest opportunity.

A HINT TO GARDENERS.—If people planting orchards would give orders to mark the north side of trees with red chalk before they are taken up, and when set out to have the trees put in the ground with their north side to the north in their natural position, a larger proportion, it is said, would live, as ignoring this law of nature is the cause of many transplanted trees dying. If the north side be exposed to the south, the heat of the sun is too great for that side of the tree to bear, and therefore it dries up and decays.

STATE VISIT TO THE ROYAL ITALIAN OPERA HOUSE.—The visit of H. R. H. the Prince of Wales, his Majesty the Sultan, and numerous distinguished persons, with brilliant suites, to Covent Garden on Monday evening next, will be a remarkable event. The Floral Hall will be used as the reception-room; and Mr. Gye, it may be depended on, will decorate it superbly. The Royal Box will be placed in the centre of the house, as on the occasion when H. M. the Queen, the late Prince Consort, and the Emperor and the Empress of the French were present in 1855. A wonderful sight that was.

NEEDHAM MARKET FINE ARTS AND INDUSTRIAL EXHIBITION.—An exhibition of novelties, rarities, and curiosities, of things useful and things ornamental, is now open at Needham Market, and promises to prove a decided success. The collection includes much that is interesting, and which would do honour to a town of greater pretensions than Needham Market. The exhibition is held in the newly-erected town-hall, all the available space in which is occupied. The great majority of the articles are contributed by residents within a few miles of the town. The catalogue shows that there are 329 "articles" exhibited, but, in the majority of cases, each "article" consists of a collection in itself.

REPORTS BY ENGLISH ARTISANS ON THE PARIS EXHIBITION.—A laudable effort is being made by the Paris Excursion Committee of the Working Men's Clubs' Union, as already mentioned, to turn to useful account the visits to the French capital undertaken by large bodies of English artisans. Accordingly, by the exercise of the special influence of the president of the committee, institutions that were never previously opened to the people are freely opened to the excursionists. A prize fund is also inaugurated, for awards to the authors of the best reports on certain specified branches of industry; towards which, we are informed, the Science and Art Department at South Kensington have decided to grant 250*l*.

HOUSES IN ENGLAND AND WALES.—In the financial year ending the 5th April, 1866, 608,345 houses and shops were assessed to house duty in England and Wales, being worth 20*l*. a year or upwards. 232,344 were assessed under 30*l*.; 198,968 at 30*l*. and under 50*l*.; 123,885 at 50*l*. and under 100*l*.; 40,412 at 100*l*. and under 200*l*.; 11,051 at 200*l*. and under 500*l*.; 1,297 at 500*l*. and under 1,000*l*.; 293 at 1,000*l*. and under 2,000*l*.; 85 at 2,000*l*. and under 5,000*l*.; three at 5,000*l*. and under 5,050*l*.; one at 6,000*l*., one at 6,500*l*., one at 8,200*l*., one at 8,350*l*., one at 8,500*l*., one at 9,000*l*., and one at 20,000*l*. One in Lancashire was assessed at 3,000*l*. a year, one in East Sussex at 4,400*l*., one in East Surrey at 4,550*l*.; but all the ten assessed at 5,000*l*. or above that value were in Middlesex.

RIVER TUNNELING.—The attempt to build a tunnel under the Chicago river has failed. The entire work lately in progress, including masonry, timber, &c., one morning fell in, involving heavy losses to the contractors.

PRECAUTIONS AGAINST CHOLERA.—The Government are rightly taking precautions against any outbreak of cholera. A supplement to the *Gazette* has been published, containing various Orders in Council as to quarantine, and the arrangements which are to be made by parochial authorities where any outbreak of cholera may take place.

GRINDSTONES.—A grindstone should not be exposed to the weather, as it not only injures the woodwork, but the sun's rays harden the stone so much as, in time, to render it useless. Neither should it stand in the water in which it runs, as the part remaining in water softens so much that it wears unequally, and this is a common cause of grindstones becoming "out of true."

MORTALITY BY FEVER IN MAURITIUS.—In reply to a question, Mr. Adderley stated that probably 30,000 might represent the total of the deaths up to the autumn of this year. The number actually dead up to 2nd of May was known to be 17,000, of which 10,000 were in Port Louis alone; and he was afraid that, by the last information, there was no abatement in the mortality. Measures had been taken by the Colonial Office to send out quinine and other fever medicines. He believed there was no precedent for a grant of money from the public funds, but this might be a proper object for a public subscription.

RESTORATION OF THE CHURCH OF ST. JOHN BAPTIST, FINDON.—This church is shortly to be re-opened, after a restoration under the supervision of Mr. Gilbert Scott. The old roof, with massive timbers, is substituted for stifying white-washed ceilings, and the pillars and arches have been freed from the high pew sides which blocked them into a shapeless mass. The unsightly galleries and cumbersome pulpit and reading pews have been removed, and a new carved oak pulpit, reading-desk, and lectern, with an east window, are presented by Lady Bath. Two windows have been put up by the Rev. John Wyatt to the memory of his parents and sisters; and it is said that a stained window in the chancel is shortly to be added by a friend. There are remains of the frescoes with which the whole interior wall was once covered.

THE ALEXANDRIA ORPHANAGE FOR INFANTS.—On the 6th inst. the foundation-stone of new buildings to constitute the future Alexandria Orphanage for infants, was laid by the Duchess of Sutherland, on the site at Horsey-rise. The arrangements to be carried out are somewhat different from those of any existing charity in England. It is intended to erect a central building, to comprise the schools, the dining-hall, the domestic offices, the laundry, &c. There will then be built, in pairs, separate houses, each to accommodate twenty-five infants, placed under the care of competent nurses, who will have the entire charge of them from their rising in the morning until they retire to rest, with the exception of the time they are under instruction. These separate houses will be connected by a covered way with the central building, so that the infants in every change of weather will be well protected. In winter it will be enclosed. To each house there will be a distinct playground for the twenty-five orphans. Messrs. Habershon & Pite are honorary architects.

TENDERS

For alterations and repairs at the Wesleyan Chapel, Richmond-road, Hackney. Mr. John Tarring, architect. Quantities not supplied:—	
Mann	£620 0 0
Saunders	602 0 0
Kully	560 0 0
Roberts	502 0 0
Hill & Sons (accepted)	500 0 0
For Fire Brigade Station to be erected at St. John's-wood for the Metropolitan Board of Works:—	
Hackworth	£2,600 0 0
Piper & Co.	1,949 0 0
Whitlock	1,857 0 0
Man	1,838 0 0
Roberts	1,835 0 0
Nutt	1,820 0 0
Rigby	1,783 0 0
Langward	1,739 0 0
Henshaw	1,735 0 0
Welch	1,730 0 0
Mathew & Read	1,640 0 0

For alterations and new story to house, 58, Regent's Park-road, N.W., for Mr. F. N. Debenham, Mr. T. O. Clark, architect:—

Kelly, Bros. (accepted).....	£782	0	0
For alterations and additions to Finsbury Chapel. Mr.			
W. Allen, Dixon, architect.—			
	1st Contract.	2nd Contract.	Total.
Heeps	£239	£1,737	£1,968
Richards	222	1,742	1,964
Anley	218	1,735	1,953
Tarrant	198	1,734	1,930
Mann	183	1,677	1,860
Crockett	180	1,661	1,850
Garrud	227	1,600	1,827
Gordon	168	1,590	1,756
Ebbage	203	1,561	1,764
Nightingale	172	1,462	1,634
Eaton & Chapman	169	1,456	1,624
Staines & Son	179	1,418	1,597*
Gribble	236	1,360	1,595

* Accepted.

* Accepted.

For six miles of brick and pipe sewer, side entrance gullies, ventilators, and other works, in the parish of Clapham, for the Board of Works for the Wandsworth Waterworks, by Mr. W. K. Leacy, engineer. Quantities supplied by Mr. D. W. Young:—

Pickering	£34,693 0 0
Sidd	34,000 0 0
Pearson	31,400 0 0
King & Co.	29,795 0 0
Morton	28,474 0 0
Hill & Keddell	26,245 0 0
Hubbard	25,800 0 0
Morris	25,500 0 0
Hiscox	25,500 0 0
Avis & Son	24,950 0 0
Hubbard	24,350 0 0
Blackmore	24,344 0 0
Dickinson & Oliver	23,613 0 0
Wrensdale	23,000 0 0
Wignall	22,900 0 0
Thackrah	22,707 0 0
Robinson (accepted)	21,200 0 0

For Fire Brigade Station to be erected at Islington for the Metropolitan Board of Works:—

Whitlock	£2,185 0 0
Avis	2,190 0 0
Piper & Co.	1,970 0 0
Rigby	1,831 0 0
Barlett	1,831 0 0
Nutt	1,830 0 0
Howard	1,825 0 0
Hubbard	1,783 0 0
Henshaw	1,700 0 0
Mathew & Read	1,650 0 0
Taylor	1,643 0 0
Langward & Way	1,620 0 0

For new warehouses, Southwark-street, S.E., for Messrs. Peter Lawson & Son. Mr. John Wimble, architect:—

Collis & Son	£9,870 0 0
Adams & Sons	5,554 0 0
Ramsay	5,468 0 0
Browne & Robinson	5,388 0 0
Piper & Wheeler	5,318 0 0
Myers & Son	5,270 0 0
Newman & Mann	5,246 0 0
Kilby	7,440 0 0

For public-house, two houses and shops, and stable, at Clarendon-road, Notting-hill, for Mr. George Wadley. Messrs. Bird & Walters, architects:—

M'Laughlin	£4,198 0 0
Bishop	4,145 0 0
Brown	4,083 0 0
Williams & Son	4,027 0 0
Cowland	3,890 0 0
Newman & Mann	3,888 0 0
Manley & Rogers	3,917 0 0
Kelly, Bros. (accepted)	3,891 0 0

For alterations and additions to house and pair of villas at Woodford-green, for Mr. F. Puckeridge. Mr. G. R. Noble, architect. Quantities supplied by Messrs. Linsell & Giffard:—

Hedges	£2,163 0 0
Egan	2,077 0 0
Perry & Co.	2,062 0 0
Hill & Keddell	2,030 0 0
Rivet	1,940 0 0
Eaton & Chapman	1,830 0 0

For new sick wards, Hatfield Union. Mr. J. Sargeant, architect. Quantities supplied:—

Colling	£1,289 17 6
Webb	1,215 15 0
Chapman	1,072 5 0
Dunham	1,060 12 10
Stranger	907 5 3
Webb (accepted)	880 0 0

For a new dwelling-house and shop, North-street, Guildford, for Mr. G. P. Shepherd. Mr. Henry Peak, architect. The shopfront and plate glass not included in this contract. Quantities not supplied:—

Pollard	£219 0 0
W. & T. Smith	697 12 0
Nye	684 0 0
Mason & Son	655 10 0
Loe (accepted)	647 0 0

For the erection and completion of new Wesleyan Chapel and Schools in Bonnor's-road, Bethnal-green. Messrs. Pocock, Corrie, & Parker, architects. Quantities supplied by Mr. R. W. Gritten:—

Collis & Son	£7,777 0 0
Wood	7,731 0 0
Clement	7,447 0 0
Reyns	7,282 0 0
Stimpson	7,275 0 0
Dove, Bros.	7,065 0 0
Lathey, Bros.	6,845 0 0
Hedges	6,838 0 0
Kopson	6,734 0 0

CLERK of WORKS.—A Clerk of Works of many years' experience, desires a RE-ENGAGEMENT.

The Builder.

VOL. XXV.—No. 1276.



What there is still to do in Glasgow.

We have tried, in two preceding papers, to tell, as far as we were able, the manner in which the progress of Glasgow has been aided by the citizens themselves, in the first place as individual members of that large community; and, secondly, in their collective capacity as a corporation. It must be admitted, we think, that those efforts have been most praiseworthy, and on the whole, they have been in the proper direction. But our readers will easily suppose, on considering the

th and extension of such an important city as Glasgow—although many difficulties may have been surmounted, that many errors must have been committed, and that many evils remain to be encountered.

Accordingly we purpose to devote an article to these circumstances, in which we strain our tone can scarcely be that of our usual eulogy or commendation. Nor should Glasgow readers regret our candid criticism for they will have seen that we do not write in a cynical or a depreciatory spirit. It is always to be acknowledged that it is the opinion and the undoubted prerogative of the press in this country to criticise such measures as the improvement of great cities, particularly with respect to the principles of the method by which reform is ultimately obtained; and it is scarcely necessary to observe that this journal has some right to be heard on such questions. Indeed, the *Builder* has had its fair share to plough in this direction, or, to use an appropriate metaphor, its own crossing the stream; and it has been a dirty one.

The first fault we must find then is one about which there can be no dispute. We refer to the manner of the Glasgow and South-Western railway, which is certainly in a most discreditable position. The platforms extend several hundred yards outwards beyond the station roof; consequently the poor traveller and his traps are left in a miserable plight, after stepping off the train on the platform, if he should be at the end of his journey in the midst of a shower of rain. Then it turns out that the station is built like that of the Great Eastern Railway at Fenchurch-street, at an elevation of 40 or 50 ft. above the level of the street, and need not stay to demonstrate the evils of it. The passengers make their exit by a steep flight of steps, very much worn, and dangerous-looking, which we are certain

must have been the scene of many severe accidents; and the luggage is conveyed by porters by a long, narrow tortuous inclined plane, to the regions beneath, under conditions of great risk, if not of positive danger. The somewhat imposing Doric portico which decorates the front of the station in Eglinton-street is no set-off to the gloomy hall and the dingy offices behind it; and there is no excuse at all for the prevailing dirt. Of course we shall be told that the traffic is very great; but then we reply that the profits are very good. Sir Andrew Orr, who is, we believe, chairman of the directors, told the shareholders at a recent meeting, that there is not better security for debentures on any railway in the kingdom. We hope Sir Andrew does not include the station in his estimate of the securities; for, if so, there might be grounds for differences of opinion.

The next fault we must find is with the general state of the streets. The most cursory inspection of the principal thoroughfares of Glasgow will convince any one in a moment that the surface cleansing is inadequate. It would be wrong to say that the streets of Glasgow are as bad as those of London. But they are very nearly as bad. The traffic in Argyle-street, for instance, is almost equal to that of Oxford-street; the omnibuses are larger, heavier, and frequently more crowded than those of the "General Omnibus Company;" and, since the principal thoroughfares alone, as it appeared to us, are paved with dressed cubes of granite, the cross streets of Glasgow, such as Stockwell-street and Maxwell-street, often present a shocking expanse of puddle—on wet weather especially. Glassford-street seemed, on one occasion, in the condition of a mews that had not been swept for a day or two; and the fact is, we discovered after careful inquiry, that the practice in Glasgow is to sweep the whole streets thoroughly, excepting, perhaps, the most crowded thoroughfares, only once a week! Now, this practice, we submit, is altogether insufficient to meet the sanitary requirements of a city like Glasgow, and is not at all in accordance with the spirit of the age. It is recorded in the Talmud that the streets of Jerusalem were swept every day. We do not see why modern Glasgow should yield in the matter of cleanliness (which is next to Godliness) to ancient Jerusalem! We must also point out that the footways along the lines of the principal thoroughfares are often impassable from the use of private persons seem to make of the pavement when receiving or despatching goods. Miller-street, for example, is quite as much obstructed by drays and vans, with their huge horses, as Wood-street or Gresham-street, and very nearly as noisy. Yet here the authorities have thought fit to establish the library instituted by the late Mr. Stirling—the only one in Glasgow, by the way, in which a stranger can consult any of the standard works. Of course the Glasgow streets suffer as much as those of any other large town in the matter of being cut up with gas-pipes and water-pipes at intervals more or less short; and this is an evil we predict which will grow in magnitude until it will become quite intolerable. Something towards a cure of this chronic disease has already been effected by the underground arrangements in the recent improvement of Southwark; and we see no reason why this or a similar plan should not be adopted in the projected streets to be made under the Glasgow Improvement Bill.* This, however, may or may not be a thing of easy accomplishment; but surely it would be an easy matter to keep the surface in better order. In connexion

* See illustrations in the *Builder*. Poor Tom Hood used to call this intermittent process of excavation "the City grave-digging." Our readers will doubtless remember his humorous stanza:—

"'Grave-digger,' I said, 'what grave diggest thou
In the heart of London town?'
And the deep stern voice of the digger replied,
'We're a-laying a gas-pipe down!'"

with this subject, it is curious to note the tendency of the Glasgow authorities to copy the names of the principal London streets. Regent-street, Oxford-street, Cambridge-street, and such like, are perhaps common property; but Berkeley-street, Grosvenor-terrace, Windsor-terrace, &c., are evident plagiarisms. There is even a tendency visible on the part of the inhabitants to contract, and therefore destroy, the euphonious nominative of Sauchiehall-street (*Anglicæ, Willow-hall-street*) into something like Saball-street or Soho-street! And what right has Glasgow, in the name of St. Eleanor, to set up a spurious Charing-cross! It is hardly worth mentioning the subject, for after all it merely involves a question of sentiment; yet we cannot help calling to memory the statute under the Mosaic law, and the penalty annexed to its infringement, concerning the removal of the ancient landmarks.

If we pass from the streets and examine into the method of removing the refuse and garbage from the private dwelling-houses, we are afraid we shall find equal grounds for censure. In this process of cleansing,—as contradistinguished, however, from surface-drainage,—Glasgow differs in one important respect from Edinburgh and other Scotch towns we have inspected, and we are sorry to say for the worse. Ash-pits are universal. Not in the older quarters of the town alone, but in the most fashionable modern streets, it is the custom of the inhabitants to empty the whole dust, ashes, kitchen garbage, and other refuse, into an ash-pit or dust-bin in the court or back yard; and this accumulation is supposed to be removed by the authorities, at least once a week. We shall also suppose in all charity, that the duty is always faithfully fulfilled to this extent; and that no residuum of the filthy debris is left to contaminate and ferment the succeeding heap. But even then it will not suffice. We are too well aware in these days of the disastrous consequences which flow from the accumulation of any sort of vegetable matter—garden refuse, even—when freely exposed to the action of moisture, to expect that the contents of these ash-pits will not follow the natural law of decay and putrefaction.

There is obviously no excuse for this antiquated system; and the only reason which we can discover for it is an historical or traditional one. Glasgow has always been distinguished for its dung-heaps (*Scotticæ, middens*). In the year 1751, for example, the street which is now called Argyle-street was the principal thoroughfare in the west end of the city; yet the roadway was a favourite place for the deposition of dung, huge heaps of which were accumulated until they obstructed the thoroughfare. The same evil prevailed to at least an equal extent within the quarters of the Gallowgate and Salt-market, notwithstanding numerous proclamations of the magistrates to the contrary.* We cannot help pointing out here that this continual law-making and law-breaking is one of the greatest curses of Scotland, and would seem to indicate some gross defect either in the constitution or the administration of its municipal codes.

We were glad to perceive that a vast number of Macfarlane's cast-iron "stopping-places" had been erected, some of them, as we have pointed out, in highly discomfortable situations, throughout the streets of Glasgow. We are sorry to find a single fault with these useful sanitary appliances, but the fact is, many are not supplied with water in any form, consequently they act, in hot weather, as so many alembics for the distillation of those gases with which our railway stations are so peculiarly well perfumed. With such an abundant supply of water as Glasgow possesses, it would be

* Some of these curious municipal edicts are preserved in Mr. Pagan's admirable work, "Glasgow, Past and Present."

an easy task to abate this nuisance, at all events. We tried to find a corresponding number of public water-closets, but we failed.

We must now say a few words about the drainage. It is not our object to describe the entire system of the drainage of Glasgow, which, as we have already stated, is very good,—at all events, in its construction, so far as it goes; but we may try in a few words to describe its leading principles with respect to levels and outlets. Glasgow lies, of course, in the basin of the Clyde, on the slopes of a valley more or less distinctly formed by the action of the river on its circumjacent rocks. The natural drainage outlet is therefore the river and its confluent streams, such as the Molendinar Burn and the Kelvin. Confining our observation to the northern side, it is easy to see that there is a gradual elevation of level somewhat like that which occurs between Upper Thames-street and Islington. In fact, we may trace from the Clyde to the rising grounds above a parallel series of plateaux, the most important of which runs from the cathedral along by North Hanover-street, the top of Buchanan-street, at Grosvenor-road, Garnet-hill, the Crescent-hill, and Gilmore-hill. Above this the highest level is reached at Port Dundas on the line of the Fifth and Clyde Canal. One of the most startling phenomena which the stranger in Glasgow can come across is to see for the first time from Glasgow-bridge, where he may be viewing the shipping, perhaps, at the Bromielaw—his horizon bounded on the north by another forest of masts 200 or 300 ft. above the level of the river! It looks like an optical delusion until the explanation is made of a canal being there. It will be seen at a glance, therefore, that the drainage of Port Dundas must command the flow of the sewage which proceeds from the lower levels, and there is absolutely no separation of the systems. Let us observe the consequences. Port Dundas is a region of chemical works, distilleries, bone works, glue works, paraffin works, and patent manure manufactories. We know from sad experience the nature of the liquid refuse which these enterprising people pour into the drains. Supposing one manufacturer to send a waste product of sulphuric acid or ammonia; a distillery some decoctions of grain wort; a cotton manufacturer the oily liquid peculiar to his trade; and the others some crude refuse, some hot glue, and some phosphogano,—these would be found in that sewage matter the elements of the most poisonous gases which it is possible to imagine. But if we add to this the ordure from water-closets, and the drainage from sinks, the entrails of putrid fish, and the hot water in which vegetables have been boiled, together with a proper and always necessary quantum of the liquid manure of the streets,—we should then get a combination the most horrible which a sewer could produce. That is, however, only the theory of combination in this case: let us inquire for a moment how stand the practical results. During hot or dry weather a bad smell proceeding from the sewers pervades the whole of Glasgow! There are gully-holes in the City-road from which is vomited a combination of smells so bad—so infernal, as they were on one occasion described to us—that a horse would shy at them! There are houses we saw in St. George's-road in which it is impossible to open the windows; some of which houses were, at the same time, damp from their faulty construction. The consequence was that in two days the carpets were covered with minute fungi, and the clothes in the wardrobe with green mould. But these are not solitary cases. At the head of Buchanan-street, at Elvesswood-square, in Garnet-hill, even in the fashionable crescents, in short, wherever an elevation occurs such as we have already pointed out, the soil-pipes of the houses act as so many conductors or ventilators to the sewers; and during certain periods of the year some of the best houses become simply uninhabitable from bad smells, for which, moreover, no one seems able or willing to account, far less to cure! Here, then, we venture to say, is an evil of the first magnitude. Until Glasgow shall have been thoroughly sewered on two or three separate systems our firm conviction is that the best and highest class of property will be subject to constant deterioration in value; and the health of the inhabitants will suffer a corresponding lowering of the vital forces. It will be observed that it is not the mere house drainage alone they have to contend with; those horrible gases we have pointed out are actively interferred through the whole system of sewerage. Systematic flushing, in our opinion, would only

aggravate the evil; and no method of trapping with which we are acquainted could amount to this fatal influence. For, if repressed by water, the gas will in time saturate the water; if by valves it will in time burst the soil-pipes. It may, indeed, be possible for the speculative builder of fashionable tenements so to manage his drains that he sells the property; but in a year or two the evil will be as bad as ever. In point of fact, one has only to observe the marvellous falling off in a few years of the rental of certain streets, such as those on Garnet-hill, together with the constant per-centage of deaths from fever which occur in the same streets, to arrive at the just conclusion that some unseen but deadly enemy to life and property has been silently indeed, but actively and surely, doing his diabolical work! It has of late years almost grown into a postulate of sanitary economy that the higher a house is above the level of the river the healthier it is. And such is, no doubt, the case, all other things being the same. But one important principle must form a necessary condition to its general application, and that is, that the gully-holes of the street and the soil-pipes of the houses shall not serve as conductors to the sewer-gases which are generated at the lower levels. We are sorry to say that this principle does not exist at this moment in connection with the Glasgow drainage; and accordingly if we had the good fortune to pay scot and lot in that enterprising city, we should choose to dwell at a lower level, if not on the banks of the river itself.

Only we are afraid as to the Clyde that,—

"There's no path by the river or overshadowed with trees"

that could be described, with truth, as being salubrious, nor no wood near which a poor valdettarian in quest of pure air would seek to build a cottage. For the difficulty we have to contend with here is, that the river is itself little else than a huge and abominable cesspool. We are sorry to be compelled to use such language respecting the Clyde, which is a river of great natural beauty, and has been the object of much careful and costly improvement. The Glasgow people are very proud—and justly so, in our opinion,—of their great achievements in dredging, deepening, embanking, and constructing quays to this noble river. Although we can hardly endorse the eloquent panegyrics of certain local authors—who compare the efforts of the ancient Egyptians in building the Pyramids of Cheops with those of the Glasgow merchants in making the Clyde navigable—we are still perfectly prepared to recognise all such efforts, and to appreciate their good results. To this end we must say that a great effort yet remains to be made. It is quite impossible that the present system of discharging into the river such conglomerate sewage matter as Glasgow continues to yield in annually increasing quantities can last much longer. We have not made the calculation per head of the population, and there is no data extant that we know of respecting the drainage products of manufactories. But it would be comparatively easy to form some approximate measurement of the quantity of liquid sewage poured into the channel of the river; and the result, we suspect, would be startling. It is, indeed, a sickening sight, particularly on a hot day, to observe the process of contamination. Let us take our stand on the Suspension-bridge. Every two or three hundred yards on both sides of the river, and about 6 ft. under the crest of the embankment, we may detect the mouth of a common sewer belching forth a small catenad of fluid of the colour and consistency of diluted London porter. When the tide is out, and the filthy torrents discharge themselves in innumerable rills over the dark, slimy, bubbling sludge which covers the *alveus* like a stratum of coal tar, and when this occurs under the glare of a hot sun, the smells proceeding from the river are such as to baffle all description. Certainly they have nothing in common with "the spicy gales of Araby the blest." The worst feature of the case is that the Clyde, being a purely tidal river, the sewage matter held in suspension is carried backwards and forwards with the flux and reflux of the tide; and, moreover, every increase of the volume of river water at the basin of the Bromielaw serves only to increase the diffusion of the ill-agglomerated and unhealthy particles.

The river itself being in this condition, we can hardly look for much improvement in its tributaries. The once beautiful Kelvin, after bidding farewell to its upland glens and their healthy atmosphere, is seized upon at Port Dundas, and

after being poisoned there and receiving all sewage of the adjacent streets and crescent steals away, foul and contaminated, through West-end Park, and finally disappears through the wheels of the flour-mills at Partick. It forms anything but an ornamental water to beautiful park, and its condition, we have reason to know, caused Sir Joseph Paxton much trouble and annoyance. On a hot day the easiest way to discover its aromatic qualities is to stand for a few moments on the bridge which crosses the little river and forms the junction between Great Western-road on the one hand, and Durwan-hill on the other. We need not be specific. All we can say is, that the sensa-anything but refreshing or agreeable. The Kelvin, however, is totally eclipsed in depravity the state of the Molendinar Burn, which we only compare to the Fleet Ditch before it is covered in and converted into the Holborn sewer. Nevertheless, it still sweeps round the base of ancient cathedral. For the purpose, we suppose of preserving a respectable-looking body of water at this point, a weir is erected under bridge which crosses from the cathedral churchyard to the necropolis—a structure which not inappropriately designated "The Bridge Sighs." But, whatever may have been intention of this provision, its principal effect has been to produce only a pool of filthy stagnant sewage, which must doubtless exercise its own influence on the atmosphere of the cathedral on a hot Sunday in July. This sewage stream next passes, without any cover, or even fence through the open spaces of Drygate, where the small boys amuse themselves with splashing bricks and broken bottles at the dead cats and such like objects of interest; then it flows by a culvert underneath the foundation of the jail, doing some duty, we suspect, in the punishment of the Glasgow criminals; and again it emerges once more in open day, on the opposite side of Duke-street. Here it receives the waste steam and other superfluous products of a large cotton manufactory, passing at the same moment, we observe under the broad flanges of an undershot wheel. After this it finally loses itself somewhere underground beside the miserable quarters of Son Pettigrew-street and Bridge-street. We should like to be thought guilty of an exaggeration; but we scarcely ever remember, unless it were on occasion, in a knacker's yard, to have had evidences of a disgusting smell so strongly brought home to our senses as we had on overlooking the ditch for a moment, at the point of its contact with the cotton-mill in Duke-street. For this our disgust unmingled with regret; for this little streamlet, now so fearfully polluted, has a history as old as that of the Thames or the Sever. One of the earliest traditions with regard to the origin of Glasgow, is that the Druids had an altar on its banks in the surrounding forest. It had undoubtedly determined the site of the ancient cathedral; and it is equally certain that St. Mungo had consecrated the silver stream and had baptized his converts in its pellucid waters. These are not the days of primitive Christianity, we shall be told. This is the era of commerce and manufactures. Well; we do not see why the latter epoch should not imitate the former in preserving the purity of its rivers among other things!

If anything were wanting to complete the circle of polluted waters with which Glasgow is encircled it would be furnished by the canal at Port Dundas, which is in a worse condition than the Regent's Canal, and that is saying a great deal. But the canal is not the worst feature of Port Dundas. We have previously indicated the nature of the manufactures in this colony of chemical works, and described the influence they exercise over the lower-level sewage. That is said enough; but it is nothing in one sense, compared to the "foul and pestilent congregation of vapours," which they pour into the atmosphere of the city. There is no least doubt but the most vital of all the sanitary questions in Glasgow at this moment is—how to purify its atmosphere. But this we are afraid is a wide question, and cannot be properly discussed unless in a separate article. We shall conclude our present remarks with a few observations on what we must regard as defective police arrangements.

There can be no doubt, we think, that a good many of the social evils under which Glasgow suffers is to a large extent due to the conflicting jurisdiction of its various municipal authorities. There are at least a dozen of separate and distinct local boards in Glasgow,—the town coun-

the police commission, the Clyde trust, water trust, the statute labour committee, urban poor-law boards, and a multitude of subordinate committees, springing from their interstices, which all possess more or less of an administrative character within the same category of duties. For example, there are inspectors of nuisances under the Poor-law Act, inspectors of cleansing under the Glasgow Local Police Act, a medical officer of health under the Local Police Act for Scotland, inspectors of weights, an inspector of markets, and an inspector of gas-meters, &c., under the recently applied Companies Act. The Lord Provost, in his capacity of chief magistrate, is of course chairman of most of these local boards; but they are, nevertheless, separate members of the municipal body, under different Acts of Parliament, with a distinct constitution, and always provided with separate clerks. The clerks are also the law-agents for their own peculiar boards. Can our readers imagine, then, that these bodies carry on a state of chronic internecine warfare with each other; litigation or legislation in some shape constitutes the principal business of the statutory bodies; and that this is always carried on at the cost of a generous and discerning public? Two who wish to study well the progress of large towns in Scotland must devote some time to the people by which the corporation clerks are appointed the law-agents of their contents; and the study will, we are certain, shed much light on the heavy increase of public nuisances! The genius which these gentlemen devote for levying assessments,—that is to say, is upon the communities over which they exercise control,—was described to us on one occasion by an impoverished house-owner as being equal to the genius of Rob Roy for levying blackmail! Our chief fault to them, however, if of a professional character: they are the enemies of all systematic progress and improvement such as a town architect or engineer might effect without any litigation at all! How true that we hear so much of the Lord Provosts of Glasgow and Edinburgh, and so little of Mr. Rick or Mr. Cousin? How is it that sums enormous are spent every year in promoting Acts of Parliament,—abortive for the most part, as so little expended in positive requirements? A most ingenious town clerk, and the most patriotic Lord Provost, even supported by the most comprehensive police Act under the sun, will it, in our opinion, to make a city clean unless improvement be carried out and constantly supervised by a competent engineer. It is too much the fashion, we suspect, to postpone the duties of this class of men to those of the town clerks and their legal concurrents; and the fact we have come to the conclusion, after long experience of the subject, that those towns which have the greatest number of police bills, and are best provided with local Boards, are the most governed, the worst cleaned, and the most heavily taxed.

Decides, if all this legislation were actually accomplished its intended purpose, there would be nothing to regret, perhaps; but such is not the case. In the first place, we must point out that there is great need for a good Building Act in Glasgow. We will not stay to illustrate this by examples taken from contemporary construction, but we are glad to acknowledge that nature has been much for the builders in providing free use of splendid quality and in inexhaustible quantities. An 18 in. or 2 ft. rubble wall is certainly one of the very best securities against fire; nevertheless, fires are of far too frequent occurrence. We happened to observe an erection of shops in progress in Sauchiehall-street, and the whole range of six or seven fronts were separated from each other by 4-inch deal, nailed on cross standards at the floors and ceilings. It is quite clear that a fire in one would speedily reduce the whole to the ashes, and seriously endanger the houses behind. Again, we noticed a most conspicuous case of unenclosed area, 6 ft. deep, in Bothwell-street, along the whole basement, some 800 yards in length of that handsome range of buildings, where Messrs. Hutchison & Co. have their offices. There was not the slightest vestige of a railing. It is true there were steps from the pavement downwards; but it is scarcely necessary to say that a man might split his skull by falling down

6 ft. of steps on a dark night! It is also very grievous to behold the manner in which the foot pavement is cut up and interrupted by masons' sheds whenever a new building or an alteration is going on. It never seems to occur to the Lord Dean of Guild, or whoever is the presiding spirit of the building regulations, that in stepping from the footway to the roadway of a crowded thoroughfare in consequence of such obstructions, the passengers risk being run over and killed! But this is an excellent type of the general principles which characterise the whole of the Glasgow municipal government.

We have already spoken of the cleansing; let us give a few illustrations of another species of neglect. The magistrates, in virtue of their *nobile officium*, are, in addition to their other duties, the administrators of the Public Houses Act, or the Forbes-Mackenzie Act, as it is called in Scotland; and they delegate this disagreeable duty to the police. Accordingly, the chief part of a policeman's duty during the night consists of watching low public-houses and unlicensed shebeens. We will not speak of the bribery and drinking to which the constables are exposed; but the legitimate consequence is that their other duties are neglected, and hence garroting and robbery, we are told, have prevailed to a frightful extent in Glasgow since the operation of this attempt to make Scotsmen sober by Act of Parliament. Fires, too, are of more frequent occurrence, it is said; but we will do the Glasgow policemen the justice to say that they make plenty of noise, at all events, about a fire when it breaks out.

Tired with a long day's walk through crowded and noisy streets, his brain fired with a multitude of new and totally strange ideas, his heart sad and depressed at the sight of much misery and wretchedness, amidst so much wealth and opulence, we shall suppose the traveller through Glasgow has, at length, sought his weary pillow.

"Light thickens; and the crow
Makes wing to the rooky wood."

The noise of the lumbering omnibuses gives way to that of the cabs; and even this rattling noise is gradually hushed in the silence of the middle watches. A vision of gentle dreams, Highland lakes, herring-boats, mountain streams, waterfalls, heather hills, rocky passes, purple clouds, northern mist, gradually suffuses the slumbering yet curiously sentient intelligence; and the weary traveller sleeps in peace. Suddenly the stillness of night is invaded by the horrible concatenation of sounds which can be produced alone by the watchman's rattle; and a stentorian voice is heard shouting at its full pitch—repeated again at the intervals of about ten seconds—*Fire, at 329, Trongate!* Up starts our poor sleeper, as much alarmed as Isaac Shove was when Toby Tossop performed peal the first! He will reflect, in all probability, although this is an odd proceeding, that these Glasgow people are careful of their warehouses, and a fire is a dangerous thing. It may be as well, perhaps, to alarm the community—an ancient custom, doubtless,—Watching and Warding, Burgers, Border fencibles, Beacon fires; and he has hardly again succeeded in reaching the arms of Morpheus, under this new set of ideas, when his slumber is once more rudely broken by the same diabolical rattle, and the same stentorian lungs. This time (peal the second), the fire is in 645, *Buchanan-street!* No relapsing into slumber a second time, for in a quarter of an hour afterwards, perhaps, comes peal the third,—128, *Virginia-street!* and so it may continue at stated periods during the night. After long and sleepless consideration, the stranger will probably come to the conclusion that he has fixed his quarters in the regions of the central fire-brigade of Glasgow, and that he will change his hotel next day. But alas! he will learn next day that the practice is universal and coincident with the boundaries of the city; and he will find his disgust not a little heightened by reading in the morning papers that there had been only two fires in Glasgow during the night (the others had obviously been false alarms), which had been got under, however, without the necessity of turning out the engines; and that Councillor Higginbotham and Bailie Muckleworth had distinguished themselves greatly by being early on the spot!

But in case it should be supposed that there are no similar annoyances during the day, we must ask leave to adduce one other example. Some parts of the New Town of Glasgow are built, as we have tried to explain, upon a series of eminences, at the base of which lie the parallel

thoroughfares. Branching from these main streets, at right angles, are numerous cross streets, such as Hill-street and Dalbois-street, which vary in their gradients from one in ten to one in five. Some streets, indeed, such as Hanover-street, are almost too steep for even an empty cab. Nevertheless, every morning from six to eight o'clock the painful process may be observed of an old broken-down cart-horse vainly striving to mount those hills with a heavy load of coals. The attempt is painful to see; it is still more painful to hear; for the coal-carter is usually most lavish of his whip and his lungs; and his language of obprobrium—which the poor horse doubtless understands—proceeds from *forte* to *fortissimo* in a string of oaths and imprecations so horrid that we dare not venture to transcribe them in our columns! Need we add that the poor horses, overladen and overloaded, often fall under their burden; but not till then is the brutal operation suspended. We saw this dismal scene enacted at least twenty times during our short stay in Glasgow; and we never saw the police interfere once.

Nor is the inhumanity of the Glasgow police confined to the lower animals. Otherwise, how is it that the poor servant-girls are permitted to expose their lives so freely in cleaning the windows? We have seen a group stuck over the elevation of a house like butterflies, with expanded hoops, of course, and streaming caps. One on the first floor of one house; another on the second floor of the next house; a third on the floor above; and, finally, a poor ignorant girl from Argyleshire or Bute, cleaning the outside of the attic windows at an altitude of 50 or 60 ft., with her feet resting on the gutter or on the course. We shall not be surprised if it be found in the social statistics of Glasgow that a constant percentage of these girls are killed with falling into the area or perhaps getting transfixed on the railing! Their very temerity, we were told, constitutes their safety. But that is surely a slender reed on which to trust. If the evil consequences stopped here the remedy might be easy; but the practice we suspect brings about a certain callousness and indifference to the risk of human life which must be demoralizing to the whole community. It is perfectly shocking to see the manner in which children are exposed at the open windows of the top flats; and no class of fatal accidents are more persistent in Glasgow than deaths arising from the fall over a window. How very narrow the margin is in which the balance may be destroyed is well known to those who have studied the laws of statical equilibrium; but it would be absurd to expect such knowledge at the hands of those poor people who fall victims to their ignorance or their temerity; or, if we must use more precise phraseology, whose instincts of self-preservation are not equal to the complicated circumstances in which they find their conditions of existence.

Commending these observations to the attention of the Glasgow authorities, we conclude for the present by expressing the hope, that while Glasgow flourishes in commerce and in manufactures, she will not neglect to cultivate the softer graces of social amelioration. The philosophy is rapidly gaining ground in these days, that the civilization of a country or of a city is to be estimated, not so much from its wealth or its magnitude in relation to other cities or other states, as from the position it has gained in the great commonwealth of Humanity. There are no surer tests of this position than the evidences which it can present of a sound constitution and a good heart,—that is to say, of its public health and its public morals.

HOW LONG WILL LONDON BE HABITABLE?

THE sun in his course through Cancer, in this the 2,620th year from the foundation of Rome, has shed light on strange and unwanted scenes in the ancient capitals of Europe. In the Seven-hilled city the chief of Latin Christianity has found in the assemblage of the unprecedented number of 500 bishops, who have paid no empty-handed visit to their superior, an encouragement for a fresh defiance of the evils of civilization and the infidelities of science. Almost at the very time that the reiteration of the loftiest claims of the Pontifex Maximus have been uttered to the hundred and fifty millions of the Romish church, the two other chief sacred personages of monotheistic worship, the head of the Greek church, and the Caliph of Islam, have thrown

Take Glasgow, for example: the police-rates alone this year amount to 2s. 6d. per pound of annual rateable property assessed within the regality! This is exclusive of poor-rates, prison assessment, &c., and it is, moreover, the highest rate ever levied within the city of Glasgow.

the weight of their authority into the opposite scale, and have admitted themselves to be disciples of the great intellectual revolution of the century, by their respective visits to its head quarters and parade-ground at Paris. The presence of the Sultan and of the Czar in France is a fact more significant than is the gathering of the Episcopate at Rome, even as the *clan* of troops on the march is more formidable than the most resolute determination to stand fast behind the intrenchments of the camp.

Of those princes who have so far broken through the habits of centuries as to visit the world's fair in the French capital, the two whose presence in that magnificent city was the most marvellous, have not been content to return to their Oriental seclusion without visiting our own island. Thus the flag which even within the last century has hovered around our Western coasts in a manner called piratical by our ancestors, has floated over Buckingham Palace, and the Sultan of Turkey, the Caliph of the Mohammedan religion, has partaken at Windsor of bread and salt with the Defender of the Faith. Which sovereign had the most distinct recollection of what was intended by the founders of the great knightly orders may be doubted by those who remember that the Sultan wore a Christian decoration.

London prepared itself to welcome his highness. Of courtly reception there was no lack. The heir to the throne and his Royal Highness the Commander-in-Chief paid graceful honours to the Padishah, whose arrival divided the attention of the town with that of the Belgian volunteers. But the Egyptian Viceroy, a prince now inferior to the Sultan himself in little more than name, has only narrowly escaped being sent to an inn owing to the public spirit of a private nobleman. Disinterested individuals, indeed, writing anonymously in the daily papers, were good enough to offer the use of more than one palace, without asking the consent of its master; but not even this futile attempt at a vicarious hospitality has been able to disguise the fact, to which we called attention some time since, of the disgraceful want of accommodation in London for the guests of the nation. If the sovereign invite a guest it is for the sovereign to entertain the visitor; but if the nation invite, or if the visit be not that of one brother sovereign to another, but that of a prince to a great capital, and to the home of a mighty nation, it is not only a discredit to that nation to have no abode in which to offer hospitality, but, in relation to Oriental monarchs, it is a degradation of the national character which is likely to have bad commercial results. The English influence in Egypt, the English prestige throughout the Mussulman world, could hardly receive a more marked and mighty buffet than would have resulted from sending the Viceroy of Egypt to a *Khan*. That such a prince should be received in a manner worthy of his position, as the keeper of one of the keys of India, and that the English nation should have been able so to receive him, without being beholden to any individual of whatever station, every one must admit to be proper. It is more than proper—in the way in which some men look at matters;—to be unable to do so may involve a serious political blunder. The absence of any fit house of reception for foreign princes at the Court of London might, with men of a temper by no means extinct in the East, have closed our overland traffic with India, or caused an ugly want of continuity in the wires of the Indian telegraph.

The want of accommodation has led us to other thoughts. With the rapid growth of our enormous capital, it is not impossible that a comparatively short time may make a sensible difference in the comfort with which it may be inhabited. In the present year the prevalence for several days together of a south-east wind, charged with the atmospheric temperature due to the source whence it blows, has borne to the vicinity of the parks the dense canopy of the smoke and vitiated atmosphere of nine miles of buildings. As the circumference of the vast city extends, so do the dwellers near that circumference suffer more and more whenever the wind sets towards them across the metropolis. In that large district which lies near the course of the North Western, the Metropolitan, and the Kensington Railways, the difference in the facility of breathing during a south-east and a north-west wind is almost incredible. With each annual addition to the space built over, this evil is exaggerated. We are without experience to guide us as to its limits and future results. We have from two and a half to three *per mille* of

the whole human race crowded into a space of some 122 square miles. The means by which Nature restores the equilibrium of animal and vegetable respiration, and takes up by the latter process the poisonous gases thrown off from the lungs of animals, are almost entirely banished from this area, and the slight remains of vegetation are daily diminishing. The actual cubic volume of air daily vitiated over this space is a matter of importance. More than six hundred millions of cubic feet of carbonic acid gas are expired in London in the course of twenty-four hours by human beings alone, irrespective of smoke and of the gaseous products of combustion, and irrespective of all other sources of vitiation of the atmosphere. This quantity of carbonic acid will render twenty times its weight of atmospheric air unfit for the support of life. Thus, if we respiration of London should hang within the limits of the thirty-six metropolitan districts, and if we then suppose that, for the purpose of removal by currents of wind, the air thus vitiated were poured into the streets, to the exclusion of the space covered with buildings, it would fill the whole roadway and footway of the metropolis to a depth of between 8 ft. and 9 ft. This is the amount of poisoned air which London must daily exchange for fresh; and, in the course of the necessary process, whether more or less rapidly performed, what is the state of the suburb over which the whole mighty column of vitiated air is steadily propelled?

In calling attention rather to the organic sources of atmospheric impurity, than to the effects of actual combustion, it must be remembered that the latter, if less subtle in their influence on human health, are of overpowering magnitude. An average quantity of upwards of 14,000 tons of coal is daily consumed in London, some 30 to 40 per cent. of which may remain in the form of ash, or may be thrown into the atmosphere, in the partially volatilised form of smoke, while the remainder, converted into carbonic acid by the process of combustion, joins with the actual human and animal expiration which is constantly accumulating in close and unventilated localities. But it would seem as if the absolute chemical quality of the air were not the sole, or perhaps not even the chief element of its effect on human health. Temperature, no doubt, has much to do with the summer effluvia of life in the metropolis, when the daily consumption of coal is at the minimum, are far more offensively appreciable than is the case in the winter. The carbonic acid expired from the lungs may be as yet indistinguishable by chemistry from the carbonic acid produced by actual combustion; but that there is in the expired air a noxious quality distinct from, and more pernicious than, that for which chemistry is responsible, we think few will be prepared to deny. The carbonic acid gas emitted from three million human lungs may be chemically indistinguishable from that disengaged from the fourteen thousand tons of coal consumed per diem in the metropolis; but with the produce of respiration we cannot doubt that there is mingled a miasma quite distinct from the effluvia of the furnace. Thus we find on the leeward side of London, in this summer weather, while the July sun is obscured by the canopy of unconsumed carbon, the current of polluted air that creeps through the streets is such as to affect even strong men with a sense of faintness. When a slow but steady draught sweeps the confined air gradually from the metropolis, those districts over which it last passes, in this summer heat, seem unfitted to allow the chest to expand with a healthy respiration.

If this be the case (and we can appeal to daily experience on whatever happens to be the leeward side of the metropolis), now, what will be the case at the close of the present century, by which time we may expect London to contain six million inhabitants? The actual experiment of how large a city can be made seems to be in rapid course of solution.

It is not our wont to be alarmists, or even to point to menacing evils without the purpose of suggesting a remedy. The increasing difficulty of living in London in the summer, notwithstanding the immense improvement in the purity of the Thames, becomes every year more oppressive. One remedy, or rather palliative, must, sooner or later, be found in the appointment of some competent professional men as *Ediles*, or officers answering to that description. In the province of such officers would fall the provision for the

architectural wants of the metropolis, the preparation of a palace, in which the visits of foreign sovereigns might be properly received, in which our own sovereign might welcome subjects. With many noble buildings for public assemblies, theatres, concert-rooms, commercial halls, we must not forget that only apartment in London fit for the son of a great court is traced to the son of the Roman Conqueror, and that even this is ordinarily made use of only as a corridor. A palace which the Queen can hold her court is as a requisite in the present day as one in which the nation can welcome its guests. Neither nor the other exists among us. But while we require an edile to build our palaces, no do we require the services of such an officer superintending the general outline of our rapidly increasing suburbs. In many instances where properties march, mutual inconvenience as to be the law. Long lines of street, opening fair avenue not only for traffic but for the circulation of air, are often cut across by crescents, terraces, or even mews, placed at the whim of the landholder, to the immense detriment of the whole town. Instances of this kind are familiar to every inhabitant of the West-end, and the impediments thus caused both to ventilation and to traffic are daily becoming more serious. That London should be regarded as a whole, and that individual caprice on the part of the various landholders and speculators should be kept within the bounds demanded by public health no less than by public convenience, daily becoming more imperative.

That the time will come, sooner or later, when the work of the edile will be useless without the aid of the chemist, there are already pretty strong indications. Those very spots which, with the wind in twenty-four points of the compass, enjoy all the advantages of pure country air at the most oppressive during the prevalence of breezes from the remaining eight points. You go to bed under a pure sky and in fresh air; you awake with a feeling of oppression, under a sky that looks like the mouth of an enormous chimney, and find that the only change is in the force of the wind, by which you have become leeward of London. Thus the most agreeable suburb for nine months out of twelve, become the most unendurable for the remaining three; nor can you tell even for a day when either condition will prevail. If chemistry can offer available assistance, if science come in aid, consuming smoke liberating oxygen or ozone within the limits of the metropolis itself, and fixing or neutralizing the gaseous products of respiration or of combustion, we may see a new chapter in the history of great cities. But unless something of the kind be effected the present century bids fair to witness a different solution of the problem. We have lived to see third-rate towns larger than Aristotle thought that independent states would ever become. We may live to see light thrown on the question how far the laws of health and the necessities of respiration will allow of the constantly increasing agglomeration of the centres of population.

ANOTHER NEW SCIENCE.

It is becoming more and more difficult every day to determine the pale of science. Once upon a time "the circle of the sciences" was a current expression that implied a certain and well-defined sequence of studies. Works of reference of the period of the foundation of the Royal Society speak of the "seven liberal sciences" as grammar, logic, rhetoric, arithmetic, geometry, astronomy, and music, or music, as it was then spelt: these stood within the pale; other sciences stood without. But now-a-days this exclusiveness has been cast aside by the scientific world, or it has been in some way overthrown; and it is, as we have said, more and more difficult to say of anything that it is beneath the dignity of science. A remarkable example of this expansion, or this comprehensiveness, in the minds of savans, is presented in the creation of a new section in archaeology under the presidency of Sir John Lubbock, which is to treat of prehistoric matters only; but a still stronger illustration of the same fact is shown in the ready acceptance given to folk-lore as a subject likely to be developed into a new science. The genial, fanciful, German fairy tale-teller, misnamed Grimm, opened the way for this recognition in his startling suggestion that our household tales, with their giants and giant-killers, are probably

fragments of a mythology that has now nearly faded from human knowledge. This seedling of a hint, with a fecundity only second to that of the magic bean-stalk, threw its tendrils around several collateral subjects and drew them together in one entanglement. Charms, cures, credulities of various kinds, old sayings, curious customs, legends of wonderful creatures such as the "laidley worms" of Northumberland and Durham; the investiture with supernatural power of certain objects, such as wishing-wells, the ash-tree, and various herbs; the lip-lore, in fine, of the simple, are now looked at with a new interest as likely to be of an antiquity equal to that of our stories. To collect these several scholars have set to work; but their labours are shadowed with regrets that they are so late in commencing them, for the last two generations have lost much of this kind of lore. Our grandmothers could have furnished thrice the quantity. We say grandmothers advisedly, for charms, cures, interpretations of dreams and portents, unaccountable customs generally, but especially those attendant upon births, deaths, and weddings, the supreme incidents in man's existence, were, till the present day, left unclaimed as a worthless possession in the hands of the aged ladies north-country people call "auld wives." Though unclaimed they were not, however, unheeded; for we suspect there are few persons, even now, without a corner in their hearts in which early impressions have enshrined an illogical belief in omens, of good and bad luck; although there are, no doubt, still fewer who will own to such harbourage of fancies planted in their minds in the nursery. We contend, nevertheless, that if a wedding-guest saw a solitary crow as he was setting out to assist in the ceremony, and it began to rain heavily as the procession came out of church, and from the unexpected absence of other guests thirteen sat down to breakfast, at which the salt was spit, and the bride and bridegroom accidentally crossed knives in the progress of the feast, and then recollected it was Friday, he would find himself arrived at the conviction, despite any amount of common sense or well-regulated condition of his mind, that the prospect before the wedded pair was not brilliantly alluring. The bridesmaids, we never, would shrink from the wedding-cake, and no more think of putting a piece under their pillows than of eating it. A century ago, there were as few people who would deny a belief in such manifestations and portents as there are now who would own to it. Did not Horace Walpole, though his genius was of a discriminating order, call at Northumberland House, to state "My Lady Northumberland,"—soon to be the Duchess of Northumberland,—to "Cock-lane?" Did not Goethe gravely record that his grandfather saw the principal events of his life enacted in dreams before they actually took place? Or, going farther back, did not the possessor of one eclectic fit, as well as minor matters, such as cramp or warts. They can interpret dreams, and they can dream where to look for stolen property, and thus aid in its recovery. They can decoit love-philters, and advise young people how to proceed if they wish to see the individuals who are to be their future partners in life; and they can tell fortunes. In some of these matters a personal interview with the charmer is requisite, and special treatment is called for; but in the majority of cases the circumstances of a case are met by a selection from a sort of floating currency of charms and cures, that requires no departure from usual practice. Portents, especially, require no special interpretation, though there are some few that may be almost considered private property, such as the supernatural appearances that precede the death of members of particular families. Many cures, too, are of general application. Should a child have the whooping-cough, for instance, there is no need of a special consultation with any authority upon the subject. Every old lady knows that it only requires to be taken out walking every day, till it meets a man on a piebald horse; or to be taken to a married couple, whose names are Joseph and Mary; or to be placed, with its face to the tail, on the cross that is always to be found on a donkey's back; or to have its breast fast of milk divided with a ferret: either of these cures will be efficacious. More serious complaints, of course, require sterner remedies. Epileptic fits call for a sacrifice: offended powers must be propitiated with the death of a cock, the spot on which the afflicted person fell when first seized being the altar indicated. The rite of sacrifice is, farther, visibly interwoven with the ceremonial of many other charms. The im-

palement of snails on thorns for the charming away of warts is another case in point, as is the victimization of frogs by sticking them full of pins for magical purposes. In the north the "uncanny" trick of piercing a pigeon's heart with a quantity of pins, and burning it thus curiously studded, is believed by inquisitive lasses to reveal wonders. There is a remarkable confusion of idea in the minds of those resorting to such practices as to whether they are summoning to their aid good or bad powers. The difference, too, between an invocation and a prayer is not clearly recognised by young and crude minds, as we may realise in the following familiar lines which, seventy years ago, as a septuagenarian assured us, were said by many a child at its mother's knee as a prayer, nightly:—

"Matthew, Mark, Luke, and John
Bless the bed that I lie on.
There are four corners to my bed,
There are four angels round me spread,
One to read and one to write,
And two to guard me all this night.
If I should sleep and never wake,
I pray to God my soul to take."

We have had occasional collectors in this field, we may say, for centuries. But they have collected with a different object in view, and have therefore disregarded items that were not available for their purpose, notwithstanding their curiosity or interest. Bourne, for instance, wrote his "Antiquitates Vulgares," in 1725, with the expressed object of showing which of the popular customs and opinions might be retained with propriety, and which should be rejected as either Popish or Pagan; and his commentator, Brand, in 1777, follows in his wake, led by a conviction that his predecessor had not done justice to his subject, rather than with a view of applying his stores to an illustration of a history of the culture of the mind of man. Both traced many of the popular notions and vulgar ceremonies, as they called them, to the times when Popery was the established religion, and thence from Christian to ancient and Heathen Rome, but they did so with an ecclesiastical rather than historical aim. In the hands of Bourne, the fancies of the multitude became only so many unrelinquished superstitions, which want of reflection had incorporated with Christian observances. Brand supplemented this view by hinting that Christianity, first at its promulgation, and afterwards at the Reformation, had connived at the continuance of many ancient practices under new names, rather than run the risk of any violent alteration of the current of existing things. Sir Henry Ellis, in our own day, has largely added to the collections of both these worthies; but, as editor of their works, has naturally gathered together such curiosities as would best illustrate their stores, rather than add to the number. The collectors abroad now, however, are of a different order. Their object is to save from oblivion all knowledge of the floating traditions and opinions which one generation has handed down to another from lip to ear and from lip to ear again, without the agency of scribe or printing-press. Their task is a preliminary one: not a leisurely scanning of ancient literature for solutions as to the meaning or origin of a belief or of a custom; but a hasty gathering together of the remains of this unconsidered lip-lore, lest it should be altogether lost. Hereafter they may trace portions of it up the streams of ages, and across the face of the earth.

Let us consider the pretensions of our charms, or wise men and women, as they are variously called. They can charm away longstanding and recurring complaints, such as rheumatism, ague, erysipelas, whooping-cough, epileptic fits, as well as minor matters, such as cramp or warts. They can interpret dreams, and they can dream where to look for stolen property, and thus aid in its recovery. They can decoit love-philters, and advise young people how to proceed if they wish to see the individuals who are to be their future partners in life; and they can tell fortunes. In some of these matters a personal interview with the charmer is requisite, and special treatment is called for; but in the majority of cases the circumstances of a case are met by a selection from a sort of floating currency of charms and cures, that requires no departure from usual practice. Portents, especially, require no special interpretation, though there are some few that may be almost considered private property, such as the supernatural appearances that precede the death of members of particular families. Many cures, too, are of general application. Should a child have the whooping-cough, for instance, there is no need of a special consultation with any authority upon the subject. Every old lady knows that it only requires to be taken out walking every day, till it meets a man on a piebald horse; or to be taken to a married couple, whose names are Joseph and Mary; or to be placed, with its face to the tail, on the cross that is always to be found on a donkey's back; or to have its breast fast of milk divided with a ferret: either of these cures will be efficacious. More serious complaints, of course, require sterner remedies. Epileptic fits call for a sacrifice: offended powers must be propitiated with the death of a cock, the spot on which the afflicted person fell when first seized being the altar indicated. The rite of sacrifice is, farther, visibly interwoven with the ceremonial of many other charms. The im-

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And, again, in the rhyme in which Coleridge tells us the Christchurch boys used to invoke the aid of the Evangelists to assist in untying the knot they believed the devil was tying in their legs when they had the cramp. The same confusion of idea is apparent in the key and the Bible test, in which two persons place a key between the leaves of a Bible and expect both objects to turn round as a sign that the questions to which they sought replies were answered affirmatively; and in the selection of holidays for the performance or accomplishment of some other ceremonies. Thus one girl whispers to another, and has done so, we may presume, for centuries, "if you pluck a rose on Midsummer-eve at midnight and put it away in a box till Christmas, and then wear it in your band or hair, some one will take it out who will be your husband, or bear the same name as that of your future spouse." Fridays, supposed to be unlucky from the fact of the crucifixion having taken place on one, are picked out as the only days on which some rites can be performed with any prospect of a result. This mystification is intensified in some counties by the interweaving of the sign of the cross as part of the occult ceremonies. In the midland counties we have heard of a cross being made at the foot of their beds by maidens with their shoes, who, getting into bed backwards, repeat the following charm on three successive Fridays:—

"I have set my shoes in the shape of a T,
Hoping my true love for to see
In his apparel and his array
In his clothes he wears every day."

After which they may not break the charm by speaking till the next morning. This process is to enable them to dream of their future husbands, and bearing in mind the physiological fact that our brains, in some conditions, continue to pursue, in sleep, the objects that last occupied them when awake, it is probable that it was successful sufficiently often to create a confidence in its efficacy. In the southern counties we have heard of as much trouble taken, on three successive Friday evenings, to procure a visit from the unknown or tardy prospective partner. For this purpose the damsels throw a handful of salt into the fire at the same hour, week after week, with a form of incantation in verse, which sets forth that it is not the salt that the fire is to burn, but the heart of the young charmer's lover that it is to turn, so that he may be neither able to rest nor be happy till he pays her a visit. To procure a letter from a lover, it matters not on which day of the week, all the longing lady has to do is to turn her bed over nine times.

Some old people delight in this kind of lore. It is upon their lips all day long. Their quaint sayings and constant reminiscences of old times make their conversation like a cabinet of curiosities. They can meet every case with a cut-and-dried saying, cut and dried we know not when, we know not by whom. From the birth of an infant till it has "come the length of a man," as the north-country peasant says, circumstances over which no one has any control indicate its destiny to these worthies. To begin with, the day of the week upon which it is born settles the leading features of temperament or fortune.

"Monday's child is fair of face,
Tuesday's child is full of grace;
Wednesday's child is born to woe,
Thursday's child has far to go;
Friday's child is loving and giving,
Saturday's child must work for living."

In some parts of the kingdom the rhyme goes

The more we think of this unwritten lore, the more curious it seems that we have hitherto more regarded it as ignorance and superstition, instead of remnants of an obsolete learning. It is not of to-day, for it has already fallen out of general circulation, and is only met with occasionally. Our so-called roughs know it not. Much of it is doubtless of Mediaeval origin, but there is more that must be older still, and probably of Celtic antiquity. The Druids were remarkable for their learning, which, Latin writers agree, was all unwritten. We have remains of their altars and their ringed monolithic temples, side by side with our railways and telegraphs, wherefore not of their lore? We labour to light the contents of ancient graves and ancient caves, asled we know not how many hundreds or thousands of years ago; we delve into grass-grown entrenchments full of circular foundations of pre-historic dwellings; we pick out of the accumulations of soil upon them narrow-heads, Celt-heads, antlers, bones, querns, pieces of broken pottery,—sufficient relics, in a word, from which we can gather how men lived in those remote times, how they hunted with flint-headed arrows, hewed down timber with stone-headed axes, built huts of uncoloured stones gathered from the valleys and hill-sides, where mighty waters had deposited them in still more remote ages, grew cereals on terraces on hill-sides and around them; and must we conclude that though this amount of knowledge of a pre-historic people has survived every word of their thoughts, hopes, and fears, their rude experience

on to say, that the child that is born on the Sabbath-day is blithe and bonny, good and gay; but in other parts these desirable characteristics are deemed the special property of those born on Christmas-day. If, in dressing, a garment should be accidentally put on wrong-side out, it is a sign of good luck; if his palm should itch it is a sign that he is about to receive money; if his nose should tingle, that he is going to be vexed or pleased, according to whether the titillation is most observable on the outside or inside of that organ; if his ears should burn, he may be sure some one is talking about him; if the sole of his foot should exhibit any irritation, he may make preparation for going to strange places; should he trip in running upstairs, a wedding may be expected; and should he shudder, some one is walking over the spot that is to be his grave. Should he forget anything, or have to turn back for it after leaving the house, he must sit down before starting afresh, or he will meet with bad luck. In some parts of the country it is deemed imperative that he should also eat and drink, to avert the evil his carelessness would otherwise draw upon him. If he should meet a squint-eyed person, he need not anticipate much profit from the undertaking in which he is engaged; for in this rude and illogical learning a squint-eye is an evil eye for others besides its unfortunate possessor. His own hands tell his unfortunate fortune, without any need of consultation with the palmist; for if there be specks upon his thumb-nails, he is going to receive a gift; if these marks appear upon his first finger-nail, he has a friend; if upon the second, a foe; if upon the third, a visit to pay; and upon the fourth, a journey to go.

The days of the week are arbitrarily lucky for the conduct of some business and unlucky for the prosecution of other. Nail-cutting on some days is a most hazardous proceeding; all sorts of misery culminate on the head of the rash mortal who presumes to cut them on the Sabbath-day,—"better for him he had never been born;" and to cut an infant's nails before it is a year old is a sure way to make it a thief. Sneezing indicates a great deal more than the development of a catarrh or cold in the head. In the matter of steruntation hip-lore has shaped the experience into this:—

"Sneeze on Monday, sneeze for danger;
Sneeze on Tuesday, kiss a stranger;
Sneeze on Wednesday, get a letter;
Sneeze on Thursday, something better;
Sneeze on Friday, 'ere for a crown;
Sneeze on Saturday, true love to-morrow."

Another rhyme says,—

"Sneeze three times before you're up,
You'll see you're sweetheart before you snip."

Some household duties are regulated by a regard for old-world rules that some people could not bring themselves to infringe for any convenience. Washing-day is settled with almost as much solemnity as attended the adjudication of the proper recurrence of Easter, in the days of rivalry between the Celtic and Roman churches:—

"Those who wash on Monday have all the week to dry;
Those who wash on Tuesday will have one day to dry;
Those who wash on Wednesday wash in the middle of the week;
Those who wash on Thursday have all their clothes to seek;
Those who wash on Friday must truly wash at need;
Those who wash on Saturday must be sluts indeed."

It will be seen that it would be next to impossible for any diletty-disposed person to commence laundry operations later than Tuesday in the face of this statement. The working-classes of London have a hebdomadal nomenclature of their own: Black Monday, Miserable Tuesday, Dreadful Wednesday, Equal Thursday, Better Friday, Joyful Saturday, Glorious Sunday. Assistants in shops, especially, sympathise with these attributes and own their application. After their holiday on Sunday, a return to business on Monday morning may be felt as tedious. Tuesday and Wednesday drag on still shadowed by the contrast of past joys; but Thursday is midway between these and those in anticipation. Friday heralds the near approach of the Sunday holiday; and by Saturday anticipation has concreted into content. The Saturday half-holiday movement has, probably, dimmed the acuteness of this feeling, which, for all we know, may have been thus expressed by London 'prentices in the days of Queen Dowry, or before. Portents do not disdain to indicate the approach of events in the homeliest forms. Our current hip-lore assigns different meanings to the cinder that flies out of the fire on to the hearth-rug, according to its shape. If it be roundish, it is a purse, and sig-

nifies the prospective receipt of money; if it be oblong, it is a coffin, and announces death; if it be hooded, or thicker at one end than the other, it is a cradle, and intimates the probability of an addition to the family circle. A film of soot, hanging to either of the bars of the fire-place, is called a stranger, and indicates the arrival of one; and should the fire only burn on one side, the approach of a stranger is considered to account for the non-combustion of the rest of the fuel. Sparks are more definite: they point out that the strangers to be expected are enemies. A tallow-candle, every one knows, lets us know when we are about to receive a letter, and the expression of "a thief in the candle" applied to fiery excrescences on the wick, looks as though our forefathers relied upon the candle as a sort of burglar-detective, the transition from the security afforded by artificial light against midnight depredators to the object yielding that light being easy. Out of doors it is just the same: there is a meaning to many things where none might be expected; and nearly everything the eye rests upon is an omen of some sort. As is probably allowed, whether in jest or earnest, wherever the English tongue is spoken,—a crow, in the south, a magpie in the north,—means much more than a close inspection of those ornithological specimens would lead us to suspect: one crow is sorrow, two are mirth, three a wedding, and four a birth. Here the indicative powers of crows cease; but magpies continue the tale, five are heaven, six are hell, and seven "the devil's own sell." Crows are accredited with a determination to soil the garments of such persons who do not put on some new garments on Easter Sunday. Should a dog howl, it is because he knows of bad news. Trees and herbs are both associated with this sort of domestic magic. The ash, for instance, has powers over witches and wizards; and lasses choose lovers by its aid:—

"An even ash I do confess,
But new pulled from the tree,
The first young man that I shall meet
My own true love shall be."

Herbs have offices beyond those of healing. Sage, unassociated with onions, has a property as attractive as its flavour associated with that bulb is appetizing. A maiden can see her future husband if she likes to pull a leaf or two of it at midnight on Midsummer's-eve. Our rustic informant of this fact tried this charm some fifty years ago, and saw, as she left the garden for the house again, the young man she married walking across an adjoining field. Her curiosity brought none of the evil consequences that are supposed by some to accrue to charm-trying, for she and her husband are still living, and among their handsome progeny is to be counted one of the brave fellows who won the Victoria Cross and a commission, for chivalry in the field in the Crimea.

We have not touched upon the pagans still lingering in this century, nor upon curious local customs, nor related legends, nor described the ghosts, goblins, hobgoblins, fairies, brownies, elves, bogies, kelpies, and other supernatural beings that have sent so many little folks to bed trembling, and caused them to lie there shuddering with their faces covered with the bedclothes in so many lands, through so many centuries. Different countries have their special customs, their special supernatural beings, and local legends, most of which have found their way into niches of local literature. Goblins and hobgoblins, however, are citizens of the world, for we expect that if Gæthe had described the beings he feared to see as he hurried out of bed in the old mansion at Frankfort to be frightened back into it again by his father, who waylaid him in the long dusky passages, with his dressing-gown turned inside out for the purpose, he would have painted them in similar outlines to those with which Sir Walter Scott would have depicted them at a similar age. We have simply shown our readers a few samples of the new curiosities antiquaries are now collecting, many of which have not been hitherto acted but hip-lore, and from which their industry and intelligence are likely to fashion into form and limn with vivid colours most interesting additions to our knowledge of the manner of the growth of the human mind.

CLAPHAM.—The chief stone of new Sunday-schools and lecture-hall has been laid at Grafton-square, Clapham. The entire cost of the structure is to be £25,000, of which £11,000 have been paid or promised. Mr. J. Tarring is the architect, and Mr. Saunders the builder of the new hall.

ECCLESIASTICAL CELEBRATIONS AT ROME.

THE magnificent celebrations just brought to a close for the Centenary of St. Peter and canonizing of twenty-five new saints, might be considered from various points of view. It is not our part or desire here to enter upon any theological question or to estimate any one of the interests affecting the Roman Catholic cause in these proceedings that are said to have attracted a greater number of prelates and priests to that Church's metropolis than ever had been seen there. We have to confine ourselves to the purely artistic aspects, and the question as to the place in the story and progress of sacred art, the claim to rank as arbiters of taste or style in things admitted within the sanctuary asserted for herself by Rome in the aggregate of costly displays, in the gallery of paintings (as we might call it, though ephemeral indeed), and in lavish apparatus prepared expressly for these days of solemnity in the St. Peter's and St. Paul's basilicas. In one respect, superior to what was seen in the former church, on occasion of the previous canonization (the 8th of June, 1863), the decorating of the same interior, in this last instance, profuse and gorgeous as it was, had one good feature,—that it adapted itself to, instead of in any part concealing the architectural whole; and, amidst the multiplicity of silken hangings, painted banners, garlands, and gold lace, all the principal lines and masses in the vast basilica were left distinctly marked out. In the choice of colour, the prevalence of warm crimson and gold was happy, and the grace of pendant draperies was pleasing. The illumination, also tastefully designed, and marvellously diffused over every "coin of vantage," radiating from the colossal tiara and cross, suspended centrally above the nave, and from measureless heights where it might be supposed no human hand could reach, produced effect the finer inasmuch as it did not dispel the solemn twilight, but seemed, like countless gems, to shine amidst a rich gloom, that allowed to appear, but yielded not to, the lustre of lamps, tapers, chandeliers, and candelabra. The report that for this decoration alone had been spent 80,000 scudi, that each of the great candelabra of woodwork made to imitate marble had cost 500 scudi, and that the round sum of 100,000 scudi was the minimum required for the occasion within the walls of St. Peter's alone, need not have caused surprise to any spectator. But nothing better can we say of the gorgeous *ensemble* than that, seen by artificial light, with the almost total exclusion of that of day, it proved magical, mysterious in splendour, harmonious in all its variations of pomp. The details would not bear inspection; and, as seen by common light, the whole appeared theatrical, in many parts even tawdry and trivial. What could be more offensive, for instance, than imitation sculpture, namely, chiaro-scuro paintings on flat boards to represent colossal statues of saints in the upper file of arched niches, the lower of which (and the upper also to some extent), along naves and transepts, are occupied by the giant figures in marble of all founders and foundresses of religious orders? What could be more unsuitable than artificial flowers, in immense garlands and bouquets, which, with childish idea of bringing such details into accordance with the scale of architecture, were actually made colossal also, chalice and petals swelling into proportions ludicrously beyond nature! We might even forgive chiaro-scuro on flat surfaces, to imitate the inimitable, in comparison to the absurdity of painted cherubim, all blooming in fleshiness, and Valentine in style, supporting similarly painted garlands, alike flimsy in material, along the summit of cornices, behind interminable rows of tapers! As to the attempts at higher art, the colossal groups, illustrating the lives of the new saints, hung over each entrance within the atrium, and pendant on banners from each arch along the nave, sufficed merely to tell their stories with some effect from a distance, though exception might be made in favour of one, by Signor Grandi, presenting a miracle wrought by St. Paolo della Croce, founder of the Passionist Order. And the other great banners carried in the procession, displaying more conspicuous or ecstatic scenes in the careers of the same individuals, could not be said, at most, to attain any worthier object than the supply of so many imposing accessories, highly conducive, indeed, to the effect of that stately pageant as it slowly defiled through the array of troops with

the gleam of tapers lighted in every hand, the hundreds of mitres, and superb varieties of ecclesiastical costume—episcopal, cardinalial, oriental. Graver objections than any we have made above might be urged against the introduction of the cross of St. Peter, instead of that by which a lost world was saved, as the grand luminous centre to all regards, pendent from the tiara and keys, that blazed like diamonds, all in glass, high above the arcades between vault and cornice. Nor could there, we thought, be a less dignified subject chosen to represent in picture the supremacy of St. Peter than the homage offered by the natives of all lands, in ideal grouping, through that ceremony of kissing the foot of the well-known bronze statue that stands in the same church, and was this day decked out in Papal robes,—such being the scene indifferently painted over the chief portal on the inner side. And this intent to refer the glories of the occasion to St. Peter, in the true spirit of Rome, however inadmissible by Protestants, was manifest in another accessory not suitable as entering into the decorative whole, the inscribing on gold ground along the entire extent of cornices, and in enormous letters distinct at that height, the full narrative of the mysterious discourse held by the Saviour, after His Resurrection, with that Apostle, while around the cupola was read in similar letters on gold the text in which such spiritual prerogatives are conferred on Peter by the Divine Master.

Turning to another art, we must report in the highest terms of praise the character and execution of the grand anthem "*Tu es Petrus*," &c. composed by Mustafa, the first soprano singer of the Sistine Chapel, and performed at the offertory by three choirs, each of 100 voices, answering from extremities of the church in strains that seemed to float through and pervade its entire atmosphere, and in their alternations of exultant jubilee and sublime mournfulness, answered to our imagining of the song of angels more than any vocal music we have ever heard. A grand passage also was the *Te Deum*, in that part where wind instruments accompanied the fine old chant in which it is invariably sung at Italian worship; and the clarion strains at the elevation had the thrilling effect never to be forgotten by those who have attended the Papal mass.

The choral music at the grand Vespers, when was repeated the same resplendent illumination at St. Peter's on this evening, would alone have sufficed to signalize the day among the *Festivals of Rome's religious observances*. And with a "*Girandole*" on the Pincian Hill, more brilliant and varied even than the precedents of such fiery spectacles—the chief design intended to illustrate the triumph of the Church over the five regions of earth (Australia included)—were closed the pomps of the 29th of June, 1867, destined to perpetual record for the sixty-second act of canonization performed by the Roman Pontiffs, perhaps in no preceding instance attended with circumstances more impressive.

The exposition of the chair of St. Peter, removed from its bronze case and colossal supporting statues, to be displayed for three days above a lateral altar, offered a study for the antiquary, and attracted crowds even amidst the ritual splendours of the 29th of June. Of dark stained wood, the seat made very deep, it has a high back terminating in a triangle, and adorned with round head open work; the front, below the seat, encrusted with ivory in eighteen small panels, on each of which is incised either an animal or some symbol not easily distinguished at the distance in which the relic was now seen.

From such description, it is apparent that the Roman tradition of this being an antique senatorial, or curule, chair, applied to Christian purposes for the use of St. Peter as an episcopal throne, is quite untenable,—if anything, the evidence of its details seeming to imply Byzantine rather than other origin.

For the decoration of St. Paul's, scene of the grand ceremonies on the 30th, the Pope, with all the cardinals and prelates attending, a better principle was adopted than at St. Peter's: scarce any draperies or hangings were admitted, but a profuse, and, indeed, tasteful illumination was dispersed along framework that followed in the general lines of architecture. As to the various popular fêtes and spectacles extending over eight days, and directed by the magistracy in honour of the great religious occasion, it may suffice to report that they were, as invariably the case with such things in Rome, brilliant, ingenious, and ably

carried out; nor could anything have been finer in its kind than the displays of pyrotechny. The illumination of the Capitoline Museum claimed higher admiration in the sphere of calm and classic beauties. Though not introduced amidst ritual celebrations, the great picture painted for this occasion by Fraassini, to be placed in a hall of the Vatican among other illustrations of hagiography, and representing the deaths of the nineteen friars, monks, and secular priests who were hanged in a garret where they had sought refuge from Calvinistic persecution at Gorkum, all being among the individuals now raised to the honours of the altar,—this powerful art-work may here be noticed as the great success of the day in Rome, and as indeed asserting for Signor Fraassini, who is still young, a primordial rank in the local school; his affecting treatment of a painful subject having this high merit,—to say the least,—that it renders the horrors of the scene subordinate to, and subdued before, those higher attributes in which is announced the triumph of the immortal over the mortal, the victory of faith at life's direst trial. For some fortnight before the removal of this picture, the studio of its artist was daily thronged by visitors of all classes, attracted by all that fame had made known with no exaggerating tongue. As to the many other artists employed for the pictures at St. Peter's, and remunerated according to their standing, it would be useless to record their names.

Rome.

HEALTHFUL DWELLINGS CHARACTERISED BY CHEAPNESS.*

I HAVE stated that the best sanitary construction of a house, apart from any question of cost, would be on the principle of the Crystal Palace, only with thick slabs of opaque glass, and with double walls, inclosing (like double windows) a still air, which would be the best means of meeting external variations of heat and cold and preventing the evils of the absorption of moisture or of miasma. The chief novelty in construction in the Exhibition is in the model dwelling of the Co-operative Society of Paris, made by M. S. Ferrand, the architect, to some extent on the principle I have stated.

He constructs his walls of hollow brick in this, and makes the wall double; thus:—The thickness of the double wall is 5 in., which, of course, would be insufficient for bearing purposes. But the wall is held together, and the bearing power is obtained, on what I have termed the Crystal Palace principle, by iron columns, beams, and cross-tees.

He claims for this construction the advantages of walls which are thin, and which, therefore, save space, and yet are warmer, resist changes of temperature better, and are better non-conductors of sound than the common brick or stone bearing walls, and that at a lower cost.

Of the hollow-brick cottage constructions, with hollow-brick flat roofs as well as walls, in England, it is reported that, as anticipated, they are warmer in winter and cooler in summer than the common constructions; whilst of ancient hollow floors, that are warmed by hot air underneath them, it is declared that the warmth derived from their extended surface is more comfortable than that derived from any other mode of house-warming.

M. Ferrand has an extended application of these double walls as a means of equalizing temperature. He opens the space between the two hollow walls into the cave or cellar beneath the ground-floor, from which the air circulates between the walls. The air of the cave being cooler in summer and warmer in winter in extremes of temperature than the outer air, this inner structure of air serves to maintain an equable temperature in the interior hollow wall and in the wall surface of the room. The principle of construction has been applied in hospital huts in hot climates, as reported, successfully. The hollow of the double wall is also applied as a means of producing a current of air for interior ventilation, the success of which in M. Ferrand's construction I had no means of getting tested.†

Of the superior quality of the wall itself, or its advantage as a non-conductor of heat and of sound, of its economy of space, and of the general

advantage of this iron-tied construction, there can be no doubt. If it were of our common brick construction, the expense of a dwelling of the same size, constructed in the cheapest manner, would not be less than 150*l*. I have an estimate from Mr. Samuel Sharp, the architect to whom I am indebted for assistance in the drawings and the technical points of this report, that, on a large scale, the improved iron-tied double-wall, detached dwelling might be constructed in England for 110*l*. Moreover, the substitution of the 5-in. wall for the common brick 14-in. cottage wall would ensure a gain of 710 cubic feet of space, which, as such space is now allotted in cottages, would serve as breathing space for two people.

Instead of facing the interior wall with soft plaster and paper, it might be faced with a light-coloured Scott's cement, in which case, at no great expense, the wall would be washable, and its sanitary quality would be nearly as perfect as if it were faced with an improved and smooth tile surface.

On the whole, this construction is eminently worthy of consideration as being an advance in the principle of construction, and as affording the best promise of any in the Exhibition in connexion with the sanitary improvement of the dwellings of the general population.

Besides the sanitary improvement of the impermeable and washable interior glazed brick-wall of the model cottage of 1851, there are other long-tried and proved improvements in construction in England, which, nevertheless, have not got into extended use. There are various practical reasons for this. In the first place, they are little known to individuals, and the common builders only attend to general demands; and any improvements requiring new forms which need care or study in alterations and adaptations for which there is no general demand can only be executed at increased expense to the first individual who adopts them. The common builder has rarely any interest in change, and is usually prejudiced against them, as requiring a change of habits in construction.

Besides these trade obstacles to amendment, there have been experienced serious obstacles from the trades unions to improved constructions of hollow brick. If the hollow brick be made of the usual size, the gain is chiefly in the quality of the brick, and there is little advantage in the price of the manufacture. But there is much gain if the cubic contents be enlarged; and a plan and estimate of a cottage, which I directed to be prepared for the Prince Consort, was submitted to the late Mr. Thomas Cubitt, the eminent builder and contractor, with walls of hollow brick, each of the size of twelve of the common bricks, and the 9-in. wall set in cement, costing 3*s*. the superficial yard, against 4*s*. 6*d*. and 5*s*. for the common brick wall set in mortar; the whole cottage, with improved qualities and washable walls, costing 25 per cent. less than the common brick construction. The contractor admitted the correctness of the estimates, but he declined to adopt the new construction, and gave to me his reasons, to this effect:—"If I adopt that new and large form of brick, which requires the use of both hands to set it, my men will strike, and I shall have all the labour of overcoming resistance; and when I have done it, and shown how much more cheaply the construction may be made, others will follow me, and I shall have no profit, and nothing but trouble and vexation for my labour. I will not, therefore, undertake it." In other instances of the introduction, not of hollow brick of new sizes, but of machine-made brick of the common size, but consolidated and improved by pressure, the trades unions, at the instance of the brick-makers, have combined to prevent them; and thus one section of the wage classes have been blindly led to oppose most important improvements in the dwellings and the health and comfort of the whole of the wage classes.

There is, however, one important material, of which extended adaptations from all parts of Europe are displayed in the Exhibition—namely, Portland cements, in various forms of concretes,—that appears to present great and earlier facility of individual use, with the least amount of skilled labour.

My attention was particularly directed by the late lamented Captain Powke to concretes, as a means of advance in quality as well as economy in laboring-class dwellings. He used much of it in constructions connected with the South Kensington Museum. An inferior specimen of it is presented in a small entrance-lodge there. It is proved that with a proportion of from one-

* From Mr. Edwin Chadwick's Report. See p. 513, ante.

† Vide for plans, Army Sanitary Commissioners' Report on the Improvement of the Sanitary Condition of Barracks and Hospitals.

fifth to one-eighth of Portland cement to sand, gravel, or small stone a wall may be made one-third stronger than common brickwork; or with concrete a wall may be made of equal strength with one-third the thickness of common brickwork, and of equal thickness, about one half the price. The common brick absorbs about 20 per cent. of water. The concrete wall does not absorb one quarter that quantity, and takes about a quarter that time in drying, and when made of the harder stone, and properly set, it may be said to be impermeable to wet. In the French Exhibition of building materials there is a very interesting collection of specimens of concrete from Vicat's cement (which is nearly the same as Portland), with table tops for wine taverns, of polished stone, held together, like mosaic work, by the cement; as well as stone for foot and road pavement, and blocks for walls. In the North German department, from the manufactory at Bonn, there are large tiles made of Portland cement, with coloured concrete facings, worth examining; as also some very good sculptured casts and objects of external decoration. But the chief development of the application of cement to concrete constructions is made by M. Coignet, who, by machinery, crushes stone into as fine a sand and powder as he can get it, and mixes the materials of lime and cement, and by pressure produces specimens of enormous strength; when powdered granite or porphyry is used, of strength approaching to that of the original stone. In the annex near the pond in the direction of the Pont de Jena, there is a school-house constructed by him, with statues of granite, porphyry, and other objects, specimens of the material. These various specimens go to prove that, if objects with the qualities of hard stone are required, it will be more economical to break the stone into pieces and recast it in moulds with cement than to carve it. One of the most important specimens is the flat concrete roof and its wide span, proving the possibility of making the ceilings and roofs of houses as with one large slab of stone. The principle of construction established by these concretes is that everything is made, as it were, a monolith. A church at Vesinet, near Paris, is made of the Béton Coignet, and the steeple may be said to be a monolith. In inferior constructions this is of importance, as cisterns and large water-tanks are made of it, as in one piece, without the insecurity of numerous small common mortar-joints. The proportions of the common beton, or concrete, were—of river-sand of good quality, 5 cubic metres; hydraulic lime, slaked in powder, 1 cubic metre; heavy Paris cement (considered equal to Portland cement), 250 kilogrammes. In 1843 I got some trial works made for the use of concrete for public drainage and sewerage work. I do not know what cement was used; but, as cements were at that time less understood, probably the wrong sort was used, for the report was unfavourable. Subsequently large quantities of Portland cement have been used for the Thames Embankment; and Mr. John Grant, the engineer in charge of the works on the south side of the river, has made very extensive trials, stated in an interesting paper, to be found in the Transactions of the Institution of Engineers of London, which establish the great strength of the material. The chief engineers of the city of Paris informed me that they have used large quantities of the Béton Coignet for sewers, for which, on account of its monolithic principle and evenness of surface, it is very advantageous; and that they are using it in the construction of bridges, and are well satisfied with it. I did not ascertain the various costs of production, but the price charged for this more finely manipulated concrete is less than for stone, though I did not perceive that in the class of dwellings in question it would have any material advantage in price over common brick; in sanitary qualities, however, it would have very great advantage indeed. It was avowed that houses constructed of it, instead of being unsafe to occupy within a year, would be very safe to occupy within little more than a month.

But the Emperor has, on the advice of Mr. W. E. Newton, the English engineer, adopted for the forty new dwellings of which I have already spoken concrete construction, which will remedy almost entirely the common default of damp walls of the first set of buildings erected by him, and give him the advantage over all the model dwellings in the Exhibition in economy and quality of wall construction, except as to quality in the double hollow walls of the cooperative association.

The new wall construction is of Portland

cement, one-eighth of cement to the gravel, sand, and stones to be got from the stratum of the foundations, and may be made without bricklayers or masons, and with common labour. Various forms of concrete walls—the cob-walls and flims in Devonshire—are of old date; but there has been one inconvenience in their construction, that deep troughs, or inclosed cases of the height of one story, were necessary; but for the Emperor's new dwellings there was used a movable case, invented by Mr. Joseph Tall, with which the walls may be constructed very quickly to any height, with considerable gain in time. With one-eighth of Portland cement the cost of this construction in England is generally about one-half the price of brickwork; and as in small dwellings, with much division-walling, nearly two-thirds of the entire cost of construction is in brickwork, this economy of half upon two-thirds is a very important gain, constituting often a turning-point of commercial advantage. Where improved model dwellings now yield 5½ per cent. as the average of the later buildings in the metropolis do, there is a great convenience of the concrete walling for distant places, in this respect, that, inasmuch as the cement is only about one-eighth the weight of the mass of brickwork, there is only about one-eighth the cost of carriage, where brick is not to be had on the spot, and where there is loose stone, sand, and gravel, or clay that may be burned, and where there is common unskilled labour available. By putting in cylinders of zinc, and lining them with cement as the walls are carried up, and when completed, taking them out, round and smooth chimneys, and water-spouts, and ventilation and warming flues may be formed readily, cheaply, and exactly. In respect to air-floes and spouting, the concrete construction appears to have the advantage over any of the other constructions that I found in the Exhibition, and to be readily available for much sanitary improvement. The concrete renders skirting-boards—those great harbours for vermin—unnecessary, and it runs all round the door and the window-frames, and therefore no filletting round them is required. The ceilings and roofs are made with concrete, for which Colonel Scott, R.E., has invented a very economical iron framing. Of this concrete construction of ceilings and roofs, as well as of walls and stairs, there is little but the doors and window-frames to burn, and they may be said to be fireproof.

The colour of the concrete wall of Portland cement is that of the darker stucco colour of houses in London, or of brown paper; which, however passable it may be for exterior surfaces, leaves improvement necessary in lightness and cheerfulness, even if the inner surface of the concrete wall be smooth. Colonel Scott, who succeeded Captain Fowke at the South Kensington Museum, and who has conducted extensive experiments on cements (stated in the Transactions of the Royal Engineers), and is deemed a leading authority on the subject, has invented one cement, which appears to be the desideratum for cheap wall-facing. It is a species of artificial gypsum, of a light warm colour, or of a light lime colour. When properly laid on, it is even better than Parian facings. It is hard, impermeable to wet, and it is, above all, washable. It has already been introduced for the lining of hospital wards, as possessing the requisite qualities. The expense of a facing with this cement, if properly used, is about two-thirds the expense of the ordinary three-coat work.

On the question of comparative economy of the concrete walling and the brick walling, it is assumed that the two walls are of equal thickness; but in the plans of model dwellings originally presented to the Prince Consort a construction was proposed on the panel or buttress principle, to economise material as well as space, the bearing power being supplied by the buttresses; and this may be given by 9-in. walling, with concrete, or in appropriate forms of hollow brick; and 4-in. or 5-in. walling of the right materials may serve for the necessary protection against the weather. 4½-in. walls of properly-made hard hollow brick are proved to be better protection against weather in times of frost than 9-in. or 14-in. common brick or soft stone.

In the English exhibition of materials there is a new species of walling, invented by Mr. B. Nicoll, of London, which presents very great advantage in non-absorbency of moisture, in non-conduction of heat, in having a washable internal facing, in saving space as against common brickwork, and being lower in price. Over a framework of strong cross wires, of about an

eighth of an inch thick, there is woven by a powerful machine a mass of straw or fibrous matter, which is saturated with a solution which renders it fireproof. It is then subjected to very powerful pressure. A coating of light Scott's cement mixed with Parian cement is then put upon it for inside facing, and of Portland cement for the outside facing. The surfaces are impermeable to moisture, smooth and washable with water, so as to save the expense of repeated lime-washings. It is formed into slabs in iron frames, which are put together and closely and securely fastened with bolts. The slabs are from 1½ in. to 4 in. thick. These slabs serve as superior panelling for dividing walls and partitions. Where space is of importance it has the advantage, perhaps, over concrete walling, in enabling a wall to be made of not more than 1½ in. or 2 in. in thickness, and yet its quality deadens sound. It has also great advantages for weatherproof roofing superior to slate or tile, though not, as I conceive, superior to well-made hollow brick (when it can be got), tied together with iron ties and covered with layers of asphalt and cement. In the Prince Consort's model the principle of the flat roof was adopted, but none of the model dwellings in the Exhibition have attained to that principle.

Where ground-space is dear, as it is with dwellings of the labouring classes in town, there is good reason for utilising the roof-space. It serves as an additional drying-ground. In dry weather it may be used for the children to play on. One example has been set in London, where in a densely-crowded neighbourhood, there being no playground for a boys' school, they have made one for them on the flat roof. If any one will look over the city *ouvrières* of Mulhouse, it will be seen what a large amount of roof-space is lost; and yet the cost of the weather-tight flat roof of concrete or hollow brick is nearly a third less in England than the timber, slate, or tile roof. Its greatest convenience or use, however, would be for self-contained dwellings; on them the father of the family may sit in fine weather, and have better air and an extended prospect, and enjoy himself in the Oriental fashion.

In respect to the economy of these improved constructions, there can be no doubt that fully 24 per cent. of saving is attainable, either on the hollow-brick principle, on the simple concrete principle, or on the Nicoll wall principle of construction. Mr. Samuel Sharp has made a very close estimate of a four-tenemented dwelling, on the principle of construction of the Prince Consort's model dwelling. At the present prices in England such a dwelling could not be constructed of brick for less than 400l., or 100l. each separate dwelling. On the concrete principle of construction, with Nicoll dividing walls, it might be constructed for 300l., or 75l. each dwelling, minus the cost of land. Apart, however, from the superiority in quality, the improved dwellings would have a gain of cubic space. The cost of the chief dwellings and the space in them is as follows:—

	Total cubic space.	Cost per cubic foot.
The Mulhouse dwellings	8,232	3
The Workmen of Paris ditto	5,950	5½
The Co-operatives of Paris ditto	7,940	4
Model dwellings (concrete), with washable interior walls, on the Prince Consort's principle of flat roofs	4,800	3

THE NEW DISCOVERIES IN ACOUSTICS.*

THAT the acoustical force is closely correlated, and strictly analogous, to the other forces connected with material substructure, and especially to the electric, as has before been noted in the *Builder*, and to the elastic and cohesive forces, as well as probably to the diamagnetic and magnetic; and that the acoustical force is subject to laws strictly analogous to those even of light and heat, although its semi-mechanical nature shows it still closer affinity to the forces first referred to,—all this is now becoming more and more apparent. Professor Tyndall has of late been much engaged in this special field of scientific research, and his discoveries are likely to lead to important progress towards a clearing up of those perplexing mysteries in respect to acoustics in the design and construction of churches and halls which so often trouble and

* "Sound: A Course of Eight Lectures," delivered at the Royal Institution of Great Britain." By John Tyndall, LL.D., F.R.S. London: Longmans, Green, & Co. 1867

Disappoint the architect. Meantime, however, the science is in a very immature state in such respects as these, but the results already attained are both curious and instructive. We have more than once given particulars from Dr. Tyndall's lectures, while they were in course of delivery, and especially as to sensitive flames, or the influence of the sounds of articulate speech upon gas jets; and we propose here to give some further details, as to both singing and sensitive flames, and as to the laws and conclusions already deduced from these and other researches on acoustical vibrations.

Friction, remarks Dr. Tyndall, is always rhythmic. When we pass a resined bow across a string, the tension of the string secures the perfect rhythm of the friction. When we pass the wetted finger round the edge of a glass, the breaking up of the friction into rhythmic pulses expresses itself in music. Savart's experiments prove the friction of a liquid against the sides of an orifice throbs musical sounds. Let a tube open at one end, and filled with water, its extremity being closed by a plate of brass, which is pierced by a circular orifice of a diameter equal to the thickness of the plate. Removing a little peg which stops the orifice, the water issues from it, and as it sinks in the tube a musical note of great sweetness issues from the liquid column. This note is due to the intermittent flow of the liquid through the orifice, by which the whole column above it is thrown into vibration. The tendency to this effect shows itself when tea is poured from a teapot, in the circular ripples that cover the falling liquid. The same intermittence is observed in the black dense smoke which rolls in rhythmic rings from the funnel of a steamer. The unpleasant noise of annealed machinery is also a declaration of the fact that the friction is not uniform, but is due to the alternate "bite" and release of the rubbing surfaces.

Where gases are concerned friction is of the same intermittent character. A rifle bullet sings in its passage through the air, while to the rubbing of the wind against the bores and branches of the trees are to be ascribed the "waterfall notes" of an agitated pine-wood. Pass a steadily-burning candle rapidly through the air; an indented band of light, declaring intermittence, is the consequence, while the almost musical sound which accompanies the appearance of this band is the audible expression of the rhythm. On the other hand, if you blow gently against a candle flame, the fluttering noise announces a rhythmic action. When a gas flame is simply enclosed within a tube, the passage of the air over it is usually sufficient to produce the necessary rhythmic action, so as to cause the flame to burst spontaneously into song. Not all, however, are aware of the intensity to which this flame-music may rise.

In speaking of his researches as to singing flames, Dr. Tyndall says:—

"While executing these experiments I once noticed that, on raising my voice to the proper pitch, a flame which had been burning silently in its tube began to sing. The song was interrupted, and the proper note sounded several times in succession. In every case the flame responded by starting into song. The same observation held, without my knowledge, been made a short time previously by Count Schellgötsch. Observe the conditions of the experiment. I place a tube 12 in. long over this flame, which occupies a position within the tube about 1½ in. from its lower end. When the proper note is sounded the flame trembles, but it does not sing. I lower the tube so that the flame shall be 3 in. from its lower end; it bursts spontaneously into song. Now, between these two positions there is a third, at which, if the flame be placed, it will burn silently; but if it be excited by the voice it will sing, and continue to sing.

In this position, then, it is able to sing, but it requires a start. It is, as it were, on the brink of a precipice, but it requires to be pushed over. I place the flame in this position; it is silent; but on the sounding of the proper note it stretches forth its little tongue, and begins its song. By placing my finger for an instant on the end of the tube I stop the music; and now, standing as far from the flame as this room will allow me, I command the flame to sing. It obeys immediately. I turn my back towards it and repeat the experiment. My back does not shade the flame. The sonorous pulses run round me, reach the tube, and call forth the song. A pitch-pipe, or any other instrument which yields a note of the proper height, produces the same effect.

When a silent flame capable of being excited is looked at in a moving mirror, it produces there a continuous band of light. Nothing can be more beautiful than the sudden breaking up of this band into a string of richly luminous pearls at the instant the voice is pitched to the proper note."

While treating of sensitive naked flames the doctor described some extraordinary phenomena.

"The most marvellous flame hitherto discovered," he remarks, "is now before you. It issues from the single orifice of a stearic burner, and reaches a height of 24 in. The slightest tap on a distant nail reduces its height to 2 in. When I shake this bunch of keys the flame is violently agitated, and emits a loud roar. The dropping of a sixpence into a hand already containing coin, at a distance

of 20 yards, knocks the flame down. I cannot walk across the floor without agitating the flame. The creaking of my boots sets it in violent commotion. The crumpling or tearing of a bit of paper, or the rustle of a silk dress, does the same. It is startled by the patter of a raindrop. I hold a watch near the flame; nobody hears its ticks; but you all see their effect upon the flame. At every tick it falls. The winding up of a watch also produces tumult. The twister of a distant spin also shakes the flame down; the note of a cricket would do the same. From a distance of 30 yards I have chirped to this flame, and caused it to fall and roar. I repeat a passage from Spenser:—

'Her ivory forehead, full of bounty brave,
Like a forest-bud did itself dispart;
For Love, his lusty triumph to engrave,
And write the battles of his great godhead,
All truth and goodness might therein be read;
For there their dwelling was, and when the spake,
Sweet words, like dropping honey she did shed;
And through the pearls and rubies softly brake
A silver sound, which heavenly music seem'd to make.'

The flame picks out certain sounds from my utterance; it notices some by the slightest nod; to others it bows more distinctly; to some its obedience is very profound, while to many sounds it turns an entirely deaf ear. It is as if, in chirping to it, or in shaking a bunch of keys within a few yards of it, great part of the flame is suddenly abolished. The light at the same time is practically destroyed, a pale and almost non-luminous residue of it remains.

We have called this the "vowel flame," because the different vowel sounds affect it differently. These sounds differ from each other through the admixture of higher tones than the vowel itself. It is to these tones, and not to the fundamental one, that our flame is sensitive. I utter a loud and sonorous *v*, the flame remains steady; I change the sound to *o*, the flame quivers; I sound *a*, and now the flame is strongly affected. I utter the words *boat, boat, boat* in succession. To the first there is no response; to the second the flame starts; but by the third it is thrown into greater commotion; the sound *ah!* is still more powerful. Did we not know the constitution of vowel sounds, this department would be an insoluble enigma. As it is, however, the flame is a demonstrator of the theory of vowel sounds, and is most sensitive to the notes of high pitch; hence we should infer that the sound *ah!* contains higher notes than the sound *v*; that *a* contains higher notes than *o*; and *o* higher notes than *v*. I need not dwell on this aspect perfectly with the analysis of Schellgötsch.

This flame is peculiarly sensitive to the utterance of the letter *s*. If the most distant person in the room were to favour us with a "his," it would instantly set the flame on fire. A hiss contains the elements that most forcibly affect this flame. The gas issues from its burner with a hiss, and an external sound of this character is therefore exceedingly effective.

Finally, I place this musical box upon the table, and permit it to play. The flame behaves like a sentient creature; bowing slightly to some tones, but courtesying deeply to others.

It is not to the flame, as such, that these effects are ascribed. Effects substantially similar are produced when jets of unignited coal-gas, carbonic acid, hydrogen, or air are employed. These jets may be rendered visible by smoke, and the smoke jets show a sensitiveness to sonorous vibrations even greater than that of the flames.

When a brilliant sensitive flame illuminates an otherwise dark room, in which a suitable bell is caused to strike, a series of periodic quenchings of the light by the sound occurs. Every stroke of the bell is accompanied by a momentary darkening of the room.

Savart's experiments on the influence of sonorous vibrations on jets of water belong to the same class of effects. This subject is treated of in the lectures.

In experimenting on the law of vibratory motions and the theory of beats, a curious experiment with a small brass table or mounted disc on which the hands are laid, reminding one of the spirit-knocking process, is thus described:—

"We are now prepared for a very instructive experiment which we owe to M. Lissajous. I divide this brass disc into six vibrating sectors; and bringing the palm of my hand near any one of the sectors, I intercept its vibrations. The sound is augmented. Placing my two hands over two adjacent sectors, you notice no increase of the sound. Placing them, however, over alternate sectors, a striking augmentation of the sound is the consequence. By simply lowering and raising my two hands, I produce these marked variations of intensity. By the approach of my hands I intercept the vibrations of the two sectors; their interference right and left being thus abolished, the remaining sectors sound more loudly. Passing my single hand to and fro along the surface, you also hear a rise and fall of the sound. It rises when my hand is over a nodal line; it falls when the hand is over a nodal line. Thus, by sacrificing a portion of the vibrations, we make the residue more distinct. Experiments similar to these may be made with light and radiant heat. If of two beams of the former, which destroy each other by interference, one be removed, light takes the place of darkness; and if of two interfering colours of the latter one be intercepted, heat takes the place of cold."

The following summary of the lecture just referred to will show in what way light upon acoustical difficulties may be looked for hereafter, when the subject has been a little further investigated:—

"When several systems of waves proceeding from distinct centres of disturbance pass through water or air, the motion of every particle is the algebraic sum of the several motions impressed upon it."

In the case of water, when the crests of one system of waves coincide with the crests of another system, higher waves will be the result of the coalescence of the two systems. But when the crests of one system coincide with

the sinuses, or furrows, of the other systems, the two systems, in whole or in part, destroy each other.

This mutual destruction of two systems of waves is called *interference*. The same remarks apply to sonorous waves. If two systems of sonorous waves condensation coincides with condensation, and rarefaction with rarefaction, the sound produced by such coincidence is louder than that produced by either system taken singly. But if the condensations of the one system coincide with the rarefactions of the other, a destruction, total or partial, of both systems is the consequence.

Thus, when two organ-pipes of the same pitch are placed near each other on the same wind-chest and thrown into vibration, they so influence each other, that as the air enters the embouchure of the one it quits that of the other. At the moment, therefore, the one pipe produces a condensation the other produces a rarefaction. The sounds of two such pipes mutually destroy each other.

When two musical sounds of nearly the same pitch are sounded together the flow of the sound is disturbed by beats.

These beats are due to the alternate coalescence and interference of the two systems of sonorous waves. If the two sounds be of the same intensity their coincidence produces a sound of four times the intensity of either; while their interference produces absolute silence.

The effect, then, of two such sounds in combination, is a series of shocks, which we have called "beats," separated from each other by a series of "pauses."

The rate at which the beats succeed each other is equal to the difference between the two rates of vibration. When a bell or disc sounds, the vibrations on opposite sides of the same nodal line partially neutralise each other; when a tuning-fork sounds the vibrations of its two prongs in part neutralise each other. By cutting off a portion of the vibrations in these cases the sound may be intensified.

When a luminous beam, reflected on to a screen from two tuning-forks producing beats, is acted upon by the vibrations of both, the intermittence of the sound is announced by the alternate lengthening and shortening of the band of light upon the screen.

The law of the superposition of vibrations above enunciated is strictly true only when the amplitudes are exceedingly small. When the disturbance of the air by a sounding body is so violent that the law no longer holds good, secondary waves are formed which correspond to the harmonic tones of the sounding body.

When two tones are rendered so intense as to exceed the limits of the law of superposition, their secondary waves combine to produce *resonant tones*.

Resultant tones are of two kinds: the one class corresponding to rates of vibration equal to the difference of the rates of the two primaries; the other class corresponding to rates of vibration equal to the sum of the two primaries. The former are called *difference tones*, the latter *summation tones*.

We hope to hear more, shortly, of Dr. Tyndall's curious researches. The volume under notice is an exceedingly interesting one.

THE JUNIOR CARLTON CLUB-HOUSE, PALL-MALL.

In consequence of the large number of candidates waiting for admission to the Carlton and Conservative Clubs, it was thought desirable to establish a new club, and at a meeting held in the year 1864 at the Carlton Club-house a committee was appointed to carry out that object.

Several offices of properties in Pall-mall, St. James's-street, Regent-street, and Piccadilly were made in answer to advertisements, and eventually a site in Pall-mall was decided upon, on account of its eligibility with reference to the Houses of Parliament, and from the fact of its being entirely freehold.

Considerable difficulty and delay were experienced in purchasing the interests of the several tenants, but that was accomplished in the course of last year, when the new club-house, of which we illustrate the front in Pall-mall, was commenced by Messrs. Lucas, Brothers, who had obtained the contract in a limited competition. It will be seen from the plans that there will be two frontages, one in Pall-mall, and the other in St. James's-square.

The rooms of the club-house are arranged as follows:—

On the ground-floor is an entrance-hall, 27 ft. by 23 ft. 6 in.; a reception-room, 29 ft. 6 in. by 20 ft. 6 in.; a morning-room, 89 ft. by 27 ft.; a smoking-room, 28 ft. by 29 ft. 6 in.; and a principal staircase, 30 ft. by 23 ft.

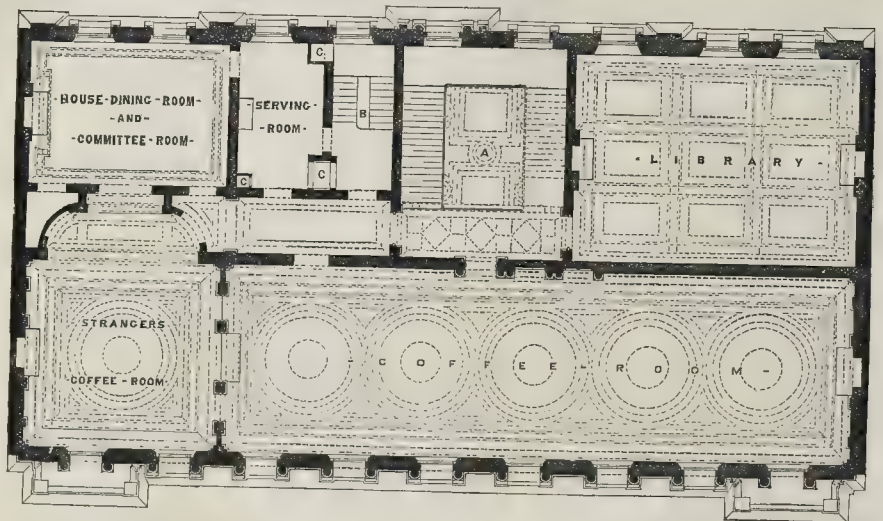
There is also a second staircase, and serving attendants' rooms, and an entrance in St. James's-square for members who have bed-rooms.

On the first-floor is a members' coffee-room, 90 ft. by 27 ft., divided by a plate-glass screen from a strangers' coffee-room, 27 ft. by 27 ft.; a house dining-room, 28 ft. by 20 ft. 6 in.; and a library, 40 ft. by 29 ft. 6 in. There is another serving-room on this floor.

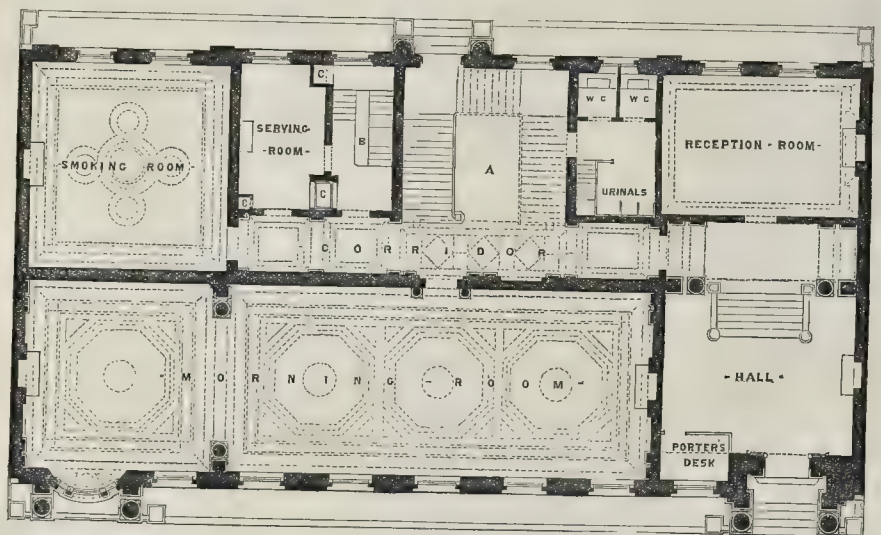
The heights of these stories are respectively 20 ft., except where the mezzanine occurs on the north side, in which are lavatories, attendants' room, &c.

On the second floor are two billiard-rooms, one being 27 ft. 6 in. by 27 ft., the other 29 ft. by 21 ft., the secretary's offices and bed-room, and a second smoking-room for visitors. The

THE JUNIOR CARLTON CLUB-HOUSE.



- FIRST - FLOOR - PLAN -



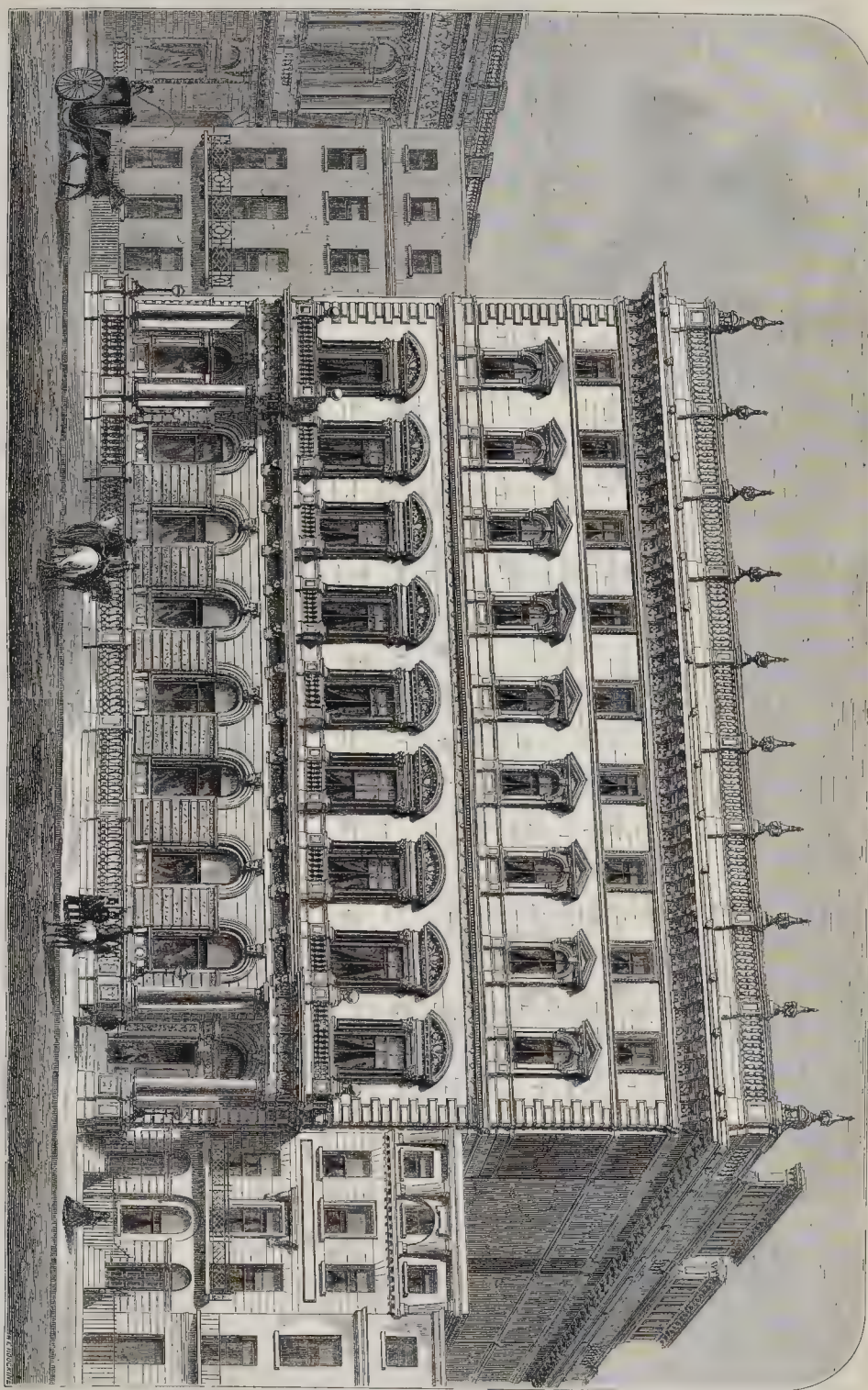
- GROUND - FLOOR - PLAN -

A - PRINCIPAL - STAIRCASE -

B - SECOND - STAIRCASE -

C - LIFTS -

X Y 0 X XX XXX XL L LX LXXFEET



THE JUNIOR CARLTON CLUB-HOUSE, PALL MALL.—MR. DAVID BRANDON, ARCHITECT.

remainder of this floor and the floor above are occupied by eighteen bed-rooms, which will be let to the members of the club.

Attendants' rooms, water-closets, &c., are provided on each of these floors.

The topmost story is intended to provide accommodation for about fifty male and female servants.

Under the ground-floor and above the basement a mezzanine story is formed, having six dressing and bath rooms, with separate corridor and staircase; also the steward's office, still-room, housekeeper's room, and stores.

In the basement are arranged the kitchen, 40 ft. by 29 ft., and the scullery, 25 ft. by 17 ft., which are continued up to the ground-floor, giving a height of 19 ft.; a servants' hall, butler's pantry, plate-closet, kitchen, clerk's office, cook's room, kitchen-maid's room, larders, steward's room, wine-cellar, and dispensing cellar. Outside, in the vaults under the pavement in St. James's-square, are beer and household cellars, fish and vegetable larders, and sand and charcoal stores.

On the Pall-mall front are coal, coke, and wood stores, an ice-well, and rooms for cleaning clothes, boots, and knives, also a washing place.

There will be three hydraulic lifts for dinners, wine, coal, and so on.

The club now consists of 1,500 members, exclusive of peers, members of Parliament, and members of the Carlton Club, who were entitled to be immediately balloted for, making together a total of 1,680, and they at present temporarily occupy the premises in Regent-street belonging to the late Parthenon Club.

The new club-house was designed by Mr. David Brandon, architect, under whose able direction the works are being done. The cost of the building will be about 40,000*l.*, exclusive of decoration and furniture.

RATS.

MR. MECHE writes as follows on this subject, important to others besides farmers:—

Has any one ever estimated the number of rats that prey upon the farmer's property? Allowing five to each acre, we should then have about 60 millions in the United Kingdom. As animals consume according to their weight, a full-grown rat would consume much grain in a year. But, unfortunately, it is not only what they consume, but what they destroy, that concerns us. Said an old labourer's wife to me, "A rat has taken away in one night eight of my brood of young chicks, worth 8*d.* a piece. My neighbour, Mrs. —, a small farmer's widow, cannot raise any poultry, for under her house is a honeycomb of rats. She took them in a hamper into her sleeping room last night, and even there they tried to get them out."

I can testify to their destructive powers from experience. When they have young they will carry away and store up scores of young chickens, ducks, or turkeys in a single night, eat the same as a cat having kittens. A friend of mine who had a little rabbit warren beside his windows, saw his cat catch a young rabbit. He followed her, and found that she had laid up thirty-six that morning near her kittens. I have known of a brace of foxes burying thirty-seven turkeys in a single night, and burying many of them up in some dung-heaps which were upon an adjoining field ready for spreading.

When hard pressed for food for themselves or for young, rats are very daring, and will attack large chickens and good-sized rabbits. I saw a case where a youth was awake in the night by a rat beginning upon his ear. Wherever the stock are fed with meal or grain there the rats will surely come, to share, with the pigs especially, their barley-meal and pollard.

When dining at Vintners' Hall with the late excellent Mr. Green, the great shipowner, he told me:—"Mr. Mechi, I can beat you in this. I make a thousand a year by my pigs." I expressed my surprise, and said if I got their nature free of cost I thought myself a lucky fellow. "Well," said he, "I have only sixty pigs; before I kept these pigs the rats used to gnaw the sails of my ships to the extent of a thousand a year, eating every greasy portion, now dine with or after the pigs, and never gnaw the sails." This hint may be useful to shipowners as well as to housekeepers, who find the mice destroy the greased or stained portions of table-cloths.

Rats migrate, and travel a long way in a night, in search of food. A neighbour of mine told me that he one night met a small army of them, some hundreds together. The carelessness of some farmers or their false economy causes serious loss to their neighbours. They may be called rat-preserved or rat-breeders. I used to pass frequently by two wheat-stacks which were completely honey-combed by the rats, whose paths into and up the stacks were visible from the road. Having consumed nearly all the grain, they left the stacks for better quarters. When thrashed there was plenty of straw, but the corn was nearly "nil." Those who keep their corn in stacks for seven years (and I know of some who do so) had need have an eye to the rats. I have used a dozen iron stack-frames (Garrett's patent) for the last twenty years, without any rats. The fact is, they cannot do without water, so if one gets into the stack he must come down to drink, and cannot re-ascend. It is too common a practice to leave carts, ladders, or anything close to the stacks, thus affording access. As soon as these are removed, Mr. Rat must come down for water and cannot return. We always trim or shave our stacks (cost 1*s.* per stack) to cut off access from below, as well as for economy of corn and neatness.

Mice are more difficult to expel than rats, for they get into the sheaves at harvest time and are thus carried on to the stack. Unless poisoned by liquid immediately after putting up the stack they soon find out that they can exist by the 12 per cent. of water contained in straw and 11 per cent. in the grain. They also learn to avail themselves of dew and rain. In the spring and summer they will so multiply as to destroy or damage a large quantity of the grain, especially if left over-year. To show how animals can exist by the water contained in what is called dry grain and its straw, I will relate the case of a horse at Cressing Temple, a few miles from me, where a horse used for treading or consolidating the barley in the barn, being left there all night, slipped down between the closely packed barley and the boarded sides of the barn. In vain was search made for him in the morning, and it was concluded that he had been stolen. On Christmas Day, as the ploughmen came to attend to their horses, they heard the neighing of a horse in the barn, and after removing the barley, they found the lost horse as fat and as sleek as a mole. Thinking he must be very thirsty, they ignorantly allowed him to go to the pond and drink his fill, and in consequence he died. This is well known to many persons now living. The horse had gradually eaten his way into a comfortable space. But to return to our rats. They are most industrious and destructive burrowers: as they cannot destroy a solid brick wall they will burrow under it, unless the foundation is well concreted; where beams enter the wall they will gnaw the wood. It requires a watchful eye to keep them under. Every hole should be noted, and plugged at once with a piece of tile or brick fixed with cement or a piece of hard wood dipped in gas-tar. Their runs should be tarred, and thus they will soon get disgusted with their quarters. Wherever a small heap of earth is thrown up near a wall, the run should be traced and at once stopped: lime and stone as a concrete cements them. Loose lime they cannot work in, it blinds and disgusts them. In every barn and shed door there should be a round hole, about 8 in. in diameter, so that the cats can have free access in search of the rats. It is at night they work, and they do so as much as possible under cover. They may be easily poisoned by strychnine, mixed with ground barley or oats; but before trying this they must be fed for several nights with the meal unmixed with poison. Rats are very sagacious, and had I space I could relate many instances of their cunning. It is a most dangerous thing to spread poison on bread and butter, for they carry it away; and I know of too many instances where valuable dogs, fowls, &c., have perished. Another inconvenience is, that when poisoned they die in their burrows, which are too frequently under your drawing or dining room, or in the walls. Their decomposition causes a most detestable and too durable stench. There is nothing like plenty of cats. I find male cats, castrated when young, by far the best rat-catchers; and by blocking the holes you give the cats a better chance of catching them. Traps may also be set; but they are very wary of them. Hollow walls are objectionable, so is thatch on buildings.

Water rats undermined the banks of my pond

until I turned in a few pike, which soon converted rats into fish. A pike of 8 lb. will take a rat and swallow him at once. Beware of pike where you have young ducks, for they enjoy them quite as much as they do rats. I had imagined that there was a chance of the rat biting the stomach of Mr. Pike; but, as an old angler, and examining the condition of the pike's stomach with a bait in it, I found that there is no fear of that, for instantly the stomach collapses like an elastic pitch-plaster, and not a single breath could the rat or any living thing draw. Pike always swallow their prey alive, and head foremost. They are very fond of eels, and swallow them alive and head foremost. They always seize their prey across the middle, and, unless very hungry, hold them so for some time.

Rats find abundant accommodation and concealment under the old-fashioned wooden barn floors and dilapidated or thatched farm buildings. The modern system of asphaltum upon concrete is an effectual barrier: they cannot gnaw it; their only chance is to burrow under between the ground and the concrete, and this, by a careful examination, may be easily prevented. A very destructive cunning old rat, that could never be trapped, was taken in the following manner:—Every hole except one was carefully stopped with gas-tar substances, and the trap set at the remaining hole. For two days and nights he declined coming out, but hunger and thirst at last compelled him to face the trap, and he was taken.

I very much commend asphalted floors to my agricultural brethren. It is so cheap and clean, and, above all, prevents any damage to corn, &c., by preventing damp arising from the earth beneath it. Cats such as I have will not only kill rats, but also weasels. The latter will destroy a brood of poultry in a night, if they have access to them. Of course every one knows the value of ferrets and a good rat-dog.

THE PACIFIC RAILWAY.

THE progress made by the construction parties who are laying down the track of the Union Pacific Railway appears to be something unprecedented. An explanation of the actual process of construction is furnished by a correspondent of the *Cincinnati Gazette*, who has recently been with the senatorial excursion party from Omaha to the western terminus of the road. He says:—

"There is little really known by the people of the character of the enterprise. Most think that a company of capitalists are busily putting down a road track, over which cars can be moved with ease, for the purpose of securing lands and money from the Government. The fact is, one of the most complete roads of which the country can boast, with equipment that surpasses many, is being laid with a speed that fails to impress the nation, simply because it is not believed. But let the facts tell their plain yet wonderful story. General J. S. and D. C. Casement, of Ohio, grade the road, lay the track, and put up the telegraph. The graders go first. There are 2,000 of them. Their advance is near the Beach Hills. They protect themselves, and are digging the fortification which makes the future sure for us, on through Indian battle-fields, while the daily light goes on. . . . Let the reader picture the scene. The rush of the loaded truck; the successive dropping of the rails in place; the rattling of the spiker's hammer, sounding like a hotly-contested skirmish; the roar of the distant supply trains moving up; the resounding of the frequent signals near at hand; the universal bustle; 'the rumble and grumble and roar' of the wonderful advance. Let the elements of the savage warfare and the actual presence of hostile Sioux along the bluff be woven into the picture, and together it forms one that the world has not seen before, and which the stories of magic can scarcely equal."

On the 9th of May, 1866, but forty miles of road were completed. In 182 working days thereafter 245 additional miles were laid and put in prime condition, every rail and tie and spike having been brought up from the rear. Seven saw-mills furnish the ties and lumber. All bridges are framed, the pieces numbered, and set up where wanted without the least delay. Unless driven off by Indians, which, the correspondent says, does not now seem probable, the road will touch the base of the Rocky Mountains in the coming autumn. The California end has already reached a point about a hundred miles east, and is descending the eastern slope of the Sierra Nevada into the Valley of the Humboldt. It is confidently expected that Salt Lake will be reached next year, and that 1870 will see the whole line completed. While the nation has scarcely heard of what has been done, the work has been nearly one-third accomplished. What about the Indians when the work is finished?

THE PRODUCER, THE MIDDLEMAN, AND THE CONSUMER.

THE great question whether the producers of wealth and its consumers cannot bargain with each other directly, for their mutual benefit, without the intervention of the overgrown middleman, who, for merely handing over goods from the producer to the consumer, takes enormous slices out of everything, and gets fat upon this, which he neither produces nor consumes in this great "nation of shopkeepers," is likely to take a prominent place henceforth in the annals of England. A new foe to economical arrangements has started up in the self-interested objections of a by no means philanthropic "Howard" to deal with co-operative consumers without the intervention of the middleman drone, who is most certainly destined to be ultimately ejected from the busy hive of industry, but who in the meantime serves the purpose of the short-sighted producer, who depends on him for touting his goods to their mutual benefit, but at the great cost of the consumer; not perceiving, perhaps, that what such a trade combination must lead to is the rapid substitution of co-operative producers themselves, who will deal with the co-operative consumers without the intervention either of the middleman or the self-centred producer for whom he touts. The question has now been taken up by a limited co-operative agricultural and horticultural association, whose council comprises influential names such as those of the Right Hon. William Cowper, M.P., Thomas Hughes, M.P., and others also well known. In an attempt to deal with Messrs. James & Frederick Howard, agricultural implement manufacturers, for their implements, at cash prices, they find, to their surprise no doubt, that Messrs. Howard decline to deal with them, because retail customers are to be supplied with their implements on trade terms, as they "feel bound to protect the interest of those upon whose exertions their trade in great measure depends"—in the meantime. And they have largely advertised their resolution amongst the aforesaid "middlemen,—with what sort of motives may be readily conceived. We should not wonder to hear of a powerful co-operative agricultural implement manufacturing company or two being planted down in Messrs. Howard's neighborhood some of these days, and circulars distributed by Messrs. Howard amongst an increasing number of co-operative agricultural implement-consuming farmers beseeching them for "custom."

THE SWANSEA WATER-WORKS.

THIS undertaking is now completed, and the final report of the chief engineer, Mr. Rawlinson, was shortly to be presented to the local Board of Health. The New Water-works Committee, accompanied by the surveyor, Mr. E. Cousins, the contractor, Mr. W. Williams, and other gentlemen, paid an official visit to the works, and inspected them prior to their being formally handed over to the town from the hands of the engineer and contractor. The work was carried out by the contractor, under the supervision of Mr. Unsworth, the resident engineer. The conduit and the conduit-pipes were first commenced in April, 1862, and the conduit and pipes were completed in the autumn of 1863, and the water began to be supplied from the new works at that time. The new reservoir works were commenced in April, 1862, and therefore but little apparent progress was made; and in May last the water for the first time was up to the finished overflow of the reservoir, and the whole of the embankments were found to be able to sustain the pressure thus thrown upon them without sign of weakness. The puddled wall of the embankment at its greatest depth is 98 ft. deep, and the main bank at its greatest depth is 80 ft. The top bank-line is a little over 600 feet long, and there are about 140,000 cubic yards of material in the bank. The bottom bank width is nearly 500 ft., and the top bank width is 12 ft., and is finished 6 ft. above the lip of the by-wash, having a 4 ft. bank water-wall on the top, so that there is a protection of about 10 ft. above the highest line to which the water rises. The greatest depth of water against the bank is 76 ft., and the available depth from which the water is drawn at the bottom of the culvert is 64 ft., so that the volume of water at command when the reservoir is full is 300 millions of gallons. The surface area of the new reservoir is 82½ statute

acres. The conduit from the reservoir to Morriston is 7½ miles long, and 2 ft. diameter earthenware pipes, having a uniform fall of 5 ft. per mile, excepting at the two valley crossings where the water is conveyed by cast-iron syphon-pipes. These conduit-pipes are capable of delivering no less than four million gallons of water within the 24 hours, equal to 30 gallons per head for 150,000 persons, so that should the reservoir be enlarged at any time, there would be no extra cost for conduit-pipes to supply the immense volume of water stated. The present daily consumption is about two millions of gallons to the town, and about one million for compensation water to the various mills, &c.

THE PALESTINE EXPLORATION FUND.

At the last meeting of the General Committee of the Palestine Exploration Fund, in the Jerusalem Chamber, Westminster, Mr. George Grove, the honorary secretary to the fund, read the report, from which we learn that at Jerusalem a discovery had been made outside the south wall of the sacred enclosure (Haram-esh-Sherief)—viz., that the live rock of the hill overlooking the Kedron was no less than 53 ft. below the present surface. The great south wall of the Haram had been traced down to that depth at the corner, making it in all 130 ft. high. In addition, the east wall of the Haram had been found to run on beyond the present south wall; and a second south wall had been discovered, 20 ft. distant from that already known. These discoveries were the most important that had been made in that part since the finding of the well-known arch by Dr. Robinson, and of the northern arch by Captain Wilson; and they were also interesting as showing what a great amount of unknown topography is probably hidden under the immense mass of debris which covers the hills and valleys of the Holy City. In the valley separating Moriah from the traditional Zion, opposite Dr. Robinson's arch, foundations of piers and other works had been found at a great depth. At the northern extremity of the town, close to the Damascus Gate, foundations of massive walls and of a tower had been uncovered. All these works are being prosecuted by Mr. Warren with energy. It had been the wish of the committee to procure a firman authorizing investigations inside the sacred enclosure; and Lord Stanley had been good enough to endeavour to obtain this; but on the arrival of the letter at Jerusalem it had been found to exclude all sanctuaries. The committee for forming a Biblical Museum reported that they had arranged to locate the museum at South Kensington, and to open it in the early part of next year. The committee will seek an interview with the Sultan during his visit to London. Their purpose is to engage the sympathy of the rulers of Syria in the object of the society, as being non-political and non-sectarian.

THE CRYSTAL PALACE.

THE appearance of the "Palace" on Tuesday, when (lighted up for the second part of the concert, and filled with 27,000 listeners) the Sultan and H. R. H. the Prince of Wales made their appearance in the Royal box, was very grand indeed, and will not be forgotten for some time by those who were present. There were other "mental photographs" received that will not soon fade. The orchestra itself was a brilliant feature; and that graceful prosconsium containing the boxes in which sat His Sultanic Majesty and suite (not a new erection) is one of the best pieces of architecture de circonstance, if we may use the phrase, employed in the building. Appealing to another sense, the characteristic Turkish Oud was striking, and the prayer "To thee, Great Lord," from "Moses in Egypt," was grand in the extreme. The fireworks, too, so far as we could see them, were effective; but with these mismanagement greatly interfered. Looking at the building in the daylight, it would seem to be a difficult task to prevent persons in it from seeing what was going on in the gardens, but this the managers, nevertheless, effected with remarkable success on the occasion in question. Persons who wished to obtain tickets for the galleries rushed to and fro unavailingly, while vexatious barriers threw difficulties in the way of egress to the grounds. The display of fireworks, for which alone many persons had come, was com-

menced before half the visitors had got into the gardens or found places within; and hundreds, we should probably not be wrong if we said thousands, were surging about inside seeking direction of some sort and finding it not, till all was over; while in the gardens matters were made worse by the stupidity and utter selfishness of many of the visitors themselves. In short, a magnificent *mélange* was mightily marred by miserable mismanagement.

THE SULTAN AT THE ITALIAN OPERA HOUSE.

THE Floral Hall formed a charming vestibule to the Opera-house on the night of the Sultan and Prince's visit (the 15th), festooned with red and white roses, hung with muslin and cloth, well lighted with chandeliers and jets, carpeted in the centre, and lined on each side with lovely flowers and well-dressed people, who for a "brief happiness," as one little lady with three very large daughters expressed it, had paid a guinea a-piece to see the *cortège* pass into the house. And yet not so brief, either. The recollection of such incidents lasts. Many times will it afford a topic for conversation: often in after-life will it be referred to as a bright and remarkable moment. The group was a brilliant one when formed; our genial Prince of Wales all smiles and kindness; the Sultan, no longer apathetic, briskly saluting all the way down the hall; the Ulema, in green, and some of the other officers literally in gold.

The Royal Box was fitted up in the centre of the house (as it has been seen before), extending from above the pit-tier of boxes to the parapet of the amphitheatre. The house was crowded, with the exception of the "gallery," where the two topmost rows of seats remained untenanted all the evening.

The opera, *Massaniello*, was listened to with the greatest attention, and the duet at the commencement of the second act, capriciously sung by Naudin and Graziani, was vociferously demanded, and was again given with increased effect. Many of the Sultan's suite divided their attention between the house and the stage; and no wonder,—such a flower-garden as was presented by the stalls, which on this occasion included even the three rows of seats that now ordinarily represent the "pit," has been seldom seen. Extravagance in dress, by the way, is greatly on the increase, and it is to be lamented. Mr. Frederick Gye may take the credit of having arranged one of the great successes of this remarkable week.

BARNS AND GATES IN LONDON.

THE parochial authorities of St. Pancras and St. George, Hanover-square, have recently been discussing with much interest the subject of the increasing traffic of their streets, and the inadequacy of their present available thoroughfares. The Victoria railway station, disgorging daily some thousands of passengers in cabs and other conveyances, has greatly increased the traffic of the district; but owing to some thoroughfares being blocked up by "bars and gates" the traffic is sent all over the district by circuitous routes. In St. Pancras the case is still worse. That parish contains the termini of the London and North Western and the Great Northern railways, to which will shortly be added a third station by the Midland Railway Company. The number of these obstructive bars and gates in that parish alone are about thirty, and the traffic through the open streets, owing to that fact, is something astounding. Some portions of the district are perfect "quadrilaterals," defying the inroads of the traffic around them. In London the number of obstructions is close upon two hundred, but the quiet streets thus protected are cleaned, paved, and lighted at the general expense of the ratepayers of the district. It was expressed at the last meeting of the St. Pancras vestry that the inhabitants of these quiet thoroughfares ought to pave, cleanse, and light their own streets in return for the privileges they now enjoy at the expense of their neighbours. It was also stated at the vestry that Lord Belmore's Committee on London Traffic had declined to take evidence respecting bars and gates, though strongly urged to do so. With regard to Regent-street traffic, the vestry of St. James's, Westminster, intend to discuss, at their next meeting, the advisability of planting trees on "both sides" of the street.

THE GUARDS' INSTITUTE.

This building, as a place of occupation, resort, and recreation for soldiers when out of barracks, has been erected on a site in Francis-street, Vauxhall Bridge-road. It is in the Venetian-Italian style, and consists of a basement and three stories. A flight of steps leads to the entrance on the ground floor: on the right is a coffee-room for the privates, and on the left a billiard-room and coffee-room for non-commissioned officers. On the first floor is a reading-room and a billiard-room for privates, and a reading-room for the non-commissioned officers. The second floor is wholly devoted to the lecture and concert room, which is 100 ft. in length and 10 ft. in breadth, its height being from the floor to the open roof, which is constructed in an ornamental style in varnished deal, 28 ft. It was designed by Mr. H. A. Darbishire, and executed by Messrs. Smith & Co., of Fimlico, under the immediate supervision of Mr. James Cradock. The Duke of Cambridge, when formally opening the building, the other day, said that the merits of the Institution were not to be compared to the men of the Guards, but were open to every soldier in London. There are already less than 920 subscribers.

LEAKAGE OF RESERVOIRS AT TUNBRIDGE.

At a recent meeting of the local commissioners, a report by Mr. Bateman, C.E., was read, of which we give an abstract:—

"On Wednesday last I examined, as requested, the two private reservoirs recently constructed by you for the supply of water to the town and district of Tunbridge Wells. I was informed that they each lost water at the rate of 10,000 gallons per day, when filled to a depth of 10 ft. or more."

The whole of the bottom of each reservoir is covered with a coating of Seyssel asphalt, which is also carried up the side walls and round the base of the lateral pier to a height of about 1 ft. The asphalt is placed on a bed of bricks, resting on concrete, and I am informed that no leakage whatever occurs in this portion of the work. The whole work, so far as I had the opportunity of examining it, appears to have been most carefully executed, and all the materials, too, have been of the best quality; and I am of opinion that no blame can attach to the contractor. I am also of opinion that the sole cause of the leakage of water arises from the insufficient thickness of the side walls and the absence of water-tight material at their base."

The simplest and most effective cure in this case will be to line the inside of the reservoirs with asphalt, in the same manner as has already been adopted for the bottom of the foot of the side walls, taking such measures as the experience of the Seyssel Asphalt Company may suggest for securely attaching the asphalt to the vertical walls. Should it hereafter shall off, or should weakness of support, this will be easily remedied by building up an internal wall, about 14 in. thick, which will secure the asphalt in its place, and prevent its cracking or falling off."

The Waterworks Committee reported, that in their opinion Mr. Bateman's proposal should be referred to, and after some discussion it was resolved by the commissioners to adopt the report and authorize the committee to carry out Mr. Bateman's recommendation.

ARCHES.

This branch of construction deserves the most careful investigation, though it has already received so much attention from the ablest men that it were impossible, perhaps, to offer any new and entirely new concerning it.

In considering the very able article by Mr. Hopkins, let us make a number of voûsoirs of masonry to construct a semi-circular arch of say 14 ft. space and 4 in. thick and place sufficient weight on the crown to break the arch: it will probably fly up to near the 45th degree on either side, the lower arises of the arch-joints being more pressed and crushed than any other part of the arch. In the arch constructed by Mr. Hopkins this could not occur; but for any great span and considerable rise his would require to be of a thickness incompatible with economy; and for arches of small span, except, perhaps, vaults, tunnels, and works of a like kind, the mode of construction is comparatively of little importance, as a few courses of bricks over the springing corbels the opening, and carry no weight above that height.

If a construction were made to rise straightly in the abutments to the vertex, and sufficiently light to prevent bending, then the breaking point at the vertex would be the weight sufficient to crush the transverse sectional area of such material when in that position; but a much less weight would break the material if

placed midway between an abutment and the vertex: we should, therefore, heighten that point, so that it would bear as great a weight as the vertex, and which would in consequence bear much less. The points equidistant between those last operated on would require similar treatment, these again weakening the previous points and reducing their greatest load; but we must also consider the load that will be placed on such arches, as that will materially alter the construction; and for a bridge we must also allow for the greatest weight that will be placed on any point, in addition to what we allow extra for safety and for the jarring of vehicles.

If an arch be elliptical, a breaking-weight placed on the crown will cause it to give way at its haunches. To prevent this, thicken the arch at the haunches, gradually diminishing towards the crown, two courses being worked to butt against one, and in doing so, endeavouring to approach in each successive course a circular curve for the following course, of as great a radius as possible; bearing in mind that the less the sagitta the greater the strength of each segment, and that, unless the arch be uniformly loaded, the crown will carry the greatest weight, because it has the shortest length of voûsoirs to press on, and, if these formed a straight line, would then resist as the sectional area of their material when in that position and operated on in that manner. But if they form a curved line, so that a string stretched on their face and attached to the extrados at springing and to the extrados at the crown, were to be at the narrowest place 1 in., then excepting the weight of the arch and friction, the breaking-weight would be equal to the resistance offered by the 1 in. left by string multiplied by width of arch; and if the string were carried beyond the crown to a point, and a breaking weight placed there, that weight would be less, because we should find the width left by string less than it was, consequently the sectional area less and weaker in proportion; therefore the crown is the strongest part.

H. AMBROSE.

SIR CHARLES BARRY AND THE LATE MR. PUGIN.

SIR,—My absence abroad prevented my seeing your impression of the 6th until to-day, or I should have replied last week.

I now beg to state, that the offensive manner in which I, amongst others, am alluded to,* leaves me no alternative but to write and say, that we are fully prepared to state facts, which will doubtless remove "the suspicious" you mention, and explain even the personal denials of Sir Charles Barry and my father, to which you refer.

B. WELBY PUGIN.

THE LAW COURTS COMPETITION.

SIR,—Having read the letter signed "A Surveyor" in your number of June 29, I beg you will allow me to say that I also have carefully measured the Courts in Mr. Waterhouse's design. I find them, however, exactly of the size prescribed, viz., 43 ft. by 32 ft. on the Common Law side of the building, exclusive of the recessed side-galleries given to many of the Courts, which would add 32½ ft. superficial more, making in all 1,700 ft., instead of 1,621 ft. as represented.

The mistake of your correspondent has doubtless arisen from his having extended from the area of the Courts that portion which is assigned to the general spectator facing the judge. Mr. Waterhouse appears to have raised this portion of the Court above the general floor level to isolate it and give a better view from it; but the fact of its being so raised can be no more reason for its being excluded from the area of the Court altogether, than the fact that the raising of the Judges' bench allows the introduction of another important passage can effect the diminution of the Court area to the extent of the space occupied by the bench.

* The statement of "A Surveyor" agrees with that of Messrs. Shaw & Po-nall. It is not "a mistake." The question seems to be, whether the corridor over which the Judges sit may or may not be measured into the area of the Court.

ARCHITECT AND BUILDER.

SIR,—The following is a list of the tenders sent in for the public-house at Chislet, Kent, for Messrs. Rignold & Delmar, Plans &c., prepared by Mr. H. B. Wilson:—

Smith & Co.	£769 0 0
Groombridge.	689 10 0
Wilson, H. B. (accepted)	687 0 0
Coxes, Brothers.	685 0 0
Adams.	680 0 0

Query.—Will the architect get a commission for superintending his own work? or will the employers be so much the gainer by combining the architect and builder in the same person?

A BUILDER.

* The observation was general, not particular.—Ed.

HOW THE THAMES EMBANKMENTS ARE GETTING ON.

SIR,—The insertion of the inclosed may do good.

Contract No. 1.—North side of river, from Westminster Bridge to Somerset House:—
Total amount of contract £520,000 0 0
Total done in labour, materials, and plant to end of June, 1867 388,189 0 0
Total unfinished at end of June, 1867 131,811 0 0
Total progress in June, 1867 7,555 0 0

Contract No. 2.—North side of river, from Somerset House to east end of Temple:—
Total amount of contract £229,000 0 0
Total done in labour, materials, and plant to end of June, 1867 214,384 0 0
Total unfinished at end of June, 1867 14,716 0 0
Total progress in June, 1867 1,037 0 0

Contract No. 3.—North side of river, from east side of Temple to Blackfriars Bridge (not yet commenced):—
Total amount of lowest tender opened October 5, 1866 (dates of Acts, July 25, 1863, and July 29, 1864) £239,000 0 0

Contract for Southern Embankment, Westminster Bridge to near Vauxhall Bridge:—
Total amount of contract £309,000 0 0
Total done in labour, materials, and plant to end of June, 1867 105,000 0 0
Total unfinished at end of June, 1867 204,000 0 0
Total progress in this contract during June, 1867 2,000 0 0
JASPER.

CHURCH-BUILDING NEWS.

Witley.—The ancient church of Little Witley has been re-opened, after being entirely rebuilt at the sole expense of the Earl of Dudley. The chancel is built with a semicircular apse, in which there are five lancet windows, all filled with coloured glass, presented to the church by the rector's friends. The church is filled with encaustic tiles from Messrs. Godwin's works, Herefordshire. The pews are low and open, and the pulpit is of stone. Mr. Perkins was architect; Mr. Wall, of Hanley Castle, the builder.

Birmingham.—The parish of St. Thomas is to have a new church, which has been long talked of. Messrs. Abraham and George Dixon have promised a donation of 1,000*l.*, and the rector is making an earnest appeal to his parishioners and townsmen. The new church will be called the Church of St. Asaph, and is proposed to be erected upon a triangular plot of land at the junction of Latimer-street with Great Colmore-street. The site being limited, the whole has been made use of, and consequently the plan varies from the usual arrangement. The church will comprise a nave (56 ft. long) of six bays, divided from the aisles by an arcade of lofty piers and arches. The piers will be of Bath stone with enriched capitals, and the arches of particular stone. Above the arcade will be a clerestory, pierced with windows filled in with geometrical tracery. Eastward of the nave a broad arch will open into the chancel, the east end will be polygonal in shape, and lighted with seven lofty windows. The aisles will follow the shape of the land, and will widen gradually from the east to the west. All the roofs will be open, and boarded underneath the slates. Galleries being a necessity, the church has been designed specially to receive them. They will be constructed in the aisles, and at the west end, the position being marked externally by a transom and tracery across the centre of the aisle windows. All the passages will be paved with tiles; those in the chancel with encaustic. The seats will be of pine, without doors, and stained and varnished. The vestry will be formed underneath the chancel, and approached by a stone staircase. Externally the structure will be of best bricks, with dressings of Bath stone, moulded, and blue bricks will be freely introduced. On the Colmore-street elevation will be placed the tower and spire, 160 ft. in height, the ground-floor of the tower forming the principal entrance. There will be seats for about 1,000 persons. The design, selected in a limited competition, was prepared by Mr. Yeoville Thomason. The contractors are Messrs. Wilson & Son, of Handsworth. The cost will be between 6,000*l.* and 7,000*l.*

Dickleburgh.—The church of All Saints, Dickleburgh, is one among the many in Norfolk and Suffolk which have recently undergone restoration and repair. Mr. R. M. Phipson, of Norwich and Ipswich, architect, was engaged to prepare plans and specifications of the contemplated restoration. These being submitted for

competition, several tenders were sent in, the selection being, for the woodwork, Mr. Bishop, Diss; and for the stonework, Messrs. Wells & Son, Dickleburgh. The stonework of the south windows is entirely new, the design being copied from the original. They are filled with cathedral glass by Mr. W. Cousens, of Norwich. The north wall has been pointed and repaired, and the old plaster taken off. A new buttress of Bath stone now occupies the place of the three old ones taken down. The chancel doorway has been completely restored with Ancaster stone, and has carved bosses to receive hood-moulds, one representing the vine and the other the oak. The interior repairs include a reading-desk in carved oak. The pulpit has been cleaned and repaired, but is both ancient and ugly. The benches are new, of English oak, with carved ends of various designs. The old carved oak screen separating the nave from the chancel has been lowered, so as to show the carved heads of the chancel benches. The east window remains in a dilapidated and almost unsafe state, and requires complete repair to harmonise with the rest of the church.

Lowestoft.—The churchwardens called a public meeting in the Town-hall to appoint a committee to assist them in carrying out the necessary repairs of the parish church. The meeting resolved that immediate steps should be taken, by appointing a committee to assist the churchwardens in raising the necessary ways and means for carrying out the repairs of the church with as little delay as possible. They also appointed a committee to assist the churchwardens in carrying out the repairs of the south aisle of the church.

Books Received.

Studies for the Restoration of the Plans of the Sacred Edifices of the Bible. By C. JONES. Part I. London: Trübner & Co. 1867.

The author claims to have made important discoveries, and says this Part is issued with the view of determining whether or not he shall publish them. He further says it was written because it had been objected to his previous works that they told nothing and afforded nothing to criticize. We have looked through the present *brochure* with every desire to discover something useful in it, but have failed to do so, and are forced to admit that if the previous works told less, the objectors were right. Six quarto plates and a number of pages of letter-press are devoted to setting forth the only point touched in the Part before us, namely, what might have been the form of the stones of Solomon's Temple if they were built with stones fitted or dove-tailed together; and as there is no foundation whatever for the belief that they were dove-tailed together, the inquiry seems to be altogether unnecessary and valueless, even from the writer's point of view, that things are made obscure in the Bible in order to teach its readers to think. Mr. Jones ends with the following:—"Note.—Lest any should puzzle themselves attempting to restore the plans of the temple by aid of the foregoing, I may as well caution my readers that they would probably fail." We have not the slightest doubt about it.

Illustrations of Medieval Antiquities in the County of Durham. From Sketches and Measured Drawings, by JOHN TAVENOR PERRY, and CHARLES HENMAN, jun. Oxford and London: James Parker & Co. 1867.

We have here fifty-one large folio plates, illustrating some of the architectural treasures possessed by the County of Durham: St. Andrew, Auckland; St. Cuthbert, Billingham; St. Paul, Jarrow; SS. Mary and Cuthbert, Chester-le-Street; St. Lawrence, Pillington; Holy Cross, Ryton, and others, but more especially Finchale Priory, and St. Hilda, Hartlepool. Of the last there are twelve plates, and of Finchale fourteen. These are very carefully drawn, more so, indeed, than some of the remainder, and include a large number of valuable mouldings and other details.

In the brief sketch of the architectural history of Durham that precedes the plates, the authors say that one year after the death of Bishop Pudsey (which is fixed at 1195), "his son Henry commenced the building of the Priory Church at Finchale." Very little, however, of what is now seen can be the design of that early period. Bishop Pudsey, we may note, had been the

means of greatly helping forward the cause of art, for not only did he cover the diocese with important buildings, but by the decoration of shrines, and by the addition to the convent library of beautifully illuminated MSS., he made us his debtors.

The volume is exceedingly creditable to the industry, energy, and skill of Mr. Perry and Mr. Henman, and augurs well for the future of a professional career commenced so auspiciously. It is appropriately dedicated to the Duke of Cleveland, as president of the congress held in Durham by the British Archaeological Association in 1866.

The coloured paper cover,—cleverly arranged, by the way, by Mr. Perry,—is numbered as Plate 1; so that, unless it be bound up with the rest, the volume will seem imperfect.

History of the Anglo-Saxons. By FRAS. PALGRAVE, F.R.S. A new edition, illustrated. London: W. Tegg, 1867.

A CHEAP popular edition of the late Sir Fras. Palgrave's "History of the Anglo-Saxons" has been published. It is "illustrated," but would be all the better if two-thirds of the engravings had been left out. They are rude and inexact; and, moreover, including, without explanation, views of buildings belonging to periods long after that treated of, only serve to mislead. The reprint is, nevertheless, welcome.

Wages Table. By HENRY J. HALLETT, Assistant Surveyor, St. Marylebone. London: Harrison & Sons, 1867.

THIS table shows the amount for any number of hours from one to eighty, at per hour or day of ten hours, from 1d. to 1s. per hour. It is very clearly printed on a large card.

Inventors and Inventions. By HENRY DIRCKS, C.E. London: Spon, Charing Cross.

THIS is a subject with which the author shows that he is familiar, and the result is an instructive volume, on,—first, the philosophy of invention considered strictly in relation to ingenious contrivances tending to facilitate scientific operations, to extend manufacturing skill, or to originate new sources of industry; second, on the rights and wrongs of inventors, particularly as affected by the influence of patent monopoly, legally and politically examined; and third, on early inventors' inventories of secret inventions, employed from the thirteenth to the seventeenth century, in substitution of letters patent. The work is dedicated to Mr. Henry Bessemer.

VARIORUM.

SOME of our readers may be glad to know that the paper by Mr. Jas. Fergusson, F.R.S., "On the Study of Indian Architecture," read at the Society of Arts, with a report of the discussion that followed, has been published by Mr. Murray, in a separate form. A sketch map and a number of illustrations have been added.—In the current number of the *Fine Arts Quarterly Review*, Dr. Kinkel reviews Mr. Wornum's account of Hans Holbein in a manner not wholly complimentary. Mr. Ruland continues his "New History of Painting in Italy." Mr. Aschpitzel, in a paper on Gothic Architecture in Spain, says,—"People talk of 'honest brickwork,' just as if a brick, after all, was really nothing but factitious stone." We apprehend the sentence was intended to read,—"People talk of 'honest brickwork'; just as if a brick, after all, was really anything but factitious stone."—Messrs. Spon (Charing Cross) have published a catalogue of scientific books published or sold by them, which some of our readers would find useful.—"The Royal Guide to the London Charities, for 1867-8." By Herbert Fry. London: Hardwicke. The mere list of titles of the London charities, here given in alphabetical order, occupies no less than 167 pages, and we feel assured that no more remarkable memento of London could be given to our numerous foreign visitors and sightseers than this volume of the titles of its host of charities.—"A Handy Book to the Collection and Preparation of Fresh-water and Marine Algae, Diatoms, Desmids, Fungi, Lichens, Mosses, &c." By Johann Nave, translated and edited by the Rev. W. W. Spicer, M.A. London: Hardwicke. To all wishing to form a collection of algae, &c., this small volume will be useful: it also gives instructions for the

formation of an herbarium.—"Observations upon a New and Simple Process for the Preservation of Meat, Poultry, Fish, &c." London: Simpkin, Marshall, & Co. The object of this pamphlet is to recommend the patented process of Messrs. Medlock & Bailey, for dipping or moistening fresh meat with a solution of bisulphite of lime and common salt in order to preserve it from taint. They say that the bisulphite gives no taint or disagreeable flavour itself.—"London Cabs: the Courage System as applied to London or any large City." By J. L. Haddon, C.E., of the Hackney Carriage Department of the Metropolitan Police. London: Stanford. Notwithstanding Mr. Haddon's experience, his proposal does not strike us as a satisfactory way to re-arrange the cab system of London. He quotes Sir Richard Mayne's remarks at the Society of Arts on the course system, although Sir Richard there admitted it to be inapplicable to London; and we are still of opinion that Sir Richard was right, and that Mr. Haddon has not completely obviated the objections to such a system as applied to London.

Miscellanea.

THE CANTERBURY DRAINAGE.—The Home Secretary has given his consent to the carrying out of the plan of drainage submitted by Mr. Filbow. The outfall has been visited by the Government Inspector, accompanied by the Local Board Committee, the engineer, and a committee from Fordwich. The outfall has been fixed at a spot below Fordwich, a few yards above the place originally fixed by Mr. Filbow.

TRANSPARENCY OF IRON.—At a recent meeting of the Académie des Sciences, M. Sechi made the important announcement of the complete transparency of iron when at a red heat. His own experiments have proved the truth of the fact, provided the thickness of the piece of iron does not exceed one quarter of an inch. This property of the metal appears to explain some of the phenomena respecting analyses which have resulted from the employment of iron.

GOLD IN THE SCOTTISH HIGHLANDS.—A correspondent states that gold has been found in various parts of the Highlands by a gentleman who has had many years' experience at the gold-diggings in Australia and New Zealand. He states that the metal was found in fourteen or fifteen different parts of the country, and that he believes there is gold, more or less, to be found along the boundaries of Argyshire and Perthshire, and all the way from Glenfine to the head of Glenetive. He has also found lead, copper, silver, and other ores.

THE PNEUMATIC DESPATCH IN PARIS.—Some time ago experiments were made with a view to transmit letters from one post-office to another by means of subterranean pipes, the parcels being propelled by atmospheric pressure. Seven offices are now on the point of being connected by the new system; and it is highly probable, according to the Paris correspondent of the *Morning Post*, that the whole of the post-offices in Paris will eventually receive their letters by this process. The bags will travel at a rate of from 800 to 1,000 French yards a minute.

AN ARTESIAN WELL OF BITTER WATER AND FIRE.—A new artesian well has been sunk by M. Belland, of Salles d'Aude, in the centre of a large alluvial plain, on the left bank of the Aude, in Narbonne. Not only water, but fire springs from this well, which has been sunk about 60 metres. The water is cold, limpid, and very bitter. It is purgative, and a carburetted hydrogen gas escapes from it. This latter, passing through a narrow tube, burns continuously, with a reddish flame, but it gives forth no odour, and consequently contains no trace of sulphuretted hydrogen or bituminous vapour.

METROPOLITAN WATER SUPPLY.—In the House of Lords, Lord de Mauley called attention to the expediency of supplying water to the metropolis from the superfluous water of the upper part of the Thames, and adduced a number of facts bearing upon the subject, urging their lordships to devise some means by which the superfluous water of the upper part of the Thames might be utilised. The Duke of Richmond said that the question had been carefully gone into by the commission, and he hoped that in the course of the autumn a report would be prepared, in which it would be found that the question had been thoroughly inquired into and considered.

LONDON ASSOCIATION OF FOREMEN ENGINEERS.—The thirty-second half-yearly meeting of members of this society has taken place at the London Coffee House, Ludgate-hill, Mr. Joseph Newton, president, in the chair: the large assembly-room was well filled. The report and balance-sheet were both of a satisfactory character. The present amount of money for all purposes, vested in the trustees, is 1,309l.; the number of ordinary members, 105; and of honorary members, 53. Mr. William Naylor read a paper on "Steam-Engine Boilers."

TRIAL OF SAFES AT THE PARIS EXHIBITION.—Mr. Samuel Chatwood, of Bolton, Lancashire, and Mr. Silas C. Herring, of New York, have formally entered into articles of agreement, whereby they stake 15,000 francs each on the issue of a trial of their respective safes by burglars' appliances, such as drilling instruments, gunpowder, crow-bars, &c. They have appointed a joint committee to decide the question between them, the winner to have his 15,000 francs returned, and the loser to have his distributed for charitable purposes in London, Paris, and Washington.

THE ANSTICE MEMORIAL, COALPORT, SHROPSHIRE.—Mr. W. O. Foster, M.P., has contributed 200l. towards the fund for erecting an Anstice Institute at Madeley. The proposal is to erect an institute, to include reading-rooms, rooms where working men may sit down with their pipes, if they wish, and enjoy themselves on an evening; also baths, wash-houses, and recreation grounds, where amusements may be indulged in. The Ironbridge tradesmen and the tradesmen and professional men of Broseley, on the other hand, have set their minds upon a free bridge across the Severn. This proposal, however, has collapsed, and the subscriptions have been transferred to the Institution and Recreation Grounds, at Madeley. Mr. Pritchard, M.P., and Mrs. Pritchard have given 300l., making altogether about 1,450l.

PUBLIC HEALTH IN SALISBURY.—The city of Salisbury was formerly one of the unhealthiest small cities in the kingdom. The average annual rate of mortality in twelve winter quarters before the sanitary works were undertaken was 30 per 1,000; in the twelve winters subsequent to the establishment of the Local Board of Health, the average annual rate has been 23 per 1,000, which is the winter death-rate of the registrar-general's "country districts" of England. The mortality for the whole year, averaged for twelve years since drainage, is 20 per 1,000, exactly the rate observed during the last severe winter, when the mortality was generally raised all over the kingdom. The city was entirely unaffected by the cholera epidemic of last year, although in 1849 cholera and diarrhoea alone were fatal to 20 in every 1,000 of the inhabitants.

EXPORTS OF RAILWAY IRON.—Notwithstanding the prevalence of adverse influences in some quarters, the export of railway iron from the United Kingdom have attained a respectable importance this year, having amounted in April to 43,974 tons, as compared with 46,673 tons in April, 1866, and 28,667 tons in April, 1865, and for the four months ending April 30 to 138,875 tons, as compared with 135,803 tons in the corresponding period of 1866, and 92,018 tons in the corresponding period of 1865. The exports would not, however, have been sustained so well this year but for an exceptionally large demand from the United States. The exports of railway iron are also well maintained to British India. In the miscellaneous demands for British railway iron there appears, however, to have been a rather considerable falling off this year.

STRIKE AT SUNDERLAND.—In consequence of the excavators, 300 in number, employed at the new London Dock having refused to work unless they received an advance upon their price equal to thirty per cent., they were unpaid off on Saturday, and the commissioners have decided to stop the night shifts, lay off one engine, and proceed with the cutting of the gunnells only, in order to get in the walls and warding. There only remain 40,000 cubic yards of marl to remove, 280,000 having already been removed, and of the 40,000 to remove 30,000 are required for backing up the walls when built, and levelling the ground. Only sixty men will therefore be required for the excavation necessary. There is no doubt that the strike arose in consequence of the excavators supposing the completion of the dock was imperative by a given time.

STRATFORD-UPON-AVON.—The foundation-stone of a bridge, to replace the old Mill Bridge, partially swept away by the floods of March, over the Avon, at Stratford, has been laid.—The partial re-erection of the church spire, damaged by lightning some years ago, has been completed.

THE VALUE OF LAND NEAR LONDON.—Eighty-seven acres of land at Edgware, belonging to St. Bartholomew's Hospital, have been sold recently to the Midland Railway Company for the sum of 45,000l., as settled by arbitration. Up to this time the hospital has derived from it simply an agricultural rent. Time has made it building land.

THE NEW INDIA OFFICE.—The new building was last week inaugurated, so to speak, by "a competitive examination of candidates for appointments in the Engineer Establishment of the Department of Public Works in India." The examiners were Mr. George Preston White, C.E.; Professor Capp, F.R.S.; and Colonel Newmarch, R.A. The examination was conducted in rooms on the second floor.

ARCHAEOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.—The annual meeting, to be held this year at Hull, will commence on the 30th inst. The Archbishop of York will be the president, and the grand jury-room at the town-hall is to be the reception-room. The arrangements for the week include excursions to Beverley Minster, Hedon, Patrington, Flamborough Head, the Dane's Dykes, Driffield Church, Malton gravel-beds, Howden, Wressell Castle, Selby Church, and Bridlington.

PRINCE CONSORT'S WINDSOR ASSOCIATION.—The annual meeting of this association, established in 1850 by the Prince Consort for improving the condition of the labouring classes of Windsor, Eton, and the surrounding neighbourhood, has taken place in the Windsor Home Park, under the most favourable auspices. The show of fruit and flowers from the royal gardens, the royal nurseries, and gardens of the nobility and gentry of the neighbourhood, was of a finer description than has been witnessed for several years past. Mr. T. Ingram's display from the Queen's Gardens included a very extensive and beautiful miscellaneous collection of plants, fruit, and cucumbers. Whilst the exhibitors were enjoying their dinner, and during the afternoon, the fine band of the Scots Fusilier Guards performed some pieces of music. The prizes were distributed by the Princesses Alice and Louise, and Prince Leopold.

REPORT ON CO-OPERATIVE SOCIETIES.—In a Blue-book lately issued is a report by Mr. Fane to Lord Stanley, on co-operative societies in France, in which the progress of these societies is reviewed. Of the three kinds of co-operative associations, societies of consumption, of credit, and of production, it is to the last Mr. Fane confines his attention. Amongst others he speaks of M. Leclaire's Society, to which the attention of our readers has already been directed in the *Builder*. Mr. Fane states, that while many of the productive societies have collapsed, a few, such as the Society of Masons, are remarkably prosperous. There has been too much faith, he thinks, in the combination of skill and labour, and too little in the co-operation of capital. He is of opinion that societies enabling workmen to effect savings and to learn providence, should have preceded, in France, the formation of productive societies.

HEALTH IN MARYLEBONE.—In the last monthly report of Dr. Whitmore, the Medical Officer of Health for Marylebone, he states that on a very recent occasion great sickness and diarrhoea were produced by the offensive effluvia arising from large accumulations of manure. An outbreak of cattle plague occurred in Malthouse-mews, Lisson-grove, adjoining to which is Carlie-mews, and in these two places at the time of the outbreak there were sixty cows and from eighty to ninety horses. These places were promptly declared to be an infected district, and a *cordon sanitaire*, so to speak, was placed round it, so that in a very short time immense heaps of manure had accumulated. After the interval of a few days, sickness and diarrhoea broke out amongst the inhabitants, and out of 149 men, women, and children residing in these mews sixty-one were suffering from sickness and diarrhoea. It was not until after an interval of twelve days, and the expenditure of much time and trouble, that he was enabled to get the manure removed.

WORKING MEN'S COLLEGE.—The summer convocations of this excellent institution was held on the 12th inst.

THE WORCESTER MODEL DWELLINGS ASSOCIATION.—The annual meeting of this Association has been held in the Guildhall. Admiral Hastings occupied the chair. The report stated that the prospects of the Association "were cheering, owing to the general rise in the rentals of the buildings." The Gloucester Arms Inn and five tenements adjoining had been sold for 340l. and 410l. The whole square or block of buildings was now open on all sides. The buildings were in good repair, and the occupants numbered about 140. The arrears of rentals amounted to 12. 18s. 9d., and a dividend of 2 per cent. was recommended. The report was unanimously adopted.

METROPOLITAN DRINKING FOUNTAIN AND CATTLE TROUGH ASSOCIATION.—The eighth annual meeting of this useful association has been held. The last year has been a successful one. An anonymous contribution of 1,000l., besides other subscriptions, enabled the Association to add many troughs for cattle and dogs to fountains in various parts of the metropolis and its suburbs, and more are in progress. There are 110 fountains in all under the care of the Association. The annual subscriptions for the year amounted to 546l. and the donations to 1,241l., besides the 1,000l. already referred to. A legacy of 1,000l. will shortly be available. Lord Grosvenor has consented to become the president. The New York people have consulted the Association and are supplying their city with fountains. The large fountain in Hyde Park, erected at the cost of the Maharajah of Vizianagram, is being rapidly completed with. The report was unanimously adopted.

WORKS IN BRONZED CAST IRON.—The American Department of the Paris Exposition contains a numerous collection of lamps of various kinds, clock-cases, and other works, all of them executed in bronzed iron. They are the productions of Tucker's Manufacturing Company, of Boston, and are the results of experiments carried on by Mr. Tucker during the last seventeen years. The material employed is American iron of several varieties compounded together, with a comparatively small admixture of the Scottish Cowlness iron. A combination of several important qualities is thus obtained. The desired colour is obtained through the union of the carbonized oil with the oxidized metal. This is a permanent bronzing, incorporated with the substance of the metal. The Tucker bronzing process is patented in England and France, as well as America, and may be applied to the decoration of stoves, iron bedsteads, and many other works in iron, which at present are usually coated with lacquer or varnish.

TIN WATER PIPES.—An invention of Messrs. Colwell, Shaw, & Willard, is being developed at New York, which is calculated to prove of great sanitary advantage, in providing a means of preventing the contamination of water by lead pipes. The *Scientific American* explains that the pipe differs from the ordinary lead pipe, in being, for its calibre, only about half the thickness of lead, and in being lined throughout with pure block tin, not merely washed or plated with it, but being really a tin enclosed by one of lead, the two being fused or welded together, forming one solid whole. It has been found that the new pipe is stronger than lead pipe, although weighing only half as much per foot. A powerful hydraulic press, worked by a steam-engine, stands by the side of a furnace, over which is a tank containing the melted lead. Directly under the press is a receiver, at the bottom of which a steel die is placed, the aperture in which corresponds with the external diameter of the pipe. The projecting portion of the press piston fits the receiver, and has a mandrel on its lower end corresponding with the inner diameter of the pipes to be formed. A cone-shaped block of pure tin, having a hole longitudinally through its centre, into which the mandrel fits, is placed in the centre of the receiver directly over the die, the apex of the cone downward. The piston of the press is then lowered until the mandrel engages with the hole in the tin, when melted lead is let in and the receiver is filled to the top of the tin cone. After a few minutes, to give time for the melted lead to form a junction with the outside of the tin, the pressure is applied, and the tin-lined pipe comes continuously through the die, and is coiled on a reel.

PATHS.—A correspondent writes:—"A Sub.' will get good paths by using less well-boiled tar to dry gravel, free from dirt, put on about 2½ in. thick, with a good sprinkling of spar (Derbyshire), or small pieces of marble on the top. Roll the gravel and tar first a little, then sprinkle with the spar, and roll altogether well. It will improve the paths to put down a low edging of stone, tile, or wood, first; it keeps the edge of the path firm; no weed or damp will then lodge upon it.

ST. THOMAS'S HOSPITAL.—At the last weekly meeting of the Metropolitan Board of Works, the superintending architect, in answer to a resolution of the Board, reported that the sums paid, or agreed to be paid at Stangate, for the Southern Embankment, were 324,492l. The surplus lands were sold to the trustees of St. Thomas's Hospital for 108,000l., which was about one-third of the entire cost. The site of the new hospital extends from Westminster Bridge to Lambeth Palace, and is bounded on the river embankment by a new public road, 20 ft. wide, and by New Palace-road, on the eastern side, 60 ft. in width. The cost of clearing the ground will be 324,492l.; for 8½ acres the governors of the hospital pay 95,000l.; for the triangular piece of ground adjoining, 13,000l.; making a total of 108,000l., which, deducted from the 324,492l., leaves 216,412l., or two-thirds of the total cost of the two new roads and embankments.

THE NEW MANCHESTER CEMETERY.—The low-lying portion of this cemetery has been submerged. It is defended from the river by an embankment some 7 or 8 ft. above the average water-mark. The rise of the river was so sudden, and the weir at the Messrs. Wood's print works offered so effectual a barrier to the flow of the water, that the flood speedily rose above the embankment and covered the burial-ground for a distance of 20 or 30 ft. The flood did not wash up the soil, or disturb any of the graves that had been closed; but it is usual to keep two or three graves unclosed, so that more interments than one may be made in the same graves, and the water, by overflowing these open graves, set five coffins afloat, one of which was carried into the stream. The city surveyor visited the ground, and in his opinion the only effectual mode of guarding against the repetition of such an occurrence will be to build a more solid embankment to about twice the height of the present one.

TENDERS

For extension of present shop, show-rooms, and warehouse, for Messrs. Brice & Sons, in the drapery, Northampton. Mr. George Low, architect. Quantities supplied by Mr. Frederic & Johnstone.—
Smith, Brothers (accepted).....£5,415 0 0

For alterations and repairs at Camden Church, Cambridge. Mr. F. W. Meakin, architect.—
Harland & Fisher.....997 0 0
Jones.....839 0 0
Garland & Sons.....804 0 0
Colls & Son.....755 0 0

For parsonage-house for the incumbent of Holy Trinity Church, Kentish-town. Messrs. Beck & Lee, architects. Quantities by Messrs. Pain & Clark.—
Ashby & Sons.....£3,333 0 0
Conder.....3,215 0 0
Manley & Rogers.....3,190 0 0
Colls & Son.....3,154 0 0
Woodward.....3,163 0 0
Foster.....3,620 0 0
Webb & Sons.....2,679 0 0

For building house and tavern, Seven Sisters-road, Holloway, for Mr. J. Pigot. Messrs. Finch Hill & Farre, architects. Quantities supplied by Mr. Dougherty.—
Warne.....£4,250 0 0
Hoare.....4,057 0 0
Wiltshire & Harold.....3,998 18 0
Langmead & Way.....3,748 0 0
Newman & Mann.....3,690 0 0
Eaton & Chapman.....3,513 0 0

For residence, Tettenhall. Mr. G. Bidlake, architect.—
Trow.....£3,600 0 0

For rebuilding Swan-hill Congregational Church, Shrewsbury. Mr. G. Bidlake, architect.—
Nevitt.....£1,477 0 0

For double villa residence, Penn-road, Wolverhampton. Mr. G. Bidlake, architect.—
Higham.....£1,187 0 0

For mission-room, Broseley, Shropshire. Mr. G. Bidlake, architect.—
Smithyman.....£236 0 0

For alterations and additions to Tor Lodge, Tettenhall. Mr. G. Bidlake, architect.—
Heveningham.....£1,120 0 0

For alterations at the Three Cranes public-house, Brick-lane, Spitalfields, for Messrs. Truman, Hanbury, & Co. Mr. J. Tanner, architect.—
Turner & Son.....£2,129 0 0
Brown.....1,780 0 0
Eaton & Chapman.....1,689 0 0
Marr.....1,873 0 0

For residence for Mr. Harry Bridger, Old Shoreham, Sussex. Messrs. Gouly & Gibbins, architects.—
Cheeseman & Co.....£2,765 0 0
Howell.....2,643 0 0
Nightingale.....2,470 0 0
Simms & Marten.....2,456 0 0
Shearburn.....2,400 0 0
Bland.....2,383 0 0
Chappell (accepted).....2,348 0 0

For three houses, Queen's-road, Baywater, for Metropolitan Railway. Messrs. Withall & Evers, architects.—
Bywater.....£4,880 0 0
Tonque.....4,866 0 0
Ebb & Sons.....4,880 0 0
Webb & Sons.....4,385 0 0
Richardson.....4,028 0 0
Foster.....3,972 0 0

For erecting public-house, Gainsford-street, Kentish-town-road. Mr. J. F. Newman, architect.—
Scriven & White.....£2,587 0 0
Webb & Sons.....2,336 0 0
Manley & Rogers.....2,200 0 0
White.....2,163 0 0
Mann.....2,143 0 0
Mathews.....2,040 0 0

For rebuilding 45, Carter-lane, City. Mr. Whichcord, architect.—
Ashby & Horner.....£1,325 0 0
Piper & Wheeler.....1,263 0 0
Macey.....1,259 0 0
Brass.....1,197 0 0
Turner.....1,171 0 0
Newman & Mann.....1,159 0 0
Hill & Son.....1,147 0 0
Webb & Sons.....1,137 0 0

For rebuilding No. 43, Carter-lane, City. Messrs. J. Young & Son, architects.—
Conder.....£2,620 0 0
Macey.....2,613 0 0
Brass.....2,542 0 0
Piper & Wheeler.....2,478 0 0
Hill & Son.....2,459 0 0
Webb & Sons.....2,345 0 0
Ashby & Horner.....2,325 0 0
Newman & Mann.....2,295 0 0

For new wing to Hospital for Women, Soho-square. Mr. E. L. Bracebridge, architect.—
Read & Son.....£2,230 0 0
Pattman & Co.....5,090 0 0
Wood & Co.....7,983 0 0
Myers & Sons.....7,890 0 0
Piper & Wheeler.....7,687 0 0
Hill & Son.....7,569 0 0
Webb & Sons.....7,167 0 0
Axford.....7,087 0 0
Wagstaff & Sons.....6,960 0 0

For alterations in Finsbury-place. Mr. H. J. Hammon, architect.—
Foster.....£2,580 0 0
Honor.....2,469 0 0
Brass.....2,389 0 0
Webb & Sons.....2,345 0 0
Pritchard.....2,337 0 0
Macey.....2,323 0 0
Brown & Robinson.....2,225 0 0

For redecorating St. Paul's Church, Islington. Mr. T. Mathews, architect.—
Ramsay.....£266 0 0
Dorset, Bruburn & Co.....865 0 0
Webb & Sons.....649 0 0
Smith & Sons.....647 17 0
Sewell & Sons.....615 0 0
Morland & Burke.....597 0 0

For erecting parsonage-house, Haverstock-hill. Messrs. Beck & Lee, architects.—
Ashby & Sons.....£3,333 0 0
Conder.....3,215 0 0
Manley & Rogers.....3,190 0 0
Colls & Son.....3,154 0 0
Woodward.....3,163 0 0
Foster.....3,620 0 0
Webb & Sons.....2,679 0 0

For Stockport Baptist Chapel. Messrs. Habershon & Pite, architects.—
Brown.....£6,490 0 0
Weatherly & Rymer.....5,947 0 0
Atkinson.....5,852 0 0
Repley.....5,600 0 0
Robinson.....5,600 0 0
Statham & Sons.....5,165 0 0
Hughes.....5,121 0 0
S. & W. Pattinson.....4,968 0 0

For cottage, new club-room, and other works, at Prince Edward's Tavern, Park-road, Holloway. Mr. Thompson, architect. Quantities supplied.—
Barker.....£567 0 0
Greenfield.....634 0 0
Ramsay.....476 0 0
Poxon & Smith.....445 0 0
Shurmer.....417 0 0
Warne (accepted).....410 0 0
Bradbury & Brett.....374 0 0

For building new parsonage-house for St. Peter's, Rochester. Mr. Ewa G. Charnock, architect. Quantities supplied by Messrs. Goodman & Vinnall.—
Naylar (accepted).....£1,479 0 0

For building house, Air-street, Regent-street, for Mr. Ralph Boddily.—
Nightingale (accepted).....£755 0 0

For building new inn at Rochester, for Mr. George Beer, Canterbury. Mr. John Green Hall, architect.—
Petts.....£1,423 12 0
Solitt.....1,376 0 0
Naylar (accepted).....1,147 0 0
* After deductions for old materials.

For residence for Mr. Henry Mills, on part of Beacott Estate, Wednesbury, near Walsall. Messrs. William & Samuel Horton, architects.—
Taylor, Brothers.....£2,200 0 0

For repairs, alterations, and refitting the parish church of Harleston, Lincolnshire. Mr. Withers, architect.—
Huddleston.....£1,370 0 0
Binns & Co.....1,347 0 0
Locke.....1,345 0 0
S. & W. Pattinson.....1,300 0 0
Bellamy.....1,168 0 0
Stiles.....1,100 0 0
Barker.....1,023 0 0

For repairs and refitting to the parish church of West Barkwith, Lincolnshire. Mr. Withers, architect.—
Bellamy & Barker.....£624 0 0

For alterations and additions to the Balmoral Castle, Caledonian-road, for Mr. Baues. Quantities not supplied.—
Bakton & King.....£237 0 0
Brett & Bradbury.....170 0 0
Beverington.....165 0 0

For repairs and additions to six houses, Caledonian street, King's-road, for Mr. L. L. Blackburne, architect. Quantities not supplied.—
Waters.....£260 0 0
Smith & Biggs.....688 0 0
Ramsay.....888 0 0
Blackmore & Morley.....623 10 8
Bradbury & Co.....613 0 0
Taylor & Son.....545 0 0
Ladd.....297 0 0

For laundry buildings to convent, Central Hill, Norwood. Mr. Goldie, architect. Quantities supplied by Mr. Scudell.—
Myers & Sons.....£2,240 0 0
Longmire & Burge.....2,110 0 0
Simpson.....1,999 0 0
Lawrence & May.....1,999 0 0
King & Sons.....1,948 0 0
Gammon.....1,903 0 0
Nightingale.....1,859 0 0
Roberts.....1,779 0 0

For the erection of additional buildings and alteration of the old buildings at the Red Coat School, Stepney-green. Mr. Henry Stock, architect. Quantities supplied by Messrs. Marland & Widdows.—
Hill & Kedell (accepted).....£2,177 0 0

For rebuilding the Old Pied Bull public-house, Holloway-road, for Messrs. Taylor & Walker. Mr. Charles Duuch, architect. Quantities supplied by Mr. G. P. Baggett.—
Hill & Kedell (accepted).....£2,493 0 0

For new parsonage, Holy Trinity, Wallington, near Croydon, for Mr. N. Bridges. Messrs. E. Habershon, Brock, & Webb, architects.—
Simpson (accepted).....£1,650 0 0

For part restoration of the offices of the London Society for the Propagation of the Gospel amongst the Jews. Messrs. E. Habershon, Brock, & Webb, architects.—
Manley & Rogers.....£261 0 0
Warne & Co.....261 0 0
Cole.....255 0 0
Morant.....185 0 0

For alterations at 6, Russia-row, Milk-street, City. Mr. William Smith, architect.—
Brasley.....£126 0 0
Chreton.....917 7 0
Crabbe & Vaughan.....394 0 0
Fanthall & Weeks.....364 0 0
Saby.....335 0 0
Eaton & Chapman.....310 0 0

For six houses, Cross-street, Islington. Mr. William Smith, architect. Quantities by Messrs. Pain & Clarke.—
Webb & Sons.....£3,069 0 0
Eaton & Chapman.....2,263 0 0
Nightingale.....2,253 0 0
Saby.....2,816 0 0
Thompson.....2,765 0 0
Bishop.....2,695 0 0
Crabbe & Vaughan.....2,649 0 0
Henshaw.....2,621 0 0
Rodds.....2,150 0 0

For villa in the Seven Sisters-road, for Mr. Joseph Ramsay. Mr. William Smith, architect.—
Flut.....£1,160 0 0
Crabbe & Vaughan.....1,050 0 0
Brasley.....1,000 0 0

TO CORRESPONDENTS.

"The 1867 Memorial"—An Inquirer wishes to know what is being done in this matter.

Proposed Assistant Engineers' and Draughtsmen's Association.—Several letters received on the subject. S. M. H. (next week)—G. K. (has been posted)—W. H. (pend partisans)—For Clerk (at any Artists' Coloursman's). P. J. T. N. W. W. J. M. A. Q. T. P. J. T. T. R. W. E. Q. & M. T. C. W. A. Inconvenient—J. Well-wisher—T. L. D. A. E. Mr. T. H. N. M. W. R. W. P. W. & S. H. T. T. M. W. M. Q. R. M. & Co. R. & E. K. N.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the names and addresses of the sender, not necessarily for publication. Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

of J. H. TAYLOR, Esq., at 1, South-street, Finsbury; and of Messrs. EDWIN FOX & USFIELD, 2, Gresham-street, Bank, E.C.

The Builder.

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Technical Education.

ET the ultimate effects of international exhibitions on trade and manufactures be what they may, it is evident that they enable us periodically to compare the technical education of the various countries of Europe with great facility, and whatever advantage any individual country may derive from this comparison, will be through the improvement of its technical or secondary education reflected in its trades and manufactures. The present Paris Exhibition has afforded even greater than the usual opportunities for such a comparison, and the peculiar position in

which we are acknowledged to stand in several branches of manufacture depending for success on the intelligent co-operation of skilled workmen, has led many of the most far-seeing of our English jurors to consider seriously the subject of technical education in England. It may be, perhaps, cynically remarked that before we begin to meddle with the secondary education of our countrymen, it would be well to establish something like a decent system of primary education, so that every English child should receive as his birthright instruction in the simplest and most elementary knowledge;—that to offer instruction in science to people who cannot read or write is like offering jewelry to a naked man, or dainties to one who is perishing for want of bread. There is, we are prepared to allow, great force in this view of the case; but unhappily for us one great evil is not remedied, one important want is not provided for, by the omission from a sense of contrition of another obvious duty; or, in other words, upon the principle that two blacks do not make a white, had primary education will not excuse bad secondary education; nor will the proved existence of a shameful neglect in the former relieve us from a responsibility to do something for the latter. We have been blundering long enough, Heaven knows, about sectarian and non-sectarian schools, denominational systems and national systems, frightening ourselves into religious panics concerning the precise theology which it is best to teach children of seven years and upwards, until, as a triumph of national foresight, there are more men and women unable to read and write in England, in proportion to the population, than in any other civilized coun-

try in Europe. This is a legacy bequeathed to us by our forefathers, for the existence of which we are not responsible, though we shall be for its continuance. It is a problem not approached in importance by any other question of the day, and one which of all duties it is our manifest business to attend to. There are signs of a recognition of the obvious necessity that exists for national action in the matter, for it is gradually resolving itself into a cry (and a cry which all political parties have used at different times), like the irrepressible Reform cry, and which all parties in the state will eventually have to agree about, to get it out of the way.

Meanwhile what is to be done in the matter of technical education? We have for many years advocated an extension of our present means of education in science and art, and the addition to them of new features on a much wider basis than exists at present. The opinions recently given by distinguished jurors of the Paris Exhibition, in reply to the inquiries of the Schools Inquiry Commission, betray to us what appears a practical unanimity of the best authorities in the opinion that we are losing ground fast and daily in our mechanical and manufacturing industries, and that this is to be attributed to the want of technical education in England,—education practical and theoretical in science and art. There is an almost singular similarity in the evidence on this point of such very different witnesses as Dr. Playfair, Mr. J. Fowler, and Mr. Huth. They all agree that what material advantages we have in England contributing to success in our manufactures, are more than counterbalanced by the great deficiency which exists in our manner of making use of them; and Mr. Huth, an extensive manufacturer at Huddersfield, a foreigner by birth, though an Englishman by everything else, boldly takes the bull by the horns, and says that we have the greatest difficulty even in maintaining our equality now, where we have for all past time ridiculed competition; and he attributes this change to the inferior education given to our “masters, foremen, and workmen,” to that which is now given to all those classes in almost every country on the Continent of Europe. It is no longer, therefore, a question of whether we should or should not teach chemistry or drawing in evening classes, in the few towns such classes exist in, but whether some degree of instruction in science and art cannot become a feature of every educational school or institution. If the inferiority of our position is as much to be attributed to the ignorance of masters as to the unskilfulness of men, the colleges and grammar-schools are as much to blame as the National schools, the universities are as deficient as Mechanics' Institutes. We cannot much longer wilfully shut our eyes to the fact, that in consequence of the progress of invention, facilities of transmission, and rapidity of communication, a nation's prosperity depends more upon the use it can make of its scientific powers than upon anything else. The natural productive powers of a country may have at one time been the test and measure of its resources or its wealth, but it is so no longer. The skilful application of scientific inventions has more to do with a nation's prosperity at the present time than the possession of minerals under its share of the earth, or the quality of soil on its surface. How can we, therefore, ignore any longer the advantages and vital necessity of physics, as an integral part of all education? We do not cry out for the exclusion of Latin and Greek in our public schools, or the dead languages and the Scriptures at our grammar schools; but we do unhesitatingly say that other knowledge is now imperatively called for, besides these excellent subjects. Our eyes and our hands must be made intelligent and skilful, and our minds rendered capable of understanding common things in this scientific age, or we shall have to be content to

take a very insignificant position for the future among the nations of the world. If, on the other hand, we could give the first rudiments of scientific knowledge to every school-boy, gentle or simple, making the first a possible manufacturer or merchant of enlightened views and far-seeing action, and the second a possible foreman or workman with ability to execute intelligently the designs of his master; and could give also in comprehensive Technical institutes the means whereby these school-sown seeds might grow into a well-developed and comprehensive knowledge of science or of art; then no fear need ever haunt us of being behind in the race for existence or prosperity; nor need we be subject to periodical panics concerning the maintenance of our manufacturing supremacy.

It required only the electric shock of evidence just now given to make us realise how very natural it is, after all, that we should be deficient in technical knowledge. Let us consider for a moment what are the means we possess of obtaining it. In the first place, we ought to know what is meant by the term, and then we may see more clearly our real position. Broadly it is what is usually spoken of as secondary education, though all secondary education is not necessarily technical. Instruction in art or science, in manufacturing processes, in the highest branches of ordinary trades, in the theory and construction of machines; in the history, theory, and practice of design; the application of design to various materials; the adaptation of scientific knowledge and artistic practice to the selection of beautiful forms in manufactures; their ornamentation; the analysis of systems, orders, and common features in the various objects in the various kingdoms of natural history, and their classification; the theories, uses, and applications, in civilized countries, of all the sciences; the practice of all art above the level of common manual labour;—these may all be said to be a part of technical education; and, if time and space permitted, we might go very much further and, by giving the detailed description of their general heads, show how education in these subjects ought to be the natural sequence of primary or general elementary instruction. General education is merely giving a man the power to study a profession or learn a trade: technical education will enable him to learn all that has been or can be done in his profession or trade outside of and beyond the pale of its ordinary practice; and all that is not merely mechanical or manual labour in either will come under the head of technical skill. Technical education stands as a connecting link between learning and labour, and, by uniting the two, confers what is necessary to all success, theory and practice, in their true relations of learning saving labour, and practice testing and rectifying theories.

From this definition, imperfect as it is, we can at least see that with the exception of medical or surgical instruction in hospitals, or private tuition in engineers' or architects' workshops and offices, technical education does not exist in England. Our schools of science and art aim at giving general rather than technical education; and the distribution of government assistance depends upon successful elementary instruction in the two subjects in schools both of art and science. Our universities ignore such subjects as these, regarding them as modern and comparatively trivial matters; our public schools have too direct a connexion with and are too much occupied in preparing pupils for the universities to lead them in paths which must be abandoned directly university life begins. Our private schools, in individual cases, do aim at laying a foundation for future technical knowledge by touching upon such subjects as mechanics, chemistry, botany, or drawing; but in almost all instances such subjects are purely

voluntary, are charged for as extras, and consequently limited to a few pupils. The only institutions which even nominally aim at giving instruction in technical subjects are the Mechanics' Institutes, and their efforts in this direction are more nominal than real. Mr. Fowler says in his reply to the Schools' Commission that they (Mechanics' Institutes) are more reading-clubs than anything else; but in this he is somewhat mistaken. Where they are most successful—as at Huddersfield and Bradford—their principal work is in remedying the defects, or supplying the place, of primary schools. In other places they become clubs, or associations for lending books and giving lectures on trivial or popular subjects. Where science classes exist in connexion with such institutions, their operation tends toward technical instruction; but the number of these classes is too insignificant to affect the question in its national aspect.

Our experiment of establishing science classes, and, in a few instances, schools of science, is of comparatively recent origin, and their organization is of too complex a character to allow of their becoming general. The same changeable regulations which have made the direction of the Science and Art Department vexatious to the schools of art, have also afflicted schools of science and science classes in mechanics' institutes; so much so that at a recent educational conference at the Society of Arts, presided over by the Right Hon. Mr. Bruce, the senior officer of the Society, Mr. H. H. Sales represented in his report that the connexion with the Science and Art Department of evening classes in his district had been found detrimental to their best interests, from the frivolous changes so constantly being made in the regulations of the department. Even with this disadvantage, the demand for technical instruction in England is really great, and a very large number of students offer themselves for examination every year in the more general subjects of science, under the auspices of the Society of Arts, as well as in the more limited and less popular examination of the Science and Art Department.

The Society of Arts, from which so much benefit to technical education has already proceeded, through the offer of prizes, the establishment of examinations, and its services generally as an initiator of local action, must be regarded more as a testing agent than as an educational one, though its work in that direction has been of great value. The extent of its operations may be judged of by perusing a recent number of the Journal of the Society, in which the report of Mr. Sales before referred to, as well as others, will be found recorded among the proceedings of the meeting over which Mr. Bruce presided. This, as well as other indications, serves to show that there exists among us not only the capacity for scientific culture, but the demand for it also, sufficiently positive to make the establishing upon a permanent basis of technical instruction, warranted as a compliance with the national requirements, its importance being of too serious a nature to leave it liable to interruption from purely local causes.

The operations of the Society of Arts, and the few schools and classes of the Science and Art Department, are valuable as indicating the existence of a want, and demonstrating the possibility, of success in secondary education; and they also serve to show how comparatively trifling have been all our efforts in that direction. The field is great, and the harvest is ripe for action; and the need is great also. We want the means for the instruction of hundreds of our professional men and skilled artisans where we now have it only for a few individuals, and the organization which shall be equal to the task of offering it to all who now do not even understand the meaning of technical education.

Is it therefore to be wondered at that we should be rapidly going to the rear in subjects requiring technical knowledge, if, as we have shown, it is so nearly impossible to obtain such knowledge in England? The wonder rather is that we should so long have retained a moderately respectable place in Europe; and we take it to be an indication of our capacity nationally for a much higher position; than we now occupy, that in spite of such imposing difficulties we are not much worse than we really are.

Whilst we have been ignoring this matter, Continental nations have been studying it to some effect, and not only thinking about it, but acting upon their thoughts. Technical schools, with their practising workshops, their courses of

lectures, their staffs of highly qualified professors, are general in the larger towns of France and Germany, and their influence is supplemented by public free libraries, museums, art galleries, technical collections, science laboratories, and art studios. There is not a town of half the population of Manchester, either in France or Germany, which has not better provision for adult education of all classes of the community in every branch of science and art, than London, or Edinburgh, or Dublin, or all of them put together. In France primary education invariably includes drawing, and technical instruction does also; so that you cannot find a Frenchman of decent position, or a tradesman of any kind, who is not able to draw to some extent. Ask a French or German artisan to describe a process he is working, or the intention of a work he is executing, and he will explain the whole matter in a clear manner, never stopping short in this direction or that for fear of getting out of his depth, but bringing knowledge of many outside or kindred subjects to illustrate his remarks. It is a common thing to see the man of science, and the workman in a blouse, sitting side by side, night after night, during the courses of free lectures given in the Technical Schools of France. For as in our hospitals the very best and widest experience is employed, as Abernethy, a Cooper, or a Faget, to attend on the helpless patient who pays nothing for such brilliant services, so in the French Technical Schools, as at Lyons, Toulouse, and Paris, the best men are employed to deliver free lectures in the public service, with the well-founded belief that good and profitable seed will be sown through their efforts, which eventually will bear fruit, and contribute to the national prosperity. Nor is this a new thing in those countries, though now more than ever cultivated and developed, for when we appeared to gain an advantage over our neighbours in the Exhibition of 1862, principally through our mechanical appliances, a definite movement was taken in this direction at once, and all that could be obtained from our experience in the sole subject in which technical practice was available for our artisans, mechanical engineering, was at once embodied more fully in their schools and free institutions.

How can we compete with people who act thus, unless we are prepared to very widely depart from our previous experience? Half measures will no longer suffice, and royal commissions issuing general suggestions addressed to the public which may never be acted on, will not provide the remedy so urgently required. Nor can we hope for much help from mechanics' institutes. Their very name implies the want of technical education, and this is precisely the only good thing that can be said in favour of their name. If we could get rid of so obviously a class name, and enlist all classes in their support by a general designation, such as Technical schools, then we might hope for the support of large numbers who now hold aloof from them, either from their charitable aspect, or from a feeling that they are only for one class of the community. Then, again, these institutes are generally managed by committees elected by members, who use the institutes for very dissimilar purposes, and when so elected they are not precisely the sort of men to manage great educational agencies. Voluntary management, and amateur direction, without any but purely accidental qualifications for the work, will not accomplish the establishment of a system of technical education; and for this we want no better proof than the present condition of the mechanics' institutes, which have attempted to do it and have failed. We require something more to be relied on as to qualification for the task of education, and promising more permanency than can be expected of purely voluntary efforts. It certainly might be attempted (if only the objectionable class-name could be got rid of) to make use of the organizations and buildings of the mechanics' institutes in the smaller towns as branches of more important centres in the larger towns, where complete and thoroughly organized systems of technical education could be carried out. Yet, it is quite possible that the institutes themselves may prefer to be the sole property of the class whose name they bear, rather than to become adapted to the requirements and new wants of society at large; and, if this be so, they must be left to their fate. If Dr. Birkbeck could co-operate in the movement which must sooner or later be made to remedy the deficiencies in education we have been describing, he would probably perceive the mistake made in giving the institutes he founded so narrow a name,

thereby very much limiting their influence, and leading them by this limitation to grow entirely out of the objects for which he established them. There is some probability that this mistake may be remedied,—for, if we mistake not, the London Mechanics' Institute, established by him, no longer exists under that name, but continues and is developing its usefulness under a more general designation.

The true remedy, however, can only be effectually provided by the matter being taken up by Government, and thoroughly well-considered plans being adopted for national action. In our primary schools, endowed grammar schools, and public schools, much may be done as preparation, and these are regions which Governmental action can effectually reach. In our universities professors should be appointed, and their lectures form an integral portion of the academical course, examinations in the theory and practice of some branches of science and art being a necessary part of the final test for a degree. Still more important would be the establishment at every provincial town in which an important trade or manufacture is carried on, of good Technical schools, with museums of art and industrial productions, as adjuncts to their class and lecture rooms, for educational purposes; and these should be managed upon a general plan, which would leave the direction of the studies in the hands of highly qualified professors, appointed by the Government, the museums and collections of educational, scientific, and artistic examples being branches of the South Kensington Museum, and the property of the nation. The theory of local government may be perfect in its application to lighting, and draining, and scavenging, though it will not bear too close a scrutiny even in these features, in practical working; but to initiate and control a system of technical education it is utterly unequal. The industrial prosperity of the country cannot, with any degree of wisdom, be left endangered, as the English jurors say it is at present, through the ignorance of all classes of society, and to rely upon everybody to remedy this deficiency is equivalent to relying upon nobody. Local agency and voluntary efforts will do little or nothing for us in this pass, and we shall have to help ourselves by the combined action of the whole nation, or drift farther behind than we are now. But it is not too late for us to take example from those Continental countries where the remedy for the evil we suffer from is already in successful operation. They do very much what we have now suggested, establishing technical schools as a national investment, and supporting them for the national profit, relying only upon local patronage to supply pupils and upon manufacturers to assist in their own elevation. It may be a chimerical view of a nation's duties, but, we confess, to us it appears as much an imperial duty to come to the rescue when its trades and manufactures are endangered by fair, though unequal foreign competition, as it is to defend them from invasions of another kind. The establishing of schools and museums at such places as Manchester, Glasgow, Birmingham, Sheffield, Leeds, Nottingham, Coventry, the Potteries, Worcester, the three capitals, and perhaps one or two other places, and maintaining them in a high degree of efficiency for ten years, would cost a good deal less than half as much as one of those foundering ironclads which appear to be superseded on an average about every six months by the invention of new targets or new guns. From an art point of view there is material enough at South Kensington to furnish all these towns with examples of industrial art with advantage to the present overcrowded museum. A year's work would suffice to obtain the materials for technical collections enough to commence with, and there are architects and engineers in England competent at any moment to co-operate in the direction of technical instruction. If we have not designs, we must do as Hunt & Roskill or the Messrs. Crossley, of Halifax, do, import them; but for men of science we need not leave our own island. Not that we anticipate the slightest difficulty in inaugurating and perfecting a complete scheme, or in its practical outworking, provided the nation can be made to see the necessity for a movement, and entrust the organisation to the best men it can find,—responsible for its management and success, shielding them at the same time from the interference and meddling of incompetent committees.

Mr. Forster has suggested in the House of Commons that information concerning the

foreign technical schools could be obtained through our diplomatic representatives abroad, and doubtless much valuable information could be arrived at in this way. It will be a good discipline for us to know precisely how much has been done that we have left utterly undone, though we shall get very little more than tables of statistics or dry records of fact from the writers of despatches.

If a royal commission were appointed to inquire into the matter, or the powers of the Commission on Middle Class Schools extended for this purpose, we should probably arrive at better results than in any other way. The Commission which has elicited the very valuable opinions of the British Jurors to which we have referred, has employed the most experienced inspectors of schools to make personal investigations into the conduct and management of the middle-class schools of England, and much information of the most valuable character has been thus obtained. We would suggest a similar action in regard to the technical schools of France and Germany. The visits and personal examinations, with full reports of a few distinguished men of science and of art, to the best Continental schools, would give us information such as we want, differing as much from the sort of facts we shall get from our foreign diplomatic representatives, as a living man does from a dissected subject. We want not only the facts, but the life; not only the bare statements, but the full details of operation in practice; and to get this we must employ men capable of understanding the processes of education, and with experience enough to detect those features of it which are successful. Something also may be obtained from records of system, appliances, and methods of instruction which diplomats will not be the best persons to note; and it will require something more than a faculty of annotating facts, or speaking in guarded language, to present this information to us in a way that will be serviceable to the cause of technical education in England. A knowledge of manufacturing processes, of much and varied technical knowledge, ought also to be possessed by those who examine for us the conduct and operation of technical education, including some experience of the trades which may be affected through the inquiry.

Nevertheless, whatever we do in this matter will be a step onwards, though much will depend upon the way we go about the task, whether it be the first of many steps, or result in a short-lived effort of no permanent benefit. We believe that if the attention of Parliament can be effectually drawn to the subject before the dissolution, which appears likely, takes place, so that an investigation be commenced previously to the closing of the Paris Exhibition, our operations will be facilitated, and many opportunities now offering will be made use of. It is a subject of some importance nationally, and we shall not be maintaining the character of a practical people, of which we are so rightly proud, if we do not strain every nerve to obtain some practical advantage from its consideration.

A MEDICAL AND LEGAL OPINION OF THE NEW SANITARY ACT.*

AN Act of Parliament has disadvantages. One of these drawbacks consists in the fact that it is not placed in our hands on approbation, or on a month's trial, nor can its framers make any trial of its capacities themselves before issuing it to the world. It comes before us, drawn up, doubtless, with grave consideration by able men, but still untried: the first strain reveals flaws here and there that it is too late to remove, but which would have been carefully strengthened had it been foreseen that the particular pressure would have been applied to which they gave way. The new Sanitary Act is no exception to this disadvantage. The conventional carriage-and-four can be driven through it in various places; and the particular breaches through which the figurative vehicle can be dexterously guided have not been difficult to find. The principal cause of this weakness is, that the Act is not sufficiently imperative in its terms and binding in its obligations. Much that should be obligatory on all authorities is left a matter of choice.

We have before us a work of twin authorship, on sanitary reform, which points out the shortcomings of the Act. Dr. Stewart, looking at the question from a medical point of view, deploras, as others have done, the non-appointment of permanent officers of health in every town as a means of systematizing the enforcement of sanitary regulations; and Mr. Jenkins, looking at it from a legal point of view, puts his finger on the particular passages which stand most in need of revision to render the provisions of the Act effective. Out of fifty-nine towns, concerning which Dr. Stewart has been able to gather information from reliable sources, eighteen only can boast the delegation of the care of the public health to a responsible officer. Notwithstanding the great accumulations of proof that many diseases are preventable, only eighteen towns out of those fifty-nine have appointed an officer to see that the causes of needless loss of life are not in operation. Looking at Dr. Stewart's concern for this apathy or negligence, we see one great generation stride already made. The celebrated physician, Dr. Cheyne, wrote in his preface to his "Essay on Health and Long Life,"—"If it were possible any set of men could be offended at my performance, it might be my brethren of the profession, for endeavouring to lessen the *materia morifica*." Now-a-days, many brethren of the profession are enthusiastic workers under the banner on which is inscribed "prevention is better than cure." It is re-assuring, too, to mark the certain steady progress made in the extended view of the conditions that maintain health. In Dr. Cheyne's day, when the Pretender, Sir George Byng, the South Sea Bubble, and Siege of Gibraltar occupied men's thoughts, regimen was considered to be the grand source both of health and disease. Nothing, if we except a recommendation to choose the side of a small eminence on a gravelly soil with a southern aspect, remote from any great concourse of waters or mines, for the site of a house, was deemed by him of much importance as the means of preserving health, but regimen. Sir Charles Scarborough's advice to the gay Duchess of Portsmouth was always in his mind as well as upon his page:—"You must eat less, or use more exercise, or take physic, or be sick." His theory was that the human frame was like a large vessel with only a small inlet and outlet, to cleanse which it was imperative to pour in a thin clear fluid and give it a good shaking. No lady person, according to him, was ever a long liver, unless he had an original constitution of brass; nor did a hearty eater ever see length of days. "The Grand Secret," he wrote over and over again, with a profusion of capital letters, "the Grand Secret and Sole Mean of Long Life, is To keep the Blood and Juices in a due State of Thinness and Fluidity, whereby they may be able to make those Rounds and Circulations through the animal Fibres, wherein Life and Health consist, with the fewest Rubs and least Resistance that may be. In spite of all we can do, Time and Age will fix and stiffen our solids." But he had a prescription with which to combat age. This was regimen again. Abstemiousness was his sovereign cure. He tells us Cornaro lived to be a hundred years old by virtue of temperance all his life and great abstemiousness in his latter days, when the yolk of an egg was sufficient nourishment for him for three days. And Sir William Temple's measurement of wine was Dr. Cheyne's admiration. It is a hundred and forty-five years ago since he wrote, "It may be sufficient for those who are tender, studious, or contemplative, to drink three glasses of water with a spoonful of wine at the great meal. And, as Sir W. Temple has it, "One for yourself, another for your friends, a third for good humour, and a fourth for your enemies, are more than sufficient after it." He saw no sanitary reform needed except in the matters of eating and drinking. His monster nuisance was PUNCH, as he printed it. It was punch that made the fortune of Bath, for it was that "heathenish liquor" that sent the crowds of debilitated, staid, Indian nabobs to drink its waters. In fine, in Dr. Cheyne's day, the public health was a matter of individual management and not suspected of being amenable to any general laws. Five-and-twenty years after his essay was penned a new light arose in the person of Dr. Lucas, an Irish physician, who was a prominent member of the Irish Parliament. He was an ardent politician, and frequently confused the political and physical health of the community. His energetic asperity overflows in his "Essay on Waters," where he hints that the

Bath doctors are strongly opposed to him. After belabouring his opponents and critics, and hoping the galled jades will wince, he unfolds his scheme of preserving the public health. This is also a personal and individual proposal, for it consists in bathing and drinking water. He took great pains to test the waters of the Thames, the New River, Hampstead, Rathbone-place, and the public pumps at Aldgate; in St. Paul's Church-yard; in Fleet-court, in the Temple; in Swan-yard, in the Strand; in the Savoy; in Covent Garden Market; at the Banqueting House, Whitehall; St. Margaret's Church-yard, Westminster; as well as the springs of Lamb's Conduit, Crowder's Well, and Postern-row; and though he discovered the presence of foreign matters in various proportions, he gives no hint of the possibility of percolations having an injurious effect upon the persons habitually drinking them. So that they drank plenty of water, it mattered not, it seems, whence the source. Neither fever, consumption, nor gout could make any stand before water. Beginning with melancholy madness, indeed, he runs through a long list of chronic and acute diseases that are only so many sighs made by the constitution for copious draughts of water. Rein-water is to be preferred for the miserable mania just mentioned, but any kind of cold water answers for ordinary complaints. Should any perverse constitution receive no benefit from this prescription, there remains the alternative of warming the water. Not a thought about surrounding conditions,—not a suspicion that any disease-creating agent was at work that was not encased in the patient's frame. Twelve years after Dr. Lucas had dedicated the work in which he set forth his idea of the source of health, in pungent as well as folsome terms, to "His Royal Highness the Prince," afterwards George III., Sir John Pringle published his admirable "Observations on the Diseases of the Army," in which he seems to have forestalled much of our experience. This eminent physician studied at Leyden, under Boerhave and Van Swieten, and was physician-general to the forces abroad till the peace of Aix-la-Chapelle, when he was appointed physician to the queen's household, and president of the Royal Society. Dr. Stewart aptly quotes, as a commencement to a retrospect of what has been done in sanitary reform, one of his most prescient passages, which we also transcribe, as it shows a remarkable awakening to the serious consequences of external surrounding objects upon health, so completely unrecognized by fashionable physicians of the reigns of George I. and George II. —

"From this view of the causes of malignant fevers and fluxes it is easy to conceive how incident they must be, not only to all marshy countries after hot seasons, but to all populous cities, low and ill-aired, unprovided with common sewers, or where the streets are narrow and foul, or the houses dirty; where fresh water is scarce; where stalls and hospitals are crowded and not ventilated, or kept clean; where, in sickly times, the burials are within the walls, and the bodies not laid deep; where slaughter-houses are likewise within the walls, or where dead animals and carrion are left to rot in the kennels or on dung-hills; where drains are not provided to carry off any large amount of stagnating or corrupted water in the neighbourhood; where flesh meats make the greatest part of the diet, without a proper mixture of bread, greens, wine, or other fermented liquors; where the grain is old and mouldy, or has been damaged by a wet season, or where the fibres are relaxed by immoderate warm bathing. I say, in proportion to the number of these or the like causes concurring, a city will be, more or less, subject to pestilential diseases, or to receive the heaven of a true plague when brought into it by merchandise."

Here, at the very commencement of the long reign of George III., we have several of the most vital sanitary requisites perceived, and the most deadly causes of disease exposed. Modern experience has added a few more items to the list, but not very many. For a hundred years the great family of mankind has been warned that certain conditions will cause the premature death of a great many members of it; and very little notice has been taken of the intimation till the occurrence of fearful epidemics draws temporary attention to the truth of the warning. This habit of indifference has led a continental philosopher, Hecker, to frame the theory "that great epidemics are epochs of development, wherein the mental energies of mankind are exerted in every direction." Would that it would also lead to the organization of competitive examinations of the management and conditions of our towns. We have seen merchandise from all corners of the earth coming to one common centre for examination, praise, and prizes; let us hope that the progress of a peripatetic jury from city to city, to examine and select for royal praise and prizes, and the concurrence of sovereigns, perfection in sanitary arrangements

* The Medical and Legal Aspects of Sanitary Reform. By Alexander P. Stewart, M.D., and Edward Jenkins, Barrister-at-law. London: Robert Hardwicke, Piccadilly, 1867.

made for the good of the community, is not beyond the limits of possibility.

Let us see what enactments have been made. Though sanitary legislation has been "timid and apologetic," it has been in advance of the national appreciation of the importance of the subject since the cholera epidemic in 1832, bearing upon the public health. In 1834, boys were prohibited from sweeping chimneys; in 1840 and 1841, the practice of vaccination was extended by law; and in 1842, the employment of women and children in mines and collieries was declared illegal; in 1846, the establishment of baths and washhouses was promoted; in 1847, the Towns Improvement Act was passed; in 1848, followed the Public Health, the Nuisances Removal, and the City of London Sewers Acts; in 1850, the Metropolitan Interment Act paved the way for another which applied to the whole of England in 1853; in 1851, there were the Acts to Encourage the Establishment of Lodging-houses for the Labouring Classes and the Common Lodging-houses Act; in 1852 the Metropolitan Water Act was passed; in 1853, the Smoke Nuisance Abatement (Metropolis) Act and the Act to Extend and Make Compulsory the Practice of Vaccination were added to our statutes; in 1854, the Merchant Shipping Act, protecting the health of the seamen, was passed; in 1855, the Diseases Prevention, the Metropolis Local Management, the Metropolitan Building, and the Nuisances Removal Amendment Acts were made; and in 1858 the Public Health Act abolished the powers of the General Board of Health, and vested them in the Privy Council. Since this transition was effected, 1858 and 1866 saw two new statutes for the purification of the Thames; 1860, the Nuisances Removal Amendment Act and the Act for preventing the adulteration of articles of food; 1860-61-64, Acts relating to the women and children employed in bleaching and dyeing works, in lace factories, potteries, and manufactories of lucifer matches, percussion caps and cartridges, in paper-staining and fustian cutting; 1861, a further amendment of the Vaccination Act; 1863, the Act for the Seizure of Diseased and Unwholesome Meat, and the Alkali Works Act; 1865, the Sewage Utilization Act; and, lastly, 1866, saw the Labouring Classes' Dwelling-houses Act and the Sanitary Act passed. All these Acts have had some influence for good, and most of them would have had more if they had been more stringently binding, and less full of loopholes through which the unwilling to comply with their terms barefacedly escape. An Act of Parliament should be more than a suggestion or a permission: in sanitary matters it should be an explicit explanation of what should be done in its various branches, an injunction to comply with these terms, besides a schedule of the penalties for evasion and other forms of non-compliance. As Dr. Cheyne would say, the grand secret of the weakness of the Sanitary Act is that it is content to suggest as frequently as it is to insist. Dr. Stewart has filed a string of instances in which refractory local authorities have adopted one Act so as to evade another, and have bearded the central authority or Health Department of the Privy Council with decisions to take no sanative steps. He has, perhaps, been still more usefully employed in drawing up the following statement as to what is yet imperatively required, which we quote as a modern filling up of the sketch made by the Queen's physician, Sir John Pringle, in the beginning of the reign of her Majesty's grandfather.

1. We require a thoroughly efficient administrative department of government for the superintendence of all matters relating to the public health, and the enforcement of the law on recurrent local authorities.
2. The appointment of officers of health, not only in towns, but in the country, and for our ports and harbours, should be compulsory; they should be independent of the local authority, their appointment, the amount of their salary, and their dismissal being subject to the approval of the central department, and should exercise a general supervision of such districts as may be agreed upon.
3. The inspectors of nuisances should always be under the control of the officers of health, and should not be burdened with other and inconsistent duties. Their appointment should in every case be compulsory.
4. There should be an annual return to Parliament of all officers of health and inspectors of nuisances, of the population and areas of their respective districts, of the salaries paid to them, and of the duties they are required to discharge.
5. As a general rule the officers of health should be specially trained and set apart for that work alone, and remunerated accordingly, out of the municipal funds, or county rates, aided from the consolidated fund.
6. The isolation of those sick of infectious disorders should be enforced by their early removal to—
7. District hospitals or refuges to be provided by the local authorities.
8. The conveyance of such cases in hackney carriages

should be everywhere prohibited under a penalty, the same to be strictly enforced against offenders.

9. Carriages for the conveyance of such cases must be provided by the local authorities.
10. Disinfecting apparatus for clothes and bedding must likewise be provided by the local authorities.
11. We urgently need a well-considered Act, which shall facilitate the acquisition of low house property, and shall empower the Government to grant loans on easy terms, on the security of the new buildings, to those who shall undertake to provide wholesome dwellings for the labouring population.
12. The supply of gas and water should be taken out of the hands of private companies, and entrusted to public and responsible bodies in the interest of the consumer.
13. It should be made lawful for Boards of Guardians to apply a portion of the rates to the providing of convalescent accommodation for those who require but cannot procure it.
14. A strict Government inspector should be made during the progress of all works, for the execution of which the Government sanctions the borrowing of money, and before instalments are sanctioned, the inspector's reports and certificates being published.

Mr. Jenkins finds the most obvious deficiency in the new Act to be the absence of a central supervising power, which he would not confound with a central administration. Local authorities should be free to act, but still be under the supervision of a superior court: in other words, more coercion over local authorities is required. A district visitation of cholera, if unchecked, soon becomes a general one. It is, therefore, a matter of the first moment that the authorities of the place in which it first appears should be amenable to some central power should they fail to take remedial steps. We would here remark that a great deal has been said about the apathy and opposition of local authorities without the true source of the resistance being hinted at. The grand secret of the inactivity of the local authorities is, that they are formed of bodies of picked men, annually, or biennially, or triennially elected by the ratepayers out of the rest of their fellow-townsmen as men who are able and likely to resist any proposal that involves any addition to the rates. Until the ratepayers are brought to their senses, and have their eyes opened to the importance of leaving not a stone unturned to lessen every individual's chance of sickness and premature death, we fear this class of men will continue to be returned. In country unions the farming interest is largely represented in the board of guardians; and, as the rates fall heavily on the farmers, it is, perhaps, too much to expect that they should be so public-spirited and generous as to charge themselves with expenses from which they will derive personally but little benefit, as their own residences are not situated in towns. And where a local board of health is in existence, or a council charged with town improvements, it is often very much pervaded by the sentiments of the board of guardians. The chairman of one is sometimes the chairman of both; the members often sit upon both boards; and, of course, the electors are identical. It is, then, the electors, or ratepayers, who are the real authors of the resistance met with. It is they, as well as their representative men, to whom the apostles of sanitary reform must preach.

Members of water and gas companies are often members of boards of health, and in that position are more likely to be the defenders of their company than their accusers, should complaints be made,—another instance that shows the desirability of an officer whose sympathies and property are locally unaffected. Such ratepayers as are in favour of reform in these matters should exert themselves to be more faithfully represented. Mr. Jenkins says, with compulsory enactments, and an efficient ministry or board of health, we might see some prospect of the sanitary regeneration of the country. We say more. There should be a college in which sanitary officers are trained, or a department should be made for them in some college, already existing, such as Sandhurst. Their appointments to towns should be for fixed periods, when they should be removed to another, the young officers beginning with small towns and graduating to large cities. A man permanently fixed in one locality gradually becomes bound hand and foot with sympathies with this or that inhabitant, fear of offending some, and wish to please others, just as a stone not belonging to the seashore gradually gets covered with seaweeds and limpets if left there long enough. The emolments should be sufficient to preclude the necessity of private practice, which should be prohibited.

In April last a deputation waited upon the Duke of Marlborough with a memorial from the Council of the National Association for the Promotion of Social Science, submitting for the

favourable consideration of the Government four statements:—

- 1st. That the laws of public health require to be revised and consolidated with plain and specific enactments on sanitary matters.
- 2nd. That permissive enactments are generally taken to be permissions not to act, and that therefore the most useful provisions should be made peremptory.
- 3rd. That the constitution of sanitary authorities should be more uniform; their areas of administration more extensive; their powers and functions more comprehensive; and that some provision be made for the addition of members possessing other and higher qualifications than those now required.
- 4th. That the inefficiency in the administration in the health laws by the local authorities is in part due to the absence of a central power, which could be appealed to without reference to the courts of law, and could by means of judicious advice, and, if necessary, by legal compulsion, cause the local authorities to do their duty.

The Duke expressed a wish to be furnished with a digest of the remarks made by some of the gentlemen forming the deputation, which has been drawn up. Mr. Jenkins gives this valuable pith. Mr. Rendle, secretary of the Health Department of the Association, alluded to the fragmentary and contradictory character of past sanitary legislation, and the need of a better organisation; an adjustment of the duties of magistrates, whose police duties he deemed little in harmony with sanitary legislation; an amended Building Act, in which there should be provisions under which healthy habitations for the poor might be rebuilt on sites where unfit dwellings were pulled down under any Artisans' Dwelling Bill, and an alteration in the administration of the Vaccination Act, which is now, paper-like, in the hands of the Poor-law authorities, whose appointed officers not only vaccinate, but certify to the success of his own operation. Mr. Rumsey laid fresh facts on this pile. He urged the consolidation of the duties now divided between the Privy Council, the Home Office, the Poor Law Board, and the Registrar-General; pointed out the anomalies which mark the administration of boards existing under Poor Law, Local Government, and Public Health Acts; the difference of area and population in the districts under these boards; recommended higher qualifications for their members, and the extension of areas of local government, with the appointment of a scientific officer to correct and verify the great facts of disease and mortality, and apply them to the suggestion of practical remedies. Dr. Lankester brought forward more fuel. What he found wanting was a unification of the laws relating to public health. In the present state of things it was a most difficult thing for an officer of health, in the parishes of London, to know to what authority to look when he wished to abate or prevent nuisances injurious to health; and that the present apportionment of control or power was not of avail he would instance in the fact of the failure of the Vaccination Act as at present administered, 2,000 persons having died of small-pox last year. Mr. James Beale heaped up the pile behind which it is to be hoped all obstructions and objections will ultimately disappear.

He, too, looked for unity: either of the present departments of government would answer with extended powers; but not at three, as they only made confusion. As an instance of this weakness he complained that the Sanitary Act of 1866 imposed upon vestries the duty of providing hospitals for infectious diseases, and that this year the Poor Law Board passed through the House a bill to impose this duty on boards of guardians, and that certain regulations approved by Mr. Walpole for Chelsea were disapproved by him for St. James's. His leading suggestion was that all the health bills and vaccination Acts should be handed over to a draftsman to consolidate and unravel. Dr. Stewart put the apex to these legal and medical opinions of the short-comings of sanitary legislation in the same propositions we have mentioned as laid down in his work. All these testimonies go into the same scale. The medical men agree that a scientific officer should have the charge of the public health in every union, and that the inspector of nuisances should always be part of his staff or under his control; and the legal authorities urge that this large body of men, so appointed, should be all in communication with and under the supervision of a central board of health service; and that all the sanitary laws in existence should be compared, reconciled with one another, condensed, and all the most useful provisions made compulsory instead of optional.

Both Dr. Stewart and Mr. Jenkins have been well employed, and neither has ventured out of his depth. The practical or constructional engineering departments of sanitary reform they have

not touched upon. We have personally a quarrel with them: in their review of the efforts early made in the cause of sanitary reform they omit all reference to the continuous labours of the *Builder* in that direction at a time when many to whom they refer as workers had not learned the importance of the subject. This, however, gives us little concern. We are contented to see that what we have striven for during long years is being achieved bit by bit; and, having no selfish motive, we shall not be led to relax in our endeavours though others may be taking the credit of much of what we have done.

THE CONSTRUCTION OF GUNS.

It is possible for the human ear to distinguish the varied sounds that combine in the constant roar of life ascending from the great centres of population, and to trace to its origin each order and species of sound, we should be startled with the strange and incessant activity of one special metallic note. Through all the din caused by the exercise of the arts of peace would be heard the sharp ring with which the armourers' hammers,

"Closing rivets up,
Give dreadful note of preparation."

In every arsenal, in every manufactory of small arms, men are working against time. Sixty thousand Chassepot rifles, we are told, are nearly ready for issue to the French army. Prussia is turning out a new needle-gun. Austria is converting her weapons into breech-loaders. Russia is preparing 600,000 of these new weapons. If *vis pacem* follow as a matter of course on *terra bellum*, never was Europe so busily employed in preparing for perpetual peace.

It will be but little purpose that we are made aware of the activity of the gunsmith among our neighbours, or that we shall be told that the ruler of a neighbouring country, who has never forgotten that the great soldier whose name he bears was an officer of artillery, has been preparing a surprise for the world in the perfection of that most serviceable of all weapons, the two-pounder gun, if we fail to cast a sharp glance on our own workshops. A conversation took place not long ago in the House of Commons, the great importance of which has been lost sight of amid the clash of party warfare, and the claims of the "compounder" on either side. We trust that our readers will not have forgotten the name of Mr. Snider. Delivered in ghosts may feel assured that the shade of that ill-used and meritorious inventor has been, to some small extent, avenged. It comes out that "the Department," betaking itself with military promptitude to make the best of the prey secured for it by its legal advisers, has made more haste than good speed. Acting on the usual principle of offering change to the last moment, and then being driven into an inconsiderate hurry that deprives the change of much of its value, the War-office, or their officers, have managed so to convert or so to load the rifles dealt with on the snider principle, as to cause wild firing, and to place our troops who were dependent on the new gun in a position to suffer affront, or worse disaster, if they had come into action. Of course, all is now set right, or will be so to-morrow or next day. It is always so when inconvenient questions are asked. But the point of the case is here. Great Britain spends annually a large sum for her defences; she does not grudge her millions for the purpose. She has more hesitation in finding men; her sons take to a red coat with less readiness than those of some of her poorer neighbours. What the country has the right to demand is, that the army and navy estimates shall be so spent that our small and precious army shall have the best military instruction and the best arms and ammunition that practical science can supply. At present it is far from having either the one or the other, and public attention cannot be too loudly called to the fact. It must be candidly admitted that the duty of a military administration, during a time of scientific revolution such as that of the last ten years, is neither simple nor easy. Time enters so intimately into all questions of safety,—the sensible enemy may not choose to wait till we are ready to receive him. If the question of the best weapon cannot be solved *impromptu*, at least has to wait the proof, or the improvement, that can only be given by repeated experiment, we are none the less bound to be provided with

the best weapon known. There are, therefore, two requisites equally important to be borne in mind by a Minister of War and his advisers. One is to have readily and promptly under hand the best known and proved weapons; the other is, patiently and cautiously to take the advice of the most experienced and able mechanics, and steadily to prosecute experiment on the value of projected improvements. It can, perhaps, hardly be expected that a Secretary of State, or a Commander-in-Chief, in the present generation, should master the simple outlines of the scientific problem, see clearly what ordnance ought to be, and thus distinguish between that experiment which forms the pathway of practical science and that which is merely empirical. But the more fully a statesman is aware of the nature of the problem which involves the efficiency of the national defence, the more earnestly will he insist on the two points we have named—full supply of proved weapons, and careful inquiry as to the capacity of better ones.

The whole history of our recent improvements in small arms and in artillery, as well as the record of the military events of the last five years, bears out the above assertion. Precision has been introduced as an element of gunnery—precision so different from that attempted in the wars of the early part of the century, that it appears as a new feature of construction. To arrive at once at the best weapon was, of course, out of the question. To remain content with an inferior one, while other nations were re-arming, would have been treason. Hence we have had, and that wisely and properly, the Enfield rifle of 1853, the Lancaster gun of 1850, the Armstrong gun of 1858, and the Snider breech-loader of 1863. No less certain is it that the scientific problem, whether or no it be yet solved, is not taken for the main requisite of our theory of defence. We have fair rifles, fair cannon, rifled on different systems, and formidable projectiles. But we have no system of artillery. Nor have we in the service either the best rifles or the best cannon known and proved to be in existence.

The progress of science, in any individual branch, is far from being always equable and maintained. There are periods of long stagnation, when some new principle awaits disclosure. There are periods when, like the planets themselves, Science seems to retrograde in her course, collecting, it may be, force for a new leap into the unknown. The discovery of some new truth may impel thought in a wrong direction, until the counterbalancing principles be also discovered. Thus, to confine ourselves to the subject of artillery, so late as the year 1863 we find a disposition evinced to return to the use of the old 68-pounder smooth-bore gun; and the frank admission of the First Lord of the Admiralty, after the enormous expenditure incurred for the improvement of our ordnance, that when asked what gun he approved for the navy, he was obliged to say that he "really did not know."

When, however, we find that the advance of scientific detail is in accordance with the historic progress of the question under investigation, we have a sure indication that the movement taking place is in the right direction. If we apply this principle to the case of artillery, we shall find that it gives valuable light. The history of offensive warfare is, scientifically regarded, the history of projectiles. The earliest instinct of self-defence among men is to make use of a missile. So completely is this the case, that it is acknowledged by the instinct of the animal creation. A dog fears, to a certain extent, a stick; but it is only when he sees it, and he believes to provide himself with a stick, and the dog is not imposed on; but only stops, pretends to pick up a stone, and the dog does not stop to reason on the probability of your finding one at hand,—he makes off before the first indication of recourse to the simple weapon from which he can least readily protect himself. Thus, especially in defence from siege, stones of all sizes were the ammunition of primitive warfare. And thus the first purely warlike weapon (whether for the chase, which is the war with brutes, or for the battle, which is war with men) was a means of propelling stones. The first means of distant offence was the sling. Great accuracy and power were attained by this simple weapon; it ranks high in military history; and its disuse, on the introduction of a more formidable weapon, was not because the bow was so much better than the sling or the catapult, but because arrows, to which a sustained flight would be imparted by attention to their feathering, were so much better projectiles than stones, or even than leaden bullets.

The invention of gunpowder drove arrows from the field. It was rather from the power of powder to project masses immovable by less forcible means, than from increased excellence of shooting, and also from the greater portability, and greater ease of manufacturing the new missiles, that the clumsy match-lock and the not very much more precise musket came to supersede the well-tried yew. The explosive system, as a whole, drove out the elastic system, as a whole, by the great superiority of the former as to the heavier artillery. As to the small arms, the question is more open. The bayonet may have had more to do with this than the bullet. The battle of Waterloo was the most terrible, as to the ravages of cannon, known in our history up to 1815; but, if we compare the results of the musketry in that critical encounter with those of the arrow flights at Crecy or at Agincourt, it is not so clear that the bullet, with all the advantage it derived from explosive propulsion, equalled as a projectile the cloth-yard shaft. In matter of precision, if not of range, the former seems to have been certainly the inferior.

Now, the increased precision of modern arms follows from the attempt to give to the bullet one main characteristic of the arrow. Instead of merely blowing a ball from the mouth of an intensified pea-shooter, such as the old smooth-bore musket, the rifle gave a spin to the projectile, which thus was enabled to sustain a more regular flight. To ensure the spin the bullet was, in the Minié and other early rifles, lengthened from a spherical to a conoidal form. But no actual investigation into the best proportions between diameter and length of bullet, or into the relation between the rapidity of spin to be given to the projectile, and the range through which it was to be propelled, appears to have been systematically attempted before the experiments of Mr. Whitworth. That eminent mechanician was certainly one of the first practically to grasp the truth that the first point in offensive science was to determine the best form of projectile, and that from this was to be deduced the best form of projecting weapon. Equally important, although a perfectly distinct subject of investigation from the question of form, is that of the nature of the best material to be employed, whether for bullet or for gun. The third element,—the nature of the projectile force,—does not at this time require investigation, from the fact that the question is not how to increase, but how to manage, the explosive power of gunpowder. So long as the powder is stronger than the gun, it is the weaker portion of the destructive machinery that demands the first attention of science.

Avoiding any minuteness of detail, it appears that the result of systematic and exhaustive experiments established the best form of projectile, a form which mathematical science might perhaps have predicted, but which positive knowledge owes to Mr. Whitworth. A bolt, some three times longer than its diameter, and with a twist around its axis four times more rapid than that which the Enfield rifle was calculated to impart to its leaden projectile, flat-headed, when destined to penetrate hard bodies, and tapered behind, to diminish the resistance of the atmosphere, such was the last step in the series of missiles that commenced with the smooth pebbles of the shepherd's scrip.

The barrel is the reciprocal of the bolt. The form arrived at as the result of Mr. Whitworth's experiments, in which the means of accurate mechanical manufacture were considered as thoroughly as the question of projection, was a twisted hexagonal tube. Shot and barrel are capable of being so turned out of hand that, if the former be sent home by the ramrod, the touch-hole being stopped with the finger, the elasticity of the condensed air is sufficient to return the bullet towards the muzzle as the ramrod is withdrawn. Greater windage is allowed in practice; but the perfect freedom of the system from tendency to jam or to rack is shown very distinctly by so delicate an experiment.

With this form of bolt, and with this form of barrel, projectiles of every diameter, from the 3-in. of the small bore rifle to the 54-in. of the 70-pounders actually tried, or to the still larger calibres of our future guns, attain the widest range, and the greatest accuracy as yet known to be possible. In the experiments conducted at Shoeburyness in 1864 and 1865 between the breech-loading Armstrong 12-pounder, the muzzle-loading Armstrong 12-pounder, and the Whitworth 12-pounder, the committee report

that the range of the latter gun was 29 per cent. superior to that of the two former; the Whitworth projectile, fired at an elevation of 33°, attaining the distance (in the mean of nine shots) of 8,776 yards, against the respective distances of 6,788 and 6,774 gained by the competing bullets. For accuracy the superiority of the Whitworth ranges from 17 per cent. above the Armstrong muzzle-loader up to 900 yards, to 100 per cent. above it from 3,000 to 3,600 yards; the muzzle-loading Armstrong, in its turn, being from 25 to 48 per cent. superior to the breech-loading Armstrong. This result is derived from comparative trials with solid shot. As to shell and case, the question of the comparative projectile value of the different patterns brought forward for experiment is more complicated, and it is by the comparison of the same kind of projectile alone that accurate results can be obtained, no element of disturbance entering the case when solid shot are employed in each weapon.

In the trial of the 70-pounder guns, as reported on by the same committee, the figures are no less eloquent as to the incontestable superiority of the Whitworth system. At elevations varying from 0° to 21°, the range of the 70-pounder Whitworth exceeds that of the muzzle-loader Armstrong by ratios increasing with the angle of from 5 to 26 per cent., reaching a mean distance, in eighteen rounds of 7,965 yards, against 6,330 yards covered by the muzzle-loading, and 5,821 by the breech-loading Armstrong. The mean radial error of the Whitworth, at this range of four miles and a half, was 65·8 yards, that of the Armstrong guns being respectively 116·2 and 123·3. Penetration, tested by firing against a solid mass of brickwork, 40 ft. thick, at a distance of 750 yards, was 7·25 ft. made by the Whitworth solid shot for 4·75 ft. made by the muzzle-loading Armstrong.

When it is remembered that these results are due to the employment of the same system which, in 1857, produced a rifle that beat the Government arm more than three to one, planting the average of its shots, at a range of 800 yards, within a circle of 4½ in. mean radius, against an area of 27 in. mean radius in the other, it seems to us that there can be no room to hesitate as to the system on which the British army and navy ought to be armed. In availing themselves of the services of Sir W. Armstrong for the development of his own weapon, the Government of the day, no doubt, exercised a wise discretion. Whether after having so far departed from the time-honoured routine, as to take the advice of an eminent civilian, on a subject on which he was at home, and military men were inexperienced, the Government went rather too far, it is now scarcely necessary to inquire. In all cases of the kind the sage maxim "*Cuicque in suis arte credendum*" cannot be neglected without misfortune. For the War-office and for the Navy to avail themselves of the best civil professional advice in such matters as the manufacture of firearms, is a duty so obvious that it seems useless to insist on it. The only danger lies in the exclusive reliance on one adviser and one system, when there is a fair question to be settled among competitive weapons. But when, on the one hand, are various systems, each more or less undergoing constant modification, for small arms, field guns, and heavy cannon, contrasted with, on the other hand, one comprehensive plan, slowly matured from exhaustive experiment, and resulting in an undividable triumph against every competitor, though in many respects hardly fairly tested against rival weapons already bearing the prestige of "the Service," the minister who hesitates to take council of the engineer who has so far demonstrated the soundness of his views incurs a very heavy responsibility in the face of the country.

We have spoken hitherto of the forms of projectiles, and of the corresponding form of the projecting arm. Another question remains untouched—that of the material. The two are so far distinct that the best results might be attained in either case by different experimenters. There is no reason why the man who finds out the best form of gun should also be the discoverer of the best material from which to make it. The question before discussed may be considered as ground common to the mathematician and to the practical experimenter. The question of material is one for experiment alone. Chemistry, which here replaces geometric or algebraic investigation, is exclusively an experimental science. She knows, as yet, nothing whatever of "the high *a priori* road," or rather it is by her depar-

ture from that old-fashioned and devious track that she has entered so closely into the secrets of the great Architect of Nature. The state of this part of the case is, at present, that the force of gunpowder is so great that no known material enables us fully to utilize it. Any gun can be burst by repeated efforts. The gun will not have attained its proper relation to the powder consumed in its barrel until it is made of a material which a full charge of powder can neither burst nor stretch.

The cohesive quality of iron, as at present manipulated, is below this requirement. Ordinary cast-iron, the readiest material for the construction of large guns, has to be altogether laid aside for the future. It cannot resist the heavy charges of powder, and the increased force of the explosive power due to the retention of the projectile by the rifling of the barrel. It has been attempted to meet this difficulty by several methods, the most successful of which have been respectively and interchangeably adopted by Sir W. Armstrong and by Mr. Whitworth. Sir William and Captain Blakely (for in this as in most instances of the independent discovery of nearly identical methods the honour is claimed by more than one inventor) have started from the mechanical fact that the chief strength of wrought-iron lies in the longitudinal direction of its fibre. Injury by excessive explosion, they consider, is inflicted on a wrought-iron gun by bulging its barrel, rending the fibres apart as if they were threads in a thread-paper. To counteract this tendency, and to make use of the utmost strength of the material, the bars of iron used to build the gun were therefore bent in a spiral, and welded together into a tube, three lengths of bar being required to form the barrel, which again was strengthened by other coils shrunk upon the primary ones, so as to thicken the breech. Mr. Whitworth preferred the forging of a single ingot or bar of steel, the solid centre of which was afterwards bored out, and the breech strengthened by hoops forced on cold by hydraulic pressure. It is enough to say that while by each of these laborious and costly processes guns may be produced far superior to any that were considered necessary a quarter of a century ago, yet neither the coil gun nor the hooped ingot gun is strong enough altogether to resist the explosive force of powder. Experiments were made by the Committee on the 12-pounder guns by firing with the service charges of powder, and one or more shot, with air spaces between the charges and the shot, the object being to ascertain which gun would have the greatest powers of endurance, and also the manner in which they would burst. The breech-loader was fired with a charge of 1½ lb. of powder, and a shot of 11½ lb. weight. The Armstrong muzzle-loader, with a charge of 1½ lb. of powder and a shot of 11½ lb.; the Whitworth with a charge of 1½ lb. of powder and a shot of 12 lb. Under these graduated tests, the trunnion ring of the breech-loader was cracked at the 33rd round; and at the 42nd round it had opened to the extent of an inch. The muzzle-loading Armstrong was cracked at the 60th round, the coil in front of the trunnion being found open and near to the gun, as if it had simply fallen off. The Whitworth gun burst violently into eleven pieces at the 92nd round. The strength thus evinced in each instance exceeds the ordinary requirements of the service; but the explosive force is still in excess of the resisting power of the gun when repeatedly and severely tested. In the case of the 70-pounder, after a practice of 3,000 rounds from each, the Committee endeavoured to burst them. The strength in each instance, however, was so great that the ammunition was exhausted without the bursting of either gun, 102 rounds of disruptive charges having been fired from each. The breech-loader was slightly cracked in the powder chamber, but uninjured in the body of the gun. The Armstrong muzzle-loader had fractured the steel barrel at the breech, but the superimposed coils were uninjured. In the Whitworth the bore was expanded 3·10ths of an inch, and the outer hoop shifted forward. In these experiments Sir W. Armstrong had adopted a steel barrel with iron hoops; Mr. Whitworth a steel barrel with steel hoops. The result of the experiments appears to be that a trustworthy service gun can be constructed on either principle; but that the power of powder is still in excess of the resistance of the material of which the weapon is composed.

The projectiles invented by Mr. Whitworth are characterized by as great an advantage in penetrating power as they possess in range and in

accuracy. For the most serious service for which artillery is required, the attack of armour-plated vessels, the superiority of the punch-headed steel-bolt is incontestable, as it is found to outclean hole through a target, even at an angle, which causes any other shot to glance. In the experiments with steel shell it was unexpectedly discovered that a fuse is unnecessary when firing against armour plates. The blow with which the missile punches out its path imparts such heat to the metal as to fire the bursting charge, and it has been found necessary to wrap the powder in flannel to prevent the explosion of the shell until its penetrative force is exhausted. To the invention of these two irresistible projectiles, Mr. Whitworth has added that of a form of case shot which the committee characterize as "an invention of very great value to Her Majesty's service."

It seems unnecessary to add another word as to the necessity of the adoption for the defence of the country of the Whitworth system of gun. Yet two most important features of the case remain unnoticed. The first is this. The capacity of a gun to consume powder, and therefore its requisite strength to resist disruption, is measured by its calibre; and therefore, supposing all the questions of construction to be satisfactorily solved, the weight of the gun should be in definite proportion to its bore. Now, in the trial of the so-called 70-pounders (leaving aside the breech-loader, as withdrawn from the competition), the two guns pitted against each other differed materially in calibre. The Whitworth gun, with a bore of 21·33 in. area, burned 10 lb. of powder and threw a projectile of 70 lb. weight to a maximum distance of 8,078 yards, against a maximum range attained by the Armstrong gun with a similar charge, of 6,528 yards, an excess of 42 per cent. The weight of the gun was 78 cwt., being 3 cwt. 2 qrs. 17 lb. per sectional inch of bore. The Armstrong gun had a bore of 32·31 in. sectional area, which gave only the proportions of 2 cwt. 1 qr. 11 lb. of weight of the piece per sectional inch of bore. A difference of more than 50 per cent. in a matter so important as ratio between weight and capacity was certain to tell its own story under experiment. The truth is that the Armstrong gun, with a capacity to burn 15·15 lb. of powder, was, in point of fact, a 106-pounder under-loaded and under-shotted. This view of the case is supported by the fact that when each gun was fired with a larger charge of powder, the increase of charge from 10 to 12 lb. in the Whitworth only increased the initial velocity 4 per cent., or by 57 ft. per second; while the same increase of charge in the Armstrong gun increased the initial velocity 12½ per cent., or 164 ft. per second; and a further augmentation to 14 lb. (still less than the capacity of the calibre) increased the initial velocity by a further 24½ per cent., or 37 ft. per second. The comparison of range is less precise as the 10 lb. charges were fired at 6° of elevation, and the 14 lb. charge at 5°. The Armstrong range at 6°, with 10 lb. of powder, was 2,685 yards, with a mean error of 25½ yards. The Whitworth range, under the same conditions, was 2,948 yards, with a mean error of 25½ yards. The range of the Armstrong gun at 5° of elevation, with 14 lb. of powder, was 2,811 yards. But the effect of the trials for duration plainly shows that a charge of 12 to 14 lb. was less than that due to the bore of the gun and demanded by the diameter of the projectile, would have altogether exceeded the powers of endurance possessed by the piece. The inference is undeniable that the Whitworth 5·28-in. gun is one duly proportioned for the discharge of a 70-pound shot, and that the Armstrong 6·4-in. gun is not so proportioned; its power of propulsion being proportionate to the discharge of a 106-pound shot, and its powers of endurance being only those due to a 70-pounder. The great superiority of the Whitworth gun is thus again brought to a definite test. Of the competing 5·28 in. and 6·4 in. diameter guns, the first is duly considered as fairly proportioned as to diameter and weight, and the second is not. To produce a gun which, must, if it is to endure, be always under-charged, by 40 per cent., is not a triumph of construction; nor is such a weapon one that can with due regard to safety be issued for service.

The other question relates to the cost and durability for service of the projectiles. The former of these elements is of far more importance in the Army Estimates than the original cost of the guns themselves. We have just seen a comparison between two large cannon for 3,000 rounds, which were fired without injury to either

pieces of ordnance. We have also seen that the Armstrong 70-pounder, with 14 lb. of powder, fell short of the Whitworth 70-pounder, with 10 lb. In this sole comparison, therefore, if we suppose the powder to cost 50l. per ton, the Armstrong gun would have cost, if fired according to its capacity, 600l. more than the Whitworth, a difference doubling the original price of either weapon. The report gives little information as to the actual cost of the projectiles themselves, and we are unwilling to supply the defect from any less impartial source of information. But if we regard, on the one hand, the rapidity with which the solid spiral bolt can be turned out of hand by machinery, and, on the other hand, consider either the complex process of coating with lead, or the troublesome application of zinc or copper studs, there can be little doubt as to the superior cheapness of the hexagonaloid bolt. Again, the more complex projectiles are liable to such damage in the necessary service of the field as to interfere greatly with the exigencies of artillery practice. The only point in which the report of the Committee seems to us to have lost sight of mechanical truth, is where they mention that the studs provide the projectile with a certain power of self-adjustment. The action of the studs in the grooves of the shunt gun would appear to be a mechanic almost certain to impart irregularity to the motion of the projectile; while the action of the spiral bolt in the spiral barrel is such as to centre it on the least motion, a fact which no doubt tells for much in the steadiness of its flight. In cost, therefore, of working, in range, in accuracy, and in penetration, the experiments at Shoeburness appear to establish the claims of the Whitworth guns and projectiles to rank, so far as experience goes, as the first in the world.

FLORENCE IN 1867.

WHATEVER the effect of the change that has raised her to a higher place in national life, Florence still remains the gayest as well as the fairest of Italian cities. It is impossible not to be struck by the visible expression on every side of the progressive and energetic spirit now awake here; and the joyousness of the scene makes itself more felt by one led to contrast it with the subdued solemnity of that capital where the church reigns supreme—should he happen, that is, to have passed immediately from one to the other. The Florentines may have something to complain of in respect to taxation, increased expenses of living, &c., but it is impossible not to recognize in the conditions of their city the prevailing evidences of things that tend to and proceed from the general well-being,—the proofs, in short, of progressive prosperity.

The works for the enlargement of this capital have been advancing, since the beginning of the year, with tolerable activity, though not yet very striking in their results. Most promising is the new quarter now rapidly springing up on the southern side between the Porta S. Gallo and Porta Croce, while the style of buildings and laying out of streets present altogether a cheerful and pleasant picture, and seem likely to attract the fashionable world. The best characterized houses are specimens of the modern Italian, without any attempt to imitate the palatial grandeur of Florence of the fifteenth century, but with general resemblance to the spacious and aristocratic residences that date from subsequent periods; the walls of brick, or irregular stonework, in every instance coated with stucco, coloured to imitate the dark grey or dark yellowish stone found in neighbouring quarries, and so much used in Florentine churches, uniformity being systematically avoided, and each house having its distinct features, however a certain type may predominate,—the ground-floor stories mostly of rustic masonry, so also the stone chieftains often introduced at angles; doors and windows sometimes arched, the latter, in almost all cases, surmounted by dressings, or, we might say, pediments, either curved or triangular, the two forms often alternating, many of the best residences having gardens at the rear or at one side; and at the level that forms a centre to this new quarter, already is opened to the public a much larger garden, planted and laid out in walks, that promises to become an attractive promenade when trees shall throw a deeper shade, and the air of novelty be worn off. That extent of fortifying walls which bounded this region is almost entirely demolished; but its

debris being not yet cleared away, the long line of ruins that rise like a steep embankment, still forming a barrier between town and country, present a somewhat diurnal feature in this otherwise pleasant quarter, and give the idea of works lately overthrown by the artillery of besiegers. Beyond, however, we have the view of the hills of Fiesole and loftier Apennines, whilst we inhale the fresh air that breathes from mountain and plain, reminding of the advantages to health and enjoyment securable for the inmates of the city's new streets on this side. Southward, where the fortifications are more ancient and picturesque, they have been left untouched, and it is understood that in this extent they will be spared, seeing that the steep rising ground along which they are carried, between Porta Romana and Porta S. Nicolo, offers no inducement to the extending of street-lines, and is in great part occupied by the gardens of the Pitti Palace. The Medieval gateways, picturesque structures in their way, are also to be preserved, out of regard for historic antiquity, and for the art details, symbolic sculptures, animals and shields, frescoes of sacred figures, by which most of them are adorned.

The Porta Croce is destined to stand isolated in the midst of a spacious square, for creating which much of a populous suburb will have to be swept away. Between that gate and the river side has been re-opened the long-shut Porta Ghibellina, whose very name had disappeared from the Florence map, and whose archway had been built up to serve as a guard-house. Of this city's more ancient gateways eight were either built up or destroyed in the first years of Medician sovereignty; and that leading to the church whose name it bears, S. Miniato, had long been closed before its reopening in 1834. Alike has been given back to public transit the Porta S. Giorgio on the height near the Belvedere fortress, a gate long reserved for military use, the river side of which has a good fresco by Bernardo Daddi, the outer a relief of Saint George and the Dragon. A fine fresco of the Crucifixion, life size, has been removed from its tabernacle, near the S. Gallo gate, to the museum in the Pretorio. Most important among works of demolition hitherto undertaken is that for destroying the "Fortezza da Basso," built by the Duke Alessandro de' Medici, 1534, with the architecture of Sangallo and two others, in the dungeon of which gloomy fortress the life of Filippo Strozzi had its tragic close. Condemned to perish as now utterly useless, and an obstacle to the city's development on the northern side, its low but extensive buildings and wide range of outworks will disappear to give place to a very spacious square, destined, it is said, to serve as a *Champs de Mars* for military parades. As yet indeed little has been accomplished towards this object, save the filling up of the moat and certain earthworks; the dark pile of that Medici castle, looking so like a den of tyranny, being still before us in horrid contrast to the beautiful scene amidst which it stands between the city and the cultured, mountain-girt plain.

Another project of importance, the works for which are now claiming notice, is the construction of the new "Lung' Arno," to extend along the river's left bank, commencing from a southeasterly point, and to be carried along the water-side so as to correspond with the magnificent promenade, so well known to all tourist-visitors, that presents the finest perspective in modern Florence on the Arno's left bank. In their present incabate stage, these works are aimed at throwing up a mole, that considerably narrows the river's bed by its encroachment, near the oldest of the bridges, *Ponte delle Grazie*; and numerous labourers are engaged all day behind palisades set in the gravelly ground through which the Arno flows, reduced, at this season, to a stream dwindling into insignificance at certain parts. For this improvement it will be necessary to knock down many picturesque old houses that rise, piled up in irregularities of good effect, immediately above the water. Public convenience has been well consulted in the other undertaking now in progress on the most frequented of the bridges, *Ponte Corraia* (originally of wood, first built in stone 1339, and restored by Ammannati, 1567); the bad condition of which was the more to be complained of as this bridge forms the principal approach to the chief marketplace in the "Olt' Arno" quarter. It is to be provided with caseways of iron-work, adding largely to its width, as well as new pavement for the central part; pending the labours for which, this busiest of Florentine bridges is now only

passable by pedestrians. We are glad to see the praiseworthy practice of distinguishing the houses of genius still kept up amidst the current of novelties and new activities in this city, alike since, as before, she became the Italian capital. On a house of modest dimensions in the Via S. Sebastiano, behind the *Annunziata* church, we read the following on a lately-placed tablet, that well honours the illustrious dead—

"In questa casa abito il pittore senza errore, Andrea Vannucci Fiorentino, detto Del Sarto, che reduce di Francia la edificò, e vi morì nell' anno MCCCCXXX., pieno di gloria e di domestici uffanni." (In this house resided the painter without fault, Andrea Vannucci, of Florence, called Del Sarto, who built it after his return from France, and died here in the year 1530, full of glory and of domestic afflictions).

Turning to the examples of entirely new architecture for public purposes, we do not find that Florence has received additions to be proud of. The ministerial palace on the Piazza S. Marco is not saved by greatness of scale from insignificance of character; that for the Minister of Public Works, Via della Scala, has better, but no very admirable, features. The facade of the Corsi Palace rebuilt as necessitated for the widening of the street, is the only architectural novelty of imposing or superior style; and this also is open to criticism for deficiency of projecting masses, and largeness in details; the occupying of the ample arched recesses that extend along its ground-floor by shops, whose windows fill the openings, detracting from the palatial in this great mansion's aspect.

Among realities of the day, the present conditions of the convents cannot be left unnoticed. The cloisters of S. Croce are in part let to families, in part used for a public office; at those of S. Maria Novella, the largest in Florence, no fewer than five Government offices are located. S. Marco, most interesting from art contents, and which was declared by edict, in this last year, to be "a national monument," is now destined to become a museum of sacred art, where several works of Fra. Angelico, besides those painted on the walls of its cells and corridors, will be collected, some from the S. Maria Novella Church; and the largest of two deserted refectories will be the principal hall for this sacred exhibition. Ten of the Dominican community are still left in the S. Marco convent; though, according to the letter of the law, six is the extreme number allowed to remain for life, in order to guard the premises and officiate in the churches of those establishments that must eventually disappear; and repairs have been begun (but for some weeks suspended) in the above-named convent, for better adapting it to its new purposes. Under these circumstances, S. Marco is a mournful and silent place; the mason's work impedes one's advance through its interior; the frescoes of the "Beato" are mostly covered for protection, till this confusion shall be at an end. But in the chapter-house we still see the "Crucifixion," largest and noblest among the wall-paintings by that friar, in good light and with every convenience for spectators; a set of engravings of all the frescoes here by the same gifted hand being on sale in the same room.

In conclusion, we must testify to the general intelligence and taste, the religious respect for antiquity, for all that charms the eye by beauty, or the mind by association, in the principles that have presided over the complicated task of renovation at this centre; and we must rejoice in the tokens that promise for the capital of Italy such graceful distinctions as were ever owned by the "Etrurian Athens" in days gone by.

DIAMONDS.—At a recent meeting of the California Academy of Natural Science, Professor Whitney remarked that there are fifteen localities in California at which diamonds have been found in the course of washings for gold. In reply to a question if there was not some familiar test by which miners might prove them, he answered that the easiest way was to try their hardness on other gems, but miners have not always these convenient to do so. A knowledge of the crystalline form, twenty-four sided and the faces curved, was the surest test. He said that the popular notion that a diamond could be hammered on an anvil without breaking, was a mistake, resulting from confounding hardness and toughness. Also, that it would not pay in California to wash the gravel beds solely for diamonds. Diamond washings do not pay in any country, except with slave or convict labour.

THE CASTLE OF ARQUES.

The Castle of Arques, one of the earliest, largest, strongest, most remarkable, and most celebrated of the pure Norman castles of Normandy, has had the advantage of being described by M. Deville in 1839, and illustrated, more recently, by the pen and pencil of M. Viollet-le-Duc.* To the work of the former of these authors the present writer is indebted for much of historical matter, and for the leading dimensions of the castle and its details; but, having recently visited Arques, he has formed his own opinion upon these details, and is responsible for them. M. Le Duc's account is very minute, and especially so upon the complicated arrangements for the entrance into and defence of the Norman keep. His statements probably rest upon plans and drawings of the building at some period when it was far more perfect than is at present the case. Indeed, at this time, the details do not differ materially from many Norman keeps of the same century in England, nor can I observe certain traces of some of the more complicated arrangements spoken of.

The castle and the county (*comté*), or, as we should say, the earldom of Arques, have played important parts in the local history both of France and Normandy. The town of Arques was the capital of Talou, the Roman Talogium, a name well known as late as the eleventh century, when it passed gradually into disuse, being superseded by the equally old but more limited appellation, which, by the creation of the *Comté d'Arques* in favour of the Conqueror's uncle, became extended over the whole lordship.

Talou or Arques, in extent about 14,000 acres, lies open to the sea upon the old frontier of Normandy. To its north-east was the territory of the powerful counts of Eu, and to the west and south the divisions of Brai, Caen, and Rouen. It is a tract of high table-land of chalk, deeply scarred with valleys, some steep, short, and dry, others broad and level, giving passage to streams of some beauty, and the sources of much fertility. It was in request on account of its frontier seaboard, the strength of its positions, and its agricultural wealth.

For these reasons it was an early resort of its Norman rulers. Duke Robert, in 1031, designates it as "one of our residences," as does his renowned son in 1047. Duke Robert died in 1035, leaving William then eight years of age, and who was formally recognised as the heir in 1038, about which time his paternal uncles of the half-blood, William and Mauger, sons of Duke Richard II. by his second wife, received from him the one the *Comté d'Arques*, the other the Archbishopric of Rouen.

The Norman nobles profited by the infancy and questionable title of their sovereign to strengthen their own positions, and William of Arques seems at once to have commenced and rapidly to have completed the present castle, which may therefore be attributed to between 1040 and 1045. Its completion tempted him into rebellion, upon which Duke William took possession of the fortress, which, however, his uncle speedily recovered by an understanding with the Duke's castellan. Then followed a second and more dangerous insurrection. The duke heard of this at Contances, in Lower Normandy. With instant speed, gathering force as he rode, he reached the town, and was in time to cut off a portion of the supplies on their way to the castle. He then attacked the advanced posts of the garrison, placed probably on the site of the present outer ward, drove them into the enclosure, and established a blockade. As the only gate of the place was at that time on the north, he threw up a fortified camp on that side, the ditch and palisade of which included the entrance to the castle, and a space in the direction of, but probably larger than, the later Bel or Bailey. It was strengthened—

"De fossés et de hericun
Et de pel stit un chasteillon;"

That is, "with ditch and palisade, and castles he formed of piles." This he placed in charge of Walter Giffard, so well known afterwards on English ground. The garrison numbered 300, while with Giffard was a body of knights and men-at-arms. The duke then retired to settle his pressing affairs in Lower Normandy.

Archbishop Mauger having stirred up Henry I.

* "Histoire du Château d'Arques," par A. Deville. Rouen, 1839. "Dictionnaire raisonné de l'Architecture," par Viollet-le-Duc, Paris, 1858. "Art. Château et Donjon."

of France, that monarch prepared to raise the siege, and was supported by the followers of Enguerrand of Pontieu, brother-in-law to the count, and shut up with him in the castle. The French coming impetuously to the attack, neglected proper precautions, and were beaten back by Giffard, and Enguerrand was slain; but nevertheless supplies seem to have reached the castle. Upon this the duke returned from Valognes to the camp, and finally started out the garrison. This was followed by the battle of Mortemar, in November, 1054, by which William secured his seat upon the ducal throne. After this event Arques was placed under the charge of a sheriff or vice-count.

The revolt and blockade, the attempt of the King of France, the arrival of the duke, and the surrender of the castle, form the subjects of 160 very spirited lines in "Le Roman de Rou," which informs us that

"William d'Archeles fu mult fier
E bue hardi chevalier,
Frere l'Arceveske Maugier
Ki mult l'amont e tenoit chier."

And thus disposes of the result of the whole business:—

"Maiz pur viande ki fellit
Terre e chasteil et tur guerpi;
Al Duc William tut rendi.
Et al rei de France s'endi."

William Rufus, having secured England, entered Normandy on the side of Arques, but the castle was held for Robert Curthose until the accession of Henry I., and the capture of Robert at Tinchebrai, in 1106. Arques, once in Henry's hands, was held by him, notwithstanding the attacks of Baldwin, count of Flanders, upon that frontier; and after his defeat of the French at Vexin, in 1119, he imprisoned Ormond, lord of Chaumont, in its dungeons. His sense of its value led him to strengthen it in 1123, and he held it until his death.

King Stephen, though he obtained possession of several Norman castles, seems only to have retained Arques. Geoffrey Plantagenet besieged it for a year, and at last, in 1145, obtained it by the accident of the death of Lemoine, the castellan, who was shot by an arrow.

In 1150, before the accession of Henry II., son of Geoffrey, to the throne of England, Arques was attacked by Louis the Young of France. Henry marched to its relief with a powerful army; but it was not till long afterwards, in 1173, that the combination of the same Louis with Henry, son of Henry II., really menaced its security. Aumale and Drincourt, two strong frontier castles, were at once surrendered, and Henry advanced upon Arques, with the Counts of Flanders and Boulogne. While actually beneath the castle the latter was slain by a Norman knight. This broke up the federation, and Prince Henry retired, leaving the castle still in the hands of its proper sovereign.

Under the treaty of Mantes, in 1193, between Longchamp, on behalf of Cour-de-Lion, then in prison, and Philip Augustus, Arques and three other castles were to be placed, two in the hands of Philip, and two in the neutral hands of the Archbishop of Reims, to be held until France had received 20,000 marcs, one castle being restored at each payment of 5,000. Philip, upon this understanding was to obtain Richard's liberation.

Prince John, by secret and dishonest covenant with Philip, was substituted for the archbishop, and placed in possession of Arques, and the castle, thus virtually in the hands of France, was one of those which, under the truce of 1194, Philip was free to fortify or destroy. Richard, however, once in the field, bent himself to its recovery. He took post before it in 1195; but his adversary, with 600 knights and barons of France, came to its relief. Richard retired after a bloody struggle, in which the Earl of Leicester was made prisoner. Philip then burnt Dieppe, already a considerable port, the growth of the preceding century, but in his retreat suffered the loss of his rear guard at the hands of Richard.

Philip marked his possession of the lordship of Arques, and his sense of its value, by bestowing it, with his sister Alice, upon William, count of Pontieu, retaining a power of redeeming it for 5,000 marcs of silver. Nevertheless, before a year, Cour-de-Lion became lord both of the land and the castle, and this by virtue of a treaty. He entered early in 1196, and placed Geoffrey de Say, whose name is preserved in Dover Castle, in charge of the fortress and of the lordship. His accounts, which are still to be seen in London, include, in 1198, a charge of 35*l.* 2*s.* 8*d.*

for repairs of the building of the castle of Arques. These accounts also show an expenditure of 49*l.* 13*s.* 8*d.* for the support of the king's nieces (Eleanor), daughter of the Countess of Brienne, whom we thus learn to have been in residence here. She was the sister of the unhappy Arthur then at the court of France. The large amount more than half the receipts of the lordship placed annually to her credit, shows her treatment to have been on a very liberal scale. After Richard's death, and that of Arthur, John moved her to Corf. She is said to have lived 1241.

In 1200 King John ordered the usual inquiry into the state of the castle to be made of four true men of Arques, and 450 livres to be spent on the fortifications, if necessary. He went there himself in that year, and there signified a grant of market at Sackville to Jordan Sackville, ancestor of the dukes of Dorset. It was also there 17th and 18th May, 1202, and a visit was followed by a hostile one from Philip Augustus, who appeared before the castle with proper siege apparatus very shortly afterwards. For fifteen days, according to Matthew Paris, catapults and ballists were directed against the walls; but the garrison, having greatly to the advantage of elevation, caused the besiegers to retire to a more respectful distance. Philip therefore, prepared for a blockade, and directed vessels from the Flemish ports to bring supplies by sea. A letter of John, in July, 1202, addressed to the Baron of the Cinque Ports, directed them to intercept these supplies. It was then that Philip learned that Arthur had fallen in the hands of his uncle. His fury was great. He broke up the siege to attack John in person, while William Cumin, the castellan, acknowledged the bravery of his garrison, and, under an order from John in January, 1203, paid 54*l.* 12*s.* 3*d.* as their arrears. This king, also, in February, showed his gratitude to the burgesses by a grant of certain liberties to their town, witnessed by the well-known names of Gurne, Farnival, Fitzgerald, Mortimer, Sackville, Torberville, and Rivers. In 1203 Wm. Mortimer and Wm. Martel were placed in charge of the castle, which was provisioned afresh, and payment was ordered to the garrison through the chamber.

The cares of John were unavailing. Normandy was about to fall. Chateau Gaillard after nearly a year of siege, Rouen after a stout resistance, Falaise and Caen, and the other strongholds of the Norman dukes, were now in the hands of France, and the Arquesons received only the sad honour of being the last to surrender. In 1204 Arques became French territory, but the castle had never succumbed to an assault.

The change, however grateful to the inhabitants, who entered upon a career of many years of peace, was fatal to the fame and glories of the castle. The castellan became a mere collector of revenue, or was occasionally called upon to compose the disputes of the local clergy. Before ninety years had passed, the Norman garrison was reduced, and so many castles dismantled that one alone—that of Arques—was preserved in Upper Normandy. In the meantime it had been visited in 1273 by Philip the Hardy, who there confirmed the privileges of Rouen, according by Philip Augustus in 1207.

In 1348, under Philip of Valois, its garrison was but four men-at-arms and twelve archers; but in 1355, when the designs of Charles the Bad, of Navarre, drew the attention of King John to his Norman frontier, Arques was directed to be put in order. The keep was to be repaired, one of its turrets loaded; and mention is made of the king's chamber within its walls. Timber was brought in from the forest, the drawbridge newly planked, the chains and ropes renewed, the working gear greased, the stables put in order, the well-ropes examined, the loops and windows repaired, and the tiled roofs made good. Nothing, however, followed this alarm. The dangers of France came on the side of Grecoy and Poitiers, and King John was shortly afterwards a prisoner in an English keep as strong as Arques, and at almost of the same age.

Under the treaty of 1359, for the liberation of King John, which, however, was not executed, Arques was one of the fortresses to have been delivered up to England.

In 1366 Charles V. confirmed the privileges granted to the people of Arques by John Lackland, in 1203. In 1378-80 the accounts witness to masons and carpenters having been employed at the castle. Buildings, destroyed by fire, were replaced. Caen stone was brought by sea for the repairs of the walls. Much was done to the

Keep or Great Tower and to the prisons, and a garrison was retained in the place.

The next event in the history of Arques, followed upon the English invasion of Normandy under Henry V., and the fall of Rouen in 1419. One month after this Arques opened its gates to the Duke of Clarence, and received the English Philip Leche as its captain, who in a short time was succeeded by John de Baskerville, and his lieutenant, Peter Lee, under whom the castle was once more put under strict military discipline. Ralph Boteler, of Sudeley, knight banneret, was their successor, and the garrison was reduced from ten to four men-at-arms, and from thirty to twenty-six archers, and the latter number was again reduced to twelve, in 1428-9. The prospect of an attack on Rouen caused these figures to be somewhat increased, and Gervase Clifton, Boteler's officer, raised them to fifteen and afterwards twenty men-at-arms, half horse and half foot, and sixty archers.

After the death of Henry V., when the time came for the expulsion of the English, the peasantry of the north rose in arms, but amidst the general fall of strong places, Arques held firm. Henry VI. was there in 1435, and there signed a charter in favour of the Archbishop of Rouen. Talbot came to Arques in 1442, when he besieged Dieppe, and trusted to that fortress to protect from the French army the vast siege preparations which he had made. John Norbury was then its captain, replaced by Sir Walter Devereux, in 1445.

The castle of Arques was one of the strong places agreed to be surrendered to Charles VII. upon the fall of Rouen in 1449. Meantime, however, the garrison of Dieppe had turned the tables, attacked Arques, taken the Bel by surprise, and laid siege to the castle, which, however, surrendered, not to their force, but in virtue of the capitulation of Rouen.

The castle now had rest until, in the reign of Louis XI., this side of France was invaded, in 1472, by Charles the Bold. The duke burned the suburbs of Dieppe, and made a demonstration before Arques, but could do nothing more. In 1485, Charles VIII. visited the castle, and the Sire de Lardinieres claimed the cup out of which he drank as a perquisite of his fee, held by the service of guarding the outer gate of the Bel of the Castle of Arques.

Francis I. visited Arques in 1544 and 1545, but does not appear to have signified his visits. Under Francis II. Arques was employed as a means of putting down the Huguenots in Dieppe, and in consequence received Catherine de Medicis in 1560. Two years later, Francis being dead, the men of Dieppe rebelled, and drove back the Duc de Bouillon into the castle of Arques; an act which was followed by a series of local skirmishes about the town and castle, with various success, the results of which were swallowed up in the events of the reigns of Henry III. and IV.

1584 found the castle held by Martin d'Epinau, a strong Catholic and member of the League, while Dieppe, still Huguenot, declared for the king. Aymar de Chaste, captain of the port, disguised a body of picked men as fishermen, and sent them laden with fish for sale to the governor. Thus equipped, they were allowed to enter the Bel and the outer ward of the castle. Once within, they killed the guard, rushed through the inner gate, and in a few minutes had secured the place for the king. Henry III. died in 1589.

Henry IV. took up his quarters at Dieppe, where he awaited the tardy and stunted aid of Elizabeth. Mayenne, in command of the army of the League, 30,000 men, hovered on the confines of the town, at about two miles' distance. Henry, holding Arques, established entrenched lines on the high ground, east of the castle, between the river and the forest, but within shot of the walls, which were armed with several pieces of cannon. His troops were placed within the lines, and there awaited the enemy.

It was long, and without the aid of a map, tedious to tell how Henry fortified Le Polet, by Dieppe, and outmanoeuvred Mayenne, until, on the 21st of September, 1589, meeting him on the narrow space between the forest and the river, and under the guns of the castle, he succeeded with less than 8,000 troops in vanquishing the Leaguers with 30,000. The guns of the castle assisted in the battle, and, with the exception of a trifling affair three days later, this was the last and most glorious conflict in which that ancient fortress took part. From this time Henry's cause was, on the whole, successful, and it was from Arques that he wrote

to the Duc de Crillon those often-quoted words,—"Hang thyself, brave Crillon: we have fought at Arques, and thou wast not there!"

In 1596 the castle was the seat of a severe endemic, and was cleaned out at a considerable expense.

Louis XIV. visited the castle in 1647, then nine years old, from Dieppe; but it was no longer a military post of importance, and two archers, to open and shut its gates, formed the whole garrison.

As national property it was sold in 1793, and after various transfers, and a narrow escape of destruction for the value of its materials, it has come to be regarded as a relic of the past time worthy of our respect. It is, however, still in private hands.*

THE PARIS EXHIBITION.

We have before us a score of letters as to the recent award of medals, mostly complaining and protesting. Some of the complainants have made themselves heard through other channels: little public good will be done by repeating the protests. We have already said that the English jurors have not excited our admiration by results. The English sculptors as a body withdrew all their works from competition. Messrs. Powis, James, & Co. think themselves excessively ill-treated by the award of a bronze medal made to them for their wood-working machinery. "It is not in accordance with the comparative novelty in design, workmanship, and utility of the machines exhibited by us. We applied for and occupied our space with the full belief that we were going to compete fairly with the world in our particular tools; but the result of awards clearly shew that there has been most unfair partiality or want of ability to decide the respective merits on the part of the jurors. We cannot understand why no gold medal should have been given for wood-working machinery in the British section, whilst the Grand Prix and two gold medals were awarded for engineers' tools in the same class and group of that section. We consider that there have been greater recent improvements in wood-working machinery than in almost any other kind."

Messrs. Dent & Co. protest, too, against the decision; and so with others. The Rochdale Pioneers claim the prize of 4,000*l.* offered for the organization best calculated to promote the welfare of the working-classes, and think themselves shamefully used because the Commissioners, overcome by the difficulties which surround the adjudication, determine on making no award. Some of the French exhibitors are also calling out for explanations. On the other hand, several of our advertisers, Mr. Thomas Peake for example (*Tools*), Clark & Co. (*Revolving shutters*), are proud to find that medals have been awarded to them, and would have it made known.

The very early intimation that we gave as to the award of medals to English architects has been seen to be correct.

ACCIDENTS.

An extensive conflagration has happened in Bermondsey, reducing to ruins property valued at several thousand pounds sterling. The disaster occurred on a piece of ground in Riley-street, on which were erected the manufacturing premises belonging to Mr. Benjamin Wells, builder and joiner. Before the fire was extinguished the five floors of the factory were burned out, the roof destroyed, the timber in the yard severely damaged by fire, &c.

At Sandbach, during a thunderstorm with rain, the water rushed down Hawk-street in such large quantities that the main sewer gave way, and undermined a house. A hole first appeared in the middle of the street, and rapidly increased, till the foundation wall of the house gave way and brought the whole side of the house with it. The inmates escaped, but articles of furniture were carried away. The sewer was built two years ago, and about a month ago a coal-cart, with a full load, got fast in a hole. The same cart ran a very close risk of getting in again while passing over it just a few minutes before the giving way, but this time unloaded. Mr. Stringer (who was contractor for the work in the first instance) procured a number of men who, by placing tim-

bers, prevented the damage extending to the next door house, the tenants of which had turned out. On the same afternoon as this happened, a wall fell at the Sandbach Baths, which occurrence, however, had nothing to do with the sewerage, but was due to the stoppage of a drain and the heavy rain.

One of the carpenters engaged on the cupola of Zion's Church, on Ohio-street, Indianapolis, fell from the spire while engaged in raising the framework of the steeple. He stepped up a ladder about 115 ft. from the ground, missed his foothold, and in falling struck upon the roof about two-thirds of the way from the comb to the eaves, breaking through the slate tiles and sheeting, and bouncing upon the roof of the two-story frame house just west, and thence to the ground. Strange to say, he was not killed outright, but was still alive, although no hopes were entertained of his recovery.

INTERNATIONAL COLLEGE, SPRING GROVE, LONDON.

We mentioned briefly the other day that the first stone of this building, previously described and illustrated in our pages, had been laid. Let us add that the decorations to ceilings and walls in the interior are being executed by Mr. Lovegrove, of Spring Grove; that the grounds are being laid out by Mr. D. Chester, of North-street, Lisson-grove, who presented the *Willingtonia Gigantea* which the Prince of Wales planted; the spade (silver and oak) used on the occasion being supplied by the Messrs. Mappin, Brothers. The furniture and fittings are being supplied by Mr. F. Moeder, of Tottenham-court-road.

THE BRICK CHURCH, ST. SAVIOUR'S, ABERDEEN PARK, HIGHBURY.

THE parochial district, St. Saviour's, Aberdeen Park, in Highbury Grove, London, has been formed co-extensive with the estate of the Rev. Prebendary Morrice, vicar of Longbridge Deverill, who has at his own expense erected the church here delineated to meet the needs of the rising population. The plan of the church is cruciform, consisting of a long chancel, with chancel aisles, a lofty central lantern, and transepts, nave, and aisles, and two porches. It follows somewhat the style of the Early Decorated. The nave has a lofty clearstory. The exterior view is taken from the direction of the main approach. The church stands in a large open plot of ground bounded by the road in front of an incomplete circus of semi-detached houses. It is entirely of brick within and without, and is covered with Staffordshire strawberry coloured tiles; the stonework, which is from the Ancaster quarries, being limited to the tracery of the windows and some of the mullions, the capitals of columns, the corbels, and crosses. Even the copings of parapets and gables are of tile, from Bridgwater. With the exception of the local stocks below the plinths, the whole of the bricks are from Aylesbury—red and buff, with a few grey headers. It presents generally a reproduction of the Early Mediæval work, the bricks being long and thin with wide joints, and a mode of bond has been adopted like that prevailing at Bruges in the old buildings. The peculiarity of it consists in the wide side joints, and in the mode of alternation. The courses are alternate headers and stretchers, but the stretchers are placed, not over each other in their successive courses, but over each other in their alternate courses; whilst the headers come over each other in their bonding throughout. This in itself forms a sort of diaper pattern. The side joints are about 1½ in. wide between the headers, and barely as much between the stretchers.

And this arrangement affects also the design of the diaper patterns, which are confined almost exclusively to the gables and to bands at top of spring of windows, and under the parapets. These diapered patterns and bandings, though somewhat varied, are carried out after the same manner inside as out; and being confined to such salient parts as those enumerated, there is an absence of that striped effect often painfully conspicuous in modern work. But in addition to this, the buff bricks being burnt of clay from the same locality as the red, have a sufficient warmth of tone about them to escape the harsh and startling contrast of colour which

* To be continued.



INTERIOR OF ST. SAVIOUR'S CHURCH, HIGHBURY.

apparently is considered in these days a great desideratum. In all cases where bricks are brought from different localities, and present a strong contrast in colour, it is needful to take the greater care to introduce much more sparingly and cautiously the contrasting colour, whether light or dark, into that to which it is intended to serve as a "dressing." Colours may be blended in almost equal masses; but if they are strongly contrasted there must be a strong preponderance of only one colour relieved, not crudely and recklessly, but delicately and carefully by the others.

The general effect of the brickwork externally is that of massiveness and repose; but internally the largeness of joint both in width and height, following as it does naturally, if not necessarily, that of the exterior, presents an amount of roughness not altogether pleasing. The eye craves for more finish and delicacy of texture for interior work, though this may be purchased at too extravagant a cost. But in the present case the roughness will be nearly, if not entirely, neutralized, when the original idea is carried out of having the whole of the walls diapered in colour, with the brickwork for a ground, in precisely the same manner (though of different

design) as the walls at the east end of the chancel, on either side of the altar.

The bricks measure $10\frac{1}{2}$ in. by $4\frac{1}{2}$ in. by $2\frac{1}{2}$ in., and it may be interesting to know that they cost at Aylesbury exactly the same in proportion to their cubical contents as the common Aylesbury brick, viz., 30s. per thousand, and the moulded bricks, 50s. It will be seen from this that the difference in cost for arches, &c., between brick and the most available stone, would be as about 1 to 6 or 7. The question of the employment of brickwork for churches is important. It is true that internal plaster surface, such as that commonly used in Medieval times, is the easiest and cheapest mode of finish. Plaster is, likewise, even more susceptible of decorative painting; but for arches and other structural features plaster is inadmissible excepting in the case of square soffits built of rough rubble stonework in certain localities; and it is certain that, until decoration can be provided, the baldness and coldness of plaster is less pleasing than the warmth of colouring obtainable by brickwork. Experience, moreover, shows that it is in vain to seek at present for any extensive revival of colour in churches.

The pillars supporting the arches are built of

Staffordshire pressed brick. The smaller shafts generally, both attached and detached, are of Aylesbury brick, with structural bondings. The open parapets of the church are built of tiles made for the purpose. The ceilings of the sanctuary and lantern internally are groined in wood, with ribs and match-boarding for future painting. The bells are hung in recesses outside the western gable. A baptistery, containing a carved and canopied font is formed in the western bay of the south aisle. The pulpit is of polished red and grey Aberdeen granite, with caps carved in white alabaster. The church is built to accommodate about 400 persons. The chief portion is open benched, but chairs are provided in the space at the west end in the chancel aisles. The seats are placed upon a floor of wood blocks, the passages and chancel being paved with Minton's tiles. The chancel is chorally arranged, and a lectern and Litany-desk are provided in the nave. The reredos is canopied in stone with three panels beneath, representing the two SS. John, and the Agnus Dei on a cross, with the Evangelist's symbols round, painted in the process developed by Mr. Gambier Parry. These are from cartoons by Mr. William White, F.S.A., of Wimpole-street, the architect of the church.



ST. SAVIOUR'S CHURCH, ABERDEEN PARK, HIGHBURY.—MR. W. WHITE, ARCHITECT.

NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE.

The annual meeting will be held this year in Belfast, from the 18th to the 25th of September, under the presidency of Lord Dufferin and Clanclyboye, Lord Brougham remaining president of the council.

In the health department, president, Sir James Y. Simpson, bart., M.D., the following special questions are named for discussion:—

- 1.—What measures are necessary to secure efficiency and uniformity in the working of the Sanitary Laws throughout the Kingdom?
 - 2.—In what respects do the registration systems of England, Ireland, and Scotland need improvement? and is it desirable that they should be assimilated?
 - 3.—In what form, and to what extent is it desirable that the public should provide means for the recreation of the working classes?
- The following are also suggested as suitable subjects for voluntary papers:—1. Improvement of the dwellings of the labouring class. 2. The supply of trained nurses. 3. Town and domestic water supply. 4. Infantile mortality.

In the department of economy and trade, president, Sir Robert Kane, F.R.S., the special questions for discussion are:—

Section A.

- 1.—What legislative or other measures can be adopted to improve the relations between landlord and tenant in Ireland?
- 2.—What are the economic results of the continuous emigration from Ireland?
- 3.—Should the Local Government Acts be extended to Ireland?

Section B.

- 1.—Can any measures be taken to develop and extend the manufactures of Ireland?
- 2.—What action, if any, ought the Government to take with regard to railways?
- 3.—How may the extension of the Irish fisheries be best promoted?

There seems reason to expect that the meeting will be a good one.

A STUDENT CLASS AT THE INSTITUTION OF CIVIL ENGINEERS.

WITH a view of increasing the usefulness of the Institution, particularly to the junior members of the profession, it has been decided to create a student class, to take very much the place of that which was formerly the Graduate class, but with certain modifications, so as to avoid the difficulties that previously arose, and to provide those advantages which experience has pointed out to be desirable. It is contemplated to grant, under the control of the council, the use of the theatre of the institution to the students, for supplemental meetings, for the reading and discussion of papers among themselves, and possibly, also, for the delivery to them of lectures upon special subjects, the object of such supplemental meetings being for the advancement in scientific and technical knowledge of the junior members.

Believing it to be of the highest importance that the profession should not be divided, but should remain one united body, having a position and an influence which one united body only can have, the council are inviting the members to unite with them in the endeavour so to extend and enlarge the basis of the Institution as that it shall continue to embrace within it all branches of engineering and all classes of engineers.

PRIZES OF THE PLASTERERS' COMPANY.

The Plasterers' Company, as our readers are aware, devote 25*l.* annually through the "Science and Art Department," towards the encouragement of the art of their special craft. These designs and models are now exhibited amongst the national works sent in competition by the various metropolitan and provincial schools, in one of the galleries at the Department of Art at South Kensington, and in reviewing these designs lately, we named the principal prize-winners in the plasterers' competition; we, nevertheless, now give the complete list:—

1. For an original ornamental corner or angle, suitable for a panel on a ceiling or wall, with a portion of border attached, in any style, to be designed and modelled in plaster, by the competitor. First prize, 8*l.*, R. J. Morris, South Kensington. Second prize, 4*l.*, R. Lunn, South Kensington.
2. For the best model in plaster, from a photograph of one of the designs submitted in competition for the month, in 1866. First prize, 4*l.*, R. J. Morris, South Kensington. Second prize, 2*l.*, E. F. Marsh, South Kensington.
3. For an original design, for an ornamental diaper, either square or lozenge-shaped, suitable for a panel of a ceiling or wall. First prize, 5*l.*, W. E. Mackerness, South

Kensington. Second prize, 2*l.*, F. Longmore, Stoke School.

These prizes were open to all students in the Provincial or Metropolitan Schools of Art, including artisan classes in those schools.

To F. Longmore, Stoke School, honourable mention. A medal also was awarded to another competitor by the authorities of the Department of Art for his corner ornament.

A member of the company writes,—

"It would appear at first sight that credit is due to the head school, South Kensington, for gaining five out of the six prizes; but this is not so, for Mr. Morris, Mr. Lunn, and Mr. Marsh received the greater part of their art-education at the Burslem, Stoke, and Sheffield schools, before they came up to the head school to study and improve themselves."

Other subjects for competition are now under consideration to be offered for 1867-8.

TRANSMISSION OF SOUNDS.

THE ALBERT HALL.

In a recent letter by Mr. Boucicault, pointing out what he calls the "alarming features" of this enterprise, immediately after selecting his own box, for which he had voluntarily agreed to pay 1,000*l.*, the writer makes the following statement:—

"It will be eleven times the size of Drury Lane Theatre, or eight times that of Westminster Hall. A church of ordinary dimensions might stand on its floor; its steeple would not reach the ceiling, which is to be 138 ft. in the clear in height. The human voice cannot fill such a space. But, it may be argued, the new hall, if vast, is designed for performances of vast proportion: the orchestra will accommodate 1,000 exponents. I reply that 2,000 voices singing or speaking together travel no further than one voice. They may fill a certain area more completely with that intricacy of waves which, when very troubles, we call a din; but each voice exerts its own influence on the air, according to its power, and dies away within certain limits. A second voice acts independently and produces its own separate effect, not fortifying the first, but distinct from it."

Without now inquiring whether the hall is, or is not, too large, and is, or is not, likely to be a success, it seems to us that this particular statement by Mr. Boucicault, which has been accepted as truth, is not correct. Waves of sound have been likened to waves of water; and in the case of water, as was pointed out in our last, when noticing Professor Tyndall's lectures on Acoustics, when the crests of one system of waves coincide with the crests of another system, higher waves will be the result of the two systems. Professor Tyndall lays it down as a rule that, if two sounds be of the same intensity, their coincidence produces a sound of four times the intensity of either.

As an illustration of these statements it may have been noticed that the sound of the cannonading during the recent Naval Review at Portsmouth was distinctly heard 150 miles off. Could any one of the guns employed on that occasion have made itself heard there alone?

ANNUAL REPORT ON EDUCATION.

THE Report of the Committee of Council on Education in respect of the year ending August 31, 1866, shows that the number of schools inspected in the year ending the 31st of August, 1863, was 11,230; in the next year, 11,818; in the following, 12,950; in the last, 13,686. The number of children present at inspection in the four years respectively was 1,092,741, 1,133,291, 1,246,055, and 1,287,604; the average number attending the schools, 1,008,925, 1,011,134, 1,057,745, and 1,082,055. The reduction in the number of pupil teachers continues, the last four years' returns showing 13,849, 11,712, 11,383, and 10,955. A considerable part of the apprenticeships never get beyond the third year. The supply of school-mistresses is maintained, but the masters are falling short. Mistresses are cheaper to employ than masters; and the committee of council regard the increased employment of mistresses as closely connected with the extension of grants to the smaller and poorer parishes of the kingdom. Of 11,635 parishes with less than 1,000 inhabitants, and containing together a population of more than 4,000,000 at the last census, only 2,099, or 2 in 11, had any share in the annual Parliamentary grant "for the promotion of education among the labouring classes." The average income of a certificated schoolmaster is shown to be 87*l.* a year, the majority living rent free besides. The report acknowledges that the general results of the examinations continue to show too backward a state of instruction. Only 664,000 day scholars were qualified by the 200 attendances within the year,

and were judged by the managers to be qualified by attainments for examinations at all, where 803,177 were qualified by age. Only 97,364 passed without failure above Standard III., where 264,231, being over ten years of age, ought to have done so; the difference marking nearly two-thirds passing out of school to work with less of elementary knowledge than Standard IV., denotes,—writing from dictation a sentence from a more advanced book used in the school, reading a short paragraph from the book, and working a sum in compound rules (money). Arithmetic continues to be the subject in which least success is obtained. A number of schools selected from all districts as fairly representative examples show these results:—In 643 boys' schools, with an average attendance of 71,196, 57,086 (80 per cent.) were examined in arithmetic, and 45,584, or not quite 80 per cent., passed; and in 643 girls' schools, with an average attendance of 56,220, 39,589 (70 per cent.) were examined in arithmetic, and 29,931, or 73 per cent., passed.

FRENCH WORKMEN.

In a report rendered to the Foreign-office this year, M. Julian Fane, secretary of embassy at Paris, speaks of wages of skilled artisans in various towns in France as ranging from 5*l.* to 10*l.* a day; for inferior workmen, from 2*l.* to 3*l.*; for workwomen in clothing establishments, from 2*l.* to 4*l.* or 5*l.*; for children, from 1*l.* to 2*l.*. The general rate of money wages in France may be said to have increased about 40 per cent. in the last fifteen years, but the rise in money wages has been accompanied by a very considerable rise in the price of the ordinary articles of consumption and in rent of lodgings. So that the improvement in the position of the labourer, meaning his power to supply himself with the necessaries and comforts of life, has been far from commensurate with the rise in the money value of his labour. Still, the relative proportions in which money wages and the price of commodities have risen leave a margin in favour of the former, and to this extent there has been a rise in real wages, enabling the labourer to feed, lodge, and clothe himself somewhat better than he could fifteen years ago.

There is scarcely a trade in France whose members have not combined in the last three years for the purpose of increasing the rate of wages and diminishing the duration of labour; and their efforts to this end have usually met with success. The employers, for the most part, assert that the law has proved to them an unmitigated evil, subjecting them to the tyrannous coercion of the employed. Various forms of the co-operative system are in course of trial in France with a view to prevent or lessen this collision of interests. The association of masons, for instance, is one that has met with remarkable success; some of the workmen are shareholders, and others are engaged as ordinary labourers and have no share in the profits, while some members of the association are simply holders of capital. In other establishments the workmen are allowed to share in the profits of the business by means of rewards or prizes allotted to them, or to the more worthy among them, by the proprietors at the end of the year, or by facilities for procuring food, clothing, lodging, and education for their children on advantageous terms.

FROM WALES.

A RESIDENCE is in course of erection for Mr. Chas. W. W. Wynne, M.P., at Meifod, Montgomeryshire. The site selected is one of the most beautiful in the vale. The contract for the house alone, not including the heating apparatus, stabling, lodge, &c., has been taken by Mr. John Potter, of Welshpool, for 4,000*l.* The stabling is being done by daywork.

A residence, designed for Mr. Thos. Gill, at Pont Aedilad, is now in course of erection. The contract has been taken by Mr. George Clark, of Chester, for 1,700*l.*; but this sum does not include chimney-pieces, bells, haulage, stabling, &c.

The church at Pwytherin, Denbighshire, is undergoing restoration. The contract has been taken by Mr. Owen, of Tremerchion, for 600*l.*

It may also be mentioned that the church at Penmachno, in Carnarvonshire, has been rebuilt. The old foundations were followed, and the roof,

a type of the church roofs in Wales, has been reproduced. The material of the walls was that furnished by the country, blue stone and a peculiar kind of limestone, which served as quoins. The windows and doors were of freestone.

A vicarage also was erected in the same place, the contractor being Mr. Owen Jones, of Penmachno. The contract was taken for 1,200l.

A mansion for Mr. Joseph Gill, of Trewern, Gobowen, near Oswestry, is just completed, the materials for walls being white brick and Rusbon stone. The contracts were taken by Messrs. Barnsley & Sons, of Birmingham, and amounted to over 9,000l.

The following tenders were sent in for building residence at Llanychan, near Ruthin, North Wales, for Mr. John Taber:—

George Clark, Chester	£5,802	0	0
W. & J. Webb, Birmingham	5,623	0	0
Barnsley & Sons, Birmingham	5,388	0	0
Abel Roberts, Llandudno	4,313	0	0
Samuel Owen, Ruthin	2,745	0	0

The contract was let to Messrs. Barnsley & Sons. The lodge, gates, stabling, &c., are not included in the above contract.

A residence near Denbigh, for Mr. Thomas Gold Edwards, has recently been completed. The walls are of pressed red brick, fret-work of blue brick, dressings of doors and windows of free stone, and quoins of free stone. The contracts were executed by Mr. Bellis, of Chester, and amounted to about 2,800l.

Llymeirchion, the residence of Mr. P. H. Chambers, the Iligh Sheriff of Denbighshire, is undergoing alterations. The contractors for the first portion of the contract were Messrs. Barnsley & Sons, of Birmingham, and amounted to 2,000l.

The works at present being carried out are done by day-work. Messrs. Barnsley & Sons supply some of the materials.

Tenders for building summer residence at Colwyn, on the Chester and Holyhead line:—

Robert Williams, Rhyl	£1,840	0	0
A. Roberts, Llandudno (accepted) ..	1,025	0	0
Robert Davies, Rhyl	925	0	0

A shooting-box, &c., has lately been completed at Havod Eilwy, about eight miles from Denbigh. The contractor is Mr. George Clark, of Chester. The cost of the works will be about 1,500l.

Some time ago it was determined to increase the accommodation at the North Wales Lunatic Asylum; for this purpose two wings were added, one for male and the other for female patients. These wings, with some alterations in the original structure, increased the accommodation 200; and cost, with new kitchens, store-rooms, residence for medical officer, &c., a little over 8,500l. The old house accommodated 200 patients, and was erected at a cost of 17,000l. or 18,000l. It is Elizabethan; the material being limestone, with Bath stone dressings. The new wings are in character with the old, but have freestone from the Cefn quarries—a better weather-stone than Bath. The contractors for the wings were Messrs. George Clark & Son, of Wootton Waven. The head of the firm has since died; Mr. George Clark, of Chester, carrying on the Welsh portion of the business. In this as in all the other works above mentioned, the architects were Messrs. Lloyd Williams & Underwood.

ROADMAKERS' LIABILITIES.

Hyams v. Webster, 15 *Weekly Reporter*, Q.B., 619. Various questions have from time to time arisen as to the precise nature of the liability incurred by a contractor taking up, or altering, or repairing, &c., public roads. As a general rule, where the work is properly authorized, he can only be held liable for any injuries to goods or property that may result from the state of a road under repair, if he has been guilty of some negligence. If he has taken all usual and proper precautions to avoid the occurrence of accidents, he cannot be held liable to compensate for the damage that the state of the road may occasion.

In *Hyams v. Webster* it was contended that the duty of a contractor who constructs a sewer under a highway is not terminated on the finishing of the sewer and the reinstating of the road, but that he must watch to observe if there is any subsidence or other result from the works which may be detrimental to the road, and repair such subsidence, &c., from time to time. The defendant in this action was a contractor under the Metropolitan Board of Works, and he properly constructed a sewer under a highway, and then filled in the ground and reinstated the road, and in so doing used the usual means, and, in short, was not guilty of any negligence. The road subsequently subsided in consequence of the construction of the sewer, but it appeared in evidence at the trial that some such

subsidence always takes place after works of that nature. The plaintiff brought this action against the contractor to recover compensation for the effects of a fall which was caused by the subsiding of the plaintiff's horse in a hole in the road in question. The only point in issue was whether the contractor was under a legal duty to keep the road from subsiding after he had done all that was possible to reinstate it after the sewer was completed. The Court, after taking time to consider, decided that the defendant was not liable. This seems almost necessarily to follow from the finding of the jury that there had in fact not been any negligence on the part of the defendant. The case is not very important in its purely legal aspect, but as so much work in the streets of London is done every year by contractors in the position of the defendant, it is worth while to notice the case, as showing very well when such contractors may feel that they have fulfilled the duties cast upon them by the law.—*Solicitors' Journal*.

THAMES STEAM-BOATS AND THEIR DANGERS.

You will perhaps save a life or two if you can spare space for a few lines to call the attention of the proprietors of the river steam-boats to the clumsy and dangerous mode adopted in the embarkation and landing of passengers. As a general rule the only part of the boat in contact with the pier is the corner of one of the paddle-boxes. The landing-rails are seldom used, and passengers pass over an opening generally more or less dangerous. The young folks appear to like the fun of the thing; but to some of that numerous class who, like myself, are too old and fat to indulge in gymnastic exercises, the consequences may be serious.

Surely some contrivance could be suggested to secure, at little trouble, a safe passage. If an iron-railed footway were firmly attached to the boat, and could be lowered at a moment's notice in the same way in which the chimneys are made to descend, there would be no excuse for negligence. At all events, as things are at present managed, an accident must happen sooner or later, and with that impression I venture to submit the subject to your notice.

J. O. HALLIWELL.

ASSISTANT ENGINEERS' AND DRAUGHTSMEN'S BENEVOLENT ASSOCIATION.

Sir,—As there is every possibility of the above society being set on foot, I should like to ask Mr. R. M. Bancroft, as the promoter, what he thinks the amount of subscription per member would be? I would also suggest the desirability of opening branches throughout the country. I think, if Mr. Bancroft would explain the advantages that would accrue to members joining such an institution it would incite others to take it up, and so help the society forward more speedily.

T. T.

Another correspondent says, How is it intended to deal with country subscribers?

STONE v. BRICK.

THERE are few facts connected with architectural progress more satisfactory to contemplate than the substitution of stone for brick as a building material, not only in public but in private buildings, and in those parts of the country where stone is not indigenous as well as in London. This fact is rendered still more remarkable by another, namely, that a very few years ago many architects, especially the younger members of the profession, were strongly and zealously advocating, by words as well as by designs, some executed and some only on paper, the use of "local materials;" brick in the clay districts, stone in the stone districts, timber in the woodlands; and which principle, if carried out to its extreme, would compel us to build ships of oyster-shells and fish-bones. It may be as well to put forth a word or two of encouragement to those proprietors and architects who are using and advocating the use of stone in these south-eastern cities and counties of England.

In doing this we have to consider (1) the question of appearance, (2) of solidity, (3) of economy, and (4) of the moral effects on producer and consumer.

1. The first question, if a question at all, might be dismissed almost with a single word, or even an unspelling interjection; and in answer to those who like to see bright red bricks, we can point out the much more sightly effect of

red granite and sandstones now in use, which in a smoky atmosphere do not attract the dirt as do porous bricks in a very few hours after erection. With regard to the appearance of cement as compared with stone, when every one can distinguish it by its muddy texture, and when about two years old by its sooty blackness.

2. The solidity of stone may be tested before its removal from the quarry; that of brick not practically till it has been not only made to form part of a structure, but has had the weight of floors, girders, and other superstructures imposed upon it, to say nothing of the superior bond acquirable in stonework. In military works the strength of resisting the severe dynamical tests to which they are exposed is found to be in proportion to the largeness of the materials of which they are built and the simplicity of their construction; for while the Egyptian barracks and other fort works, consisting of 6-ft. granite walls, supporting, by medium of 18 in. by 6 in. oak joists, 12-in. floors of the former material, are shell and shot-proof, our brick-material towers are not at the present day worth a single pinch of snuff.

A careful examination of buildings of different ages, built in the two materials whose relative merits we are discussing, and this only, will show us the advantage that stone has of resisting age, or other destructive influences. Bricks, tiles, glass, and earthenware are as much subject to decay, and more so, than stone, marble, and granite. The plate, or cup, or glass that breaks when we let it fall on the floor, breaks where it was beginning, and hitherto imperceptibly, to decompose.

3. Taking a broad view of economy, there is more stone under the super-soil than there is clay. And clay is taken from those lands whose surface is already quite near enough to the level of the sea or the river. And we sink our basements to an unwholesome depth to acquire the earth to build our houses with, instead of helping to level rocky impediments to agriculture on the other side of the island. Again, we shall, many of us, live to see brick houses that we can remember being built, sink to half their original value from the decay of their materials, and the unequal sinking of their foundations. This latter condition can be prevented with a stone construction; not so with brick. Where are the brick houses, or at least nine-tenths of them, erected immediately after the fire of London? The answer to this question will show us that brick is barely fit to hastily rebuild an old city after a general conflagration, when there is not time enough to consider the systematic rearrangement of its streets.

4. The disappointing beggarliness of many of our supposed interesting towns drives many an expectant visitor to them to spend his excursion-day in frivolous and vicious amusements. It is an indisputable fact, and the cause is equally indisputable, that the ugliest towns contain the greatest proportion of the haunts of vice. One who has visited a dozen important towns in different parts of England will be able to confirm this assertion.

When we enter an externally clean-looking building, we can always perceive much more clearly whether its internal condition in that respect agrees with its external. But we enter our dingy brick house, upon the exterior of which our eyes have been fixed since we turned the corner of the street or square in which it is situated, and do not perceive half the possible dirtiness of its interior. And we all know the connexion between cleanliness and morality, and have herein already discussed the relative superiority in that respect of stone as a building material. And thus much for the moral effects of the use of this or that material as regards the consumer. It remains only to consider their effects as regards the producer.

A stone-quarry is a very interesting sight, and worth going to see, whether or not at the time that the different operations of removing the stone are in progress; and there is nothing offensive or unhealthy either to the spectator or the workmen employed.

A brick-kiln is both unwholesome and nauseous and dirty. Stone-quarrying is instructing and elevating. Hugh Miller's "Old Red Sandstone" was written by a quarryman. When is our brickmaker's work on geology going to make its appearance? The relative cleanliness, enlightenment, and morality of the two classes of workmen—the natural result of their respective employment—is too well known to need investigating; we shall find a very correct portrait in

"Bleak House" in the brickmaker of St. Alban's. The highest summit of the working bricklayer's ambition is to be a master builder—little more than a mere capitalist: there is now nothing in his craft to raise him beyond this. The working mason, on the contrary, will, independently of his connexion with other trades, find ample opportunities in his own of developing the genius of the sculptor. S.

AN AMERICAN VIEW OF THE WATER SUPPLY OF LONDON.*

COMING to London and modern times, we see this great city, with nearly three millions and a half of inhabitants, embarrassed not only in the quantity, but in the quality of her water supply. With five times the population of Philadelphia, she has in the river Thames, "the great river" of England, a supply, flowing over Teddington Weir, of just about half the volume discharged over Fairmount dam from the smallest of our two great rivers—the Schuylkill. She would literally threaten to drink up that "great river," were she not, in connexion with fifty-six other towns upon its banks, fast rendering it utterly unfit to be drunk. The degree of mineral impurity in 1854 was represented in figures as 15.53 degrees. It ranged in 1863-65, from 22 to 16 degrees, there being an improvement latterly, arising, we suppose, from a change in the sources of supply of some of the companies. The organic impurity, although increasingly perceptible to the senses, is not represented in the analysis. The mineral impurity of the Schuylkill at Fairmount is put at 6 degrees; and our chief engineer is every year reminding the authorities in his reports of the rapid increase of the sources of impurity to this river from the sewage of towns, and the filth of numerous factories of every kind, constantly multiplying on its banks.

As "the great river" of England is becoming hopelessly foul, and as artesian wells are totally inadequate to the wants of the city; as it is idle to look to surface drainage, or to streams in any of the densely-populated regions around the city; as even the Severn river, in its lower course, is almost as bad as the Thames, the question forces itself upon the authorities and property owners of the great metropolis, how this vital necessity is to be met? Is the growth of London to be arrested and its population finally scattered? and shall those melancholy anticipations of the essayist, with his famous New Zealander musing on the broken arches of London Bridge, already begin to cast the shadows of a cold reality upon the hearts of her surging and swelling millions? We seem to have found the limit of England's coal supply. About the time she has burned up all the coal she can come at, will her city populations have swallowed or hopelessly corrupted all the drinkable water within their reach?

English engineers are answering the question very hopefully for London and other great cities on the island. Far away among the remote and desolate hills of Northern Wales, where the damp winds from the Atlantic impinge upon the rocky walls, and first deliver their heaven-distilled treasures for the use of the inhabitants of earth, 171 miles from the half-famishing, half-poisoned millions of London, wise and skilful men have fixed the probable future location of the pure supplies which are to send health, comfort, and cleanliness through the streets of the metropolis. Here, the limpid streams, which form part of the head waters of the Severn, are depended on to furnish 200,000,000 gallons per day, or 50 gallons to each of the present inhabitants, with the chance of increasing the supply as it may be needed. The total cost of these great works, with the long range of aqueducts, is put at 8,600,000*l.*—not an enormous sum when the vast nature and utility of the enterprise is considered. A gala day, indeed, would it prove for London when such a gift was put in her keeping,—an omen of better days and of true advance to the corrupt, festering masses of her poorer population. Two millions of dollars' worth of soap alone would be saved each year by substituting the soft water of the hills for the hard water of the Thames River in washing the clothes of the Londoner.

A truly grand and comprehensive scheme is at the same time broached by these English

engineers, which proposes to supply Liverpool, Leeds, and a score of Northern towns, from one and the same undertaking. Copying, doubtless, the very successful experiment by which the pure Waters of Loch Katrine are brought into Glasgow, these engineers propose to apply the pure and abundant waters of two lakes in Cumberland and Westmoreland to a similar source. The mountainous ranges of these counties face seaward, and the regions showed in the years 1845-53, the extraordinary average rain-fall of 140 in. per annum; four times the average in this vicinity. Over the area drained by these lakes, there should, therefore, be an average daily drainage, allowing for evaporation, of 550 millions of gallons. From this immense store, in positions elevated from 400 ft. to 700 ft. above tide, it would be a simple problem to furnish those low-lying towns with a daily supply of 181 million gallons in the aggregate. The cost of the combined works would be 12,000,000*l.* sterling, the annual revenue being estimated to exceed interest and expenses of every kind.

CHURCH-BUILDING NEWS.

Wells.—A reredos has been presented to St. Cuthbert's church by the Freemasons. The new reredos is executed entirely of Caen stone in the style of the fifteenth century, which was adopted to harmonize with that of the church. The subject chosen for illustration was Our Lord's Supper. The design was accepted by the committee, and a model of the work was exhibited at the Royal Academy last year, and on the opening of the Paris Exhibition, Mr. Forsyth sent it with other of his works there. The permanent work, as a whole, is now in its proper position in the church of St. Cuthbert. The work is divided into three compartments, but the subject is unbroken. In a niche on the south side is a sculptured figure of St. Cuthbert, the patron saint of the church, and in a corresponding niche on the other side is a statue of St. Andrew, the patron saint of the cathedral. The sculptures are inserted in three recesses, arches, or canopies, surmounted by carved crocketed finials and tabernacle work, the spring of each canopy being adorned with carved angels bearing emblems of the Crucifixion. The sculptor, Mr. Forsyth, was assisted in the architectural design by Mr. W. Smith, of London. The whole of the chancel has been laid with Minton's encaustic tiles, graduating from comparative plainness in the west to more elaborate in the east. The steps are of dark lime, polished. Another addition to the chancel is the polished oak communion-rail, supported by four standards of hammered iron enriched with brass. There are also two side screens of hammered iron, by Mr. Cornell, of Cheltenham. Mr. Forsyth, who is a member of the craft, has executed the sculptures at cost price, viz., 250*l.* (the price to other parties would have been 350*l.* or 400*l.*), the whole of which has been provided by Freemasons. The expense of the extra work, the new altar-rail, side screens, &c., was between 150*l.* and 200*l.*, and this has been done by general subscription.

Wolverhampton.—The committee for erecting St. Jude's Church, Wolverhampton, have selected the design submitted by Mr. G. Bidlake, of Wolverhampton. The site of the church is on the Tettenhall-road; the proposed accommodation, 812; the outlay about 4,000*l.*

Wath (Yorkshire).—The chief stone of the cemetery at Wath has been laid. The architect is Mr. J. D. Webster.

Sharrow (Sheffield).—The corner-stone of the church now in course of erection at Sharrow has been laid by the Archbishop of York. The church is one of the seven proposed to be erected in the town by the Sheffield Church Extension Society, and it is being built upon a piece of land near the main road to Cherry Tree-hill. Messrs. Blackmoor & Mitchell-Withers, of Sheffield, are the architects. The cost will be about 4,000*l.*, exclusive of boundary walls and heating apparatus.

Llanbrynmair.—Efforts have been made to build a church in the lower part of the parish. The ground for the site has been given by Sir W. W. Wynne, bart., with the addition of 100*l.* grant to the building fund. The total cost will be about 1,000*l.* The design and plans for the building have been drawn by Mr. J. W. Poundley, Black Hall, Kerry. The contract for the building has been taken by Mr. Harrison, builder, Montgomery.

Tilbrook (Beds).—The church here has been

re-opened. The wood screen has been displayed by the removal of the paws, and restored by the care of the Bedfordshire Archeological Society, as a brass plate on the back records. This work has been confined to the effective preservation of the loosened structure, with the addition of such few pieces only as were requisite to make it whole. No re-painting has been allowed, and the new work is clearly distinguished from the old. All the south wall has been renewed, with the upper part of the east nave wall and the northern clearstory. The old work has been imitated by the alternate use of red and yellow stone, and the gable cross reproduced after the fragments of the old design. The nave and chancel roofs are entirely new; the principal timbers, of oak, moulded, with traceried spandrels and angels alternately. The stone corbels represent angels in the nave and natural foliage in the chancel, together with shields carrying the arms of Lord and Lady St. John, the bishop, and the rector. The east window, of grisaille glass, with arms of the Passion in the tracery, is the gift of the Duchess of Manchester. A memorial window in the south chancel is by Mr. Wailes, and contains representations of the Crucifixion, the Holy Women at the Sepulchre, Mary at the Feet of Jesus, and Christ blessing the little Children. A pulpit of Caen stone is the gift of Mr. A. A. Young, of Orillingbury; it is enriched with foliage and serpentine shafts in the panels. The reading-desk, of oak, was given by Miss A. Young, of Bisleigh, and the window in the tower by the Rev. R. Barnes, the rector's brother-in-law. The tracery of the new reticulated windows in the south wall was presented by the Rev. B. G. Bridges, of Blackney, Lincolnshire. The whole of the church is re-seated in oak. The altar-rails are of oak and wrought iron, and encaustic tiles enrich the floor. The architect was Mr. W. White, of London. Mr. J. Wilson, of Kettering, was the contractor; and Mr. James Hudson the foreman of the works. The total cost of the restoration is about 1,400*l.*

Leighton Buzzard.—The new church of St. Andrew at Leighton Buzzard has been consecrated. It is situated at the extreme north end of the town, a locality in which both a church and a school have been long wanting. The church is of the style of the latter end of the thirteenth century, with a French element introduced. It consists of nave, north and south aisles, chancel, vestry, organ chamber, and north-west porches. The extreme length of the building is 110 ft., the width being 74 ft. The nave and side aisles are 66 ft. long and 50 ft. wide. The tower is placed at the north-west corner of the building, and, with the spire, is 110 ft. high. The materials used in the construction of the building are the local sandstone with Bath stone dressings. All the columns are of blue Pennant. The floor of the gangway is laid with Staffordshire squares, and the sacristy and chancel with encaustic tiles, manufactured by Messrs. Dering & Hargreaves. The whole of the woodwork, including the pulpit, is of red deal stained and varnished. The pulpit was designed by the architect, and was to have been of stone, with five panels containing seated figures of our Lord and of the Evangelists. The centre panel would have contained the Saviour, and in the other four panels would have been figures of the Evangelists in the act of writing the gospels. The pulpit was actually executed, but some members of the building committee objected to it and it was laid on one side, the present wood one being substituted for it. A similar remark may be made with reference to the reredos, which has also been dispensed with. The timber in the roof is all displayed, and the roof of the chancel is boarded, with moulded ribs and bosses at the intersections. The architect is Mr. J. E. Neate, of Bristol; and the work has been executed by Messrs. Garridge & Holderstock, of Leighton. Mr. Joseph P. Stevens has been clerk of the works. The carving was executed by Mr. Margetson, of Bristol. The contract was for 2,840*l.*, but the total cost will be about 3,000*l.*

Pentonville (London).—The district church of St. Silas, Pentonville, has been consecrated. Recently, through the assistance of the Bishop of London's Fund, an arrangement was made with the Rev. Dr. Courtenay, of St. James's, Pentonville, to secure for this mission district the building lately erected and known as Christ Church, Pentonville. Before, however, it could be consecrated, there remained to be raised the sum of 3,250*l.*, toward which amount the Bishop of London's Fund contributed 1,400*l.*, and since then other friends have given about 1,100*l.*, still leaving about 750*l.* to be raised. The building

* From a paper "On the Water Supply of Our Great Cities," by the Rev. John W. Meers. (Published by order of the Water Committee of the Councils of Philadelphia.)

had been previously opened by license. In addition to this there is a site secured for schools, for the erection of which about 900l. have been raised, and it is reckoned that, for about 700l. more, suitable school premises may be built. It is proposed, as soon as possible, to raise the sum of 750l. still required for the church, and 700l. for the erection of the schools, which are urgently needed.

Weston-under-Penyard.—The parish church has been re-opened, after undergoing a restoration. An erection on the south side, hitherto used as a vestry, has been removed. An ancient south doorway has been opened out, and a new organ-chamber and vestry have been added on the south side of the chancel. The window-frames of former days have been removed, and the window-openings filled in with tracery of the fourteenth century, and some new windows have been inserted. A new chancel-arch and screen-wall have been built of local red stone, and a new sedilia, in the architecture of the fourteenth century, of Forest of Dean stone, has been inserted. All the internal and external masonry has been stripped of the plaster and whitewash, and restored. The chancel has had a new roof. The windows are glazed with tinted glass. Stained glass has been inserted by Messrs. Heaton & Co., of London, in the triple-lighted window in the east end, and a stained-glass window, by Messrs. Clayton & Bell, has also been put in at the west end. The chancel and nave are paved with encaustic tiles. The reredos has been supplied by Mr. Earp, of London. There are open seats of varnished deal in the body of the church, those in the chancel being of carved oak. The architect employed was Mr. G. E. Street, of London; and the work has been executed by Messrs. Collins & Collins, builders, Tewkesbury.

Bredhurst.—The church of this parish, which has long been in a dilapidated state, has lately been restored and enlarged at a cost of between 1,600l. and 1,700l., under the superintendence of Mr. E. Christian, at the sole expense of Mr. T. H. Day, of Frindsbury, father of the present incumbent. The old nave has been pulled down and a new one built, and a new arch now takes the place of the small one which formerly divided the nave and chancel. The chapel on the south side of the chancel, which for years has been separated from it by a lath-and-plaster partition, has been again thrown open, and the east windows filled with stained glass by Messrs. Cox & Son, to the memory of the little daughter of the present incumbent, given by her godmother. The chancel windows have also been filled with stained glass, by Messrs. Clayton & Bell. The floor of the chancel is paved with tiles. The whole work has been executed by Mr. W. Vaughan, of Maidstone.

DISSENTING CHURCH-BUILDING NEWS.

Eastwood.—The Committee for erecting a new Congregational Chapel at Eastwood, Nottinghamshire, have selected the design of Messrs. Bidlake & Tait, architects, of Leicester.

Brighton.—The foundation stone of a Congregational new chapel has been laid in Cliftonville. The edifice is situated at the north-west corner of Ventnor Villas, at the top of George-street. It is being built by Mr. C. E. Kemp, of Brighton, from designs furnished by Mr. Horatio N. Gouley, also of Brighton, architect. The style is Early English, faced with Kentish rag, with Bath stone dressings. There are to be six lancet-shaped windows on the north and south sides of the building; and in the principal frontage, in Ventnor Villas, there will be one large central window, triple-pointed, but divided into four lights; and beneath this window, between the entrances (which are to be north and south of it), will be a piece of fret-work in Bath stone. It is built to accommodate 400 persons on the ground floor. There are to be no galleries at present.

Kidderminster.—The chief stone of a Baptist chapel and schools has been laid here. The new building will be in the Gothic style, and is from a design by Mr. Bidlake, of Wolverhampton. The entrance from the street will be by a flight of steps right and left, opening into a corridor which runs along the front of the chapel, and is lighted by seven small windows. On what may be called the ground floor there is a school-room, 30 ft. by 40 ft., and 11 ft. high, and also four class-rooms of various dimensions. The chapel is above these, and extends further to the rear than the area they occupy. It will be 68 ft. in

length and 40 ft. in breadth. The height from the floor to the wall plate is 22 ft., and the roof rises steeply above, and will be left open in the interior to two-thirds of its height. The platform in the chapel is to be 14 ft. by 8 ft., and the baptistery 12 ft. by 3½ ft. There will be a gallery at one end of the interior 40 ft. by 20 ft., and an organ-loft 24 ft. by 12 ft. Three vestries will be provided. The fabric is to be of red brick and white Alveley stone, intermixed with blue-brick bands and arches. A window will be at the end of the chapel nearest the street. The edifice will hold from 750 to 800 persons. The total cost, including site, is estimated at 2,000l. The builders are Messrs. Scholes & Warrington. Mr. J. Wilkinson is clerk of the works.

Liverpool.—A new Wesleyan Methodist chapel, at Fairfield, has been consecrated. The edifice, which has cost about 8,000l., has been built at the joint expense of Messrs. Daniel and Joseph Leather. The chapel, which stands in Laurel-road, is built in the Decorated style, with windows filled with flowing tracery, each window being of different design, and some of the larger ones having shafts with moulded bases, carved caps, &c. The plan of the building is cruciform, comprising a nave and transepts, with chancel and chancel aisle. The west gable is filled in with a deep sunk arch, moulded and carved; the inner part of the arch being occupied by a large traceried five-light window. The west porch faces Laurel-road, and the chapel is also entered by a porch on the south side. Separate entrances are provided for the transepts, north and south. The transept gables have traceried windows above the gallery level, and a row of three smaller ones below. The walls throughout are built of Yorkshire harpstones, with dressings of Stourton stone. The roof is slated with dark slates, interspersed with light green bands, and ventilators are fixed in the ridge. In the interior the nave is 76 ft. long by 43 ft. wide, with 42 ft. to the highest part of the ceiling, which is wagon-headed; the top part of the roof being shot off, which, it is said, gives an equal temperature and good acoustic results. The transepts are 17 ft. deep and 26 ft. wide, with a gallery in each, supported by brackets. The chancel is 20 ft. wide and 27 ft. deep, and opens into the nave with a stone arch and jambs, moulded and carved. The organ chamber is on the north of the chancel, and the entire east end is occupied by a large five-light window, with tracery and stained glass, continued to the floor by a reredos of Caen stone, with moulded arches, carved spandrels, caps, &c., and polished marble shafts. The floor of the chancel is laid with encaustic tiles. The pulpit, which stands on the one side, is of Dantzic oak, relieved by brown oak pillars, and supported upon a Caen-stone base with shafts of polished marble; and on the other side is the reading-desk, also of Dantzic oak. The chancel is filled on each side with stalls for the choir. The whole of the timber work is pitch-pine. The roof is stained, and is in one span, so as to avoid columns of any kind. The east and west windows are "memorials," stained by Mr. Wailes, of Newcastle. The other windows have opaque cathedral-tinted glass, with white margins. In addition to the chapel there are several vestries, lavatories, &c., and a large school or lecture room entered from the south side, and capable of being used independently of the main building. The design was by Mr. C. O. Ellison, architect, under whose supervision the buildings have been completed. Messrs. Barrongh & Sons were the contractors for the work; and the masonry was done by Mr. Black; the painting, plumbing, and glazing by Mr. Holt; and the slating, plastering, &c., by Mr. Callaghan. The carving was by Mr. G. Shaw, and the base of the pulpit and the reredos by Mr. Stirling.

Redland.—A Baptist Chapel is being erected from the design of Mr. S. Hancock, of Bristol and Newport, architect. The design was chosen out of several others submitted in limited competition. The builders are Messrs. Marquis & Munro. Mr. Hotham is the clerk of works. The design is in the Decorated style of Gothic, and includes the chapel, with transepts; vestibule, with two lobbies in connexion therewith; open porch; chancel, with baptistery underneath and organ recess on one side the same; minister's and deacons' vestries with private entrance, and ladies' vestry with private entrance, and underneath the heating apparatus. An end gallery is also proposed over the vestibule and lobbies, with stone staircases leading thereto. A tower is included in the design, but it is not intended at present to carry it higher than necessary for the

stairway. The principal front faces White Ladies-road, from which the chapel floor will be raised about 3 ft. 6 in., and attained by a flight of broad, easy steps extending the entire length of the porch (26 ft.). A five-light traceried window is intended to be placed in the principal gable, and three-light traceried windows in each transept. The chapel will be further lighted with two-light traceried windows, with gables over same, at the side. The roof of the chapel will be in single span. The seats are proposed to be of pitch pine, and low with sloping backs. The walls of the chapel will be stuccoed, and have a string of encaustic tiles above the pews. The elevations of the edifice will be faced with Pennant stone in random-ranged courses, tucked pointing. The roof will be covered with Bangor slate, alternating in plain and ornamental courses. Cathedral glass, in patterns with two tints, is proposed for the windows. The floors of the vestibule and lobbies are intended to be paved with encaustic tiles. The chapel will be both heated and ventilated by Messrs. Haden, of Trowbridge. The contract has been taken at 5,652l., and it is thought the tower can be completed for about 800l. additional. The chapel will accommodate 580 persons.

Derby.—A new Congregational Chapel is about to be commenced here. Messrs. Bidlake & Tait, of Leicester, are the architects. New Presbyterian churches are also about to be erected from the designs of the same architects.

Greengates.—The foundation-stone of a new Wesleyan chapel has been laid at Greengates, a populous neighbourhood near Apperley Bridge. The style adopted is Early Gothic. The edifice will be entirely of stone, and the roof and fittings of deal, stained and varnished. The size within the walls is 53 ft. 10 in. by 36 ft., and the height from the floor to the wall-plate at the eaves is 17 ft. 3 in. The roof is open nearly to the ridge, and the timbers and bindings are dressed. The seats are low benches, with small doors, and will accommodate on the ground-floor, including the free seats, 360 persons. A small gallery crosses the end of the chapel, over the entrance-lobby, which will accommodate about sixty persons, making a total of 420, all seated. The building is to be heated with hot water, and ventilated. A small vestry is attached to the further end of the building, in the same style as the chapel. The contractors are,—for the masons', joiners', and plasterers' work, Mr. Robert Sugden, of Keighley; for the slaters' work, Mr. Smithies; for the plumbers' and painters' work, Mr. J. Garth, of Idle. The architects are Messrs. Milnes & France, of Bradford. The estimated cost is 1,700l.

Falmouth.—A large building, erected by the Wesleyans at Pike's-hill, has been opened for public worship. The new building is of Gothic architecture. The architect is Mr. Lander, of Bristol; the builder, Mr. Blatchford, of Tavistock. It contains sittings for about 800 persons, and the total cost is 2,500l., of which about half has been raised. The chapel is ceiled internally to the vaulted form of the sweep timbers of the roof, the ceiling springing from a wood cornice to the height of 38 ft. from the floor. At the intersection of the roof is fixed a sun-burner, having fifty jets, the gift of Captain Edmund Hancock, of Falmouth, which illuminates the whole of the chapel, excepting directly under the galleries. Daylight is afforded by three large five-light windows and one large wheel window, all traceried. A neighbouring owner of property has blocked up one of the windows on the outside by some brickwork.

STAINED GLASS.

Farsley.—This church, which has been closed for some weeks, has been re-opened. Five windows have recently been placed in the chancel, in memory of the late Rev. Samuel Marsden, a native of Farsley, known for his missionary labours in Australia and New Zealand, and for the services he rendered in establishing the Australian wool trade with this country. The windows are of stained glass, and are the work of Mr. Wailes, of Newcastle. The subject of the principal window is the "Good Shepherd." The expense of the memorial has been raised by public subscription. The nave has also received the addition of three stained windows at private cost. One of them is to the memory of children of the Rev. Parsons J. Manning, the incumbent.

St. Luke's, Maidenhead.—A stained-glass window has lately been placed in the south side

f the channel of this church. The window was designed and painted by Messrs. Lavers & Barrard, of Bloomsbury. There are two groups in the window, the subjects of which are taken from the Gospel of St. Luke: one from chap. xiii. 47. The woman who had touched the hem of our Lord's garment is represented in a kneeling posture, and confessing to Him that she had done. The other, from chap. xiv. 32, our Lord giving sight to the blind man. This is the first stained window placed in this church.

Michaeldever Church.—The memorial window in this church to the late Lord Northbrook is now completed. The stonework, executed in Bath stone in the Decorated style, and consisting of three lights with tracery, is by Messrs. Newman & Son, of Winchester. The stained glass representing the "Crucifixion" and "Good Samaritan," with the emblems of the Apostles, is by Messrs. Clayton & Bell, of London. Mr. John Wilson, of Winchester, was the architect.

SCHOOL-BUILDING NEWS.

Tusley.—The foundation-stone of the parochial schools for the parish of Tusley has been laid. The first undertaking, after making provision for the newly-appointed incumbent, was the building of a parish church at a cost, it is believed, of from 2,000l. to 3,000l., and the parishioners decided upon erecting a master's house and schools for the education of the children of the poor parishioners. The building, which is being erected by Mr. John Davies, of Lecomister, under the superintendence of Mr. F. R. Kempson, architect, will consist of the master's residence and schools. The latter will consist of two large rooms, one for boys and the other for girls, with cloak-rooms, porch, &c. The building will be composed of native stone, with Bath stone dressings, the interior being of oak. The contract sum for erecting the building is about 800l.

Stanley.—The new school for boys, with the master's house, in connexion with Wellington road, has been opened. The school-rooms are a right wing to the original school-rooms, 46 ft. by 18 ft., and has been built by Mr. Hammersley, from the designs of Messrs. Cooper, architects. The total cost was 457l.

Books Received.

Fouling and Corrosion of Iron Ships; their Causes and Means of Prevention. By C. F. T. LUNG, C.E., London Drawing Association, Delphi. 1867.

Fouling and corrosion of iron ships have been a great trouble in the Navy, and a satisfactory remedy, it seems, is still a desideratum. The chief object of this volume is to advocate a plan brought forward by Mr. T. B. Daft, C.E., and all respects the soundest, simplest, and most practical. The author endeavours to prove that it is in all respects capable of fulfilling the requirements sought to be obtained; but this is a subject we can now enter on.

Alps and the Eastern Mails. By SIR CUSACK RONEY. London: Wilson, Royal Exchange.

A question of the best route to the East is ably discussed. Sir Cusack Roney thinks, as regards the European portion of it, the interest of England ought undoubtedly to lean towards the Simplon, and not towards St. Gothard. Nevertheless, as he remarks, Mont Cenis route, with the summit railway, according to Captain Tyler's calculations, is a gain over the Marseilles route of 291 miles, and of 42½ hours after the completion of the line from St. Michel to Susa. The objections and alterations suggested by Sir Cusack are of important improvements in the great work of communication which connects the two countries with the whole of her Eastern possessions, and with the great commercial centres that lie farther eastward even than Paris. His pamphlet should have attention.

VARIORUM.

Quarterly contains more than usual to attract attention from our special point of view, "Paris" (less as to its buildings, on which millions sterling have been spent in fifteen

years, than its manners and arts), "Cornish Antiquities," "Agricultural Gange" (with their proper condemnation), and "The New Courts of Law." The article in which the latter subject is dealt with is a piece of indiscriminate abuse of all the designs submitted. The writer proposes that the Strand front should consist of a range of houses and shops crowned with gables designed "by a dozen or a score of our best Gothic architects;" that the site should be enlarged so as to take in the whole ground from Chancery-lane to Newcastle-street, and from the Strand to Carey-street; and that for the courts themselves, Gothic architects of proved ability should be invited, without previous restriction of number (twenty-four or even thirty), to confer and settle the general plan of the buildings;—while each architect would assume the initiative in designing his own separate portion, every part might be subject to such critical judgment of the entire number as would ensure the harmonious combination of the whole work." "The initiative of one architect for each court will give that individuality and variety which we have shown to be so essential; while a thorough harmony of effect will be secured through the general co-operation of the architects!" When we add that, according to the writer, there is to be no "design," but that the buildings are to "grow," we shall have made obvious the thoroughly practical nature of the article.

Miscellaneous.

HEALTH OF NEWCASTLE-UPON-TYNE.—Typhoid fever has again made its appearance in the eastern part of Newcastle.

MORTUARIES AND POST-MORTEM ROOMS.—The Marylebone vestry have decided that, in addition to a mortuary-house, a post-mortem examination house shall be built. It is to be hoped the example will be followed.

TUNNELLING ON THE GO-HEAD SYSTEM.—The Californians, who are working through their Summit Tunnel in the Sierra, have accomplished 1,000 ft. of the 1,660 ft. since last September. They not only began at both ends, but sank a shaft in the middle, and worked both ends from that.

BUSINESS AND AMUSEMENT COMBINED.—Pike's new opera house, now being built in Cincinnati, will be five stories high, with a frontage of 170 ft. The lower story is divided into six large stores. There are one hundred rooms on the second-floor, and a concert-hall 70 ft. wide and 128 ft. long. The remainder of the building is divided into rooms for mercantile purposes. The cost of the building will be more than a million dollars, and it is estimated that the total annual rent will amount to 150,000 dollars.

THE FEMALE SCHOOL OF ART.—The first gold medal given by her Majesty, to be competed for annually by the students of the Female School of Art, 43, Queen-square, has been awarded to Miss Alice Manly, for three groups of flowers, painted in *tempora* from nature. The adjudicators were,—Mr. Westmacott, R.A., Mr. Cope, R.A., and Miss Moutrie. Miss Manly has also obtained this year a national silver medal, given by the Science and Art Department. We have before now commended her work.

SALE OF LAND BY AUCTION.—The new Act for amending the law of auctions of estates is to take effect on the 1st proximo. Where sales are invalid in law they are also to be invalid in equity, there being at the present time a conflict between law and equity in respect of the validity of sales by auction of land where a puffer had bid, although no right of bidding on behalf of the owner was reserved. With regard to the rules respecting sales without reserve it is enacted, "And whereas, as sales by auction are now conducted, many of such sales are illegal and could not be enforced against an unwilling purchaser, and it is expedient for the safety of both seller and purchaser that such sales should be so conducted as to be binding on both parties, be it therefore enacted, by the authority aforesaid, as follows:—That the particulars or conditions of sale by auction of any land shall state whether such land will be sold without reserve, or subject to a reserved price, or whether a right to bid is reserved; if it is stated such land will be sold without reserve, or to that effect, then it shall not be lawful for the seller to employ to bid at such sale, or for the auctioneer to take knowingly any bidding from any such person."

GLUE FOR METALS.—A good glue for metals may be made by mixing with sixteen parts of melted glue one part gum ammoniac, and then adding one part of saltpetre acid.

ALUMINIUM BRONZE.—This alloy, in which aluminium takes the place of the tin contained in common bronze, is becoming daily more and more important in the metal trades.

THE CHISEL.—Sir: Can any of your correspondents inform me when the chisel was first introduced into this country? My impression is, that it was in the eleventh century.—FREMASON.

NEW NATIONAL GALLERY ACT.—The New National Gallery Act is issued. Under the former one the Commissioners of Public Works were to acquire land for the enlargement and improvement of the National Gallery by agreement. No agreement had been made with the owners, and it was necessary to provide for the compulsory purchase of the land. Compensation is to be given for the purchase of the parochial schools of St. Martin-in-the-Fields. A copy of the lands required is to be deposited at the office of the Commissioners of Public Works, and to be open to the inspection of the public.

SANITARY INQUIRY AT EPPING.—One of the Government inspectors, Mr. A. Taylor, has been sent down to Epping to make sanitary inquiries in consequence of a complaint made to the Home Secretary to the effect that the sewer authority for the town had failed to properly drain the town, or supply its inhabitants with a sufficient quantity of water. The inspector has heard evidence on the subject, which goes to show that the whole drainage of the town is on the cess-pool system, and that it is surrounded with field-ditches, which evaporate noisome stenches most injurious to the health of the place. An abundant water supply, it is said, can be had in the neighbourhood.

HEALTH OF LIVERPOOL.—The official report by Dr. Trench, the borough medical officer of health, on the health of Liverpool during the March and June quarters of the present year, has been printed. During these quarters there were registered 7,255 deaths in the borough, making its death-rate equal to 29.5 per 1,000 per annum of the inhabitants. This shows a decrease of 2,825 deaths as compared with the corresponding period of 1866, and of 1,141 deaths as compared with the corrected averages of the last ten years. Of the total deaths, 3,558 were males, and 3,427 females, and 3,280, or 44.4 per cent., were children below five years of age. Zymotic diseases occasioned 1,368 deaths, being a decrease of 630 on the corrected averages of the last ten years, and 1,713 on the number registered under this class during the corresponding period of 1866. This gratifying diminution in the range of contagious diseases was chiefly observed in those affections such as typhus, diarrhoea, and small-pox, which are supposed to be either directly or mediately amenable to the influence of sanitary regulations.

WAVERTREE URNS.—The discovery of cinerary urns at Wavertree, similar to those found in the celebrated Derbyshire grave-hills and elsewhere, is referred to in a letter written by Mr. H. H. Vale, of Liverpool, architect. These urns are sun-baked, and not made by the potter's wheel. They are discoloured by smoke, as if burning matter had been put into them. Other finds of a like order in burrows and grave-hills, of pre-Roman and pre-Saxon origin, lead to the idea, remarks Mr. Vale, that "elevated sites were usually selected by the prehistoric races who inhabited this island for their internments, and the existence of Druid stones at Calderstones, upon which Sir J. Y. Simpson reports the indications of emblematical circles, and the finding of these urns at Wavertree and Roby, proves that this district of Lancashire was inhabited ages before the arrival of the Roman legionaries upon our shores. It is a peculiar feature of these ancient barrows that the British internments are frequently found underneath those of the Saxons, leading one to suppose that the places of burial were consecrated, and had been from time immemorial, and not merely haphazard internments on elevated situations, but cemeteries used by succeeding races. These grounds may have been consecrated thousands of years ago by the priests of a religion which has reached us only in those mysterious incised emblems which are at present exciting the attention of our best archaeologists."

THE CHATHAM SURVEYOR.—At a recent meeting of the Local Board of Health, a gratuity of 20*l.* was unanimously voted to Mr. Greenstreet, their surveyor, for his services as architect of the new offices, while also attending zealously to his other duties.

IRISH ANTIQUITIES.—Within the last few days, on the farm of a man named Thomas M'Garry, residing at Aghamore, near Graa, there was discovered a curious relic in the shape of a wooden house, which is constructed of black bog oak. It was found under water in an exhausted bog, at a considerable depth beneath the surface. It measures 23 ft. by 10 ft., and consists of eight very strong beams, ranging in length from 10 ft. to 13 ft., which are supported by cross beams of great strength, and firmly jointed. The side beams are mortised, as if intended for uprights.

THE GATESHEAD TOWN-HALL DESIGNS.—The town council have resolved—"That this matter be referred back to the Town-hall Committee, and that the architects be requested to furnish detailed drawings and specifications, to enable the council to judge of their plans; and that they then be submitted to the contractors, to enable them to state the total cost of the building;"—also, "That the council appoint a thoroughly competent person to make an inquiry into the plans and specifications, after the contractors and architects have gone over the plans."

THE LONDON GAS COMPANIES.—The progress of the metropolis gas question has arrived at a sudden conclusion. Various objections were made by the companies; and the chairman said that, this being the case, the committee would not proceed any farther with the Bill, but would report their opinion to the House. He regretted that this long and, doubtless, very expensive inquiry had led to no further result at present; but he hoped, by the next session of Parliament, the companies would be able to introduce a Bill which would be considered satisfactory,—a singular termination, surely!

ADOPTION OF THE MAIDSTONE MAIN DRAINAGE SCHEME.—The town council as the local Board have resolved by a majority of ten to four, "That the plan of sewerage, recommended by the surveyor in his report of 21st January, 1867, as modified by Mr. Lawson in his report of the 13th May, 1867, be carried into execution, and that application be made to the Local Government Act Office for power to borrow, on mortgage of the rates, the sum necessary for the purpose, and also for statutory powers to purchase the requisite land, and that the drainage of the West Borough and Kingley Estate be at once proceeded with."

ROYAL PRINCESS'S THEATRE.—Mr. Herman Vezin, one of the few actors left us capable of refined expression and the portrayal of delicate differences of feeling, has opened this house for a brief season with a new play by Mr. W. G. Wills, titled "The Man o' Airlie." The play is well conceived, well written, and well acted; but that it has in it the qualities needed to ensure a popular success we cannot say so positively. It is, however, just one of those experiments that deserve the support of every earnest lover of the drama. Mr. Vezin plays a difficult part with great ability, and is well supported by Miss Nelly Moore, Mr. H. Forrester, Mr. E. Price, and Mr. Maclean, especially the latter.

CUMBERLAND AND WESTMORLAND ARCHEOLOGICAL SOCIETY.—The members of this society have held a meeting in the Crown Hotel, Penrith, to hear three papers read, and to visit Brougham Castle, Yanwath Hall, and Maybrough. The Chairman, Mr. Brown, of Tallentire Hall, briefly opened the proceedings. The Rev. J. Simpson read a paper sent by the Rev. J. Mangham, of Bewcastle, with the title,—"Was Lanercost a Roman Station?" The Rev. J. Simpson then read a paper on "Brougham Castle," and the weather having cleared up, a large party departed in conveyances to visit and explore the objects of archaeological interest in the neighbourhood indicated. On reaching Yanwath Hall, Dr. M. Taylor read a paper whilst standing on the scene of his subject. The society passed a vote of thanks to Lord Lonsdale, for his permission to visit and inspect the ancient apartments of Yanwath Hall. The company then proceeded to Brougham Hall, through the chapel, and then on to Brougham Castle. The visit to Maybrough was postponed until a future day. On the return from the excursion the members and friends partook of tea together at the Crown Hotel.

BOROUGH SURVEYORS AND PRIVATE PRACTICE. After much discussion it has been decided by the Council of Derby that the town surveyor may carry on his private practice.

BUILDING PROGRESS AT SUTTON.—The foundation-stone of some houses has been laid on the Rose-hill Park estate, which is planned out for the erection of houses. Mr. J. D. Hayton is the architect. Under the stone were laid various English, Belgian, and French coins.

ROYAL GALLERY OF ILLUSTRATION.—We willingly comply with a request to mention that Mr. German Reed will bring his season to a close on the 5th of August, when there will be a benefit for himself, Mrs. Reed, and Mr. John Parry. To a "Dream in Venice," got up as it is with care, and enriched with capital scenery, and "Merry Making," will be added other attractions on that night.

JASPER.—Jasper is now procured, to almost any required extent, at St. Gervais, in Savoy, where the quarry has a surface of at least 24,000 square yards, and a depth of about twenty-two yards. It is a variety of quartz, which is characterised by being opaque, and is of various colours. It is an excellent material for ornamentation, whether as stands for small objects, or as panels and columns, to be used by the architect.

THE BRICK-KILN NUISANCE: BRICKS MADE WITH SEWAGE.—In the Chancery Court, before Vice-Chancellor Stuart, the case of *Luscombe v. Steer*, was a motion to restrain the defendant from making bricks in a field of his, lying between the plaintiff's property and the Crystal Palace line of the London, Brighton, and South Coast Railway. The defendant, in making bricks, it was said, used water from a sewer into which four houses poured their refuse. The plaintiff contended also that the defendant was not entitled to make bricks on the land. The defendant denied that he was guilty of committing any nuisance. His field on the plaintiff's side of the railway was nearly half a mile from the house of the plaintiff, who, when he became tenant of his property, was fully apprised of defendant's rights. The Vice-Chancellor granted an injunction to restrain the defendant from making bricks to the damage or annoyance of the plaintiff.

THE CLERKENWELL MORTUARY.—At a recent meeting of the vestry, the clerk said he had received a letter from the Coroner of Central Middlesex, containing the presentment of a jury who sat at the Queen's Head, Princes-street, to inquire into the cause of the death of a person whose body lay, in a putrescent state, in an overcrowded house in Pallionville, in consequence of the public mortuary being closed, to the serious inconvenience of the medical officer whose duty it was to make the post-mortem examination, and to the danger of the health of the inmates of the house. The jury expressed themselves in the strongest terms against the closing of the mortuary. It was agreed that a copy of the resolution of the jury be forwarded to Mr. Boodle, the agent of the Marquis of Northampton, who had closed the mortuary, to the Marquis himself, and to the special committee recently appointed by the guardians to take steps for the re-opening of the mortuary chapel.

FRUIT WITHOUT STONES.—A new horticultural process has been described by the Rev. F. Firminger, at the last meeting of the Agricultural Society in India, whereby, it is said, the stones of fruit may be reduced or made to disappear, and the pulp be increased in size and flavour. During the cold season (says the *New York Tribune*, in giving an account of the process) select a branch that is to be used afterwards for inarching. Split it up carefully somewhat less than a span long. From both halves of the branch thus split scoop out clearly all the pith; then bring the split halves together again, and keep them bandaged till they have become thoroughly united. At the usual time, inarch the branch thus treated upon suitable stock, taking for the place of union the portion of the branch just below where the split was made. Upon the branch of the tree thus produced a similar operation is performed, and so on for successive seasons; the result being that the stone of the fruit becomes less and less after each successive operation. This process, it is added, has been applied likewise to the grape vine at Malaga; and plants thereby have been produced which bear the finest fruit, without the slightest vestige of a stone within them.

A GIFT.—Mr. Titus Salt, the proprietor of a well-known alpaca manufactory at Saltaire, has just made a magnificent offer to the borough of Hull. He proposes to give 5,000*l.* to the Sailors' Orphan Institution connected with the Port of Hull Society, on condition that the institution be enlarged, to give accommodation for 100 orphans, and the school 200.

HOUSE DECORATION: PRIZES.—It is due to Mr. George Dobie, of Edinburgh, to draw attention to an advertisement which has appeared in our columns in which he offers prizes for designs in drawing-room wall-decorations. This is likely to encourage and develop talent, and it is the best way to promote self-interest as well as public taste in house decoration.

OLD FILES.—Old and worn-out files may be perfectly renovated by first cleaning them from grease with a hard brush and a concentrated solution of soda; placing them in a dish containing water; adding to the latter an eighth part concentrated nitric acid, and mixing well; agitating; then leaving them at rest for five or twenty minutes; next withdrawing them, washing them with water, and brushing them, placing them in the dilute acid, to which is added a second eighth of nitric acid, and letting them lie for 50 minutes, then again brushing them, replacing them in the bath, to which a sixteen part concentrated sulphuric acid has been added, finally washing in pure water and milk of lime to remove all traces of the acid, and drying. *Scientific Review.*

CHIMNEY TOPS OR COWLS.—The improved chimney top or cowl, patented by Mr. G. Whitehead (Nov. 13, 1866), is made by preference in two parts, one fitting over the other. The inner portion or part is made by preference of octagonal shape, but it may be round, square, or of any other shape. For the sake, however, of clearness, the patentee describes it as being octagonal, the top being covered with a cap, made by preference somewhat conical. The outer part, which fits over and rests on the inner, is made of a shape to correspond therewith, and is open at top, terminating in a sort of crown or canopy. Ribs are brought from the top of the cap down the eight corners to the way down, or thereabouts, the top or cowl. Each square formed between the ribs there is, by preference three apertures, preferably square for the smoke to escape, which can either ascend or descend, according as the wind may affect the draught. There are cross pieces from rib to rib, which act as shields to prevent the action of the wind when blowing down affecting the draught.

EXHIBITION OF WORKS OF ARTS AT LEE. 1868.—It is stated that there will be three galleries devoted to the old masters, each measuring about 120 ft. in length. For the English School there will be two galleries, each 110 ft. long, besides the gallery set apart for water-colour drawings, which is also 110 ft. long. But perhaps one of the most important features will be the large gallery for pictures of foreign painters of the various schools, including those of America, lately distinguished in landscape art. In addition the principal galleries above referred to, will be one of the same size filled with engravings and drawings by old masters; an extensive portrait gallery of Yorkshire worthies, round the corridor of the central hall, with rooms for miniatures, and a complete museum of antiquarian and ornamental art. The spacious staircases and halls, in themselves highly ornamental, will be made available for pictures as well as for picturesque decoration of every kind in the shape of tapestry, trophies of arms and of the chase, while the principal examples of Scripture will be arranged round the central hall and in the picture galleries.

TENDERS

For alterations and additions at No. 6, Royal-crematorium, Mr. G. S. Kempton:—
Neil & Tuxford (accepted) 2470 0 0

For extensions and alterations at Bethnal Green Asylum, Bethnal-green, Middlesex. Messrs. Tolley Dale, architects:—

Hedges.....	23,250 0 0
Perry.....	3,140 0 0
Johnson.....	3,935 0 0
Forrest.....	2,986 0 0
Pritchard.....	2,937 0 0
Rivet.....	2,773 0 0
Baker.....	2,769 0 0
Renshaw.....	2,680 0 0

manufactory, Ludgate-hill, will be glad to
shew to clergymen, architects, and committees,
Plans and Specifications of every descrip-
tion of Horological Machine, especially cathedral
public clocks, chiming tunes on any number
bells. A descriptive pamphlet on Church
clocks post free for one stamp. Watch and
Clock Maker by Warrant of Appointment to
H. the Prince of Wales, and maker of the
clock for the Exhibition, 1862. 25, Old
Bath-street, and 83 & 84, Ludgate-hill, E.C.
Printed and Published 1749.

ences, and stating when to be sent to me on or before the 1st day of AUGUST next. Testimonials not to be sent unless applied for.
GEORGE S. ROBINSON, Clerk to the Local Board.
Leominster, 22nd July, 1867.

Generally n. of D., is a good accountant. Good references.—Address
G. B. MARSH, Cambridgeshire.

V experienced LATH BENDER. Good reference.—Address, D
1, Hornsey-road, Citizen-road, Holloway, London.

The Builder.

VOL. XXV.—No. 1278.



A Large Hotel for New York.

IG beyond compare, or, at any rate, very large, a hotel of considerable pretensions is about to be added to those already existing in New York, and we have received from the parties interested a view and particulars of the proposed building. Our readers will probably be glad to know what is doing in this way on the other side of the Atlantic, and we give them the advantage of the materials in our hands.* The site which has been bought by Mr. Cranston, now of the New York Hotel, is

posite the main entrance to the Central Park, comprising the whole of the block between Fifty-ninth and Sixtieth streets, and extending from Fifth Avenue in front to Madison Avenue at the rear: it is a square of 201 ft. front by 100 ft. in depth. The intention was, when we were written to, to form a joint-stock company erect the building upon this plot forthwith. The situation chosen is unrivalled, particularly for the view of the rapid growth and expansion of the city in this quarter. The establishment is to be strictly a family hotel of the first class, similar to that of the Clarendon, of Fenton's, or Warr's, in London; and to this end the arrangements will be somewhat different in character from those of any hotel now existing in New York. The designs have been made by Messrs. Bryant & Gilman, architects of the new City Hall of Boston, and lately residents of that city. Mr. Gilman, having now removed to New York, will remain for the purpose of carrying out the works of the new hotel to their completion.

The proposed building is to be of five stories in height, in the walls, in addition to the basement story, and includes also a seventh story of dormers in the high Mansard roof, which covers the whole. It is built in blocks around a central court in the centre, which are separated by wings of the building. The height of the building above the level of the area pavements is about 90 ft.

The plan comprises, as its principal feature, a central court covered with a glass roof from which alone access is obtained to the building. This court is entered by two carriage-ways, each 26 ft. wide, one on Fifty-ninth-street, and one on Sixtieth-street, and includes an area of 88 ft. by 118 ft. Two white terraces, with steps of the same material, in width, give access from this court to the opposite wings of the main building, and open,

on the one side, to the *salle de reception*, 30 ft. by 46 ft., and on the other to the hotel office and the block on the Fifth-avenue front of the building. There are two main dining-rooms, one for the *table d'hôte*, 46 ft. by 110 ft., and one intended as a restaurant, 48 ft. by 100 ft., where meals will be served at all hours. There are eight staircases in all, each running from bottom to top of the house, four of which are for the public and four are service-stairs, of iron, enclosed in brick walls, for the use of the servants only, but available, in case of fire, from all the corridors of the building. Two of the public staircases are 10 ft. in width, and two, near the centre of the building, and opening directly from the *salle de reception* above mentioned, are each 8 ft. wide, and are to be of highly ornamental pierced and carved black walnut wood panelling, and intended for ladies mainly. Two lifts will run from the ground floor to the sixth story, opening from the corridor opposite the foot of the central staircases in every story. A balcony opens from the upper saloon, which is directly over the one before described, and of the same dimension (30 ft. by 46 ft.), the balcony entered from three carved doors, filled with plate-glass panels, and overlooking the large dining-room below from this higher level. The principal corridors of communication are 12 ft. wide, and the lesser ones 9 ft. wide, and are all open to the external light and air; by transverse passages across the whole width of each block at intervals of about 75 ft.

The bar-room, billiard-rooms, and barber's shop are all in the half-basement story, and occupy each an area of about 60 ft. by 50 ft. The kitchens, larders, pantries, service-rooms, laundries, and all the other domestic offices occupy the basement and first-floor of the whole rear wing on Madison-avenue, and the basement story of the dining-room wing in the centre of the second or house court before mentioned. All these apartments have been well studied out and arranged.

In regard to the accommodation for guests, it may be briefly stated that there are 174 private parlours on the several stories, the largest of which measures 18 ft. by 27 ft., and the smallest 16 ft. by 20 ft., each with one, two, or three chambers attached *en suite* respectively, each one with its own private bath-room and "closet" included; the bath-rooms measuring in general 7 ft. by 10 ft., and each suite having in addition its own antechamber, 7 ft. by 12 ft., giving access to each room of the suite, but separating them all by an entry and double doors from the noise of the public corridors outside. This feature insures privacy and quiet.

Besides the parlours above noted, there are upwards of 600 chambers, single and in suites, many of them being of the largest size, exclusive of more than 100 other rooms, for the officers and domestics of the house, for the servants of private families, and for other necessary uses.

The exterior architecture of the hotel will present many features of novelty in New York. The large hotels there, from the Astor House to the Fifth Avenue Hotel, have all been designed on nearly the same principle, viz., a large square block or mass of buildings, with a straight line of wall and cornice, both horizontally and vertically, and with no more relief or variety of outline than is to be found in a packing-case. This appearance it has been the aim of the architects in the present instance to avoid. The design of the exterior consists of pavilions at each angle of the great quadrangle, and massed in couples, with a higher line of roof connecting them in the centre of each longer façade. Thus it results that the composition separates itself into eight pavilions, connected by eight wings or curtains of different heights, and a considerable variety of outline is accordingly produced by the different heights of the parts. The angles stand somewhat forward from the line of the wings or

curtains, and terminate in lofty, square pavilion roofs, with a *couronnement* of gilt iron railing. The effect of these angles is repeated in the additional boldness and weight of the centre masses in each longer façade.

The centre of the Fifth Avenue front has a projecting portico of two orders, which forms a terrace walk overlooking the Park, in front of the public parlours on the first and second stories. Above this the *insignia* of the city of New York, surmounted by a mural crown are introduced in an ornamental shield in the centre of the pediment over the central compartment of the third story. The carriage-ways on Fifty-ninth and Sixtieth streets are entered between detached columns of the Doric order, carrying on their shafts verniculated bands (an ugly feature by the way, notwithstanding Philibert De Lorme), each column being surmounted by a sculptured figure. A profusion of balconies constructed of wrought-iron scroll-work are also introduced on the various floors, not less for the pleasure and convenience of the occupants of the apartments than for effect.

The authors acknowledge some obligation in the distribution of the masses, and the outline of the roofs to the premiated designs by Mr. Garling, for our Foreign Office.

It is intended that the great interior court, 88 ft. by 118 ft., through which, as we have observed, entrance will be had to the entire building, shall be made the most ornamental portion of the design. The general style of this part of the composition is studied from the well-known façades of the Château of Heidelberg. This court is to be protected by a light iron and glass roof, and it has been determined to construct the architectural work required in Ransome's concrete stone.

The new hotel, if carried out as proposed, will certainly prove an important addition to the architectural and social features of New York.

THE NIGHT-WATCHMAN.

THE very destructive fires which now and then break out in large manufactories and stores have set us thinking of late about that important officer the night-watchman. The latest great fire at Messrs. Myers & Son's, Lambeth, whereat property to the extent of 40,000*l.* or more was irredeemably burnt and spoiled, has raised the question in our mind of watching,—what it is, what it is not, and, above all, what it ought to be.

The first alarm was given by the inhabitants in the dwelling-houses adjoining, who were terrified by the unusual glare of light on the back windows. Where were the police? Is the question first to be asked. The locality is in the L division, and all the way down the road to the Waterloo dry arch is "studded" with manufactories of various inflammable materials. The great Indian army stores' office is almost next door, and it is believed, well supplied with a competent staff of watchmen or police, tell-tale clocks, and every appliance to keep such people to their duty. Where were they that they couldn't see such a body of fire sooner than people who were fast asleep in their beds when the fire broke out? Again, will anybody undertake to explain why a builder's fire on a Saturday night should be one of the ordinances of the Fates? When one is reported we have the same stereotyped story,— "The works were vacated early on Saturday afternoon, and at that time all was perfectly safe." Sometimes there is a watchman,—more frequently not,—and when the watchman makes the discovery, it is,— "The first intimation of the fire was from the carpenter's shop on the first story, which the watchman found to be in flames, although, when he passed through half an hour previously, all appeared to be perfectly safe."

In this fire the conflagration had enveloped an entire factory from floor to roof, comprising the whole of the wood-working department. There were nearly twenty fire-engines on the spot, and a strong force of fire and salvage-corps men. Most of the engines were steamers,

* See p. 571.

and threw large quantities of water, but, for all that, the fire burned until the Sunday afternoon. Adjoining the burning premises is a large block of buildings called "Bell's India-rubber Works." In a very short time the upper part of this building was all in flames; and, as if to give us an idea of the terrible appearance of a town on fire, all the dwelling-houses abutting on the scene of the disaster in the Belvidere-road, Guildford-street, and the York-road, were set on fire also. The consternation in the neighbourhood was something awful: the noise of steam fire-engines, the shouting of men, the shrieking of women and children, and the crackling and falling of burning floors, roofs, and beams, were things fearful to witness in their terrible reality. In the midst of all this calamity came the inevitable contingent of the destroying hundred-thousand—the London plunder mob. It has been stated on reliable police statistics, that there is in London the enormous number of 100,000 persons who live by plunder, who do not know where their day's food is to come from when they get up in the morning. At every fire the police have a great deal to do to prevent these gentry breaking into adjoining houses and ransacking them, on the pretence of rendering assistance. The present instance formed no exception to the rule; the police had hard-fighting with them, and, even then, were not always successful.

The buildings destroyed consisted of saw-mills, moulding and planing shops, machine and timber-drying rooms, engine and boiler houses, woodsheds, joiners', emills', and wheelwrights' shops, in all 340 ft. long by 116 ft. broad. The India-rubber factory had two floors burnt, and the roof burnt off the entire building; it was not insured. The backs of thirteen dwelling-houses were, more or less, burnt. In addition to all this the premises of Acre Wharf, in the occupation of Messrs. Crosse & Co., timber merchants, were damaged by fire and water. Look at all this destruction, and then say whether the night-watchman does not involuntarily rise up before the "mind's eye." Here is a case of such alarming dimensions that, watchman or no watchman, it calls for an investigation of the most searching character.

The place was stated to be "safe on the Saturday night," and what the public right demands is, that an endeavour ought to be made to ascertain how, under such averments of safety, a building 340 ft. long and 116 ft. broad came to be all in flames from basement to roof-tree by half-past three o'clock on Sunday morning? Was it by spontaneous combustion? Was it carelessness? Was it negligence? What was it? In all fires so terrible as this one—even in smaller ones—especially where the workable material is of a combustible character, a very strict inquiry should be originated. Are there any watchmen in each case? If so, what kind of men are they? Are there any tell-tale clocks to watch the watchmen—"quis custodiet ipsos custodes?" Who is to take care of the caretakers? What are the watchmen of this competitive age like? Are they old, worn-out men, or middle-aged active men? Are they given to ramble about in the day time and trust to the chance of a "pitch" during the night? Do they lodge in a place where sleep is not a difficulty during the day-time? Are they of the old "Charley" breed, and so, utterly worthless?

A night-watchman should be well paid; so well that the money would always command a superior class of men. He should be in the confidence of the counting-house, hold the rank of foreman, and be called "Mister." If practicable, he should be provided with a cottage either on or near the premises; and if he should happen to have a wife and family all the better, for then he will have continually before him so many hostages to fortune and good behaviour. Twice a week, at least, some member of the firm, or the manager, should converse freely with the watchman, and let him see that his care and intelligence are considered from a point of view beyond the pay-table. He should have a neat, plain uniform, something that he would feel proud to wear as the "regimentals" of the firm. He should be able to read and write well, and should, every morning, present a short "state" of everything that has transpired in and around his territory during the night. If he speaks to a policeman at the gate, let it go down, with the time and the man's number; name the last man away and the first back in the morning; and let the "state," or, which would be better, an "Occurrence Book," show to the counting-house all that had happened on the premises from watch to

watch. In short, the night-watchman should be revolutionised: instead of the common labourer, we would have a man of sufficient intelligence, good enough to be asked to sit down and offer any suggestions coming within the scope of his duty.

And the alteration would pay, and pay well. Look at the enormous value of the interests in some firms committed to his charge, and consider what his negligence or inattention may cost. We would not have a night-watchman on the place unless he was good enough to be a sergeant in the army. Such a qualification, combined with the habits of a first-class policeman, would make the article required. We have abolished the "Charleys" from the streets, but most of the night-watchmen I have seen have been merely a prolongation and transfer of the Charley system into where, of all other places, such a system is the most unreliable and dangerous; namely, large manufacturing premises. Some day the night-watchman will become a very important officer on an establishment, and his well-kept "occurrence-book" will be looked upon as attesting information to the firm not obtainable in any other way. To be sure, the article must be paid for; but, with a good night-watchman, a 40,000l. fire would be a much more improbable contingency than with an indifferent watchman. We earnestly commend these views to the serious consideration of employers, and fully believe that, after one year's experience of the change, they would wonder how they had tolerated the old system so long.

Let us take any of our large manufacturing premises. We close business for the day, and commit thousands, and tens of thousands of pounds' worth of property to the care of the night-watchman—a man who, in a general way, is simply a common, unintelligent labourer. In many cases you may have good, well-meaning, honest, industrious men; and then it may be asked, "What more do you want?" You do want more. You want a higher order of intelligence with all this honesty and industry; and, when you look upon the vast "sleeping" interests confided to his care, you are as much called upon to have him as to have a good manager or foreman. We have heard most singular doctrines about the quality of night-watchmen. It has been said that when a man is fit for nothing else he'll do for a night-watchman. And the fallacy is far too often acted upon.

Again, in large premises, the "tell-tale" clock will be found a valuable adjunct in compelling the watchman to go to the place where it is and look it in the face, leaving the record of his visit behind him. Most of our readers have seen them, but those who have not can gratify their curiosity any day by a visit to the House of Commons; there they will be shown the tell-tale, or "peg-clock," by merely asking any policeman whom they may happen to see on duty. We will say what they are like for the information of those who do not happen to know.

The "Tell-tale" clock is the invention of Mr. Whitehurst, of Derby, and was adopted by Parliament many years ago. It will be more explanatory if the reader will occasionally look at an ordinary clock while reading the following lines:—Imagine the dial of a clock without hands, but with all the hours and minutes marked on it. This dial is screwed on the "axle" of the wheel that carries the hour-hand in other clocks. Fixed to the inside of the case, close to the figure of XII., and exactly opposite to the XII. "dot," is a small wedge-like pin, whilst standing up out of the rim of the dial are small brass pegs, about a quarter of an inch high, and placed at such a distance apart that four of them extend from one figure on the dial to another, so as to make a quarter of an hour in time between every one of them. Over the XII. again, and opposite the time-pointing wedge-shaped pin just mentioned, is a little fairy-looking hammer, covering the peg of each quarter, but not touching it. This hammer is connected by a wire, with a bell-pull on the outside of the clock-case. Everything is locked in, and the key kept by some superior officer. We will now set the clock going, if you please. Observe, and you will see the dial moving away to the left, which will shortly bring a quarter-past XII. in front of the time-pin, and you will notice that the quarter peg has been brought under the little hammer. Pull the bell now; down it goes, and for the next eighteen or twenty hours it will bear witness that you knocked it down at the proper time. As it is somewhat monotonous work

watching the dial of a clock, let us look round a little.

Well, the fifteen minutes having nearly expired, let us go back and hammer down the half-past twelve. By Jove! we're just in time. Pull Ah! the hammer has missed the peg: we are minute too late, and that peg will record the fact on the other side of the book against us without the possibility of preventing it except by smashing the concern. Sometimes the pegs are made to project from the rim instead of standing out of it. When they come round the afternoon of the next day there is an inclining plate, or roller, over which the inside ends of the pins pass, and are thus pushed out again ready for work as before.

It will now be understood that, where there are two of these clocks, the night-watchman must be with each of them every quarter, half, or so on, of an hour, as may be deemed requisite. Thus, if one be placed at the gate and another at the further end of a range of shops, stores, or warehouses, the night-watchman may pay personal attention to them all the night through, or the up-standing peg will surely do it in its silence, where were you when you ought to have sent me to rest in the night?

We have probably said all that is necessary about the night-watchmen. That we have made a general advance in this direction, it will be inclined to deny. It is a curious feature in our national character how long we will rest upon an inferior article without for one moment thinking of its inferiority. We have often pondered over this question of the night-watchman when dreadful conflagrations have startled the town. We are satisfied that the quality is not what we ought to have, and that some change should at once be made.

THE PUBLIC HEALTH IN THE SECOND QUARTER OF 1867.

SOME remarks upon the health of our last towns during the thirteen weeks ending the 23rd of June last, appeared in our columns a week or two since. The Registrar-General's Quarterly Return relating to these three months is now before us, and it is eminently satisfactory to find that the improvement in the health of our last towns was shared by the nation at large. I greatly increased birth-rate, and a remarkable decrease of deaths, be taken as a sign of prosperity, the present return is indeed gratifying. The natural increase in the population of England and Wales during the three months, excess of births over deaths, was 87,126, or 23,359 more than in the same period of last year, and at the rate of nearly 1,000 a day. The birth-rate of the quarter, 37·4 per 1,000 was the highest on record.

The marriages given in the return just published are those registered in the first three months of this year, and not for the same period as the births and deaths. In the first quarter of this year the persons married were only 18 per 1,000, instead of 14·00, the average rate for the same quarter of the previous ten years. This depression of the marriage-rate was, doubtless, as suggested, caused by the unsatisfactory commercial condition of the country. The increase of marriages was greatest in Northumberland and Durham, where the shipping and coal trades were at a low ebb; and in Cornwall, where the complete stagnation of business in the mining districts is causing an emigration which is spoken of by the local registrars as "exodus." The marriages in the first three months of this year in Cornwall were only 493, against 709 and 577 in the same quarters of 1865 and 1866. The births also fell from 3,453, and 3,331 in the second quarters of 1865 and 1866, to 3,011 last quarter. There is, therefore, no doubt that the population of this county is decreasing in a remarkable manner, at a time when the general increase in the population of the country is proceeding at a rate never before known.

The most important feature of the present quarterly return is, however, the decline of the rate of mortality, and the satisfactory conclusion which may be derived therefrom as to the improved condition of the public health. We are somewhat at a loss when we attempt to account for the healthiness of last quarter. We are used to attributing a rise or fall in the standard of health to the weather, that it would scarcely be unreasonable to expect that our knowledge as to the manner in which the tempera-

and various conditions of the temperature affect the public health should be making progress; but, beyond a certainty that extreme cold in winter or extreme heat in summer alike swell the returns of deaths, we really know little or nothing more than our grandfathers. The spring quarter of 1866 was one of the most unhealthy on record; while that just ended was healthier than any corresponding period since 1857. The mean temperature of the two quarters was almost identical, and in sudden alternations from wintry cold to summer heat the second quarter of this year was certainly most remarkable. Then, again, the price of wheat, which in the spring quarter of 1866 was only 46s. 6d., averaged 63s. 11d. last quarter, accompanied by a corresponding increase in the price of nearly all other articles of food. The decrease in the death-rate can, therefore, be scarcely attributed to the weather, or to the abundance of cheap provisions. How much, then, of this improvement in the nation's health dare we safely attribute to the great strides which in the past twelve months have been made in the sanitary condition of the country? In the spring of last year, when the unsatisfactory condition of the health, more particularly of our towns, was from time to time pointed out, not only in these columns, but by the press generally, warnings were freely given of the consequence of a cholera epidemic coming upon us, unprepared as we evidently were. That warning carried weight from the previous fatality from cholera on the Continent, and many towns immediately went to work in earnest, and, doubtless, thus saved themselves in many instances from the epidemic when it really came in autumn. Many towns and villages and parishes which delayed doing anything until cholera was really among us and was carrying off its hundreds a week in London, Liverpool, and the Welsh towns, then set to work in earnest, not only in organizing preventive measures, but in carrying out important sanitary improvements, the effect of which on the public health will prove cumulative. There is no longer any reason to doubt that the nation's intelligence and interest have at last been fairly roused to the vital importance of the subject; and when England sets about anything in earnest, it is generally thoroughly done in the end. More sanitary activity has been displayed during the past twelve months than in the previous twelve years. Again we ask, therefore, how much of the improvement in the health of the country dare we place to the credit of this sanitary activity?

During the three months ending 30th June the 112,623 deaths registered in England and Wales showed a decrease of 16,169 upon the number returned in the same quarter of last year in a smaller population. The annual rate of mortality to 1,000 persons living was 21.1, or 1.1 per 1,000 less than the average rate in the ten previous corresponding quarters, and 3.3 per 1,000 less than that in the same quarter of last year. In all the large town districts of England and Wales, containing in 1861 an enumerated population of eleven millions, the death-rate was 22.0 per 1,000, or 1.6 below the average, and 4.4 lower than last year. In the remainder of the population of the country, comprising the small towns and rural districts, the rate of mortality was 19.9, or only .6 below the average of ten previous quarters, and showing an improvement of only 1.8 per 1,000 upon the rate in the same districts last year. It is only natural that the greatest difference between an unhealthy and healthy season should be shown where the heaviest rates have long proved the greatest necessity for improvement; but it is also to be remembered that inasmuch as it was in large towns that most dread of cholera was experienced, so it has been in large towns that most has been done during the past year in the way of sanitary improvement.

The most marked decrease in the death-rate during last quarter took place in the ten largest towns of England, including London, and furnishing weekly returns, and estimated to contain at the present time a population of about five millions and a quarter. The annual death-rate in this population in the three months was only 22.0 per 1,000, against 27.5 in the same period of last year. The details relating to the improved health of these ten towns have been previously examined; suffice it here to remark that the decrease in the death-rate was greatest, 11.7 per 1,000, in Liverpool, 8.6 and 8.5 in Leeds and Sheffield, while in Manchester and Sheffield it was only 2.6 and 1.3 respectively. Both these towns are, however, now actively considering

measures for the improvement of their sanitary condition, and the appointment of efficient medical officers of health should be among the first fruits of their consideration. London, Bristol, Liverpool, and Leeds have already reaped an ample return from the services of their sanitary officers, although the effect of their labours is only now beginning fully to appear in the death returns.

Croydon, which, not a short time ago, was notorious for its unsanitary condition, now rejoices in a mortality of only 17 per 1,000, the standard of healthy districts. The registrar remarks that preventable diseases have there been reduced almost to a minimum. Southampton has also recently been unprecedentedly healthy, and to the present date shows no signs of its annual epidemic of diarrhoea. We hear, indeed, of marked improvement in towns, villages, and parishes in almost every corner of England and Wales, which renders the few exceptions noticed by the local registrars the more conspicuous.

Generally speaking, Wales, Yorkshire, and the Northern Counties are still the unhealthiest, and participated last quarter to the least extent in the improved health of the country. Winterton, near Glandford Brigg, Lincolnshire, and Northallerton, in the North Riding of Yorkshire, are, however, among the few places noticed as suffering from conditions the reverse of sanitary.

We, who have taken no inactive part in the crusade which has been fought during recent years against the ignorance and apathy which have been displayed upon all matters relating to sanitary reform, and against the almost wilful opposition which in towns, parishes, and vestries, has been made to the expenditure of money to save the lives and ameliorate the condition of our labouring population, in the crowded courts in town, as well as in the over-filled cottages in the country, cannot but rejoice at what appears to be at last the fruit of the general awakening of the public to the importance of such matters. But the victory is not won yet; we must still fight on, in the hope of seeing still more gratifying results from the completion of what is now only begun.

SKETCHES IN ANNANDALE.

DURING a brief residence on the northern shore of the Solway Frith, not long ago, we contrived to pick up a variety of curious information with regard to what the French authors would style its comparative civilization. We made some notes on the ancient history, as well as the present condition of its inhabitants. We had time to examine the ruins of some of the old feudal castles, and to contrast them with the modern mansions of the district; and we did our best to compare the condition of the working classes at the present day with those of former generations. Finally, we discovered certain curious coincidences of manners and customs on the opposite shores, which are worth recording; for, be it always remembered, the Solway constitutes the western boundary between the North of England and the South of Scotland. These notes we shall try to present in due order to the consideration of our readers, without, however, making any pretension to systematic treatment of what would in that case be a very wide subject.

Lady Mary Wortley Montague has pointed out, with that clear perception and delicacy of taste for which she was so distinguished, that the most interesting point in the landscape of a country is that in which the lowlands approximate to the highlands, and where the plains begin to lose themselves and merge into the slopes of the neighbouring mountains. A similar degree of interest, we think, belongs to those debatable regions of land and water which separate two countries; and if we regard the Solway from this point of view, we shall find it well deserving of study; for it is equally rich in the monuments of antiquity and of modern progress, in traditional lore, in ballad poetry, in the annals of war, and in the arts of peace. There are few subjects more fascinating and seductive than the antiquities of the Solway. The study may be regarded almost in the light of an *Iliad* in a nutshell. The history of England and of Scotland might be deduced from examples derived from its neighbourhood; and, in point of fact, it is to this district we must go for some of our chief historical landmarks.

The western extremity of the Roman wall, for example, abuts on the southern shore in the vicinity of Bowness on the Cumberland coast.

The parish of Ruthwell on the Dumfries-shire coast contains the finest extant specimen of a Runic cross,—with its primitive Christian poetry only recently deciphered,—that time and the inroads of warfare have left to us. Although we believe there are no round towers or borghs, still there are abundant legendary evidences of the ancient Picts and the aboriginal Celts; and from the vernacular language of the district we may easily trace the influences in their respective periods of the Danish and the Saxon invader. With regard to Norman antiquities, feudal castles, and the like, there is no district in the country so rich in ruins and so redolent of border traditions; and as to the relics of memorable battle-fields, these are equally valuable and abundant. A monumental pillar at Burgh Marsh, or Burgh-upon-the-Sands, still identifies the spot where Edward I., at the head of the English chivalry, was taken ill and died. On the opposite coast lies the little town of Annan, the patrimonial burgh of King Robert the Bruce. Between these two points, at the apex of the triangle, lies the celebrated Solway Moss, which recalls the destruction of a Scottish army. And there are two memorable points in the Solway Frith—Dundrennan Abbey in Kirkcudbrightshire and Mary-Port in Cumberland—which signalise the departure from Scotland and the arrival in England of the beautiful and ill-fated Mary Queen of Scots!

To go back for a moment to the remote history of the Solway, we must begin with the Roman wall. On this head we cannot do better than repeat a portion of Dr. Bruce's valuable address, delivered at the Cumberland and Westmoreland Archaeological Association's first meeting at Carlisle.* As showing the value of the Norman antiquities, he remarks that the statements of Gildas (the first British historian, as he is called) can only receive full credence when they have been sifted and rectified by the Roman inscriptions, and by the hoards of coins which turn up from time to time. Tacitus tells us, for example, that Agricola commenced the battle of the Grampians by ordering forward some Tungrian and Batavian cohorts. How interesting it is to find buried in some of the wildest parts of the north of England slabs and altars carved by Roman hands which mention both Batavian and Tungrian cohorts! At the request of the late Duke of Northumberland, Mr. Lauchlan has not only surveyed the Roman wall, but the Watling-street from the Scottish border to the Tees, the Devil's Causeway, and various branch roads communicating with these. He has also surveyed the ancient British and the Saxon and Danish encampments in large districts of that country; and he is now laying down the combined results of all his interesting researches in a map of Ancient Northumberland. Perhaps it is not too late to undertake a similar work for Cumberland. For it seems that the Romans took a firmer grasp of Cumberland than of any other part of the north of England. Besides the stations on the wall, including Burdowsal and Bowness, and all between, a chain of forts, the chief of which was Mary-Port, has extended all along the coast. These have evidently been intended to prevent the enemy, whether from Scotland or Ireland, from landing within the wall. A road had connected these coast defences, from which even modern military men might still take a lesson. Such a map would supply a desideratum, we have no doubt; and besides every ancient barrow, every Danish camp, every Border tower and Peel house ought to be carefully marked and authenticated.

With regard to the Roman antiquities north of the Solway, we shall just mention, on the authority of General Roy,† that the second principal Roman way, or that which served as the western communication into North Britain, crossed the Roman wall at Stanwix, near Carlisle, and leading by a place called Blackford, seems to have passed the east at or near Longtown Church. In the neighbourhood of this place a road had branched off to the right, leading towards Netherby; but the principal one, or at least that which is most conspicuous at present, points towards Gretna. From this place, for many miles together, the vestiges are distinctly to be seen leading through the *procurium* of the station at Birrens, near Middleby. After leaving Malls Castle, Lockerbie, and Agricola's Camp, on Torwood Moor, it passed

* For a full report, see the *Carlisle Journal*, Nov. 9, 1866.

† Vide "Military Antiquities of Scotland," vol. i.

the River Dryffe, below Dryfesdale Church, not far from the junction of this river with the Annan, near which a branch had departed from to the left, taking the route of Nithsdale. On this line the most important remains are to be found at the Roman Encampment of Birrenswark Hill. This singular height is of an irregular oval shape, rising from the plain in solitary pre-eminence to an elevation of 500 ft. or 600 ft. It has been conjectured from this circumstance, and from comparison with similar works elsewhere, that the *Selgove*, a tribe of the ancient Britons, had a fort here in the days of their independence, when Roman legions were unknown; and certainly, adds General Roy, no better site could have been chosen within the whole circuit of their possessions on which to found the family stronghold of a Selgovian chief.*

Of the Roman remains excavated at the Birrens Camp, the chief, perhaps, is a volute altar, which was dug up in 1810, and now stands majestically in the entrance-hall of Burnfoot House, in a niche in the wall made on purpose for it. It measures 50 in. in height by 22 in. in breadth, and 9 in. in thickness, the back being, as usual, roughly cut for standing against the wall. It is profusely decorated with leaves, birds, fishes, and other natural objects; and the mouldings are extremely fine. There is also in the possession of the same gentleman a lesser altar, and a fine bust, the remains of what must have been a beautiful statue, probably of Minerva. Vast quantities of coins have been found near Langholm, chiefly of the reigns of Nero and Vespasian. Numerous remains of urns, lacrymatories, and such-like specimens of Roman pottery, have also been discovered here; and, we may add, on the authority of a respectable builder in Ecclefechan, that, in addition to these remains, examples of the works have been also traced at this station of Roman engineers. When the line of the Caledonian Railway was in process of construction, there was found in the course of some cuttings, at a place called the Land, near the Roman Camp, several slabs of hewn pavement, abundant traces of scorine and forge ashes; and also, we were told, specimens of iron filings! This would afford most fertile grounds of speculation, but we must not dwell any longer upon the Romans. We have only room for another curious fact. There is a spring well in this camp of Birrenswark, which the simple peasantry of the neighbourhood have from time immemorial been accustomed to call *Grecklie's Well*, of course without knowing the reason why. But this Grecklie, we suspect, is undoubtedly a corruption of *Agricola*; and if so, it is not the only instance in which the rude dialect of the Border has been enriched with the sonorous idioms of the Latin race.

Our next paragraph relates to the celebrated Runic cross of Ruthwell, a glance at which will carry us from the vestiges of Roman superstition and idolatry to the rude memorials of our Anglo-Saxon Christianity. Ruthwell is a parish of Annandale, lying close to the shore of the Solway, about half way between Dumfries and Annan, and comprehending within its boundaries a large portion of the celebrated Locher Moss, which we formerly described.

In a region where there are absolutely no historical traces of the nature and disposition of the primitive inhabitants it is always interesting to study the remains of such singular monuments. And even the very names of the places themselves are often the surest index and the only expression of a remote and almost obliterated civilization.

The etymology of Ruthwell has not, so far as we are aware, been satisfactorily explained; but Dr. Wilson suggests that the name of the parish has, in fact, been formed from the name of its Runic monument. He mentions, in corroboration of this idea, a place similarly, if not precisely so named in the ancient province of Moray, viz., *Rumeluwethell*. But we need not pursue this topic. The Runes, it is hardly necessary to explain, are the characters of our most ancient extant graven records, and are distinguished into two varieties; the northern Runes, belonging to the ancient Celtic race, and the Anglo-Saxon Runes, of which Ruthwell Cross is a valuable specimen.

* At this period the districts, afterwards named Eskdale, Annandale, and Nithsdale, and now comprehended by Dumfriesshire, were occupied by this tribe of *Selgove*, from which name that of the adjacent Solway Firth is, by some authorities, considered a derivation, or rather a corruption.—Comp. *Henry's Hist. of England*, vol. i., p. 281.

The most ancient description of Ruthwell Cross which we remember to have read is that of Pennant, and it is still the best. The church of Ruthwell, he says, writing in 1772, contains the ruins of a most curious monument, an obelisk, once of great height, now lying in three pieces; for it was broken, strange to say, by an order of the General Assembly, in 1644, under pretence of its being an object of superstition among the vulgar! When entire it was probably about 20 ft. high, exclusive of pedestal and capital; but making allowances in the measurement of the present pieces of fragments shipped off when it was destroyed. It originally consisted of two pieces: the lowest, now in two, had been 15 ft. long. The upper had been placed on the other by means of a socket. The form was square and taper, but the sides of unequal breadth: the two opposite on one side at the bottom were 18½ in., at the top only 15 in.; the narrower side, 16 in. at the bottom and 11 in. at the top. He then goes on to transcribe the inscription,—the Runic characters, Saxon letters, the Latin legend as rendered by Mr. Gordon,† and finally the rude sculpture, which he says were probably the work of different artists and different nations, the first being Christian Saxons and the other of converted Danes.

The remains of this monument as they then appeared, were lying within the church; very soon after that date, however, they were carried out into the churchyard, where they lay exposed to every species of accident and ill-usage, till the Rev. Mr. Duncan was presented to the parish. Soon after his settlement, he had the fragments conveyed into the manse garden, and re-erected in something like their original form. In this new situation it stood, displaying in mysterious characters legends that provoked and tantalized the curiosity of this worthy clergyman; but nothing was legible to him more than the fragmentary Latin inscriptions on the back and front of the cross, which had already been made out by Pennant, and had been freely quoted and discussed. He proceeded, however, to make careful drawings of the monument, giving a precise delineation of its ornaments, and a correct representation of its Runic and other inscriptions.† These drawings were engraved and, accompanied by a history of the monument so far as could be gathered from parochial tradition, were forwarded to various parts of northern Europe, and to that quarter particularly, because the Runes were then believed to be inscriptions entirely peculiar to the Scandinavian races. The translation of the Ruthwell Runes was now an object of desire and ambition to the first antiquaries of Europe. It was first undertaken by Mr. Storleiff G. Kepp, an approved scholar, and a native of Iceland, whose rendering, although unsatisfactory, remained for some time undisputed. Professor Finn Magnussen was the next to essay an interpretation, and although differing considerably in his version from that of Kepp, he still agreed that the inscription, though of one uniform Runic character, consisted of a mixture of both Anglo-Saxon and old Scandinavian words. Another Danish professor, Mr. Thorkeilia (who had travelled in England and Scotland in 1790), added to this the discovery of one of two etchings by the Scottish antiquary, Adam Cardonnel, accompanied with a description by Roger Gale, that had been read before the Society of Antiquaries in London. Still the secret remained undisclosed. At length, about the year 1838, Mr. J. M. Kemble, a most eminent English Anglo-Saxon scholar, undertook to render the Ruthwell Runes, and he gave a reading and interpretation entirely different from his predecessors. In his able paper on the subject, he pointed out that although the characters were no doubt Runic, and as such the proper characters to be employed by the old Scandinavians; yet as otherwise employed by the Anglo-Saxon race, the Runes represented only radicals of their native tongue; or, at most, Anglo-Saxon with a mixture of old Northern words. He was the more positive in the accuracy of his readings and correctness of the version he had executed, from having satisfactorily demonstrated that the inscription in its grammatical construction was of a rhythmical character peculiar to the poetic compositions of the Early Saxons. Even now, however, when the

* In the *Itinerarium Septentrionale*.

† Dr. Duncan's drawings are engraved in the fourth volume of the *Archæologia Scotica*. This gentleman, we may mention, so distinguished and zealous as an antiquary, was also the originator of Savings Banks. See an excellent memoir in *Chambers's Edinburgh Journal*, vol. xvi.

language could be nearly read, the theme was only revealed in fragments—of rare beauty, however, and of high poetic grandeur.

At this stage of the investigation, a remarkable instance of good fortune occurred to reward the unwearied research, and the uncommon zeal of the Runic antiquaries,—which confirmed in a most wonderful manner the conclusions of Mr. Kemble, and raised him to a high position among contemporary archaeologists. Some years before a manuscript volume, consisting chiefly of Anglo-Saxon homilies, had been discovered at Vercelli, a town in Piedmont, which also contained, intermingled with the prose compositions, some religious poems of Anglo-Saxon origin. Of these poems, one was found on closer examination, entitled "A Dream of the Holy Rood," extending to 310 lines, which contained the whole of the fragmentary lines previously translated by Mr. Kemble, as well as a context almost complete; but at all events sufficient to supply the numerous lacunæ which occur on the broken inscription of the Ruthwell cross! It is difficult to say, says Dr. Wilson, whose excellent description we follow, whether this discovery, so singular in its circumstances, is more extraordinary for the confirmation it affords to previously published conclusions, or more interesting for the ample satisfaction it gives us respecting a local antiquity which, during many generations, had been the object of mystery, wonder, and superstition; or, finally, more surprising from the beauty and exquisite grace of its revelations of the faith of an earlier age and race.*

The "Dream of the Holy Rood" commences by representing a Christian startled from his sleep by a vision of the cross, which seems to come looming in glory through the sky, attended by angels, and displaying by various manifestations its intelligent sympathy with the insatiable passion that had been accomplished on it. Onwards this cross approaches, till at length, having arrived at the sleeper, it reveals in language its feelings at being made the instrument of the sufferings of the Son of God. It is from this part of the poem that the verses have been selected for inscription on the Ruthwell Cross, of which we can only presume to quote a dozen lines:—

"A cross was I reared—
I reared the powerful King,
The Lord of the heavens.
I dared not fall down.
They pierced me with dark nails;
On me are the wounds visible!
They wept as I both together.
I was all stained with blood.
All creation wept.
Christ was on the Cross;
Yet hither hastening
Men came from afar.
Unto the Nettle One.
All that beheld me,
With sorrow I was overwhelmed.
They stood at the corpse's head:
They beheld the Lord of Heaven!"

The lines in italics represent some of the fragments which are still legible on the Ruthwell Cross. It only remains to state, that the date of the erection of this monument must have been somewhere between the periods of the sixth and eighth centuries, which corresponds with a period when the Anglo-Saxons of Northumberland attained to a state of civilization as far advanced as any other portion of Teutonic Europe. The present incumbent of the parish, the Rev. Mr. Gordon, is most obliging in showing the cross and explaining it to all poor antiquaries and wandering artists; and we can only hope that our notice of this somewhat obscure but valuable antiquity may lead to some official conservation of its remains; for at the time of our visit its condition was not creditable to the antiquarian or archaeological societies of Scotland.

We shall now pass for a moment to the memorials of the Norman era. We need scarcely tell the most ordinary student of English history that although none of the early Norman monarchs succeeded in effecting a conquest of this Northern territory, it so happened that their followers obtained, one way or another,—we need not tell how,—possession of the greater portion of the most fertile land. Thus Robert Bruce was the descendant of a Norman baron; John Baliol, his rival, was another; John Comyn, whom Bruce slew, was also a Norman; the Gordons, the Hamiltons, the Lennoxes, the St. Clairs, the Randolphs, the Lindsay, Kerrs, Montgomeries,

* Vide the "Archæology and Prehistoric Annals of Scotland," by Daniel Wilson, LL.D., 2nd edition, p. 334, where the poem is quoted at length. See also Mr. Cuthbertson's excellent pamphlet entitled "Walks in Annandale," to which we acknowledge our obligations.

and many others, seem all to have been of Norman extraction. Let us glance, for a moment, at the sort of castles those Norman warriors built in order to secure their property, keep their vassals in order, and the neighbouring country in subjection. Perhaps the most celebrated ruin on the Solway,—at least as a specimen of departed feudal grandeur as a castellated fortress, or what the old historians quaintly denominated “a place of strength,”—is Caerlaverock Castle. Its history commences so far back in the remote periods of Scottish antiquity that it almost belongs to the region of fable. It has, however, been pretty clearly established that it was founded before the Saxon kingdom of Bernicia, or, indeed, before the disciples of St. Columba had established Christianity in the Borders. But by whomsoever it was built, the fortress, as far back as the days of Malcolm Canmore, was the seat of the Maxwells, a family which still exists, and whose property it still is. William the Conqueror beleaguered it. Edward I. besieged it, and reduced it. It was recovered by Bruce; it was again taken and retaken; and, in fact, was so enfeebled by repeated sieges and dismantlings, that a new fortress had to be built, which was finally completed in 1425; and it is the ruins of this castle of which we must say a few words.

Leaving Dumfries on a fine sunny morning, having previously secured a box seat on the outside of the omnibus which plies between the Crown Hotel, in the High-street, and the Pier or Quay of Glencaple, on the shore of the Solway, we proceeded in high spirits, and with much curiosity, to have a leisurely survey of this noble and interesting ruin. It has no connexion with the subject, but it is worth mentioning that we pass on our way down the old house of Kirkpatrick, the seat of the ancestors of the present Empress of the French. It is an ancient square-built and rather modest-looking mansion, near the left-hand of the river Nith, and standing in the centre of a bare grassy field. What a contrast, one could not help reflecting, was this to the Tulleries! Glencaple, as well as a seaport, is also a favourite resort for sea-bathing of the Dumfries burghers and their families, as one might see walking along the picturesque beach, which we must do for three miles before reaching the object of our search; and many a weary mile have we trodden in search of objects less interesting than Caerlaverock Castle. Near the shores of the Solway, about nine miles below Dumfries, and situated at the southern extremity of the parish to which it gives its name, this venerable ruin stands in solitude and peace in the centre of a wood of splendid oaks and birches. As to its external aspect, we must remark that it presents much the same appearance that it did in the days of Pennant and Grose, both of whom have given a description of it, and it is curious that their description corresponds closely with that which is given of the original edifice in the Norman-French poem, which is still preserved in the British Museum. It is triangular, or shield-like on the plan, and surrounded by a wet ditch. At two of the corners there had been two round towers; and on the western angle, of which there are traces, is called Murdoch's tower, from the circumstance that the Regent Albany was confined in it. The other, or eastern, turret is entirely demolished. The entrance into the castle-yard lies through a gateway in the northern angle, which is machicolated, and flanked by two circular towers. Over the arch of the gate is still seen the crest of the Maxwells, with the date of the last repair, and the motto “I bid ye fair.” The residence of the family was on the east side, which is elegantly built, has three stories, and measures 123 ft. in length. The doors and window-cases are handsomely adorned with sculpture. On the pediments of the lower story are the coats of arms and initials of the Maxwells, with different figures and devices. On the windows of the second story are representations of legendary tales; and over the third are sculptured designs taken from the fables of Ovid's *Metamorphoses*, a not uncommon characteristic of the feudal architecture of the period. The opposite side of the courtyard is plain. In the front is a handsome staircase leading to the great hall, which is 90 ft. by 26 ft.

The surrounding scenery is, of course, highly picturesque. To the north lie the finely-wooded uplands of Annandale; eastward lies the majestic form of the Criffel mountain; to the south the Solway extends, with its rippling waves sparkling in the sunbeams; and beyond the Solway lie the beautiful outlines of the Cumberland mountains, which contain

in their bosom the regions of the lakes. The fishing-sloops, with their white sails, passing and repassing in the frith, and the fisher-villages, “peeping from among the trees,” add to the value of a landscape and sea-piece that for beauty and variety can hardly be surpassed. Who shall tell us about these Norman architects, who seemed to choose their sites for beauty as well as strength, and who combined the poetical decoration of a “Lady's Bower” with the grim constructive necessities of a Border tower and garrison? Caerlaverock Castle is still sometimes the scenes of feudal festivity. When Lord Herries, the present proprietor, came of age in 1858, there was a great and joyous meeting of the tenantry and their friends in the old castle hall; and Mr. Maxwell, of Breoch—who presided over the gathering—told, among other things, that the ancient and honourable family to which the noble lord belonged had been ever distinguished for kindness to their vassals and benevolence to their dependents! Long may the walls of Caerlaverock resound with the cheers which kindly acts must always evoke!*

To conclude this subject we will briefly allude to Drumlanrig Castle which will serve as an illustration of dual magnificence of the last century as contra-distinguished from the ancient feudal grandeur and the warlike necessities of a fortress. This extraordinary pile, it is said, occupied ten years in constructing and bears the date of 1689. It stands on a knoll or rising ground on the right bank of the Nith, about seventeen miles north-west of Dumfries, and within the parish of Durriadeer; and for several miles forms a conspicuous feature in the rich and varied landscape of the valley of the Nith. The castle superstructure consists of a hollow square about 145 ft. on external walls, surmounted with turrets capped and spired at its angles. It presents such an array of windows that there is a local proverb to the effect that they are as numerous as the days of the year. The staircases enter from the inner court, and ascend at the angles in semi-circular towers. The architraves of the windows and doors are profusely embellished with the well-known arms of the Douglasses—the bloody heart pendant on a field of stars. The principal gateway fronts to the north, and consists of a heavy Gothic archway; and the eastern walls also possess a noble though heavy elevation combining the aspects of strength and beauty as well as may be expressed in the united lineaments and proportions of a fortress and a mansion. There is no portcullis that we could see, but there is a very thick and quaintly panelled door of oak, as well as a ponderous iron gate at the principal or northern entrance. There are no means left of ascertaining the cost of this singular castle. It was built by William, the first Duke of Queensberry, who, it is said, only slept one night within its walls. But he had expended such enormous sums of his princely revenue in completing it that he packed up the bills of cost in a parcel, on the outside of which he wrote—“May the devil pick out the eyes of any of my descendants who dare to inquire into this!” The traditional and poetical taste of the district has rendered his famous sentence in the following couplet:—

“May the Devil pick out his eyes
That daurs to look herein!”†

Drumlanrig was the principal residence of the family of Queensberry; but on the death of Charles, the third duke—the famous duke—without male issue, it passed along with the Queensberry titles to William, Earl of March, and upon the death of the latter in 1810 it reverted by entail to the Duke of Buccleuch. During this period of its history it was little occupied, greatly neglected, and by the Highland rebels in 1745 it was much defaced. (A portrait of William III., by Godfrey Kneller, still bears the marks of their violence.) But the present noble proprietor, at his majority in 1827, adopted it as his favourite residence; and in a few years brought the castle itself and the beautiful grounds which surround it into the fine condition in which we now see it. The present Marquis of Queensberry, we may add, usually resides in a modern mansion on his patrimonial estate of Kellhead, near Annan. Of this respectable, but by no means architecturally remarkable,

* A good deal of valuable information respecting the settlement of the Normans in Scotland will be found in John Hill Burton's “History of Scotland,” vol. ii.

† Sir Walter Scott often quoted the example of the Duke of Queensberry with regard to his own expenditure on Abbotsford. See Lockhart's Life.

mansion—of which Smirke was the architect—we had intended to give some description; but we have already exceeded our space, and we must reserve some of our readers' patience for our notes on a humbler class of domiciles.

THE CASTLE OF ARQUES.*

LIKE many other castles in Normandy, Arques crowns and occupies the head of a steep and bold cape or promontory,—in this case a spur from the great chalk table-land of the “Pays de Caux.” On the west it is flanked by a short but deep combo or dry valley, and on the east by the deeper and far wider valley of the Bethune and Varenne,—streams derived from different sources, but which here meander across a broad and level bottom, above half a mile wide, until, a little below the castle, uniting, they receive the tributary Anne, and, thus combined, under the name of “la Rivière d'Arques,” fall into the sea at the port of Dieppe.

The castle thus stands above the left bank of the principal valley. It is about 4 miles from Dieppe; and immediately below, and to its north-east is the village whence it takes its name, remarkable for a church of unusual size, and a most elegant example of the style of the latter part of the sixteenth century. Beyond, upon the right bank, are the remains of the ancient Forest of Arques, a part of the spacious domain of the ancient lords of the fee, and upon the skirts of which, within shot of the castle, was fought, in 1589, the celebrated battle of which mention has already been made.

The castle, in its present form, is composed of a rectangular keep, standing in the south-west corner of an inner ward, in plan something less than a half-circle, having its chord to the west, and contained within an *enceinte* wall, strengthened by towers and buttresses along its sides and at its southern end, and capping its angles.

Applied to the north end of this is an outer ward, of later date, four-sided, and having drum towers at its four angles.

The main entrance, approached by a steep and winding road from the town, is in the north end, or at the point of the cape, between the two towers. Entering, is a second gatehouse, opening from the outer into the inner ward, also between two towers. A third gate-house, at the other end of the fortress, leads direct from the exterior into the south end of the inner ward, and thus opens a communication with the rest of the cape. There is also a lateral postern, defended, within its vaulted passages, in the west wall of the outer ward.

Outside the wall, encircling it closely, is the Ditch, the most striking feature in the whole fortress. This is in general plan not unlike the long section of a pear, the northern end being the smaller, and the western side flattened so as to be nearly straight. The counterscarp of this ditch includes an area of about 5 acres. The ditch itself, measured from the level of the foot of the wall crowning its scarp, is about 60 ft. deep, with slopes of 1 ft. horizontal to 2 ft. vertical, and about 70 ft. broad. It is only just not too steep to be covered with short turf. The crest of the counterscarp is a ridge about 6 ft. broad, and about 20 ft. below the level of the foot of the wall. From it descends another slope, equally steep, but much deeper; on the west side descending about 150 ft. to the bottom of the valley, and on the east to a rather less depth, as here this “glacis” is succeeded by a sort of broad terrace of pasture land, which falls gently towards the river, the level of which may be 250 ft. below the platform of the castle.

At the north end the ditch is traversed by a very modern casemate of earth, which supercedes the earlier drawbridge. At the south end, where the ground is highest, and the ditch about 50 ft. deep and 80 ft. broad, there remain two engaged piers upon the scarp and counterscarp, and between them two detached piers, of which the outer has fallen against the inner. All are rectangular; and the inner of the detached two is considerably the largest, and probably carried a tower for the protection and working of a double drawbridge. These piers are of flint rubble, cased with ashlar, of which a small part only remains.

At the outer end is the earthwork of a *l'île du pont*, or ravelin, of triangular plan, the passage from which was a little to the east side of the

* See p. 548, ante.

apex. This work was evidently constructed when artillery was in use, and is attributed to Henry IV., during the campaign of 1589. It no doubt represents an earlier barbican, also of earth and timber. There are now no traces of masonry beyond the bridge. This work opens upon the ridge of the promontory, which widens and rises somewhat higher to the south. Its surface is secured with banks and ditches, the remains of field-works of various dates, both of attack and defence.

The design of this castle ditch is peculiar. The more obvious plan would have been to place the walls upon the edge of the hill, and scarp its sides down to the valley with such steepness as suited the ground. Instead of this the upper 40 ft. of the hill, being chalk rock, was scarped vertically, and then faced or revetted by a wall, upon which was placed the *enceinte* wall of the inner ward. At the foot of the revetment was then excavated the ditch just described, the material being thrown outwards so as to form an artificial scarp, which thus became a sort of advanced banquette or earthwork, beyond the ditch, representing the crest of the glacis, and capable of being held by a line of soldiers, but which, when taken, was too exposed and too narrow to allow of its being held, or of cover being constructed upon it. This banquette was at a rather lower level than the foot of the opposite wall.

Such an arrangement is found in other castles in Normandy, and notably, as pointed out by M. Deville, at Molineux, De Longueville, Bec de Montagne, and in the later work of Château Gattiard, where, however, it is less marked.

The keep is rectangular, about 80 ft. north and south, by 70 ft. east and west, and at present about 60 ft. high. It stands in the south-west corner of the inner ward, close to the *enceinte* wall, of which its south-west angle forms a part. Its walls at the ground level are about 13 ft. thick. It presents three buttresses on the north face, and two on the south,—the third being a sort of cap thickening and enveloping the south-east angle. These are of the unusual breadth and projection of 9 ft., and they rise to the present, which cannot be above 10 ft. below the original, summit. At the north-east angle the adjacent buttresses are set square, leaving the angle free. The south face is plain, or nearly, excepting the cap at its south-east angle, which extends southwards, and is connected with the adjacent *enceinte* wall. The west face is plain, outside of which was the entrance.

This is composed of a flight of steps, beginning upon the north face, passing by a doorway through its most westerly buttress, and which then, turning, is continued along the west face, until, at its south end, it lands in the usual square appendage or barbican common in these keeps. This staircase was guarded by an exterior wall, and had a gateway at its foot, and one at its summit. It was covered over, as appears from marks upon the wall; and above it was, no doubt, the usual platform for defence. In the basement of the barbican, which forms also part of the *enceinte* wall, was a vaulted chamber opening into the basement of the keep; the usual prison. The landing story was also vaulted, in barrel, having at one end a loop towards the field, and at the other a door in the wall of the keep.

Entering this door, the staircase is continued southward in the wall of the keep, up a roughly-vaulted, round-headed, mural gallery, until at the angle it reaches the level of the first-floor. The gallery now turns the angle, and is continued, on the level, half-way along the south wall, when it is stopped abruptly. A door on the right leads upon the *enceinte* rampart, and one on the left probably leads into the keep.

The interior of the keep is composed of a basement and an upper, or perhaps two, floors, divided by a north and south wall into two chambers on a floor. This division-wall is said to be original, and ought to be so in a keep of this size, but it looks of the sixteenth century, and may represent an older one. The west basement is much choked up with rubbish. The east is tolerably clear, and shows an exterior aperture in its east wall, near the south end, which communicates with the adjacent south gateway. This may be original, but it is now a mere hole. In the north wall is a short mural gallery, entering a well-stair in the north-east angle, which ascends to the first floor and chapel only. The lower stage was not vaulted. The first floor has four windows on the north side, two in each room, and one on the east side. The second floor had also similar windows on its

north, and a vaulted chamber on its east side,—no doubt a chapel. The chapel is formed by throwing a vault from buttress to buttress for its floor, and at a higher level for its roof, and above this were the leads. There are traces of similar chambers on the north front. The upper story has been vaulted in six bays, three on each side, duly groined and ribbed, as is shown by the springers. The material and the workmanship, no less than the section of the ribs, show this to be a late addition, probably of the sixteenth century.

The supposed two upper floors were very possibly intended for one floor of state, with two tiers of windows and a chapel above. The chapel seems to have had a barrel round-headed vault, probably groined. The accounts show this eastern side to have been the royal chamber in the fourteenth century. The fire-places seem to be confined to the upper floors. As now seen they are of the date of the vaulting.

In the south-west angle of the keep, very near the wall, is the well, of which the pipe was continued at least to the first floor. It is about 6 ft. diameter, lined with ashlar, and in 1760 was choked up at 254 ft. deep, or about the level of the river; a depth now reduced to 30 ft. or 40 ft.

Outside, between the battresses, are traces of walls, as though the space between them had been turned to account below as well as above; but these walls are thin, and do not seem original.

M. Deville cites the public records for the existence in 1318 of four turrets on the keep, roofed with lead.

M. Le Duc, in his Dictionary, art. "Donjon," gives a great variety of very curious detail connected with this keep, detail unknown to M. Deville, and for which there should be some authority other than the traces actually existing, which are very unsatisfactory.

The keep is built of large chalk flints grouted copiously in mortar, and cased outside with ashlar, now mostly stripped off and removed. Within, the flints are occasionally laid herring-bone fashion. The ashlar was a calcareous tufa, known in the country, and formed by the trickling of calcareous springs over moss and similar vegetation. It was used in the earlier castles, but not afterwards. The later ashlar of the vaulting ribs and inserted door cases seems to be a fine hard limestone, approaching Caen stone in appearance, and perhaps actually that material. Where the ashlar is wanting the putlog holes are seen, placed with exceeding regularity. The joints of the original ashlar are large, those of the later fine. The new and old ashlar can readily be distinguished; but one flint wall is very much like another.

The Inner Ward, in length about 160 yards, and in its greatest breadth about 70 yards, is a natural chalk platform, revetted all round by a wall about 8 ft. thick, which on the east side is reduced to a parapet, but on the west rises about 20 ft. higher, probably its original height. In 1708 this court contained the apartments of the governor and the staff of the garrison, a well, and a chapel. These were probably of the sixteenth century or later, and have now entirely disappeared.

The *enceinte* wall, which girdles this inner ward, deserves attention, as most of it is of early date. Setting aside the four northern towers with their curtains which are of later date, we have about 380 yards of curtain broken by five mural towers and three rectangular buttresses. Nearly the whole of the wall is faced with flint, with three bands of ashlar. Much of the flint is laid in herring-bone workmanship, the repairs, where of brick, being of much later date. The ashlar bands are of tufa. Of the towers two, half round, are on the east front. Of these one, though probably original, has been cased with brick. The other has had an ashlar base, and the upper part, of flint, shows herring-bone work. Each is about 15 ft. diameter, with walls 5 ft. thick.

Between these towers are three rectangular buttresses; two of 15 ft. breadth and 12 ft. projection, and one about 7 ft. square. The two former contain no herring-bone work, and are probably early additions, perhaps by Henry I.; the latter is original.

On the west face are now no towers, but in 1708 there were two; half-round, and of small size, traces of which remain. They were, no doubt, original.

The remaining three towers capped the three salient angles of the south end; the central containing the gateway, and the others flanking it. All are one-quarter engaged.

The flanking towers are alike; about 22 ft. diameter, and 55 ft. high from the exterior base, with walls 7 ft. thick. The bases are either solid or pierced by steps leading down to the galleries. There is a regular basement story, and above it a floor on the level of the inner ward. They are not vaulted, and show no exterior herring-bone work, though one has a little inside. A modern summer-house has been built upon that to the south-east.

The central or gate-tower is 24 ft. diameter. It is pierced at the level of the scarp by a portal which opens upon the drawbridge, the piers of which have been described; and there is a stage above this.

The portal ascends towards the keep; its details are much broken down, and little can be made of them.

Of the *enceinte* of the inner ward there remains to be noted the northern gate-house. This, the original, and probably the only entrance to the Norman fortress, though much ruined, does not appear to have been materially altered. It consists in a rectangular building, 40 ft. deep by 20 ft. broad, set in the centre of the curtain, with which its outer face is nearly flush. It is crossed by an outer, middle, and inner wall, each pierced by an arch of 12 ft. opening, through which lies the passage. There remain the rectangular grooves of a portcullis, and a few years ago was evidence of a second, and in the wall is herring-bone work. The arches are plain, without moulding or chamfer. The inner one is round-headed, and springs from a flat abacus, chamfered below. The joints of the ashlar work are about 1 in. wide. The curtains on either side of this gateway, though much repaired, seem to be original, and there are traces of the old round gate-towers. The pit of the drawbridge remains in front of the gate, upon the original line of fosse.

The OUTER WARD no doubt occupies the site of an earlier outwork. It is built against the narrow and north end of the inner ward, is four-sided, about 250 ft. north and south, by a mean of 110 ft. east and west. Its west side is straight, being the continued line of that face of the old fortress. The east face has a slight re-entering angle, caused apparently by the shape of the ground. At the two southern angles are two large drum towers, which connect the old and newer work, and, probably, replace two smaller and older towers. These stand in the line of the old ditch, and flank the Norman gateway. That to the south-west, rather the larger of the two, and slightly oval in plan, has a mean diameter of 60 ft.; it is of two stages, both vaulted, or rather domed. That to the south-east, of 50 ft. diameter, is nearly circular, but has a remarkable spur, or keel-shaped projection, in plan, towards the field. It is of three stages, the two lower being domed. These towers are in fact casemates, having embrasures for small calivers towards the field. Each has a well-stair in its southern side, and is entered from the gorge.

The two other towers cap the northern angles of the ward, and flank the main gateway. They are of irregular form, semicircular to the field and angular within. In diameter they are about 40 feet, and about the same height. They are of two stages, which have been domed. The walls of these four towers are from 14 ft. to 16 ft. thick. They are of flint faced with brick.

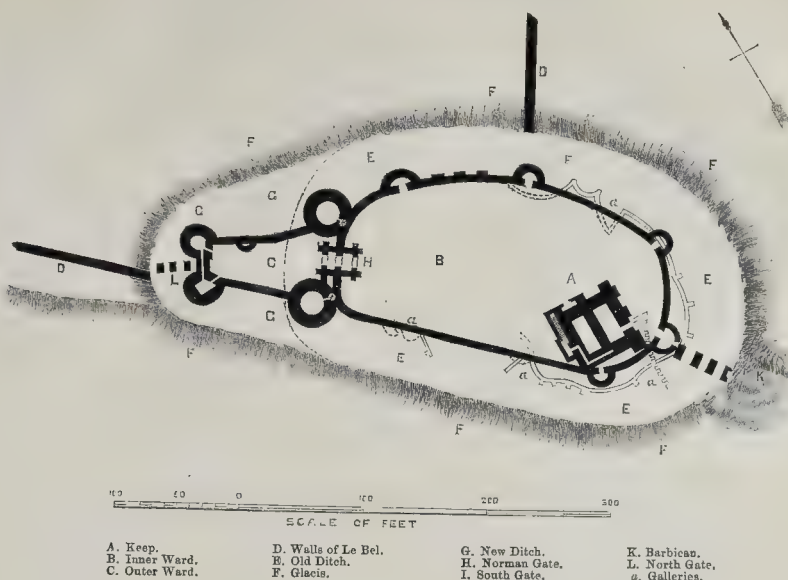
Between the gate-tower is the gateway, composed of a larger and smaller portal, the latter very narrow. The present work is modern, but no doubt, in this double entry, represents the earlier openings. The ditch, two detached piers standing in it, and with these the traces of the drawbridge, are concealed by the modern causeway.

In the west curtain, near the south-west tower, a flight of steps beneath hanging arches of brick descends from the ward level in the direction of the foot of the wall. This is much encumbered with ruin, but seems to have been a postern, opening upon the ditch.

All the works of this outer ward are of flint, rubble-faced with brick, which material forms the lines of the embrasures. The quoins are sometimes of ashlar, as are the extensive string-courses and bands, and the dressings of the openings. Traces of herring-bone work in its west curtain, outside, will be accounted for afterwards.

As the original castle was confined to the inner ward, its ditch everywhere encircled it. When the outer ward was added, the intercepted portion of the ditch was partially filled up, but the new work was included in a new ditch,

PLAN OF THE CASTLE OF ARQUES, NORMANDY.



A. Keep.
B. Inner Ward.
C. Outer Ward.

D. Walls of Le Bel.
E. Old Ditch.
F. Glacis.

G. New Ditch.
H. Norman Gate.
I. South Gate.

J. Barbican.
K. North Gate.
L. Galleries.

which was an accurate prolongation of the old one, of equal depth and breadth, and continued in the same direction. Accurate observation will, however, detect two slight shoulders in the counterscarp, showing where began the curve of the old ditch.

Very remarkable in this castle are the subterranean GALLERIES, driven in the chalk rock beneath the lines of the original wall, and behind the scarp of the ditch. These are now in part blocked up, but there still remain two or three hundred yards of them of which the direction is known. They are entered by a passage in the inner ward, in its north-west quarter, and by a descent of fifty-four steps near the keep, and possibly from other points now lost. The galleries are about 7 ft. high and 6 ft. wide, rudely cut, and somewhat singularly laid out. They lie within, without, and beneath the wall, and give off frequent spurs or short passages intended to occupy any space in which a mine was likely to be opened. At this time they have been broken into at three or four points in the scarp of the ditch, about halfway down. They were intended as a system of permanent counter mines to meet any attempt at mining on the part of the besiegers. In one place a large central pier is surrounded by a gallery, whence the branches go off; an arrangement intended probably to check the progress of those who might break in. So far as is known these galleries, of which a survey was made in 1708, are confined to the southern half, or four-fifths of the old castle. There are none under the outer ward.

Outside, and to the north-east of the outer gate, are some semicircular platforms, which seems to have played a part in the defence of the castle; but whether before or after the use of artillery is uncertain.

THE BEL.—A curtain wall, which originally was about 5 ft. thick, and from 15 ft. to 20 ft. high, commences abruptly upon the crest of the counterscarp in two places; one on the east opposite to the mural tower, which marks about the centre of that front of the castle, and thence descends towards the river, and the other north, close outside of the drawbridge of the main entrance. This latter wall is continued down the hill, and makes a bold sweep towards the town, and finally reaching the river bank, joins the river wall. The enclosure thus formed contains about twice the area included by the ditch of the castle, and has long been known as Le Bel or La Baile, a form evidently of the Norman-Latin *Ballium*, called by us the "Bailey." This enclosure is traversed by the road from Dieppe to Martigny, which passes through the two gates

bearing those names. A third, or water-gate, to the east, opened upon the river. Upon the north front appear to have been two small half-round mural towers, of which one remains. The river has somewhat encroached upon the lower part of the Bel, and has undermined part of the wall.

The Dieppe gate, which is also that from the town of Arques, was in 1433 called "La première Port du Bel de Château d'Arques," and as such was the subject of a tenure by castle guard already mentioned, the tenant being bound to defend it for forty days in time of war. From this gate the approach ascends to the castle, having the curtain-wall as a protection on its right. Where this wall approaches the castle, at either end, it is covered by a broad ditch, continued down the slope.

A flint-wall may be of any age, but the remains of the gates, which a few years ago showed round-headed arches, prove this enclosure to be of early date, probably one of the earliest additions to the castle, and made by Henry I. No doubt, before the construction of the outer ward, the wall of the Bel was produced, so as to unite with those of the castle. M. Deville has discovered a part of this wall worked into the great curtain of the outer ward, which lies in its line, and may still be seen.

Looking to the history of this castle, and to the evidence afforded by its remains, there can be little doubt that the keep is the oldest part of the whole, and the work of the Conqueror's uncle, Guillaume d'Arques, between the years 1039—1043, and it is supposed one of the earliest, if not the earliest of the rectangular Norman keeps known. The chronicle of Normandy, cited by M. Deville, says of William, "Si fist faire une tour moult forte, adessus du chastel d'Arques" as though there had been an earlier castle, which is possible.

To William or his immediate successor must be attributed the *enceinte* of the inner ward, the excavation of the ditch, and the formation of the galleries. All these no doubt formed part of the original plan, and it is only the occasional appearance of round towers upon the wall that leads to the opinion that any time intervened between the actual construction of the keep and of its surroundings.

The southern entrance, with its gate and two flanking towers, and one or two of the other mural towers or buttresses, seem to be additions, but of the Norman period, probably the work of the Conqueror's son, King Henry I., who, about 1123, seems also to have enclosed the Bel. Robert de Thorigny, called also "Du Mont," from his abbacy of Mont St. Michael, a Norman

chronicler of the twelfth century, says that King Henry I. "fortified admirably the Castle of Arques with walls and a tower." This has been held to show that the whole structure was the work of Henry, who reigned from 1105 to 1135, and the extreme boldness of the buttresses and superincumbent constructions of the keep no doubt favour this view; but, as M. Deville remarks in the same passage, similar reference is made to Gisors, Falaise, and other castles, known to be of earlier date.

M. Deville is disposed to attribute the southern gate to Charles V., as he finds a record of 1367, charging cost of transport of 6 "nances" of stone, each of 16 to 18 "tonneaux," from the river to the castle, for the masonry of the new bridge and the new gate of the castle. This material was taken by the king's direction from the dismantled "manoir" of Veules or Weulles, at St. Valéry-en-Caux. The accounts of 1378-80 mention the tower on the bridge behind the keep, its drawbridge, axles, ties, "vergues" or levers, 18 ft. long, and its beams of 9 ft. Probably the three towers are Norman; but this was probably the southern drawbridge and gate, and the opening of the communication between this and the basement of the keep. These works are attributed to Charles V. about 1378-80. He probably only pierced the existing central tower, not otherwise altering or rebuilding it.

The next considerable work was the outer ward, which may be attributed to the fifteenth century, subsequent to the use of brick and the introduction of siege artillery. It is singular that no record of this very considerable work should be preserved, for it included not only the outer ward, a castle in itself, with its enormous towers and massive curtains, but the extension of the ditch, in itself an immense work, the repair of the older walls and towers, and finally the fitting up and vaulting of the keep. All this is supposed to have been the work of Francis I., and it is said that the date of 1553 was inscribed upon some of the additions to the keep.

Henry IV., during his occupation of the castle in 1589, may have constructed quarters in the inner ward and repaired what was amiss in the old building; but more probably his traces are to be found in the field works which crown the adjacent hills and along the high ground towards Dieppe.

It has been thought that the ditch of the castle is a remnant of an older fortification, such a work as the early Normans or still earlier Celts might have constructed. No doubt this was often, perhaps usually, the case, with the sites of the great Norman castles, both in Normandy

and in England, and the position of Arques is a tempting one. There is, however, no positive evidence of an earlier encampment, and if one there was, it is probable that it was entirely removed when the present very peculiar ditch was excavated.

It will be observed that the keep is so placed as to command both the inner ward and the most exposed side of the castle, that along the level ridge of the promontory. It was perfectly capable of holding out when all else was taken, and finally, if threatened with fire or starvation, had a possible escape by the galleries.

This castle is the triumph of Norman skill. Often attacked, it was never taken by storm. Without being a royal residence it was visited in peace or in war by our Norman kings, from the Conqueror to John, and by most of the kings of France, from Henry I. to Henry IV.; and, after a lapse of 800 years, its oldest parts are still those best worth attention, and are at least as well preserved as the additions of far later date. 1867. C.

A PUZZLE IN THE NAMES OF SOME BRITISH ARCHITECTS.

WHEN Southey was on a visit to the pleasant city of Norwich, two difficulties, he tells us, mightily puzzled and perplexed him,—the number of turnings in the streets, and the in-and-in medley in the genealogy of the important family of the Gurneys of "that ilk."

A difficulty such as Southey encountered puzzles and perplexes us. Curious and inquiring as we are, and have long been, about English architects, we have at times found ourselves in a Campbell and Breadalbane maze about the families of some of our best-known architects and builders:—the Dances and the Hollands, the Gandys and the Gandy-Deerings, the Hardwicks, the Gwilt, the Smirkes, the Wyatts, and a Wyattville.

We first hear of an architect or builder of the name of Dance—"George Dance"—in or about the year 1737, when Caroline, queen of George II., died, and Colin Campbell and Kent were fashionable architects through Lord Burlington's recommendation and ruling influence. Dance's great work was the "Mansion House" of the Lord Mayors of London. He died on the 11th of January, 1768. In the Soane Museum there is a large folio of miscellaneous drawings (originals) by Dance. What more is known about him?

The second George Dance (the son, I presume, of the Mansion House architect) was the architect of the Old Bailey Prison in London—a building the exterior front of which tells most unmistakably its use. This George Dance was born in 1740; married 24th March, 1772, Miss Gurnell, of Ealing, and, dying 14th January, 1825, was buried in St. Paul's Cathedral by the side of Sir Christopher Wren and John Rennie. His two folio volumes of profile portraits, engraved by William Daniell, B.A., are well known and deservedly admired. James Love, the actor, who died in 1774, was the son of this George Dance.*

Sir Nathaniel Dance (alias Holland), third son of Mansion House Dance, was born in 1730, and died 15th October, 1811, aged 81. He married a Mrs. Drummer, a Hampshire heiress, and changed his name to Holland. His widow (Lady Holland) died 12th June, 1825. Sir Nathaniel resigned his Royal Academy designation of R.A. on his marriage in 1790. There is a portrait of him by Cipriani at the Academy, and a half-length engraving of him by Charles Turner, after R. Westall, R.A.

We come now to Joseph Gandy, elder brother of John Peter Gandy. He took the name of Deering; had property in Buckinghamshire; and was M.P. for Aylesbury, in that county. In 1826 he was elected an A.R.A., and in 1838, a Royal Academician. Exeter Hall, in the Strand, will preserve his name. Let me add that he was living in April, 1814, at No. 58, Greek-street, Soho; and that he died in 1844.

From the Gandys to the Hardwicks is an easy and natural step; and here we have another involved architectural family. In April, 1802, Mr. Thomas Hardwick was living at No. 55, Berners-street, Oxford-street, next door to the Mrs. Tottenham (No. 54) on whom Theodore Hook played the memorable Berners-street coal-order hoax. He was there in the same house, and for many years, when Robert Smirke, the painter,

was living at No. 13, and Henry Bone, the enamel, at No. 15.

As to the Gwilt, were there not more Gwilt than two architects of name,—George, who died in 1856, and Joseph, who died in 1863? I may be allowed to observe that there is a good account of the latter in the *Builder* of 3rd October, 1863.

For nearly a century the family of the Wyatts has been well known to London contractors and London masons. James Wyatt, who died in 1813, having half destroyed the character of Salisbury Cathedral, is buried in Westminster Abbey, with a tablet to his memory, close to the grave of Camden, in the south transept or Poets' Corner. His best work, the Pantheon in Oxford-street, London, is still standing to preserve his name. The portico in Oxford-street is well proportioned, harmonious in all its parts, and useful.

Some account of the Pantheon (hitherto unpublished) from a competent hand will not be out of place.

"The late James Wyatt was employed, immediately on his return to England from his educational tour in Italy, on the erection (1770) of the original Pantheon in the Oxford-road,—then one of the suburban avenues into London. He produced a magnificent structure of most elaborate Roman architecture, which was for many years a fashionable place of resort, somewhat similar to Ranelagh (see allusion to it in the *Critic*). This building was destroyed by fire, except the portion connected with the entrance portico in the Oxford-road and the side entrance in Poland-street. It was then rebuilt as a theatre, and was again destined to be a favourite with the fashionable world, for the performance of operas chiefly. It fell, however, into oblivion (or rather, into Chancery), and remained for many years deserted and dilapidated; its capacious stage during its latter years being occupied by Graham, the aeronaut, for the construction and occasional inflation of his balloon. It was so tenanted (the audience part being thickly enveloped in soot and cobwebs, and reported to be in a dangerous state of dilapidation) when in 1834 a few gentlemen visited it with a view to the erection of the present bazaar at their joint expense.

With the exception of the rooms next the entrance, the whole of the walls were then taken down to within a few feet of the ground, and other premises purchased, so as to gain an access through into Great Marlborough-street. The present structure was designed by and executed under the superintendence of Mr. Sydney Smirke, at an expense of between 30,000l. and 40,000l.

The entrance-front, in Oxford-street, as originally designed by Wyatt, was but little altered, an attic being added, and the portico increased in size, and otherwise remodelled. The front rooms, which formed the refreshment-rooms in the original building, were converted into galleries, for the exhibition and sale of pictures, &c.; and the whole area of the theatre was occupied by the great room of the bazaar, being about 116 ft. long, 88 ft. wide, and 60 ft. high in the centre. An aviary and conservatory connects this great room with the southern entrance in Great Marlborough-street; and the wing, which extends from the great room eastwards to Poland-street, is devoted to the private accommodation of the numerous renters of the bazaar. There are rooms for the deposit of goods, as they are brought in from the wholesale dealers; in spectresses' rooms, refectory, kitchens, &c.; and the whole extent of the basement, nearly three-quarters of an area in extent, is occupied as wine-cellars."*

A Jeffrey Wyatt changed his name from Wyatt to Wyattville. He was nephew of the Pantheon Wyatt, born 3rd of August, 1766, and died 18th of February, 1840. Windsor Castle, as restored or rebuilt under George IV., still preserves his name, and Chantrey's inimitable bust of him, his shrewd look and features. The bust well deserves the site it occupies in Windsor Castle.

There are still more Wyatt architects. Old Drury-lane Theatre,—the Drury of the Rejected Addresses,—

"By Wyatt's trowel patted plump and sleek,"—

was the work of B. Wyatt; and Apeley House, at Hyde Park Corner, as we now see it, was designed by Messrs. S. & B. Wyatt. Of Wyatt living this is not the time to speak.

PETER CUNNINGHAM.

* In the "Companion to the British Almanack for 1835," are many other details, drawn up by Professor Hosking, of King's College.

SURREY ARCHÆOLOGICAL SOCIETY.

THE annual excursion of the members of this society has taken place. The locale of meeting, previous to the proceedings of the day commencing, was at the Box Hill Station of the South-Eastern Railway, and the Dorking Station of the London, Brighton, and South Coast Railway. One vehicle was occupied by Belgian volunteers: it was an open one, and the strangers had to endure a drenching rain, which they did with equanimity, disdaining umbrellas. The route was to Great Bookham Church, which was down for the first visit, and Burford Bridge, Mickleham, Leatherhead, and Fetcham were passed. After a long ride, Great Bookham was at last sighted, with its little church on the rising ground, nestling among the trees.

Mr. Alfred Heales gave a description of the church and its associations.

The company then resumed the route onward through Little Bookham and Eppingham, towards West Horsley Place.

Mr. B. A. C. Godwin-Austen, of Chilworth Manor, gave an interesting account of the manorial associations from the time it was possessed by the Berners family down to the present period.

At the conclusion of the account the company dispersed, and minutely examined all the various works of antiquity with which the house abounds.

Mr. Austen, on the lawn, gave a short account of the front of the mansion.

The company then repaired to West Horsley Church, which abuts on the mansion.

Mr. W. H. Hart, in the absence of Mr. R. Bray, gave some account of the registers, and mentioned the startling fact, that in overhauling an old cupboard, a few minutes before, and alighting upon some ancient records of great interest, the sexton coolly informed him that there would have been more had he not from time to time used them as occasion required to light the fires in the church! This announcement rather startled the auditory, and many warm expressions of admiration were hurled against the register-burning "man in office." Saved from this conflagration were many interesting parochial records, which Mr. Hart handed round to those present, dating from 1694. All these were in a perfect state of preservation, and contained the names of some who were in attendance. Mr. Hart suggested that they should be handed over to the society, who would have them bound, and place them among their archives.

The rector, the Rev. H. S. Cerjat explained some of the brasses and monuments. The company afterwards drove towards Uplands, Merrow Downs, the residence of Mr. W. Willmer Pocock, the president of the society, who had invited the members and visitors to a collation. The return journey was made over Newland's corner, famed for its extensive views.

A NEW CEMENT.

WE learn from *Galliani* that M. Sorel has communicated to the Academy of Sciences a new cement, being a basic hydrated oxy-chloride of magnesium. It may be obtained by slacking magnesia with a solution of chloride of magnesium in a more or less concentrated state. The denser the solution, the harder it becomes on drying. The magnesium cement is described as the whitest and hardest of all those known to this day, and it can be moulded like plaster, in which case the cast acquires the hardness of marble. It will take any colour, and has been used by the inventor for mosaics, imitations of ivory, billiard-balls, &c. The new cement possesses the agglutinative property in the highest degree, so that solid masses may be made with it at a very low cost by mixing it up on a large scale with substances of little value. One part of magnesia may be incorporated with upwards of twenty parts of sand, limestone, and other inert substances, so as to form hard blocks. By means of these artificial blocks, building may easily be carried on in places where materials for the purpose are scarce. All that is required is simply to convey a quantity of magnesia and chloride of magnesium to the spot, if there be none to be had there, and then to mix them up with sand, pebbles, or any other matter of the kind close at hand; blocks can then be made of any shape, and imitating hewn stone. This magnesium cement may be obtained

* Genest's History of the English Stage, v. 411.

at a very low cost, especially if the magnesia be extracted from the mother-ley of salt-works, either by M. Ballard's process, whereby magnesia and hydrochloric acid are obtained at the same time, or else by decomposing the ley, which always contains a large proportion of chloride of magnesium, by means of quicklime, which by double decomposition yields magnesia and chloride of lime containing a certain quantity of chloride of magnesium, and which, with the addition of various other cheap substances, may be used for whitewashing.

THE ARCHBISHOP OF YORK ON ARCHAEOLOGY.

At the opening meeting of the Archaeological Institute in Hull, the Archbishop of York made an address as President. His Grace said,—"We may be proud of the two churches in Hull, Holy Trinity and St. Mary, the former inviting and the latter having received a wise and liberal restoration. Hedon, a town which even in the time of Edward I. languished in poverty, fearing the nearness of the two rivals, Ravensard and Hull increasing from day to day—Hedon, which in the time of Edward III. confessed that its commerce depended upon a sewer called the Sturch, along which boats used to pass to the borough, and that the said sewer was dried up, has managed to preserve for us a church worthy of a more flourishing and numerous population; and we cannot wonder that it bears some marks of decay. Unlike Hedon, which contains examples of various styles, the beautiful church at Patrington is of one period, the Decorated, and has the symmetry of one design. Its graceful spire, for which one is thankful in a country where a height of 190 ft. is almost mountainous, its noble oak roof, its beautiful proportions, entitle it to be called, after the fashion of county historians, "The glory of Holderness." A writer describing it in 1840 (Wm. Poulson) speaks of its ruinous condition. But it is already partly restored, and its present incumbent has shown such zeal in so arduous an undertaking that the completion of it cannot be a matter of doubt. Of the Abbey of Meaux, the remains are very small, but the archaeologists have to thank Mr. Edward Levine for publishing a volume of MSS. relating to this important house, and amongst them a chronicle of its government and doings. Further from us, but within easy reach and embraced in the scope of the present meeting, the Minster of Beverley, and St. Mary's Church in the same place, now worthily restored, the Priory Church at Bridlington, the Abbey Church of Selby, the church at Driffield, possessing, we are told, an effigy of Paulinus, the first Archbishop of York, Howden with its chancel and chapter-house in ruins and fast disappearing, Thornton Abbey and the remains of the abbey's house, which are to be explained by one who has studied domestic architecture with the greatest success; all these, and many other monuments of the piety and skill of ages long gone will pass before us, and will be lectured upon by those whose knowledge may be trusted. Let us hope that with such a programme the veteran supporters of this society may carry away with them pleasant recollections, even new information from this meeting; let us hope that the novices whom they meet here,—a body over whom I should have many claims to preside,—may retain the instruction that they are certain to receive, and may catch the infection of that fervent zeal for the past which animates this and the sister association. In reading the transactions of the sister society, to which I happen to belong, I am struck with the moderation of the present race of archaeologists in fixing the limits of their science, and in the method which they pursue within those limits. Archaeology is a science of the remotest past; but this general description would include ethnology, the history of languages, and the study of ancient written records on palseography. Archaeology, according to one authority, should be content to separate herself from all these tempting subjects, and to confine herself to the study of the works of human skill, which indicate the growth and social condition of man. A boundary-line so artificial as this is likely to be transgressed from time to time. The charter, the chronicle, and the will are often appealed to, although the object of the sciences is not the written documents, but they are used not so much for the written thought as for some tangible monument on which they may throw

light, not so much for the development of mind they contain as for their account of things produced by manual skill. The charter illustrates for us some church, castle, or abbey; the will, with its inventory of household possessions, admits us to the interior of a dwelling which we can by no other means reproduce as it was upon the day when the possessor left it never to return. The main business of archaeology is with the work of men's hands. For my own part, I would venture to submit that, in taking for its materials all the materials of history, archaeology would do better still. I am glad to see a department of history connected with this institute. Now this boundary is a very narrow and artificial one, but within it the archaeologist has learned to prescribe to himself rigid rules of method. You know that every science consists of two parts, the collection of facts, and the grouping of the facts when collected under some idea, or law, or principle, call it what we will. A French writer tells us that in the course of their history sciences pass through three stages—the theological, the metaphysical, and the positive. I prefer to say that sciences are found in three conditions. The first, where facts are scanty and theory too active; the next, where facts have been industriously collected, but theory has not been applied for their due interpretation; and the last or perfect condition, where facts have been abundantly supplied, and theory has been used with sobriety, and yet with bold sagacity, for their explanation. Now, the greatest peril to science has always been on the side of the tendency to theorise overmuch. The hypothesis, too swift of foot for the laggard experience, has left her far behind. Bacon, in the sixteenth century, usually has the credit of awakening the world of science from a speculative dream to a sober experience; but the remarks of Leonardo da Vinci and others show that this was felt by other minds. Bacon was the spokesman for his generation of an intuition which perhaps no one else could have expressed so well or with so large a result. Now, the temptation which besets all physical sciences perhaps assails archaeology with the greatest force and success. Over the restored building, or the exhumed relic, the feelings of wonder, reverence, respect, and curiosity are aroused: who can wonder that the theory, or rather guess, is prompt, or that it is ambitious? Dr. Stukeley wrote, in 1740, that the church at Driffield was very old, and contained an effigy of Paulinus, the first Archbishop of York. I probably do him no wrong in saying, that the only evidence connecting the *basso relievo* which still exists in the church with my great predecessor, was that Paulinus was the first and most illustrious archbishop, and that there was no particular reason against fixing his name to the ecclesiastic with a crossier whom he found at Driffield. Stukeley was a wild and speculative inquirer, and in such hands archaeology had not advanced very much beyond the monks of Meaux, who record that in the reign of Henry II. "the bones of King Arthur, and of Guinevere, his queen, were discovered at Glastonbury," and were distinguished by most unmistakable marks, for Arthur's thigh-bone exceeded by three fingers the length of the tallest man's thigh-bone that had ever been found when measured down to the knee. Moreover, the space between his eyebrows was of the breadth of the palm of a man's hand. One understands the mistake which makes artless monk and credulous doctor hasty to make over to saint and hero the first great and worthy thing that imagination can manage to connect with their names. But guesses of this kind are not archaeology, and it makes little difference in our estimate of them whether they happen to be right or wrong; they tend to bring the whole subject into ridicule and disrepute.

Many people think, to this day, of a museum of antiquities as a collection of stones and potherds ticketed into dignity by falsehoods, and divide collectors into two classes—those who deceive themselves, and those who would deceive other people. Modern archaeologists do not, in the transactions of both our English societies there is a remarkable caution and sobriety. To avoid a groundless theory seems to have become, as it were, part of the moral code of the archaeologist. The time for theories, it seems to be admitted, begins when the collection of facts has been large and general, and as exhaustive as the subject seems to admit. Archaeology has passed through the same stages as the other sciences. Once chemistry like astronomy was bare of

facts, but full of dreams. But she was born late; and her earlier trips and stumbles took place; amongst her grown-up sisters, who make merry with her failure; yet the ridicule has stimulated her efforts, and no science walks more firmly or more truly along the line of induction. But ever and again the ardent curiosity and impatience of symmetry will lead us into hasty generalisations. The theory of three periods—the stone age, the bronze age, and the iron age—has been carried too far; and in assigning a place to any weapon, or other implement, people often forget that long after bronze and iron were discovered, stone might continue to be used among the poorer and less civilised, whilst in our own country it is very probable that the iron instrument preceded the composite metal bronze which was in use on the Continent.

At present one cannot help thinking that many of those who explain to us lacustrine dwellings of early times, and the buried flint implements, and the inhabited caves, have far outstripped the facts at their disposal. An enormous antiquity has been claimed for earthen vessels found about the lake dwellings, on the ground that the lake dwellings must be enormously old; but an archaeologist sets them aside by side with vessels known to be of the fifth and sixth centuries after Christ, of the sort known as Anglo-Saxon, and finds the form the same. Surely this marked similarity of form is worth more than any mere speculation as to what the age of the lake dwellings ought to have been. And this brings me to consider a little more closely the work of the archaeologist, and to recognise its dignity and worth. Archaeology might be called the microscope of history; and we know that without the microscope neither geology nor physiology could have reached its present exactness. Ehrenberg computed that every cubic inch of a stratum of Tripoli powder at Bilin, in Bohemia, contains 41,000 millions of the microscopic organisms, and this bit of stone or pinch of powder, a thousand times more populous than this island of men and women, would have kept its wealth of life a secret only for the microscope. One may say that without this instrument the science of physiology could not exist. The services which archaeology render to history are of the same kind, and in the end they will probably not be less. Next to the soil of England, perhaps Englishmen are most interested in that country from whence the word of life has come to them—the land which the Lord made holy by His footsteps—the land which for eighteen centuries seems to have been mourning in ashes the crime of having put Him to death. We could not stand in Nazareth, embosomed in its low and rounded hills—we could not shelter from the heat under one of the aged olives of the Mount of Olives without our hearts burning within us with a sense of greater nearness to the heavenly. We of the English Church, known in those Eastern lands as "Christians of the Book" have studied with peculiar care the scenes that throw light upon the Bible. Strange to say, the archaeology of Palestine is still in its infancy. The jealousy of Mahometans, and not less the jealousy of Christian sects towards each other, have hindered us from using the proper means; and the traveller has stood guessing and theorising upon some mound of earth under which perhaps lay buried the monuments that would have solved the riddle and set the guesses at rest. We have hardly broken ground in Palestine, though we know that the evidence we seek must be buried under the soil. But here, too, a beginning has been made. Our Government has lately published an elaborate work, full of exact measurements and plans, and photographic reproductions. A society has been formed for the exploration of Palestine, and a fortnight since I pleaded the cause of this society in a long interview with Fud Pasha, the powerful minister of the Sultan, who promised that every aid should be given to our explorers that was consistent with public order. "The Turkish Government," he said, "is tolerant to all; but the danger lies in the fanaticism of Christians against each other. We, too," he added, "believe in Christ, the Son of God, born of the Virgin—ascended into heaven; only the crucifixion we do not believe." That is still to Jews a stumbling-block, to Gentiles foolishness. But with larger powers our little society will pursue its work so far as its means allow, and a word of sympathy and a word of prayer from members of this body will be valuable to us.



A CHAT ABOUT

THE RIVER FLEET.

In times that have not long gone by when there were but few facilities for travelling in comparison with those of the present, a voyage to Gravesend, or a journey to St. Alban's, Windsor, or other famous places in the parts surrounding London which are now within an hour's journey, was looked upon as an adventure of as much consequence as we at this time attribute to an expedition to the Dutch coast, Paris, or the bordering parts of Northumberland, Durham, or other comparatively far-off places. A journey to Edmonton, Waltham, or for travellers of greater endurance and enterprise, to Epping Forest, was an undertaking of consequence. But in those days, many pent-up Londoners were content to be able to wander with their children to the Southampton Arms, the Bedford Arms tea-gardens, or to other pleasure-grounds at Camden-town; the Load of Hay, on the road to Hampstead, or to Chalk-farm. There was also accommodation nearer to the City bounds, at the Adam and Eve, in the Tottenham-court-road, and the tea-gardens of the same name adjoining old St. Pancras Church. Then there was the Elephant and Castle, and, not so far south, the Fortune of War. Nor in this list of tea-gardens and taverns should we omit the far-famed Bagnigge Wells, the Merlin's Cave, the Angel at Islington, the White Conduit, and other places of refreshment which were scattered here and there. Even now antiquaries who have diligently examined the books of local history connected with London and its environs will meet with much disappointment when they go in search of the realities. Wonderfully has the antiquarian map of the metropolis been changed. Although in the parts which lie from fifteen to twenty miles around London, there are scenes of exquisite beauty, which show a high state of cultivation; there are also immense tracts of heathy, wildly-picturesque, and uncultivated land, which seem to have been disposed as they are for the express purpose of providing

for the recreation and other wants of the immense population which has accumulated upon the banks on each side of the Thames at London. In all directions, wide tracts of land are being occupied by buildings of various kinds. Others—and the spaces seem, when looked at, to be enormous,—are devoted to the purpose of burying the dead; and in various directions—in some instances by a slow process, and in others with a degree of rapidity which is astonishing—the barren districts are showing the several phases of progressive management in land culture. But we must not wander further in this direction at present, and may only remark that, both in the metropolis and while sojourning in provincial towns, we have found health, amusement, and instruction in observing with interest and care the rivers, streams, and other water-courses which flow through the various neighbourhoods. Get some distance away: take, for instance, the Tyne, and by some means of convenient water-transit sail from the rugged rocks on which the priory and castle stand; see the church and spots connected with the Venerable Bede at Jarrow, the vast groups of ships, the staithe and other means of loading the vessels with coals, the great docks, manufactories, and other varied scenes of industry; the smoking and steaming of innumerable chimneys, the commanding appearance of the canny town of Newcastle, with its Norman keep, the symmetrical lantern of its ancient church, its famous bridges and other buildings, both old and new. Then, with knapsack on back and staff in hand, away to the immense manufactories of the Hawthornes, the Stephensons, and Sir William Armstrong; look to the Roman wall; refer to our histories for accounts of Scottish armies of invasion; away to Wylam, where George Stephenson was born, and where the locomotive was first brought into a rough working order; and so on to the little churchyard of Ovingham, where Robert and Thomas Bewick lie buried, and to the ruins of Prudhoe Castle; to Bywell, with its two little churches—one the Black Church, the other the White Church; the castle; the Roman and other remains of antiquity; and then through wild and solemn scenery, many points of which are rendered more than usually interesting by the legendary lore which is connected with them. And as mile after mile is passed, and the pencillings in the portfolio and notebook become more numerous, the chief stream of the Tyne dwindles away, until in the dry summer weather its course and rise amongst the heather-covered hills are scarcely distinguishable. Such a trip is not without its peculiar delights; and one in connexion with journeys of this kind is, that the traveller is taken out of the beaten track; he meets and mixes on terms of friendly familiarity with travellers by the way, and the dwellers who lead simple lives away from the turmoil of towns.

The English rivers have all—each in its way—varied interest; and we know of few modes in which a summer's holiday could be better spent than to select one of our rivers, and wander from the outlet in the ocean to the humble origin in the fissures of rocks, in minute gurgling streams, or in springs in moss-covered basins, in

the repose of nature, which is only broken by the pleasant sound of the water, the dry rustling of the withered grasses, and the notes of insects and solitary birds.

The spirit of travel is one of the characteristics of Englishmen. It is said that this feeling is more developed in Scotland, but respecting this trait we will not enter into dispute, and will just remark that the wanderers from the British Islands have found their way, notwithstanding dangers of all kinds, into most parts of the world. Notwithstanding the attention which has been bestowed on other matters, the exploration of rivers to their sources has always been a favourite kind of adventure. It is, therefore, not wonderful that if at home we have no opportunity of examining such a watercourse as the Nile, we should be tempted to take advantage of what in this particular kind of adventure offers itself; and, even without moving from our own land, the journey throughout the course of the Thames or of the Severn, if well performed, would yield adventures with which the traveller might with reason feel satisfied. Many would be unable to spare time for this purpose, although such a wandering, either alone or in company would, in fine weather, prove very delightful; and therefore many, especially in those bygone years to which we have referred, have been content, if dwelling in London, with the examination of some of the tributaries of Father Thames. Take, for instance, the river Lee, or the artificial stream made with so much skill, patience, and cost by Sir Hugh Myddelton, and called the "New River." Either of these streams will guide a cheerful company of Londoners in a pleasant way towards the Hertfordshire hills; or the "Mole" and some other streams which flow into the Thames will take the pedestrian to many a delightful spot, where the landscape painter, the architectural draughtsman, and the antiquary might find subjects for study, nor would the naturalist and the geologist find the soil unprofitable.

But as regards the metropolis, the Londoner who in past times would have been content in the holiday-journey to Bagnigge-wells, the Spa-fields, Merlin's Cave, and some of the other places for the refreshment and repose of travellers, is forced to go further in search of green fields; and the little boys, humble followers of old Isaac Walton, who with parcels of provisions, earthenware vessels, willow rods, and other articles intended for the fell destruction of roach and dace, and such small fry, are obliged to walk miles away, even from Clerkenwell and the southern parts of Islington and St. Pancras, before they have the chance, with success, of casting a single line; and the bournes and streams which passed through parts of the City, and were so familiar to the dwellers of Old London, are hidden from the sight. And glad we should be of the circumstance. Notwithstanding the evident advantages of this shutting-up process, however, there are one or two drawbacks, which may be worth referring to. One of these is, that besides the watercourse, they brought along the margins a dash of the country into the town, and seemed to point out the way, especially in days when the watercourses had not become so polluted as to render them unwholesome.



The River Fleet.



PROPOSED HOTEL, OPPOSITE THE ENTRANCE TO THE CENTRAL PARK, NEW YORK.—Messrs. BAXTER & GILMAN, ARCHITECTS.



some to the body, to pleasant walks which did not lie far away from the homes of the artisans and their children.

To refer, however, to the quarter of a century, or thirty years ago, mentioned at the commencement of the present paper: even then the chief of London streams had become hidden from the sight, cast into a state of oblivion to all except some of the authorities at the City Office of Sewers and a few very old inhabitants, or a small party of learned and painstaking antiquaries, who, by the patient examination of plans and maps, could, and even can now, by the names of the streets, or by the peculiarities of the gradients of the surface, trace the course which those once lucid waters ran, and in which, in Queen Elizabeth's days, and for long afterwards, close by the Mansion House, and in other parts within the City walls, the small boys of those generations may have caught minnows, or captured frogs, and chased the butterflies.

At the time we have stated (about thirty years since) although the Old Bourne and the other City streams had been for long closed, the River Fleet and the New River came, with the exception of a short length, openly and directly to their destination.

At this time there was but little difficulty in effecting an exploration of the course of the Fleet, from its source to the huge gully-hole from which, at high-water, it tumbled a polluted and unwholesome stream into the Thames; and, when the river was low, it fell with a splashing, heavy noise, adding, during many yards of space to the unwholesome deposit which, to a depth of several feet, had collected on the shore. From the river, along Bridge-street and Farringdon-street, the Fleet stream was hidden from the river, and a substantial sewer passed in nearly a direct line to the back of the houses which formed the east side of Field-lane, but those who felt desirous to examine it might be fitted with water-tight jack-boots and suitable garments, and, in the guidance of some of the men whose business keeps them for many hours in the day attending to those great underground channels,—on the careful keeping of which the health of the metropolis much depends,—they might enter the covered part of the Fleet and progress northward. It was some time before the eye became accustomed to the darkness, notwithstanding the use of lantern-light, and to the deep roaring noise of the water. Far away in the distant perspective was a small light, which did not appear larger than a shilling, but seemed of an intensely-blue colour, and this showed the termination of the sewer at the point to which it had then been carried. In course of time the lantern-light began to glimmer on the brickwork,—on the thick water, unpleasantly tinted with a sickly greyish green, on the picturesque figures of the assembled company, on points of communication with other drains, and parts where, in summer months, when the water was not raised by heavy rain and thunder storms, there were accumulations of a dark-coloured, sandy-looking substance. At the time referred to, mud-larks and others often explored the Fleet in the search for articles of various value, which had been thrown away by careless housewives, or to pursue their trade of rat-catching, or in some instances to damage traps and carry away metal work of really small value, but which would be costly and troublesome to replace. Boys and youths often exposed themselves to danger, not only from the flow of the Thames, but also from those sudden land freshets which accumulated, and rolled down, the Fleet stream with irresistible force, aided by the numerous streams which flow from various directions. The noise of the water, the peculiar sound of the conversation in this long archway, and in parts the heavy rumbling of the carriages on the pavement overhead, when once heard, kept their places in the memory amongst the strange noises of the great capital. The air was heavy here, and we were not sorry to pass from this portion of the bowels of London to the regions above, and to notice that behind Field-lane the actual surface of the Fleet river was about 10 ft. below the surrounding level, and that on each side, more or less, the houses were planted on a kind of quay, partly of brick and partly of stone work.

From a suitable point, if we could by any possibility have closed our sanitary eyes, the scene which was here presented would have been pleasant in respect of its striking and picturesque appearance. Here and there passing across the uncovered stream there were tumble-down wooden bridges, supported in part by rugged and dilapidated houses. From some

windows women were throwing liquid refuse, and from others drawing water out of the stream, which was often applied to domestic uses. From many parts clothes were hung out to dry; and here and there were open spaces, one of them being part of the premises of the celebrated "Horse-slaughterer to his Majesty." Others were devoted to preparation of cat's-gut, sausage and polony skins, which in immense festoons hung in various parts of the ditch. There were other unwholesome places, such as butchers' slaughter-houses and the premises of tripe-dressers, placed in the midst of tenements which were let to families, forming a dense population.

But for those who had not been acclimatised to the atmosphere, it was, in the days referred to, advisable to make a *détour* for the purpose of obtaining a breathing of better air, but good air could not be readily had in this vicinity. It would be difficult, however, for any one who had formerly known this locality to recognise it now. Over a large space the houses have been swept away, and those who once resided in them are dispersed, but accounts of the dwellings which once stood here have been given in these pages, as we saw them, both in the broad daylight, and in the darkness of night, when evil was rampant. Then the deep shadows of London were less known than they are now; but words, even when aided by the pencil, would fail to give a full idea of the terrible conditions which prevailed throughout the metropolis, and in this district especially.

Unable to find satisfactory air in the locality, part of which is now taken for the underground railway and its terminus, and where the partially completed vaults mark out the lines of new streets in such an imperfect and strange way, that the boys have been the first to christen it by the name now generally known as "the ruins," we wandered back over the surface of the part through which we had passed from the Thames in the covered sewer, and by means of old accounts, and prints, formed something like a notion of the scene here in the time of the grim walls and other portions of the Fleet Prison, with its outer walls and keeps eastward of the London-wall, Newgate, and so forth; the high-pitched centre of the inconvenient Fleet Bridge at Holborn, and before the Great Fire of 1666, Old St. Paul's, and portions of Ludgate and the City wall running towards the Thames. At the time of our exploration, however, no such marks of particular antiquity met the eye. Large houses without mark or picturesqueness, stretched along New Bridge-street, past obelisks at Fleet-street; the large bare wall, and the forbidding but singular-looking portal which afforded an entrance to the dreary, unwholesome, and unhealthy-looking debtors' prison: but even this has passed away, a circumstance which few will regret.

Again sauntering northward we reach the open part of the Fleet, and marvel, while looking along the line of the Fleet-valley and comparing its past value with the sums which it would at present fetch if placed in the market. For instance, the site of St. Pancras Workhouse would, only a few years since, have brought the usual price paid for pasture-land; but when thought of for an extension of the Midland Railway Company's line, the solicitor of the company offered to the vestry 80,000l.—to be paid without interest in four yearly instalments of 20,000l.—for the freehold land, the Vestry Hall, and other buildings. The land consists of 7½ acres, so that the price offered was over 10,000l. per acre; but after a consultation with Mr. Lockyer, the architect, the Board of Directors resolved that, in consequence of the central and advantageous position of the work-house, and the opening which the still unoccupied land offered for any necessary extension, the proposal of the Midland Railway Company for the purchase of the property be declined; and there can be no doubt that they were right on this point, for the value of the land will largely increase, and with great rapidity. It is a wise policy for those who wish to endow charities to let them depend for income upon the revenue of well-chosen land in the suburbs of the metropolis. Many remarkable instances of this might be given; but the following may be taken as a characteristic illustration. One William Harper, was born in the town of Bedford, from which town he came to London; and having carried on business as a tailor, became a member of the Merchant Tailors' Guild, and eventually served as Sheriff for Middlesex, and Lord Mayor of London. In the reign of Edward VI. let-

ters patent were granted him, conveying to the town of Bedford 13 acres 1 rood of meadow-land, in the parish of St. Andrew, Holborn, in the county of Middlesex, of the annual value of 140l., for charitable uses, for the benefit of the inhabitants of Bedford and also of the school-house in the said town, which had been built by this worthy. The land was subsequently built upon, and now comprises part of Bedford-row, Bedford-street, Gray's Inn-passage, Featherstone-buildings, Hand-court, Three Cups-yard, Princess-street, Red Lion-street, Lamb's Conduit-street, Theobald's-road, and other places. The houses were leasehold, and the leases having all fallen in, the estate, which was only worth 140l. a year, now produces 13,000l. a year, and is known as the Bedford Charity. Other instances more immediately in the way of our journey might be mentioned; but we are in sight of the glittering and richly-coloured banners of Field-lane, and being invited by fair dealers, we enter this singular London region.

"Buy a good Indian handkerchief, gentlemen;" "Here is the genuine article; half a dozen for a sovereign;" and other invitations to purchase meet the ear; and it is not easy to move along in consequence of the pulling and pushing and the bewilderment caused by the flutter of silk handkerchiefs and articles of male and female costume, the persuasive voices of the daughters of Israel, most of whom were more fat than fair, and the mingling of male voices which more resembled the croaking of ravens than the speaking of human beings. Here as we pass along may be noted all the peculiarities, on a small scale, of Petticoat-lane; here were second-hand tools for workmen, boots and shoes, hats, caps, and whole suits of clothing, the chief of which were renovated and altered with such skill, and shone with such resplendent brightness, that the original owner would have failed to recognise the once familiar articles, which for long he had been accustomed to wear. Very skilful were the artists who effected those works of restoration; but vain was the trust which might be put in them by purchasers, for the chemical processes and rubbings, the hot-glazings, and stiffenings, do not render the worn-out materials substantial; and as regards the gloss, the tail-end of an April shower or a few hours of a London fog, at once undecieved the most sanguine, and caused the discreet to distrust for evermore the charm-working of the dealers, who still in loud words offered to stake their existence that old articles revived in this way were "better as new." In Field-lane, now no more, there were no indications of the rural condition from which its name was derived, except that the narrowness of the flag-stone covered footpath was of about the same width as that of many country footpaths; but now the noise and crowding were bewildering, and here and there amongst the shops there could be noticed narrow dark passages, which led to upstairs tenements, crowded with people, and back premises abutting on the side of the Fleet, in which lurked dangerous-looking groups of idle people, who eyed with dark glances any strange visitors. At the time mentioned, dog and cock fighting, rat-killing, badger-baiting, the fighting of boys and of men, and other barbarous practices were common in back alums such as this without interference; for then, although the time since is so short, it appeared to be a police rule to leave the benighted dwellers of these localities to their own resources. There were also in the lane lodging-houses for travellers, which were daily and nightly places of resort for thieves, their trainers and associates; and here might be met with old men, from whose physiognomy George Cruikshank doubtless studied that remarkable figure of Fagan with which the story of "Oliver Twist" is illustrated. Very skilful were the thieves who dwelt there, and it was by no means unusual that visitors who might have ventured into Field-lane from motives of curiosity, and effected a purchase, were robbed of the goods, and perhaps of other articles, before leaving it.

The dilapidated appearance of many of the premises which abuted upon the Fleet was extraordinary. Some of the houses were built of wood, mixed with brick and plaster, and both exteriors and interiors were crumbling to pieces. In some of the least unsightly of those yards and other premises which at one time had been gardens, all the vegetation which remained was a few dead and withered trees; but there were gathered on those spots human weeds, where the flowers and fruit should have been, in the form of boys and youths, who in groups were as in-

As affecting the ventilation and cleaning of

buildings, the Order provides that, before any school, place of public amusement, or other place for holding large numbers of people for any purpose whatever is begun to be built, there shall be submitted to the council a plan and description of the proposed construction of such building, with respect to the means of supplying fresh air to, or proper access to and exits from, such building. The owners of all common stairs and passages are bound to have the same properly ventilated and cleansed to the satisfaction of the burgh engineer and inspector of cleaning; and these officers, as well as the medical officer, may enter all dwelling-houses or other premises where there is reason to believe that they are not in a cleanly condition.

The Order prohibits the establishment, without the consent of the council, of any noxious or offensive business or manufacture within the city, or within 200 yards thereof. It enacts that no premises within the city shall be used as an infirmary or hospital without a license from the magistrates, granted only after certification by a medical officer. It authorises the medical officer to cause persons labouring under infectious diseases to be removed to the infirmary, and it further authorises him to cause to be removed to a lunatic asylum, to be provided by the magistrates and council for the purpose, such persons as, if kept, would be offensive or prejudicial to the health of persons in the same or any adjoining tenement.

As regards the improvement of the City, the Order also confers important powers upon the Council. After one month's public notice, they may allow houses to be set forward so as to improve the line of street; and they may also, on making compensation to the owners, cause houses projecting beyond the line of street, when taken down in order to be altered or rebuilt, to be set back towards the line of the street or of the adjoining houses. They may also, after a resolution to that effect at a meeting called for the purpose, acquire houses or premises for the purpose of widening, enlarging, or otherwise improving any streets, courts, or closes, reselling such portions of the premises so acquired as may not be needed; they may drain, repair, pave, or otherwise improve streets, courts, and places where there may be doubts as to the liability of owners to execute such works. The Council may acquire lands or premises for the purpose of reserving them as vacant spaces, or of opening up thoroughfares, or of improving the buildings, or of otherwise disposing of them, so as to improve the sanitary condition of such localities.

THE BRITISH MUSEUM.

THE House, in committee of supply, has just passed the usual vote for the British Museum, amounting this year to 99,621*l.*, being 3,123*l.* less than the estimate of last year.

Mr. Walpole, in moving the vote, said that the number of those who studied in the different departments was increasing, and that the accommodation required to be increased. Of the estimates a large part was devoted to the purchase of the Blacas Collection of Antiquities.

Mr. Layard said he considered that our collection in the British Museum, as illustrative of the progress of civilisation and art, was unequalled in the world; and he believed the reason why it was not adequately exhibited at the Museum was the want of room. He should like to have some information on the subject of the great catalogue so long in progress, and when it was likely to be finished. He hoped the Government would next year seriously consider as to providing adequate room for our various collections. He had it in intention to bring forward a bill for the better arrangement and organisation of our national collections, which he proposed to introduce next session, in the hope that it might be referred to a select committee.

Mr. Ayrton regretted that further arrangements had not been made for making the Museum accessible to the public. It was perfectly easy to light the Museum with gas, without any danger from fire or injury to the collection by the gaslight.

Colonel Sykes thought the result obtained was by no means commensurate with the immense expenditure of money on the British Museum. He found that in 1861 the number of visitors was 779,000; in 1863, 554,000; in 1865, 677,000; and in 1866, only 516,000, showing a progressive decrease in that period. In the same way the number of those who visited the Museum for

purposes of study and research declined from 136,000 in 1861 to only 99,000 in 1866.

The Chancellor of the Exchequer said the collections were packed almost in warehouses, and there was no inducement to collectors to leave their valuable possessions to the country. He believed there were many persons at this moment who would leave their collections to the country if a better state of things prevailed; and next year it would be the duty of the Government to submit a plan to Parliament, which they hoped, if adopted, would bring about results which had long been desired.

Colonel Sykes said the labouring classes ought to have the same facilities for visiting the British Museum in the evening which they possessed for going to the South Kensington Museum. There could be no difficulty whatever in fixing a number of sunlights in the building, from which no danger need be apprehended.

Mr. Layard said if he were a trustee of the British Museum, nothing would induce him to consent to the lighting of such a vast building with gas. It was a very doubtful question if works of art, such as pictures, did not seriously suffer from the effects of gas.

COTTAGE DESIGNS.

THE Suffolk Agricultural Society offered two premiums, one of 25*l.* and the other of 15*l.*, for the two best plans, with detailed specification, of the cheapest double cottage, adapted for Suffolk labourers; the designs in competition to be exhibited at the Show of the Royal Agricultural Society of England at Bury St. Edmund's.

The committee to whom the matter was referred reported that there had been sixty-three plans sent in for competition, the cost of carrying out which, according to the designers' estimates, varied from 106*l.* to 338*l.* each. Upon this point the committee remark that, having been assisted by practical builders, they have ascertained that in many cases the estimated cost is far below what the actual outlay would be in erecting the same. The committee state that:—

"After close investigation, they have unanimously arrived at the conclusion that the plan bearing the motto 'Suitability,' and costing 170*l.* 3*s.* 8*d.*, should have the first prize of 25*l.*; and that the second prize of 15*l.* should be awarded to the plan bearing the motto of 'Level,' and costing 18*l.* 1*s.*

The former the committee consider would be improved by continuing the roof so as to form gable ends, also by placing fireplaces where the dressers are in each of the sculleries, instead of that in the bakery. In both plans more shedding outside is desirable.

In second prize a pair more rafters at each end are required. Sliding casements would be preferable. A fire-place is wanted in the scullery, also windows in the pantries for ventilation."

Messrs. Corder & Larkett, of London, were accordingly awarded the first premium; and Mr. Shaw, of Birkenhead, the second.

On the first-prize plan, the main entrances are at each end of the block, the doors to the lobbies being further protected by simple hood porches. In the lobbies are the doors of the living-rooms and staircases, the scullery opening from the living-room; and out of the scullery open the pantry and a cellar or fuel closet. The dimensions of the ground-floor rooms are,—of the front room, 11 ft. 7 in. by 12 ft.; of the back room, 6 ft. 2 in. by 8 ft. 9 in.; pantry, 3 ft. by 5 ft. 6 in.; closet, 3 ft. by 2 ft. 10 in. Between the two sculleries and opening to the yard is the common bakehouse of the two cottages, which is furnished with a large oven, kneading-trough, and copper. The cottages and bakehouse are thus brought within four walls. The water-closets stand at the end of the common yard, their doors opening away from the house. A water-butt containing 130 gallons is provided to each cottage, but no provision is made for a well, owing to the impossibility of making any estimate for a work the expense of which entirely depends on the situation. There are windows to the staircases, and from the landing at the top of each independent access is obtained to the three bed-rooms, whose dimensions are respectively 14 ft. 3 in. by 9 ft. 1 in.; 7 ft. 3 in. by 11 ft. 8 in.; and 8 ft. 10 in. by 6 ft. 8 in. Two of the bed-rooms in each cottage are furnished with fireplaces, and the third is ventilated by means of a piece of perforated zinc in a framed opening in the middle of the ceiling, the air passing into a false roof terminated at each end by louver boards. The windows of the upper floor being below the roof-plate, the roof, with the exception of these breaks for ventilation, is uninterrupted, and the additional ex-

pense of gullies is avoided. The committee, however, recommend that even this interruption in the line of roof should be omitted. In the larger bed-room is a corner cupboard, and in one of the smaller a closet. The internal work is designed to be neatly done, the doors being panelled and the casements chamfered. The total estimated cost is 170*l.* 3*s.* 8*d.*,—approved, it is said, by a Suffolk builder. The woodwork is painted internally with three, externally with four coats. In the particulars of cost, the red bricks are put at 25*s.* per 1,000, the floor bricks at 42*s.*, the pantiles at 7*s.* per 100. The bricklayers' work is set down at 3*s.* 6*d.* a yard (9 in.), the flooring at 2*s.* 3*d.*

In the second prize design, the front elevation shows the four windows of the living-rooms (two to each), with bed-room windows above them. The cottages form a square block, and the entrance-doors are at the side. Each opens into a lobby, from which there is access to the staircase, the living-room, 15 ft. 6 in. by 12 ft., and the scullery, 9 ft. by 8 ft. 6 in. The latter is provided with oven, boiler, and sink, and has also a pantry, 5 ft. 6 in. by 3 ft. 6 in., each cottage being entirely independent of the other. The scullery has a door opening into a back yard, at the further end of which is a privy, with its door at the side. Adjacent to the latter is an ash-pit common to both cottages. The staircase gives independent access to each of the bed-rooms, respectively 12 ft. by 9 ft., 9 ft. by 6 ft. 6 in., and 9 ft. by 9 ft. 6 in. Two of these have fireplaces, and there is a closet, 5 ft. 6 in. by 3 ft., conveniently situated on the landing. Estimated cost, 190*l.*

GAS AND GAS-PIPES.

If there were no other reason why it is desirable that some radical change should be effected in the management of gas-supply, the fact that the streets are torn up and the traffic stopped at the will of the gas companies would be sufficient. If the pipes were laid in the subways, no such disturbance of the roads would be necessary, and the cost incurred by frequent paving and repaving would be dispensed with.

But there are other reasons why it is inevitable that a complete reform must be accomplished. Under the present system, the companies enjoy a monopoly, and the only control which the Government obtains in virtue of this concession is in its very nature an evil. The dividends of the shareholders can never rise above 10 per cent. The Act of 1860 fixed that limit, and as a matter of fact the limit has been attained; so that there is no longer any sufficient motive to induce the companies to improve their process of manufacture with a view to economy or to supply gas of a better quality, for in neither case could they gain anything by change. The monopoly protects them, and the limit to their profits acts as a complete check to improvement. This is the present state of matters as regards the gas-supply in the metropolis, and it is very justly awakening the attention of Parliament. The problem is to devise a plan by which the companies shall be encouraged to improve their process of manufacture so as to cheapen gas and to supply it of a better quality. And so perplexing is the task of solving this problem that the Select Committee appointed to investigate the question, and if possible to propose a remedy, has abandoned the task as hopeless. But a solution of the difficulty must be found; and until this is done we must seek it patiently.

A scheme which has been proposed by Mr. R. H. Patterson is apparently attracting some attention. Mr. Patterson believes that any attempt to fix the price which the companies should charge for gas would be a mistake. He thinks that ordinary trade principles are sufficient to determine this point, and that it is beyond the power or province of Parliament to touch it. He proposes that, in order to secure gas of the best quality, we should adopt a system akin to that of the Excise. He would have certain officers empowered to apply appropriate tests for illuminating power at the mains near the manufactory, and for purity near the extremities of the supply pipes, whenever and wherever they please. In short, that the gas companies should be treated as the distillers are. He recommends a system of heavy fines for the supply of gas of inferior quality, and these he would enforce, giving the inspectors a large share in the fines, in addition to a fair salary. With this check Mr. Patterson would

abolish the Act of 1860, which limits the dividend to 10 per cent. He would fix 8 per cent. as a starting-point, and above this permit the companies to gain what profits they pleased, provided only that for every 1 per cent. so gained, one-half per cent. should be appropriated to a deduction in the price charged for gas. The half per cent. dividend would thus induce the companies to earn 1 per cent. by improvements in their process of manufacture, and the consumers of gas would profit equally with the companies by the lessened price consequent upon these improvements.

But Mr. Patterson's scheme comprises a still greater change. He thinks it desirable that the municipality should buy up the companies, and take the business into their own hands. The question arises, is the scheme practicable? To this Mr. Patterson replies as follows:—

"The transfer of the property of the gas companies to the municipality (so to call it, or the aggregate municipal bodies) can be effected without any direct purchase, and without any loan or other financial process, on the part of the municipality. All that is required is to convert the shares of those companies into City bonds of equal amount, bearing 10 per cent. of yearly interest. The funds necessary for the payment of interest on these bonds are already in existence; they are supplied by the proceeds of the rate at present levied upon the community by the companies. The only change which would be made would be that the present amount of the gas-rate would be collected by the municipality, and paid to the shareholders of the companies as interest on the bonds, instead of being collected by the companies themselves, and paid by them as dividend to their shareholders.

This is all that is necessary in order, by one stroke, to transfer the property and interests of the gas companies to the municipality. No loan or new rate would be needed at all. And no less could possibly happen to the municipality from the arrangement, seeing that the funds required for the annual payment on these new City bonds are already in existence."

There is something ingenious about the proposition thus stated. A circular letter which Mr. R. H. Patterson has recently published explains the matter more fully, but enough has been said to show that it deserves attention. The subject is a most important one, and legislation upon it cannot be long postponed. It is too late to do anything decisive this session, but the matter must not be allowed to drop.

WELSH NEWS.

Llangollen.—The court-house here has recently been completed. The contractor was Mr. John Griffiths, and the architects were Messrs. Lloyd Williams & Underwood. The cost was about £2,000. The assembly-rooms and markets, designed by the same architects, are also completed, the contract having been taken by Messrs. Morris Roberts. The total cost of the works has been about £2,000.

Ruthin.—The contract for alterations and additions at Ruthin Gaol has been let to Mr. John Griffiths, whose tender was £8,000. Messrs. Lloyd Williams & Underwood are the architects, Mr. Lloyd Williams being county surveyor.

Bangor.—The first portion of the contract at the George Hotel, Bangor, amounting to about £4,000, and including alterations to old house, new portico, new laundries, kitchens, stabling, billiard-rooms, servants' range, gas-house, &c., has been completed by Messrs. Thomas & Sons, of Bangor. Architects, Messrs. Lloyd Williams & Underwood.

THE YORK GUILDHALL WINDOWS.

Two more windows have been erected in the Guildhall. They are the gifts of the Lord Mayor (Mr. James Meek), and of Mr. R. Farrar (ex-sheriff). The Lord Mayor's window illustrates the first of a series of historical subjects intended to be commemorated. In the centre of the window is represented the election of Constantine the Great, as emperor, at York, July, A.D. 306. Constantine, habited in a mourning-cloak, is represented as receiving the principal military and civil authorities (among the former of whom would be the commanders of the 6th or Victorious Legion, so long stationed at York), who bring him the sceptre, the golden orb, the laurel crown, and the imperial mantle. The portrait of Constantine has been studied from his coins in the British Museum. In the lower compartments are introduced on each side the Roman eagle, and in the middle the monogram of our Saviour, which Constantine, after his conversion, adopted as a device for the imperial standard. This window has been manufactured by Messrs. Hardman & Son, of Birmingham. The next

window, given by Mr. Farrer, represents the granting, by King Edgar, of permission to the men of the north to make their own laws. In the centre is King Edgar, who, standing before the throne and holding the sceptre, announces to the ecclesiastical and military chiefs of the north his grant to them of the privilege of making or choosing the laws for themselves. On the right of the king is his chancellor, holding his charter recording the concession. Next the chancellor are Oskytel, Archbishop of York, and his attendants. On the opposite side is Osric, Earl of Northumbria. With him are other northern chiefs, one of whom bears aloft the royal sword of state. Behind these chiefs is the Dragon, the ensign of Wessex, Edgar's principal kingdom. In the lower compartments of the window are introduced the Dragon, the Raven, and the White Horse, the ensigns of Wessex, Northumbria, and Kent. This window has been manufactured by Messrs. James Powell & Sons, of London. Both windows were designed by Mr. James E. Doyle, the author of "The Chronicles of England." Other windows, continuing the series, and depicting some of the most interesting events in the city's history, are in progress of manufacture, the necessary funds having been promised by other citizens.

FROM SCOTLAND.

Edinburgh.—The thirty-third annual meeting of the Royal Association for the Promotion of the Fine Arts in Scotland has been held in Queen-street Hall. There was a large attendance. The distribution of the prizes also took place in Queen-street Hall. The attendance was not large. The Solicitor-General presided. The chairman stated that the total number of subscriptions for the year was 5,235, compared with 5,171 last year, which he considered very satisfactory.

Glasgow.—The window placed in the west end of the nave of the cathedral, and known as the "Baird Memorial Window," has been wantonly destroyed by a person named John Marshall. It is broken in three different places, by stones. The culprit was asked why he had committed the offence, and coolly replied he had an ill-will towards the church, and, were he liberated tomorrow, he would do the same thing. Afterwards, however, he said he was starving of hunger, and did the act in order that he might be relieved from his destitute condition. The cost of the window was about £2,000.

Hamilton.—At the time of the demise of the late Duke of Hamilton, in 1863, a general wish was expressed by the tenantry on the estate, as well as by many personal friends, that a monument should be erected to his memory. A committee was appointed, subscription sheets issued and in a very short time a sum was subscribed sufficient to enable the committee to enter at once into preliminary arrangements. The committee invited specimen designs for a monumental structure; and, after considerable labour, and frequent consultation with Her Highness Princess Marie, the Duchess of Hamilton, at length decided on adopting that furnished by Messrs. C. H. Wilson & D. Thomson, architects, Glasgow. The site fixed on, and which was also approved of by the duchess, is at the entrance to Cadzow Forest. The monument is to be erected on a rock of red sandstone, on the bank of the river Avon. It is designed in the classic style of architecture, the plan being circular, with square projections for pedestals under columns. The basement will consist of masonry 8 ft. high, with channels wrought on the joints, having a moulded base-course about 2 ft. high and a cornice at top. At the front there will be a flight of steps leading to the interior of the monument. The floor will be paved with stone, and it is intended to fix seats between the columns all round the apartment. These seats, which are to be of stone, will be 1 ft. 6 in. high. There are to be nine columns, placed at equal distances; each will be about 15 ft. high and 19 in. diameter at the foot, diminishing to 16 in. at the top. The shafts of these columns are to be of Aberdeen granite, while the bases and capitals will be formed of freestone. In the interior of the monument a pedestal of grey granite, 6 ft. in height, and surmounted by a bust of the late duke, will be erected. The whole structure will be about 22 ft. in diameter outside, and from ground to top of roof about 32 ft. high. The works are estimated to cost about £1,500.

Paisley.—Some months ago a meeting was held to consider what should be done with a sum raised by subscription in Paisley about forty years ago, for the erection of a monument to Wilson, Hardie, and Baird, who were executed in 1820 for the part they took in connexion with the Radical movement of that period. A good amount was collected in a short time, and the design of a monument by Mr. William Robin sculptor, Paisley, was approved, and the work was proceeded with. The monument has just been erected in the cemetery here, and inaugurated in presence of a large number of spectators. It consists of a square basement and shaft, formed of a durable white freestone.

DOWAGER COUNTESS OF ELLESMERE MEMORIAL.

To those who have inquired on this subject, we are enabled to say that the three designs selected by the committee were those of Mr. Charles Henry Driver, of Westminster, London; Mr. T. Graham Jackson, of Devereux-court, London; and Mr. John Gibbs, of Oxford. The committee afterwards submitted these three to the arbitration of Mr. C. E. Street, who, after visiting the locality, and examining the drawings, has decided in favour of Mr. Graham Jackson's design.

BUILDERS' BENEVOLENT INSTITUTION.

On Wednesday afternoon, the twentieth annual meeting of the subscribers and friends of the above charity was held at Willis's Rooms, King-street, St. James's, for the purpose of receiving the report for the past year; for the election of president, treasurer, directors, and auditors for the year ensuing; and for other matters connected with the welfare of the institution. Mr. Benjamin Hannen, president of the institution, occupied the chair.

The secretary then proceeded to read the following report:—

"The directors, in presenting to the friends and supporters of the Builders' Benevolent Institution their report for the past year, take leave to state that notwithstanding the unparalleled monetary depression of the last twelve months which has so seriously affected all classes of society, the funds of the Institution have not diminished; the annual subscription having increased, which, taken into consideration the above-named cause, is highly creditable both to the feelings and generosity of all connected with the building trades.

Since the last general meeting several friends have been removed by death, and the directors have to announce the receipt of the following bequests in aid of the funds of the Institution:—Firstly, the late Robert Forest, esq., £1,000; less duty; secondly, the late Charles Becher, esq., £500; less duty; thirdly, the late H. Larner, esq., £21; fourthly, the late Charles Hack, esq., £200; less duty; and they take pleasure in expressing their deep regret, and the lasting obligation which is due to their memory, together with a feeling of gratitude for the generous sympathy which prompted those gentlemen to think of the sorrows and afflictions which befall those of their brethren who had been less fortunate in life than themselves.

Two elections of pensioners have been held, the first in November last, when three were elected, viz., two males and one female; the second in May, 1867, when a similar number was chosen, making a total of four males and two females during the past year; and two deaths have taken place during the same period, one man and one woman, making the number now in receipt of the benefits of the charity 45—23 males and 22 females. Pensioners elected: Males—James Webb, elected November, 1866; J. F. Goff, ditto; George Hunt, May, 1867; Charles Gravall, ditto; Females—Mrs. A. Colborn, Brighton, November, 1866; Mrs. Ann Walker, May, 1867. Pensioners deceased: John Noble, elected November, 1862, died August, 1866; Mrs. A. Thomas, May, 1866, died April, 1867. £1,368.18s. Stock has been added to the Relief Fund, and 100s. 4s. 8d. to the Building Fund, making an addition of £1,469.2s. 8d. Stock Three per Cent. Consols purchased during the past year. There is now standing in the names of the trustees for the Relief Fund, 9,868.10s. 1d.; for the Building Fund, 2,832.11s.; being a total of 12,700.1s. 1d. The directors again notice with regret that there is still a large number of building carpenters, bricklayers, plumbers, &c., who have not yet responded to the numerous appeals made to them to become supporters of a charity which relieves many of the trades in immediate connexion with the building interest; but they do hope that, either of themselves or through the persuasion of subscribers, they may be induced to give their support to the Builders' Benevolent Institution.

In accordance with rule 15, section 3, a special general meeting was held on the 3rd December, at Willis's Rooms, St. James's, to take into consideration what should be done with the £2,000 which was subscribed to the building fund, when the following resolution was passed:—"That it be recommended that there be a sub-committee formed from the general committee for the purpose of selecting such sites of ground as may be eligible for the erection of almshouses hereafter, within a radius of seven miles from Charing-cross, the land not to be less than three acres in extent; and the report of such site shall be laid before the general committee at their monthly meeting for March, 1867, when they shall be empowered to negotiate the purchase of the site upon which they may determine." Several meetings of the said sub-committee have been held within the past six months, and plots of land viewed; but no definite result has been determined on.

The subscribers and donors are respectfully requested to notice that permanent offices have been taken in an eligible and central position, at No. 4, Vernon-place, Bloomsbury-square, W.C.

The Chairman moved that the report be received, adopted, and printed, which, being seconded, was unanimously carried.

Mr. Plucknett, of the firm of Cubitt & Co., proposed that Mr. W. R. Rogers, his partner, be elected president for the ensuing year.

Mr. G. Bird seconded, and Mr. Rogers was unanimously elected.

Mr. Plucknett was re-elected treasurer to the Institution, and the directors and auditors for the past year were re-elected for the year ensuing.

The usual vote of thanks to the chairman and retiring president concluded the proceedings.

A COMPETITION ABROAD.

THE Society for "la Propagation de l'Architecture," at Amsterdam, offer a premium of 500 florins for the best design for an Hôtel de Ville for the capital of the kingdom. The rewarded design will be published. The competition is open to all nations, and should any of our student readers desire to enter on it, they may consult the programme at our office.

THE PAYMENT OF GOVERNMENT ARCHITECTS.

A DEPUTATION from the Institute of British Architects, consisting of Mr. W. Tite, M.P. (president), Mr. Lanyon, M.P., Professor Donaldson, and Mr. D. Brandon (vice-president), had an interview a few days ago with Lord John Manners, M.P., at the Office of Her Majesty's Works, Whitehall-place. The deputation attended in reference to the commission to be paid to the architects of that department for works in connexion with the Houses of Parliament, and other public offices, concerning which we have already spoken. Lord John Manners said he would inquire into the matter; and as to the practice of the Governmental Boards, alleged to pay the 5 per cent. free from the measuring; further, that in requiring the measuring to be included in the charge of 5 per cent., he did not originate the question, but merely followed the practice of his office.

PAYMENT BY LOCAL BOARDS.

At a recent meeting of the United Water Boards of Duesbury, Batley, and Heckmondwike, a discussion ensued as to the plans and superintendence of two local supply reservoirs to be constructed at Staincliffe. Some of the committee seemed to think they could draw the plans themselves. A letter was read from a civil engineer offering to make all the necessary drawings, general and detail, and the specifications; to set out and fix all levels, superintend the works, attend all meetings of the Board when requested, &c., for one per cent. on the outlay. A correspondent on the subject says:—This will give the profession a clear insight into the treatment they are likely to receive, and the rivals they are likely to encounter, when they become competitors for the premiums offered by local Boards. If it is right to learn from the enemy, one receives a miserable lesson in pursuing the right!

THE THAMES EMBANKMENT AT WHITEHALL, AND THE RAILWAY.

Sir,—As an engineer of upwards of fifty years' experience, I beg to call your attention to this important subject. According to a published account of the north embankment, it is intended that the underground railway (fortunately not yet commenced) is to be constructed in the inner side of the embankment, next the intended river-front terrace houses, and the main sewer and the subway above it are to be placed next to the river walling, a portion of which is already built; whereas, for all practical and successful purposes, it must be obvious to every one that the reverse position should have been adopted, which would afford the following beneficial result. The drains and sewers from all

the Strand streets and longshore houses, &c., would thus discharge direct into the main sewer, as also the connexion with subway for supply of gas, water, &c., without crossing over or syphoning under the railway, which must upon the present arrangement be done to connect the sewer, and pipes to subway. Also the very tremulous agitation which the close proximity of the underground railway must produce on "the whole length of this deep and treacherous-made ground," and where neither light, air, nor ventilation can possibly be obtained, and the only exit for steam and foul air must be by shafts at intervals, to the injury of the surrounding inhabitants, for the whole length of the embankment. But if the position of the railway be reversed, so as to run immediately within the river wall, it may be thoroughly lighted and ventilated the whole length, by external apertures, 15 ft. or 20 ft. long and 3 ft. high, 18 in. above high-water mark, and filled in with ornamental iron perforated work, in lieu of the present blank parapet wall; and with white glazed brick slanting apertures to angle of roof of tunnel, and a low water outlet for any percolation time might effect. This railway would thus be as light as day, and free from smell and unwholesome gases, as at Gower-street metropolitan line.

Notwithstanding this error has so far advanced, there is yet time to rectify the evil before the railway is commenced, or connected with its Westminster approach. And even in this there seems some blind generalship to have allowed so many "thousands of thousands" of loads of ground and debris to have been filled in on either of these sites of construction; and it is to be hoped that, through the medium of your powerful agency and support, this evil may yet be averted, and the public service and benefit intended be speedily effected, before it is too late.

H. H. R., C.E.

BUILDER AND ARCHITECT.

SIR,—Having noticed a communication headed "Architect and Builder" in your last number, I am induced to send you a few lines which may be headed "Builder and Architect."

I am superintending the erection, from my own designs, of several semi-detached villas. A lady living opposite approves of them, and wishes to erect a similar pair of houses. She sends for the builder, who undertakes to build her a similar pair for the same amount as mine. They copy the agreement, word for word, which I drew up for my client; in fact, everything is copied, without my consent or that of my client, and without even asking permission. Upon remonstrating with the lady in question, she informs me that the builder said he had a right to make use of the plans, &c., as he pleased; also that a friend, who is an estate agent, is going to superintend the works without any charge.

I should feel obliged if any of your readers could inform me whether they know of a similar case, and whether I have any remedy; because, if not, architects had better be builders also, and carry out their own designs, as it will not be safe to entrust them to builders, who may make use of them ad lib. I will send the names of the parties, if necessary, to show that the above is a real case.

ARCHITECT.

NEW ST. THOMAS'S HOSPITAL.

The following is a list of the tenders received for the New St. Thomas's Hospital, at Stangate. The foundations are already in. Mr. Henry Curry, it will be remembered, is the architect—

	Stone and Red Bricks.	All Stone.
Asbury & Horner	£382,100	£460,400
Hill & Kedell	381,050	400,300
Piper & Wheeler	377,080	395,190
Brass	397,021	383,826
Lee	384,000	399,000
Gannon	382,664	395,568
Thorne	353,745	362,645
Wolster	353,854	375,398
Higgs	349,290	367,276
Mansfield	347,188	364,173
Holland & Hannen	344,232	364,488
Myers	340,948	363,540
Lucas	338,160	357,455
Perry	332,748	356,780

Messrs. Perry's tender has since been accepted. We may add that Messrs. Baker, Messrs. W. Cubitt & Co., Mr. Downs, and Messrs. Trollope, were invited, but did not submit any tender.

PROPOSED NEW SYNAGOGUE, LONDON.

Sir,—Permit me in justice to myself and other unsuccessful competitors to correct a statement in your notice relative to this competition. Mr. Philip Hardwick was not consulted, nor did his opinion guide the committee in determining the merits of the designs submitted. I competed solely under the belief that the inferential obligation as conveyed in the instructions to architects would have been fulfilled by the committee, and that Mr. Hardwick's well-known ability and impartial judgment would, at least, have guided, if not determined, the ultimate selection.

H. H. COLLINS.

* The statement that Mr. Hardwick would so act came to us from the committee.

THE CHISEL.

Sir,—In reply to your correspondent, "A Freemason" who asks when the chisel was first introduced into this country, I beg to assure him that it is possessed of a much higher antiquity than the eleventh century, as he supposes. There are evident marks of the chisel on the islands of Stonehenge. There are chisels to be found among the relics of the Bronze period. How old that may be I cannot tell; but I think your correspondent would probably arrive at a sound conclusion were he to suppose, in the utter absence of authentic proof, that the chisel was introduced into this country much about the same time as the hammer; and there can be no doubt whatever that it must be assigned to a period vastly anterior to that of the screwdriver.

AN ANTIQUARY.

CONCRETE CONSTRUCTION.

Sir,—I have refrained from making any remarks upon your correspondent's letter in the Builder of July 6th until I made myself acquainted with the facts of his assertions.

First permit me to state the solid house he speaks of is built by Messrs. Harwood, cement manufacturers, of Northfleet. His blocks are made one day and laid the next, necessitating a larger proportion of cement than one in eight, as in my concrete, and thereby sacrificing both strength and economy. I am at a loss to understand how he can call it concrete building, as it is built with cement blocks as bricks, and with a large proportion of bricks in chimney-jamb, &c.

He thinks hollow walls far "beyond" solid ones. I differ in opinion, and at the same time think he must be totally ignorant of my system of building, or he must know, in the way my houses are cast, in one solid block, I have only to insert cores, say 2 ft. long, 2 in. thick, and 9 in., 10 in., 11 in., or 12 in. wide, in the centre of my mould, and 4 in. or 6 in. apart, in the same way that I form the recesses for my joists, &c., and I get the hollow wall he thinks so much of. A 6-in. wall may be made hollow by 1½-in. cores or prints. I think, sir, this will apply equally to Mr. Edwin Chadwick's remarks on hollow wall construction. I am sure that gentleman has not been well informed of my system of building, or he would have spoken of it in his able remarks on improved construction.

Your correspondent thinks he can build cheaper and quicker. Permit me to say he is a bricklayer, and his lumps were laid by skilled labour.

I commenced two houses on Monday, the 22nd of last month, and on Saturday, the 27th, my houses were up 9 ft. 6 in. in height, the work done being equal to laying 14,580 bricks. The whole of this was done in forty-three hours by two labourers and one strong boy. They did the apparatus every day in seven hours (excepting on Saturday, when, owing to so many gentlemen visiting the building, they took one hour longer). I have no hesitation in saying my two houses will be up and covered in by August 10.

My men being labourers do not understand work by the rod, and take it by the yard super, of 8-in. work. 14,580 bricks will do 14½ yards super, which, at 6d. per yard, equals 3l. 12s. 10d., the amount earned by two men and one boy in four days and three hours, which I paid on Saturday last. When the houses are ready for the roof, the labour for walls will have cost me 7l. 5s. 8d., the amount of work being equal to laying 29,160 bricks, including moulded reveals to windows and doors.

If you and your intelligent readers will compare this with the cost of casting separately, and laying separately cement lumps, I feel sure you will at once be satisfied as to the economy of the system.

J. TALL.

SMOKE FROM BAKERS' FURNACES.

At the Marylebone police court, on Wednesday last (July 31st), Mr. Dolamore, master baker, of South-street, Manchester-square, was summoned at the instance of the Government Inspector for unlawfully using upon his premises a certain furnace not constructed so as to consume or burn its own smoke.

Mr. Saunders, the inspector, said he had given orders for certain alterations in the furnace, which had not been carried out, and called two police-constables who gave evidence that on different occasions they had observed smoke issuing from defendant's chimney.

Defendant produced a receipt from a leading tradesman, to show that every alteration required by the Government Inspector had been duly made by him, and that Mr. Dolamore had paid him for the work. Defendant's foreman was also called, who particularly the alterations which had been ordered by the inspector, and he swore positively that every requirement had been carried out. He said it was impossible at the first start off that all the smoke could be consumed, and he would undertake to prove that if any practical man went to the bakery he would say that nothing further could be done than had been already done.

Mr. Dolamore, who was fined thirty shillings and costs, said it was very hard to be a man because practical and scientific men were unable to construct an apparatus that burnt all the smoke. He had paid the best price to a first-class tradesman to enable him to comply with the Act of Parliament, and had failed. Would his worship or the Government inspector advise him what to do?

Both the magistrates and the inspector declined to give any advice, and defendant paid the money with a remark that there were scores of bakers in the immediate district who were precisely in the same predicament as himself with regard to furnaces that "could not" be made to consume the whole of their smoke.

INDUSTRY ENCOURAGED.

A CORRESPONDENT sends us for publication the following resolution of the Labourers' Trade Society in the Staffordshire Potteries:—

"You are strictly cautioned not to outstep good rules by doing double the work you are required, and causing others to do the same, in order to gain a smile from your master. Such foolhardy and deceitful actions leave a great portion of good members out of employment the year round. Certain individuals have been guilty, who will be expelled if they do not refrain."

THE SANITARY STATE OF EPPING.

THE adjourned official inquiry into the sanitary state of Epping, before the Government inspector, Mr. Arnold Taylor, was resumed at the police-station in that town on the 18th ult., in the presence of a large number of the inhabitants. Mr. Dower, of London, C.E., said he was quite satisfied that a good supply of water could be obtained for Epping at a reasonable cost. The estimate for sinking a well with a small engine of about six-horse power, and a small reservoir over it, would come in round numbers to about 1,600l. or 1,700l., and their pipes through the town might be put down at 800l., which would make up the total cost. 2,500l. would be sufficient every way, and he would guarantee that it could be carried out for less than that. That would give a supply at constant pressure of twenty gallons a day for 4,000 people, which was double the present population of Epping. After some other evidence for and against the necessity for something being done, the inspector said:—"After what I have seen to-day I am quite satisfied, apart from the application made to the Home Office, there is more than sufficient to justify this inquiry, and it is most disgraceful that some of the places should be allowed to remain in their present state. As to your sewers you are doing the right thing in the wrong place, for you are taking no steps to compel the owners of property to drain their premises by bringing them within the prescribed limits." The proceedings then closed.

THE ARCHITECT FOR THE HOLBORN VALLEY IMPROVEMENT.

At the Court of Common Council, on Monday last, Deputy Fry, the chairman of the Improvement Committee, brought up a report from that committee, recommending that they should be empowered to engage the professional services of Mr. Heywood, the engineer to the Commissioners of Sewers, in any further manner they may consider advisable for the successful completion of the above works. The object sought to be obtained by the committee in this report appeared to be that Mr. Heywood should be employed to superintend not only the work for which his services were originally retained,—namely, the viaduct,—but that he should also be engaged in preparing plans for the erection of shops and other buildings that would have to be erected, a duty which would, in the ordinary course, fall within the province of the City architect.

The report was strenuously opposed by Alderman J. C. Lawrence, Mr. Lowman Taylor, and several other honourable members, on the ground not only that it would entail a very large additional expense on the corporation by employing Mr. Heywood in the way suggested, but that it would also cast a slur upon the City architect, by passing him over and retaining the professional services of another gentleman to do a duty which he was perfectly competent to perform. Mr. R. N. Phillips, and several other members, in supporting the report, repudiated the slightest intention of casting a slur upon either the talent or the fitness of the architect to perform the work, but said that his time was fully occupied by the great and important works that were already in progress, and particularly

the meat market in Smithfield, and that it would be most advisable that the Holborn Valley works should be entirely carried out under the supervision of one professional gentleman, who had been engaged upon them from the commencement, and that a great saving of time was likely to be thus effected. Mr. Medwin, one of the members of the committee, also stated that from the inquiries they had instituted, they had reason to believe that the two gentlemen would not act harmoniously together, and, therefore, the committee had no alternative but to make the recommendation they had done in their report.

After a lengthened discussion, the reception of the report was negatived by a majority of 14,—the numbers being, in favour of the report, 37; against it, 51.

CHURCH-BUILDING NEWS.

Leek.—The chancel of the Old Parish Church, Leek, after undergoing thorough restoration, has been publicly re-opened by the Bishop of Lichfield. For about two years the work of restoring the east end has been in progress, though delayed in its final completion. The whole interior of the chancel has been renewed. One chief feature in the restoration is the number of memorial gifts. The memorial window at the east end of the chancel has been placed there at the cost of Mr. Thomas Carr, of Leek. The window is of five lights, each divided into two compartments. The centre one in the upper series contains a representation of our Lord's Crucifixion, and in the compartments right and left are the Betrayal, the Scourging, the Transfiguration, and the Resurrection. In the compartments of the lower series are represented the Ascension, the Last Supper, the Raising of Jairus's Daughter, Christ turning Water into Wine, and the Feeding of the Multitude. In the north and south walls of the chancel are other memorial windows. One on the north side is of two lights, containing a representation of the Descent of the Holy Ghost. There is also another memorial window of stained glass on the north side of the chancel, of two lights, representing two passages in the life of Naomi. This window has been given by Mrs. George Davenport, of Leek. A memorial window at the south end of the chancel is the gift of Miss Wood. Corresponding in design and dimensions with those in the opposite wall, it is of two lights, divided into four compartments, in which are represented scenes from the life of our Saviour, viz., the "Touch me not," Christ's Charge to Peter, the Entombment, and the three Maries at the Sepulchre. The only structural addition to the church is the chancel aisle on the south side, and this also contains two memorial windows, one at the east end of the aisle, but partially overshadowed by the organ. It is of three lights, and contains figures of the Psalmist as King, St. Cecilia, and St. Alpheus, formerly bishop of the diocese of Lichfield. The window is the gift of the late Mr. Thomas Crompton, of Leek. On the south side of the chancel aisle is likewise a three-light lancet-shaped stained-glass window, the gift of Mrs. Hannah Sleigh. In the right and left compartments of the window are two representations of St. John the Evangelist; and in the centre the figure of the patron saint of the church, Edward the Confessor. In the west end of the church, at the south side of the tower, is a memorial window of two lights, representing Moses, and Aaron the High Priest. This window is the gift of Mr. George Young. The pulpit is the gift of Mrs. Heathcote, widow of the late Vicar of Leek. It is of old English oak, having round its body twelve niches, in which are full-length figures of the twelve apostles, each bearing an emblem of his sacred calling. Surmounting the figures is a canopy of richly-carved oak. The pulpit has been executed by Mr. Earp, carver, London, from the designs of Mr. Street, the architect of the church restoration, at a cost of 250l. The font is of marble and alabaster, and stands at the south-west end of the nave. The work included in the general contract embraces the erection of a reredos of alabaster and marble of various kinds; also a screen separating the chancel from the nave, of Derbyshire grey marble, moulded, and enriched with alabaster, and filled in with mosaic work of variegated pattern. The floor of the chancel is laid with Godwin's encaustic tiles, and the chancel is furnished with open stalls for the choirists. At the west end the old arch has been re-opened,

and the floor tiled, making a robing-room for the choir, and an additional entrance to the edifice through the tower. The restoration and addition have cost about 3,500l., the contract work having been executed by Mr. John Nadin, of Leek, from designs of Mr. Street, the architect.

Broadstairs (Kent).—Holy Trinity Church having been considerably enlarged towards the east, and the altar consequently moved, has been reconsecrated. The works which have just been completed, have dealt with the interior, and the points which have been aimed at are increased accommodation, superior heating and ventilation, and better provision for carrying out the services of the church. The architect employed was Mr. William E. Smith, of London. The vestry and boys' school which occupied the east end of the church under an eastern gallery have been removed, together with that gallery, and the east end of the church is now occupied by choir-stalls to the north and south, by the sanctuary with an oak altar-rail on ornamental iron standards, and coloured tile paving in patterns, and by the altar on a foot-pace of stone and tiles, the east window being brought full into view. An organ-chamber has been built on the north side, and the organ removed into it. The taking into the church of the space occupied by the boys' school rendered necessary very considerable alterations and enlargement of the schools, so as to provide accommodation for the boys, and the whole of the schools and vestry have been renovated; these are also heated by means of hot water. The total outlay is about 1,200l., nearly 400l. of which remains to be subscribed. We understand that the east end is to have illuminated tables of the Decalogue, Lord's Prayer, and Creed, and that the east window is to be temporarily stencilled in colour, awaiting a stained-glass window.

Books Received.

The Last Thirty Years in a Mining District. By

IGNOTUS. London: Longmans, Green, & Co. The writer of this sketch considers the last thirty years to be the most important period in colliery experiences, not only as regards mining in relation to the development of minerals for trade and profit, and as to the statistics of science, but equally so as regards the habits, education, and general development of the working man.

Of the colliers, as a class, he says:—

"Assuredly the supply is becoming exhausted, some say deteriorated. This, I believe, is not at all the case, and that the rising generation of collier is, physically and constitutionally, as strong as his predecessors. We can account for it more readily and certainly in connexion with the following considerations:—Accidents, by explosion and otherwise, not only directly diminishing the stock, but deterring others from following the like calling; monotony of labour, and education, both tending to inculcate preference for labour above ground, not being permitted to smoke, or take intoxicating drinks into the workings, but more especially the non-renewal caused by emigration some years ago, and which even now draws largely upon us at disaffected periods; for we must recollect that, not only did the gold-diggings cause a greater draught upon this class than any other, but they were in a certain ratio absolutely necessary for the opening of those large fields of wealth, and to be procured at almost any price. Even at the present time, in the mines on the Continent and the New World, no undertaking is contemplated without the assistance of the British miner. I believe to these causes may be attributed our being so short-handed at present, and which bodes so unsatisfactory a prospect for the future in skilled and, in fact, colliers generally. Colliers are a race peculiar to themselves; idiosyncratically, they differ most materially from any other set of men who gain their bread by the work of their hands. I would seriously draw the attention of masters to the extreme desirability of encouraging them to the utmost, and extending them as a class. I would respectfully, likewise, urge the Government to render them every protection, not only where life and limb are concerned, but extend their support to any legitimate cause; for unless we derive aid from machinery, we shall find ourselves at no distant day wishing we had thought on these things. For they, assuredly,

"When once destroyed can never be supplied."

The author also treats of trades unions, and on the most important question of coal exhaustion.

VARIORUM.

A new edition has been published (Tegg) of "The Jurymen's Guide," by Sir George Stephen, revised to meet the law as it now stands. Every man liable to serve as a juror will be rendered much better able to discharge the duties of the office properly by reading it.—Various letters that appeared in the *Gateshead Observer*, on the subject of the Gateshead Town-hall Designs, have been reprinted in the shape of a pamphlet.

Miscellaneous.

THE STRAND MUSIC HALL.—The sale of this freehold property, consisting of the Strand Music Hall (now closed), together with the adjoining houses and shops in the Strand and Catherine-street, has been attempted by auction at the Mart in Tokenhouse-yard, City, by Messrs. Ohnnoek, Galsworthy, & Chinnock. The site is described as extending over an area of 14,000 ft. No advance being offered on that sum, it was withdrawn from sale. A portion of the site was next offered, but, as no bid was made over 30,000l., no sale was effected.

COLNEY HATCH LUNATIC ASYLUM.—At the Vice-Chancellor's Court, before Sir R. Malins, the case of the "Attorney-General v. Colney Hatch Lunatic Asylum," has come on for hearing. This case has for its object the abatement of an alleged serious nuisance by reason of the present mode of carrying off the sewage. The asylum contains 2,300 inmates. Mr. Bazalgette, the engineer, had made a scheme, and there had been a commission and report, which, as the defendants urged, would no doubt terminate in some Government Parliamentary measure. After a good deal of discussion, the Vice-Chancellor directed the case to stand over until November, meanwhile it might be seen whether some scheme could not be devised. It was stated that a pipe could carry off the sewage at a cost of 600l.

REVIVAL OF THE PROPOSAL TO BURN THE DEAD. A discussion on this subject took place some years ago in the *Builder*. The Paris correspondent of the *Star* calls attention to a paper published in the last number of the *Journal des Connaissances Médicales*, and bearing entirely upon the expediency of burning the dead, instead of burying them. Dr. Caffé, the author of this article, he says, very ably demonstrates that the cremation of the dead might be effected at a small expense by means of a *sarcophage*, or purifier of the body, erected on some elevated point of the town, and of which he gives a description. The body once being incinerated, the ashes might then be gathered into an urn, and returned to the family. Dr. Caffé believes that the vast cemetery which the city of Paris purposes establishing at Pontoise, and which will measure 2,125 acres, will exercise a most pernicious and baneful influence on the sanitary condition of the capital.

PRESERVATION OF NATIONAL ANTIQUITIES.—In the House of Commons, on Wednesday, Sir H. Verney asked the Secretary of State for the Home Department, whether he would endeavour to devise means for the preservation of ancient monuments, many of them belonging to prehistoric periods, and some to the Roman occupation of Great Britain, which existed in different parts of the country, and many of which had been injured and partially destroyed, owing to the ignorance of their value and want of care of their owners. Mr. Hardy thought there would be great difficulty in the way of the Home Department becoming an archaeological department, as it had not the means of doing so. "The objects of antiquity to which the question referred were private property; it was extremely desirable they should be preserved, and perhaps the growing intelligence of the country would supply the best means for this purpose." Ought we to trust wholly to this?

HARBOURS OF REFUGE.—The annual reports of the engineers show that at Portland the quantity of rough stone deposited in the breakwater mound, and the foundations of the heads, has reached 5,627,654 tons. With a slight exception the works have stood successfully the storms of the winter, and large numbers of vessels have taken shelter within the harbour. At Dover the expenditure upon the breakwater, or west arm of the harbour, has reached 611,277l., the estimate being 725,000l. At Alderney the expenditure at the end of March, the period to which all these reports are made up, had reached 1,140,513l., the estimate being 1,300,000l. At Holyhead, at that date, a length of 7,037 feet of the superstructure of the north breakwater had been built to its full height, and a length of 7,124 ft. was built above high-water; the inner or harbour wall was built to its full height, and a length of 5,930 ft. In the year ending the 31st of March, 3,647 vessels sought the shelter of this harbour. The expenditure had reached 1,371,155l.

ACCIDENT BY LIGHTNING.—The vane and upper part of the spire of Rillington Church, near Mallon, have been thrown down by lightning. Whether there has been a proper lightning-conductor we do not know, but should rather think not.

LANDLORD AND TENANT.—A notice of his intention to quit given by a tenant on a Sunday is good and binding on him. This point was decided by Sir J. Eardley Wilmot, Judge of the Brentford County Court, in the case of *Sangster v. Noy*, where the plaintiff had, on a Sunday, given a written notice of his intention to quit the defendant's premises. The learned judge remarked on the fact that the notice was the act of the plaintiff, who, having chosen to give it on a Sunday, now sought to treat it as a nullity, and to take advantage of his own wrong.

THE CANNING STATUE IN PALACE-YARD.—On a motion by Lord Stratheden, in the House of Lords, for the restoration of the Canning statue to its old position in Palace-yard, Lord Stratford de Redcliffe, as a relative, concurred in the motion, and other lords spoke on the subject. Lord Malmesbury said there was not the slightest reason to suppose that any disrespect was intended by the removal of the statue, and he was sure that that step had not been sanctioned by the late Government without due consideration. The present Government had only followed in their footsteps. He owned, however, that there was something invidious in the removal of any statue. Under all the circumstances, he would recommend that the motion should be withdrawn, and he would then undertake that the subject should receive the consideration of her Majesty's Government, who would bear in mind the high interest which their lordships had expressed in the matter. The motion was accordingly withdrawn.

THE BIRKBECK BUILDING SOCIETY.—The sixteenth annual report of this society states that their undivided accumulated profits, after providing for all contingencies, amount to 25,490l. 16s. 1d., which equals a bonus of nearly 66 per cent. upon the total amount due to the shareholders. "During the last three years," says the report, "the profits realised are nearly three times the amount of the total profits of the first thirteen years. Under these favourable circumstances the Directors are enabled to declare upon all investing shares which have been in existence for ten complete years a further bonus at the rate of 85l. per cent. upon the three years' subscriptions which have become due and payable since the last triennial division of profits, thus showing a remarkable increase in comparison with the former allotments, the first division having been at the rate of 4l. per cent., the second 9l. per cent., the third 30l. per cent., the fourth 53l. per cent., and the fifth 85l. per cent., which gives an average of upwards of 36l. per cent. on the amount paid on completed shares of ten years' standing, in addition to the 5l. per cent. compound interest guaranteed by the rules."

VITAL STATISTICS OF SCOTLAND.—The Registrar-General has now completed ten years' detailed reports of births, marriages, and deaths in Scotland; and we have now, therefore, the means of ascertaining the vital statistics of the country more accurately than at any time since Scotland has been a nation. The annual birth-rate in the ten years, 1855—64 has averaged 3.447 per cent.; the marriage-rate, 0.689 per cent.; the death-rate, 2.135 per cent. The death-rate in England in the same period was 2.216 per cent. The lower mortality in Scotland is due, partly, at all events, to its smaller proportion of large towns. The annual death-rate in Glasgow in the ten years averaged 3.01 per cent. 9.1 per cent. of all the children born were illegitimate. In the same period the registers show only 6.4 per cent. illegitimate in England, but a considerable number of births escape registration in England, and it is assumed that the proportion of illegitimate children at birth is nearly the same in both countries. Owing to the Scottish law of legitimization by subsequent marriage of the parents, however, fewer persons in the population are illegitimate in Scotland than in England. In the five years 1855-59, 88.2 per cent. of the men who married and 76.5 per cent. of the women were able to sign their names in the parish register; in the five years 1860-64, 89.3 per cent. of the men and 78.1 per cent. of the women. These numbers are much above those of England.

THE METROPOLITAN BUILDINGS AND MANAGEMENT BILL.—On the motion of Mr. Tite, leave was given in the House of Commons to introduce a Bill to regulate the construction and use of buildings, and the formation of streets and of sewers and drains, in the metropolis, and for other purposes connected therewith. The Bill was afterwards read a first time.

FIFTY PHOTOGRAPHS AT ONCE.—Mr. Helsby, a Liverpool photographer, according to the *Albion*, after years of "hope deferred," has at last invented a machine by which he can simultaneously take fifty photographs of a person or object. As yet Mr. Helsby has only applied his discovery to the production of miniature cartes, about the size of postage-stamps, and which—gummed at the back—are very useful for placing on cards, letters, &c. The likenesses taken by the process, adds the *Albion*, are admirable in every respect.

DISCOVERY OF AN ANCIENT AMERICAN TOMB.—In Monroe county, Indiana, lately, as some workmen were digging a cellar, they struck a block of stone which disappeared with a dull thump. Investigation disclosed a chamber with a 6-ft. ceiling, and 18 ft. by 25 ft. within the walls, which are of solid neatly-seamed stone-work. Ranged in rows, on rudely-constructed platforms, were twelve skeletons, each with tomahawk and arrow-heads at their sides, ear-rings and bracelets of solid silver lying where they dropped, and piles of what appeared to have been furs, in the centre of the platform, each pile crumbling to dust as soon as exposed to the light. A number of tools, made of copper, and hardened equal to the best cast-steel, were also unearthed.

FALL OF PART OF A TUNNEL AT ABERDEEN.—It was the intention of the Government inspector to go over the Dembun Junction Railway preparatory to its being opened for traffic in August; but on Sunday night, says last week's *Scotsman*, between seven and eight o'clock, about 26 ft. of the Maberly-street tunnel, Aberdeen, fell in, and the opening of the line is consequently delayed for some time. On Saturday the line was inspected by Mr. Ironside, and every part of the tunnel was considered by him quite satisfactory. During the night a heavy fall of rain occurred, and this, coupled with the fact of some springs of water from the west side mixing with the clay falling on the arch, caused it to give way and fall. About 400 cubic yards of rubbish lie in the tunnel.

A BEAN FEAST.—Sir: I beg to inform you that the annual bean feast of the *employés* of Messrs. Thorn & Co. took place on Saturday last, at the Gun Inn, Findon, Sussex, where there were covers laid for 200, presided over by Mr. P. Thorn, and the manager, Mr. J. Nadin, supported by several influential tradesmen and gentlemen of the surrounding district. The procession was headed by the brass band, numbering twenty-two, composed of Messrs. Thorn's *employés*. All kinds of old English sports were indulged in until dark, when a walk of about half a mile brought us to where the carriages were in waiting, and we regained our head-quarters at 10.30, without a dissentient voice or accident. Knowing your willingness to aid in recording evidences of friendly feeling between employers and employed, and being a twenty-one years' subscriber to your valuable paper, will be some excuse for my intrusion on your space.—R. V. C.

ANIMAL POISONS SUPPOSED TO BE ALLIED TO CHOLERA POISON.—In some experiments on the poison of the cobra di capella, which George B. Halford, M.D., Professor of Anatomy in the University of Melbourne, has been lately engaged in, he has discovered that when a person is mortally bitten by the cobra, molecules of living "germinal" matter are thrown into the blood and speedily grow into cells. These cells multiply so rapidly that in a few hours millions upon millions are produced at the expense of the oxygen absorbed into the blood during respiration; and hence the gradual decrease and ultimate extinction of combustion and chemical change in every other part of the body, followed by coldness, sleepiness, insensibility, slow breathing, and death. The professor adds to his account of the action of this powerful poison that he has many reasons for believing that the *matéria morbi* of cholera is a nearly allied animal poison, and that if this, on further examination, should prove to be the case, we may hope to know something definite of the poisons of hydrophobia, small-pox, scarlet fever, and, indeed, of all zymotic diseases.

THE SURVEYORSHIP OF ST. LUKE'S PARISH.—It has been resolved in appointing a new surveyor in the place of Mr. Christie, resigned, that the salary shall be 250*l.* a year, the surveyor giving his whole time to the parish and residing in it. Advertisements for candidates were ordered to be issued.

THE RATE OF MORTALITY.—The annual rate of mortality last week was 23 per 1,000 in London, 23 in Edinburgh, 23 in Dublin, 22 in Bristol, 21 in Birmingham, 27 in Liverpool, 34 in Manchester, 27 in Salford, 21 in Sheffield, 24 in Leeds, 20 in Hull, 26 in Newcastle-upon-Tyne, and 23 in Glasgow. The rate in Vienna was 23 per 1,000 during the week ending the 20th ult., when the mean temperature was 8°6' Fahrenheit higher than in the same week in London, where the rate was 21.

THE THAMES EMBANKMENT BILLS.—In consequence of the postponement of the second reading of the Wine and Coal Duties Bill till Monday next, and the lateness of the session, it is understood that the Thames Embankment (North Approaches) Bill, which was a Bill to authorise the making of several new streets between Whitehall and Waterloo Bridge, and altering others, and also the Thames Embankment (Chelsea) Bill, will not be proceeded with this session,—the funds for carrying out the above works being derivable from securities which would be available to the Commissioners of Works by the passing of the Wine and Coal Duties Bill.

THE NEW STRUCTURES AT STANHOPE-STREET GATE.—In the Commons a few days ago Lord Ebury asked upon whose responsibility the structures now in process of erection at Stanhope-street gate were being built, and whether the further progress of the works could be stayed until an expression of some competent opinion could be obtained in regard to them. The Duke of Buckingham replied that the structures in question were being erected under the direction of Mr. Pennethorne, architect. The works were so far advanced that they could not be stayed. In consequence of the widening of Park-lane it had been deemed desirable to add another story to the lodges in question. Whether a hoarding could not be placed round them the duke could not say.

KENT ARCHEOLOGICAL SOCIETY.—The tenth annual meeting of this flourishing society has been held at Dartford. The chair was taken by Earl Amherst, the president. The Rev. T. P. Coates read the annual report, which spoke in suitable terms of the unexpected death of the late Marquis Camden. The finances of the society were represented as being in a flourishing state. The archaeologists then proceeded to examine the many objects of interest to be found in Dartford. The principal of these is the church, attributed by Dunkin, the historian of Kent, to the Saxon period, but in which there is abundance of work undoubtedly contemporary with Gaudolph, who was not only one of the princes of the church but an architect of great taste and skill. Amongst the objects of interest in Dartford are some panel paintings in the Old Bull Inn. Some remarkable caves were visited in the plateau between the rivers Cray and Darent, which Mr. Dunkin describes as the city of Cassivelaunus, or Caswallon, to which Caesar marched in his second invasion of Kent, and where the Romans were defeated. The archaeologists then proceeded in open carriages to the neighbouring village of Stone, where the Rev. F. W. Murray, the rector, acting as guide, pointed out all the interesting peculiarities of the church, lately restored by Mr. Street, architect. The party then returned to Dartford, where a banquet was prepared beneath a spacious marquee erected upon a lawn at the back of the Bull Hotel. The chair was taken by Sir W. Stirling. In the evening a number of papers were read in the Bull Assembly Rooms in relation to several places of local interest. Several excursions were arranged for the next day.

TENDERS

For alterations and repairs to the Bell and Anchor Tavern, Hammer-smith. Messrs. Bird & Walters, architects:—	
Stimpson.....	£1,340 0 0
Eyles.....	1,275 0 0
Whitlock.....	1,224 0 0
Newman & Mann.....	1,185 0 0
Williams & Son.....	1,133 0 0
McLachlan (accepted).....	1,072 0 0

For the erection of an additional wing to the East Sussex, Hastings, and St. Leonard's Infirmary, and for certain alterations to the present building:—	
Sims & Martin.....	£1,221 0 0
Sawyer.....	1,168 0 0
Hughes.....	1,142 0 0
Jones & Moyes.....	1,124 0 0
Broadbridge.....	1,073 12 0
Winter.....	1,070 0 0
Poxon & Smith.....	1,065 10 0
Geary.....	1,061 14 0
Kenwood.....	1,045 0 0
Longhurst (accepted).....	968 10 0
Sadler.....	927 0 0

For rebuilding the New Fountain public-house, City-road, for Mr. James Blyth. Mr. James Harrison, architect. Quantities supplied by Mr. H. F. Gordon:—	
Little.....	£3,497 0 0
Robson.....	5,400 0 0
Causton.....	5,012 0 0
Henshaw.....	2,960 0 0
Browne & Robinson.....	2,983 0 0
Bishop.....	2,935 0 0
.....	2,894 0 0

For building Working Men's Institute, Monmouth. City of Mrs. Jones, Anchor-hill. Mr. Lawrence, architect:—	
Jackson.....	£1,330 0 0
Roberts.....	1,320 0 0
Lawrence, Webb, & Elias.....	1,210 0 0
Durk.....	945 0 0

For alterations at premises, Wells-street, Cripplegate, for Messrs. Fuman & Co. Messrs. Newman & Billing, architects. Quantities not supplied:—	
Greenwood.....	£1,139 0 0
Pokey.....	1,093 0 0
Russell (accepted).....	986 0 0

For new warehouse, Shad Thames, Southwark, for Messrs. Forster & Co. Messrs. Newman & Billing, architects:—	
Lugg (accepted).....	£4,770 0 0
For new bay windows, &c., to St. John's Parsonage, Battersea. Mr. E. C. Robins, architect:—	
Sharpton & Cole.....	£269 0 0
Easton, Brothers.....	275 0 0
Bass.....	270 0 0
Lathey, Brothers.....	283 0 0

For additions and alterations, Woodlands-road, Red-hill:—	
Barnes.....	£685 0 0
Nightingale.....	675 0 0
Penfold.....	675 0 0
Cook.....	628 13 6
Holdsforth (accepted).....	617 10 0

For Baptist Chapel, Brockley-road, New-cross. Messrs. C. Seale & Son, architects:—	
.....	£210
Colls & Son.....	£5,180
Ennor.....	5,120
Hedges.....	5,030
Sims & Martin.....	4,984
Wood & Nunn.....	4,897
Dove, Brothers.....	4,665
Higgs.....	4,467

For the erection of a pair of semi-detached residences, at Eitham, Kent, for Mr. A. F. Timothy. Messrs. Tolley & Dale, architects:—	
Ritso & Capps.....	£4,000 0 0
Langmead.....	3,650 0 0
Fawcett.....	3,550 0 0
Bake.....	3,300 0 0

For the excavation, drainage, metalling roads and walls, boundary walling, and entrances, Belfast Cemetery. Messrs. Gay & Swallow, architects:—	
Taylor.....	£2,800 0 0
Rest & Smith.....	9,832 0 0
Lapth.....	9,600 0 0
Taylor.....	9,349 0 0
Monk & Co. (accepted).....	9,700 0 0

.....	£200
Palquists and Gates.....	685 0 0
Cliff & Co. (accepted).....	685 0 0
For the erection of a sessions-house, police-station, public offices, and assembly-room, for the Local Board, Paignton, Devon. Quantities supplied. Messrs. J. Tarring & Son, architects:—	
Perrett & Son.....	£4,732 8 6
Roberts.....	4,290 0 0
Stevens.....	4,218 10 0
Call & Pethick.....	3,975 0 0
Weeks.....	3,779 0 0
Frans, Brothers.....	3,663 8 10
Bragg & Dyer.....	3,417 15 0
Piller.....	3,312 0 0

For alterations and repairs to No. 7, Adam-street, Strand, W.C. Mr. J. Tarring, architect:—	
Jamerson & Hobson.....	£408 10 0
Clemence.....	326 0 0
Richards.....	307 10 0

For five houses, Norman's-buildings, St. Luke's. Mr. Thomas J. Hill, architect:—	
Perry (accepted).....	£2,000 0 0
For works at Central-hill, Nurwood, for Mr. D. Miller. Mr. Thomas J. Hill, architect:—	
Webb & Sons.....	£1,424 0 0
Wood & Co.....	1,365 0 0
White.....	1,249 0 0
Sahey.....	1,160 0 0
Auley.....	1,073 0 0
Cortelidick.....	1,005 0 0
Perry.....	997 0 0

For new stables, at Enfield, for Mr. H. W. Draper. Mr. Thomas J. Hill, architect:—	
Webb & Sons.....	£459 0 0

For the erection and completion of New British Schools, at Frogmore, Wandsworth, Surrey. Mr. E. C. Robins, architect. Quantities supplied by Messrs. Batstone & Hunt:—	
Kirk.....	£2,511 0 0
Nicholson & Sons.....	2,430 0 0
Adams & Sons.....	2,400 0 0
Lathey, Brothers.....	2,218 0 0

For alterations and additions to a warehouse, Noble-street, City. Mr. Harbert Ford, architect:—	
Cole.....	£700 0 0
Perry.....	638 0 0
Beeton.....	640 0 0
Gordon & Co.....	689 0 0
Sahey.....	689 0 0
Crabb & Vaughan (accepted).....	467 0 0

For alterations and additions, &c., at No. 30, Upper Hamilton-terrace, St. John's-wood. Messrs. Bird & Walters, architects:—	
McLachlan.....	£2,789 0 0
Edbs & Son.....	688 0 0
Morsman.....	682 0 0
Williams & Son (accepted).....	617 0 0

For alterations to Messrs. Dudley, Bolls, & Co.'s Envelope Works, in Goswell-street. Mr. J. W. Dennison, architect. Quantities supplied by Messrs. Franklin & Andrews:—	
Parman & Fotheringham.....	£26,396 0 0
Brass.....	6,625 0 0
Rider & Son.....	6,044 0 0
Duws.....	5,983 0 0
Little.....	5,978 0 0
Newman & Mann.....	5,914 10 0
Henshaw.....	5,893 0 0
Myers & Sons.....	5,757 0 0
Drowne & Robinson (accepted).....	5,653 0 0

For additions, &c., to the Friend-in-hand beer-house, Wilcox-road, for Mr. Howett. Mr. Danglefield, architect. Quantities not supplied:—	
Partick.....	£293 0 0
Nightingale.....	368 0 0
Quennell.....	361 6 8
Whittick.....	218 0 0

For additions to house at Chiselmurst, Kent. Mr. Glyn, architect:—	
.....	A. B.
Little.....	£1,370
Hande & Co.....	£1,150
Thomas.....	1,140
Alcan.....	1,071
Permy & Co.....	1,030
Nightingale.....	1,004
Wade.....	916
Watkins.....	813
.....	£2,891

For additions to house, Woodlands-road. Mr. Matthews, architect. Quantities supplied:—	
Barnes.....	£285 0 0
Nightingale.....	679 0 0
Penfold.....	675 0 0
Cook.....	628 13 6
Holdsforth.....	617 10 0

For new receiving wards, North Surrey District School, Anerley. Mr. J. Barney, architect. Quantities supplied:—	
C. & J. Bowler.....	£2,479 0 0
Munday & Hutchinson.....	2,031 0 0
Little.....	1,930 0 0
Sims & Martin.....	1,780 0 0
West.....	1,688 0 0
Hart.....	1,734 0 0
Godbolt.....	1,689 0 0
Nightingale.....	1,617 0 0
Low.....	1,618 0 0
Jarrett.....	1,609 0 0
Chappell.....	1,540 0 0
Poxon & Smith.....	1,495 0 0
Hollidge (accepted).....	1,495 0 0
Hazel.....	1,320 0 0

For additions, &c., to No. 4, Bury-street, Aldgate. Mr. N. S. Joseph, architect:—	
Newman & Mann.....	£2403 0 0
Corder.....	383 0 0
King & Sons.....	376 0 0
For alterations, &c., to No. 20, Worship-street. Mr. Hammon, architect:—	
Aford.....	£270 0 0
Browne & Robinson.....	291 0 0
King & Sons.....	280 0 0
Macey.....	267 0 0

Atkinson Morley Convalescent Hospital, Wimbledon.—The contractors for this building are Messrs. J. Simpson & Son, Baker-street, Portman-square.	
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TO CORRESPONDENTS.

T. & D. J. D. A. W. & L. & M. H. de M. R. T. J. H. J. T. R. D. & S. & H. C. & Y. & B. E. N. T. H. J. L. C. S. R. S. & Son. — M. D. W. J. G. — T. L. D. — J. T. P. — W. A. — F. S. — J. P. — N. & R. J. P. — J. W. S. — A. C. — G. V. — C. J. P. — D. O. — S. J. G. — W. C. — W. J. D. — R. K. — Young Mason apply to Society for Improving Condition of Labouring Classes, Ender Hall.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m.** on **THURSDAY**.

The Publisher cannot be responsible for ORIGINAL TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

The Builder.

VOL. XXV.—No. 1279.

Town Drainage.

HE sudden ground of an undrained town breeds fever and malaria. Seldom is the wisdom of the authorities sufficient to enable them to foresee this. An epidemic comes upon them, and they cast about for a remedy, and use a great deal of chloride of lime—the best disinfectant of rotten organizations; call out the doctors to cure the infected persons; and get ready the machinery of burial.

The engineer is then called in, and he cuts up the ground in all directions to relieve it of the overcharged liquid refuse.

In the old days,—that is to say, before the time of the glorious

old Board of Health,—this work, when done at all, was done on a scale of magnitude, and vast sums of money were spent in providing receptacles which took down the filth from the surface to a few feet below it; and, for the most part, kept it there to still breed malaria, and send it up through the open street-gullies and open sinks in and about the houses. Was this an improvement? It is useless to inquire whether it was or not. There are now few if any towns absolutely undrained, and scarcely any so badly drained as most of them were before the time of about 1848. We find the more usual state of things now to be, that towns are drained more or less well under the advice and superintendence of their surveyors, who are for the most part competent engineers equal to the design and construction of any work that may arise. The town surveyors of England have not yet reached the climax of their glory, but they are working towards it. The day of their glory will be the day when one can live in a town with as much pleasure as in the open country, and with no more liability to disease.

The health of the people is the object of the town surveyor. It is not always that he has the advantage of having associated with him a medical officer of health, but whether he has or not his proper object remains the same, viz., the health of the people.

Some of our surveyors of towns and cities do not take a high view of their position, and are satisfied to follow in the wake of committees, and do anything or nothing as they may be instructed. This is unfortunate for any town subject to it, but the remedy for these evils will come when these gentlemen, who fail to appreciate their true position, are succeeded by better men.

The atmosphere is one great disseminator of health or of disease; and it is to the want of attention to the ventilation of the drains that the

want of success in many attempts to improve the health of towns is to be attributed. To leave the street gullies open is to poison the people in the streets. To leave the house-sinks untrapped is to bring poison into the houses. To ventilate the sewers by shafts over them in the streets is a clumsy and imperfect device; and to ventilate by means of the rain-water pipes is not much better, unless great care be exercised in selecting proper places. That the sewers and drains ought to be ventilated no one should deny. The decomposition of the animal and vegetable matter they receive cannot be prevented, and the gas into which these substances are converted will rise, and find outlets into the atmosphere. The higher temperature of a close sewer facilitates the formation of gases, and increases their quantity. To provide, then, a proper means of ventilation of the sewers and drains is a necessity. How is this to be best done? Various means have been proposed from time to time. At one time huge chimneys are to be built, but they are found to be impracticable for any good, for they would only draw up the air from the immediately surrounding areas of very limited extent, and would by no means answer the purpose they would be intended for. To come at once to the point, the proper way of ventilating the sewers and drains seems to be to carry up a flue or pipe at the head of every house-drain, that being the highest point of the drainage. In building new houses, a flue of half a brick square should be carried up with and adjoining to, but quite independent of, the fire-flue, and be continued to the top of the chimney. In draining houses already built, a 4-inch pipe, which may be the common sort of rain-water piping, answers the purpose, and it should be carried up at the back of the fire-flue and to the top of the chimney. There are houses of such construction as to make this difficult, if not even impossible; but they are few and may be neglected.

Nearly every house in the town being thus provided with a ventilating flue or pipe for its own drains, and by thus providing for ventilation in detail, the whole system of sewers becomes ventilated, which is precisely what is wanted to make the work complete. The air that is breathed by men and animals is drawn from a space limited to about 6 ft. vertical height from the ground in the daytime, and to a height at all other times less than the height of the chimney. It is this clearing of the lower 6-feet space of noxious effluvia from sewers that renders a town healthy. The gas that is most injurious to health is lighter than common air, and will continue to ascend when conducted to the top of the chimney, and will not descend again to the ground. In considering the effect of this system of ventilation it will be seen that the means taken to conduct away the foul air of the sewers renders the production of the foul air itself almost impossible; for, to feed these numerous ventilating pipes, there must enter the sewers a supply of atmospheric air, which reduces the temperature within the sewers and drains, and so checks the formation of gases. And instead now of the gullies being trapped to prevent the escape of sewer gases into the streets, they must be left open to supply fresh air to the sewers, which ascends the tall ventilating pipes by the law of motion of fluids. This is the consummation devoutly to be wished. The expense of building in the wall such a flue as has been described is very small; and the cutting off of a corner of a cupboard, or other space adjoining the fireplace where the wall is thinly built, as is usual in cottage houses, is of no great moment or injury to the convenience of the tenant, while the benefit to the health of the people is immense. And where houses are already built before they are drained, the carrying up of such a pipe as has been described need not cost more

than 20s. per house. Not so much on the average, because the practice is frequently to drain half a dozen houses by one drain of, say, 6 in. diameter, and in these cases it is sufficient to carry up one flue; or one pipe, at the head of the drain.

In one town that has been drained on these principles, the cost has not exceeded 10s. per house, and the results are the reduction of the mortality from zymotic diseases to the extent of 50 per cent. of the population during the last five years, since the drainage works were completed, compared with a period of ten years immediately preceding that time. Another town is now being drained on the same principles, and a like benefit is anticipated. The reduction of the death-rate is not the only advantage of good drainage. The reduction of the number of days of sickness of the people is of vast calculable advantage. It is easy, by going thoroughly into the statistics, and taking the numbers sick that accompany one death, and the duration of their sickness in the one case and in the other, to show an absolute saving to the community, when the people can go about their work without being made ill by it, and can return home at night and stay there until morning without being made worse by the inhalation of a poisonous atmosphere. The owners of house property are directly interested in these things in a pecuniary way; for if the man and his family are made sick, the one cannot work, and the others become a burden. Soon he finds he cannot pay his rent, and goes to another house, of lower rent, that he may perhaps be able to pay; but he does not rest there, and the pursuit of the inquiry what becomes of him and his family is too painful to be contemplated, and, indeed, is sufficiently obvious. It is more to the purpose to show a positive benefit to the prosperity of a well-drained town, and this is proved by past experience, and is in the course of proof at the present time. The results of one town were given in the *Builder* not many months since. But it is not necessary to wait for a multiplicity of proof in such a case as this, where all that is advocated is as agreeable to common sense as it is to physical law.

The cost of these ventilating flues and pipes falls properly on the owners of the houses, each owner ventilating his own drains, and so by degrees the whole town becomes healthy. This necessity of ventilation is the thing most commonly overlooked, and therefore it is here mentioned in the first place; but there is another thing very necessary to be attended to in laying drains, and which is but too often neglected, and it is that the joints of the pipes, or of the brick-work, as the case may be, should be made water-tight. This is necessary both for preventing the escape of liquids from the drains, and for preventing the admission of land-water into them; for in the former case, the escape of the liquids prevents the solids being carried forward towards the outfall, besides contaminating the surrounding soil; and in the latter case the drains become surcharged with mere water.

In dealing with the sewage, the less superfluous liquid there is to be dealt with the better. Therefore, make the joints of all drains and sewers water-tight. Clay is the best of all materials for this purpose. It is quite as invulnerable to the passage of water as cement; and it is more easily removed when junctions are required to be made with the drains or sewers.

The fall that should be given to drains has often been overrated. The absolute quantity of water or sewage that has to pass through them is small, comparatively, with the dimensions and falls often given to them. It is seldom that a house-drain, even when it drains a number of houses, requires to be more than 6 in. diameter, or to have more fall than 1 in 120.

The joints and the direction of the drain, and its form of junction with the sewer, these are

more important to be considered, because more liable to be overlooked as secondary, whereas they are of the first importance. The direction of the *Cum* should be the nearest way to the sewer, turning all angles with bend pipes of about 3 ft. radius, and laying the intermediate lengths straight; instead of following the bad practice of trying to make long curves with straight pipes, and leaving every joint open on the outside of the curve, whereby obstruction is offered and accumulation is promoted. Besides, the shorter the distance the greater the fall *pro rata*.

Another important thing is that the kitchen sinks should not communicate directly with the drains; but the pipe from them should be carried through the wall, and empty into a trap outside the house, from which the water should pass into the drains. In other words, a drain should never terminate inside a house.

With this trap outside, as with street gullies and other openings at the ground level, where an efficient system of ventilation is provided, it becomes unnecessary to trap it; and, indeed, it is better that it and they should not be trapped, but that the refuse from the kitchen sinks should all pass into the drains,—the solids with the liquids,—and be all carried away to the outfall instead of choking up the traps, and being, as all traps are, a constant trouble to the tenants to clean them out. But it is only with a thorough system of ventilation that this becomes practicable.

In carrying out the system of ventilation that has been described, it has not been without difficulty that the prejudices of the architects and builders have been overcome in favour of the system of providing a flue or pipe to the head of every house-drain. The objections have been sometimes ingenious, and it may be well to state some of them. The first was, that the sewer air would be taken up to the bedroom windows, and blown into them. The answer to this is, that, to begin with, ventilation is necessary, and has always been admitted to be so; and then that the attempts first made to accomplish it were either to leave every opening into the drains untrapped, and so diffuse the sewer air all over the town, or to trap the house-drains and leave the street-gullies open, or to trap these too, and carry up a ventilating-shaft in the middle of the street, with or without charcoal-boxes; or, further to ventilate the sewers and drains by the down pipes from the roofs. This latter system, indiscriminately carried out, does convey the sewer air to a too close proximity to the bedroom windows, and even where great care is taken to omit such down pipes as lead up close to the windows, yet the system must be allowed to be imperfect; for, besides the risk of contamination of the air drawn into open bedroom windows, these pipes do not in general enter the head of the drain, and so do not lead away the air from the higher parts of it, where it accumulates. The improvement, therefore, seems to suggest itself that a *flue* or pipe *shall be taken up near the fireplace for the purpose of increasing its temperature, and, therefore, power of ventilation, and be continued to the highest practicable part of the building.* The house-drain is easily connected with this flue or pipe by an earthenware pipe underground.

Another objection has been attempted to the effect that as all houses are not of the same height the higher ones will do more than their share of duty by reason of their greater power of ventilation. Well, this would be no great harm if it did occur, but in reality the quantity of air passing up any flue or pipe is capable of being regulated by its size. In practice, however, these small objections may be disregarded. It is satisfactory to know that the system is being recognised and carried out.

A COUNTRY HOSPITAL FOR MANCHESTER.—Of 16,000 children born annually in Manchester and Salford, 8,000 die prematurely. The stress upon the children's hospitals of the town is excessive. A successful effort has been made towards building a country hospital in connexion with the General Hospital and Dispensary, for sick children of Manchester. A receiving-house will be retained in the city, of which the estimated cost is 3,000l.; and a hospital will be erected in the country, containing three detached wards of twenty-six beds each, on the Pavilion system, with a central house for domestic and administrative purposes. This will cost 12,000l. Nearly 10,000l. have already been subscribed.

BRITISH ARCHAEOLOGICAL ASSOCIATION AT LUDLOW.

In the course of the address with which the Congress on the 29th ult. was inaugurated, Sir Charles Roane Boughton, bart., as president, referred to the local historians of the district, citing the names of men living and dead, who had contributed to illustrate and elucidate that history—Ludlow in Parliament, Mr. Wright, Mr. Dukes, Mr. Pigeon, Archdeacon Owen, Mr. Blakeney, Mr. R. Anderson, Mr. Nightingale, and a host of other Shropshire worthies. He might remind them, he continued, that it was in that neighbourhood, at Barrington, near Shrewsbury, that an individual was born in the reign of Edward IV., who was still living in the time of Charles I.,—that old, old, very old man, Thomas Parr. He proposed to say nothing to them that evening of all the ancient remains in that locality—the British earthwork, the Druidical remains, the Roman camp and town, the Norman abbey, the Plantagenet castles—with which that part of the country was so thickly studded; but he trusted his archaeological friends would bear with him if for a moment he reminded them of how much interest lay at their very feet. If they would learn all that was known of the early history of Ludlow and the solitary time the inhabitants must have led, they could consult no better authority than Wright's "History." Others had chronicled the subsequent feuds in which their castle was engaged, and how different great men were alternately lords of the castle and inmates of its dungeons. It was here probably that the great victories of Mortimer's Cross, Wigton, Barnet, and Tewkesbury were planned, and here probably the forces were rallied after the great defeats of Ludford, Wakefield, St. Alban's, and others. But it was not only as a stronghold of war that Ludlow Castle appealed to their sympathies, but after these tribulations had passed it became the chosen residence of royalty. Could those old walls speak, how many a story of the courtly revelries of the princes of York might they not unfold; how much of misery might they not divulge! But 365 years ago the saddest scene of all was presented, when the funeral cortege departed from those gates with the remains of Prince Arthur for their last long home under Worcester Cathedral, after a short period of happiness in wedded life with the lovely Katherine of Aragon. Then again, it was here that the lofty intellect of Milton first drew attention in his "Comus;" and here Butler's satirical pen was wielded. Passing over the Government of Sir Henry Sidney they came to the time when, stripped of its roof, the old border rallying-place of centuries, the castle became the ruin it now was. If they would gather something from these antiquarian reminiscences, they might ask themselves how careful the thought ought to make them when they reflected who the men were that quietly viewed the destruction of Ludlow Castle, and how anxious they should be that posterity should not pass on them the same verdict as we did on those before us. Those days which saw the ruin of this fortress were not the days of what was called a barbarous age, but were the days when Swift and Congreve lashed the most prominent of our national vices. They were the days when the *Spectator* and the *Tatler* charmed our forefathers with the wit of Steele and Addison,—the days when Bolingbroke, Pope, Arbuthnot, and others gave to the world a literature which is still among our most cherished possessions. If, then, there was much to cause them to mix regret with pleasure in viewing Ludlow Castle, he was glad to say no such mingled feelings need be entertained with respect to Ludlow Church. Sir Charles briefly sketched a history of the church, which he said had gone through three periods,—a period of splendour, a partial eclipse, and a perfect revival. He then referred to other ancient remains in the town,—the old town walls, and one of the original gateways still standing, the sites of two priories, and half-timbered gabled houses, and acknowledged the invitations received from the mayor and corporation of Ludlow, Lord Northwick, Lady Mary Olive, and Mr. Knight, of Downton, to visit Oakley Park, Burford, Downton Castle, &c. He should also himself have pleasure in receiving the corporation at Downton Hall, though he had not much of antiquarian interest to show them, for they knew that old stones must not be moved if they wished them to retain their moss, and his family had its foundation on a Warwickshire soil.

In the evening of Tuesday, after visiting various places and an entertainment at the president's.

Mr. E. Roberts, F.S.A., gave an account of the day's excursion to Bitterley Church, Middleton Chapel, Titterstone Clee Hill, and Downton Hall; after which

Mr. R. Kyrke Penon, F.S.A., read a paper on "Ludlow Church," taking as a fact that in 1199 the then existing Norman church was taken down and enlarged, and that the early English church, exclusive of the side chapels, coincided in extent with the present building.

The Chairman then called upon Mr. Thomas Wright for his remarks and extracts, upon early churchwardens' accounts.

Mr. Wright said they were no doubt aware that the corporation of Ludlow possessed a collection of records which contained a very considerable number of documents of the greatest interest, not only to the town of Ludlow but to the country generally, because they throw much light on the history of past ages. It was his original intention to give them a full report upon those records; but, unfortunately, some delay had been caused by their removal to a place where he could more conveniently examine them, and some of the papers had got disarranged, and he was sorry to say that this had obliged him to postpone what he intended to do. On some future occasion, however, he hoped to be able to complete his report, and to lay it before them in full. In the meantime he had chosen from among the records one remarkable document, containing the churchwardens' accounts for a period earlier than any other document with which he was acquainted at present. It began in 1540, and extended to 1607, and it contained entries of a very interesting kind. Almost, he might say, of an exceptional kind. He was not well acquainted with the details of the history of Ludlow Church at its early period; but he was rather inclined to think that it originally belonged to the Guild of Palmers, or, at any rate, that they were in some way connected with it. After the dissolution of the guild,—indeed, before it was altogether dissolved,—the corporation had great power over it, and the churchwardens' accounts appeared to have got into the hands of the corporation, where the documents now under notice had been preserved. Partly for these reasons, perhaps, there were items of expenditure in these accounts which were not usually found in accounts of this description; but that they might more fully understand their nature, he would read some extracts from them. Mr. Wright then read several extracts: among the most interesting were these:—

Richard Langford and Wm. Esom (or Escon) churchwardens, 31 Henry VIII. 1540.
Item, paid to E. de la Torre, and Mathew Buckelmaker for drayage of the tryn and malver of the staple up.
Item, paid his name Thomas Pavsey for whippynge deas out of the church vine.
Robert Alder and Richard Lane, 1544, churchwardens.
The work upon the church is full and curious: continual mending and making of door keys to church or to the vestment parts of it.
Holl' ap Rees and John Clee, 1545.
Item, to the Belmon for malyng the cline of the church, 1547.
Item, paid for redyng the church of stonys, 1547.
Item, paid for mending of our Leys by stone, 1547.
Item, paid for a loken to the cloche door, 1547.
Item, to Sir Richd. Cupper in a reward a pair of gloves, price 12d.
Item, for mending of the window in Saint Margretes chancel, and for pargettyng the leades to Thomas Season, 1547.
William Hoke and Thomas Coze, 1548, churchwardens.

The receipts become this year a very important article of the accounts, for they arose from the sale of the objects of Romish superstition, and we learn not only the appearance which the interior of our church must have presented before the Reformation, but the manner in which these superstitious objects were distributed for sale.

Antony Atkinson and Edward Coper, 1550.
Item, to Thomas Season for gowynge up into the stiple to mynnynghtes to save the glasse ther in the windowys, 2s.
Item, to the said Thomas for ix. fote of new glasse to the west wyndow in the stiple, 10s.

Mr. Wright went on to say that the early history of pews was exceedingly obscure, and the accounts usually given were confused and inaccurate. Then the article in the *Penny Cyclopaedia*, which was supposed to have been carefully compiled, informed them that "there were no pews in churches until about the period of the Reformation, prior to which the seats were movable, such as chairs and benches as we see at this time in the Roman Catholic churches on the Continent. Before that time no cases are to be found of claims to pews." The extracts he had read from the churchwardens' accounts of

Ludlow were sufficient to show the inaccuracy of this statement. But he had another proof of the antiquity of the use of the pew. In the English "Moria of Arthur" of Sir Thomas Malory, printed by Caxton, one of the prelates of the heroes, Galahad, arrived at a monastery, and, says the text,—"On the morn he hard his masse, and in the monastery he fonde a preeste redy at the altar. And on the ryght syde he sawe a pewe cloyd with yron." This, no doubt, was a closed pew. He was inclined to think the word "pew" was not of foreign origin, but that it had been some English word of popular fiction.

A short discussion followed, in the course of which the Rev. Sir F. A. G. Onseley expressed a hope that further search would be made in these records for entries relating to organs, organ building, and organ players.

On Wednesday the meeting-place was the Castle, where the members mustered well. Mr. T. Wright, stationed on a bench surrounding a tree, gave a brief outline of the history of the castle, tracing the memorable events connected with it from the time of its being built, in the reign of William the Conqueror. The castle was then explored, and the party afterwards proceeded to Ludlow Church, over which they were conducted by Mr. Gordon Hills and Mr. Roberts, in the absence of Mr. Penzon. An adjournment then took place to the Feathers to luncheon, to which the Association had been invited by the Mayor and Corporation of Ludlow. The tables were laid for 260 guests, and every seat was occupied. The ex-mayor presided. After toasts, preparations were made for proceeding to Ludford, when the "house" was kindly thrown open by Major Ogle, who described the many objects of interest there. A movement was then made to Ludford Church, which was inspected, and then onward to Whitton Court, over which the Association was shown by the Rev. C. Whiteford. The last place visited this day was Ashford Court, where some interesting old books were shown by Mr. Hall, who also provided refreshments.

At the evening meeting, papers were read by Mr. Leven, M.A., on the "Barony of Burford," and by the Rev. J. De La Touche, F.S.A., on "Stokestey Castle," a small castle now disused on the banks of the river Conny, about four miles from Ludlow. He traced its history from about 1200. In 1291 a licence was granted to Laurence de Ludlow to crenellate his house, to guard it against the Welsh marauders. The castle has not been very famous in history. In 1790 it was the resting-place for a night of the Bishop of Hereford. The bishop appeared to have purchased food for himself. Ten generations of the De Ludlows held possession of the castle down to 1497, when a female descendant married one Vernon, and the property remained in the Vernon family down to 1616: eventually it came to the Cravens.

On Thursday the excursion was by road through Ludford, Woolforton, Ashford, &c., to Little Hereford; thence to Bushford, and so on to Tenbury. The first halting-place was at Little Hereford, where there is a quaint old church close to the river-Teme. Mr. Roberts was the guide to the party, and described the archaeological features of the church. The party, after spending a short time at Little Hereford Church, resumed their carriages, and proceeded to Burford, where they were conducted over the mansion and church.

The party next wended their way to Tenbury, where, at the Swan Hotel, Lord Northwick (who was detained in London by Parliamentary duties) had ordered to be prepared for the travellers a most hospitable reception. The church was visited, as was an Oriental collection at Sir F. Gore Onseley's. At Burford Church, previously examined.

Mr. Roberts said that, with the exception of the monuments in the church, there was not much of particular interest. Mr. Leven had stated that the church existed at a very early period prior to Domesday, and had two priests; but that after Domesday it was not mentioned until 1253, and then it was held in three portions. There were three churches or chapels. The monuments were restored in 1848, and repainted, according to the accounts given by Dineley. However much they might regret that they did not see the monuments with the portions of their original colours, it must be acknowledged that there had been a very considerable amount of zeal exhibited by the incumbent in the restoration, but he (Mr. Roberts), as an archaeologist, would rather that they had been untouched. The chancel, he had been informed, was supposed to be Anglo-Saxon, but

as far as he could see, there was nothing of the kind. They could not tell without excavations what the foundations might be, but there certainly was a church there before the Conquest. It was supposed besides, that the church was shortened at the east end and the west wall cut through, and a new arch inserted in the nave at the latter date, probably just before the Reformation. The registers commenced in 1569, and were carried on to 1679.

The Rev. J. W. Joyce then proceeded to describe the monuments. He said that those which would afford them the greatest interest were those of Lady Elizabeth of Lancaster, who was laid under the north window, and a small monument under which the heart of one of the Cornwalls was buried. Elizabeth of Lancaster, daughter of John of Gaunt, was first married to the Duke of Exeter, who was beheaded at Cirencester, for rebellion against Henry IV. She afterwards married Green Cornwall (so called because he was born at sea), afterwards Lord Panhope, who distinguished himself very much at Agincourt, and afterwards at a tournament, where he won great praise. Mr. Joyce, replying to the expressions of regret which had fallen from Mr. Roberts, that the monuments should have been touched, said that if nothing had been done to them the archaeologists would have found them covered with whitewash, and the effigies covered with very thick coarse red paint. Through the advantage of the Dineley MSS. they had been enabled to restore them to their original painting. Then there was the Baron Burford, Edmund Cornwall, a man of great stature, 7 ft. 3 in., whose walking-stick would be shown them presently. They next came to a little monument, or rather stone, with a hole in it, in which the heart of one of the Cornwalls was buried, who died at Cologne, and wished that his heart should be sent to his native soil. Above this tomb was the inscription,—

"O Lord, my contrite heart is meek,
Do not refuse, I thee beseech."

And also the following verse:—

"O God, my soul I do bequeath, to rest in heaven lie,
And there my corpse to be interred where I shall hap
to die;
My heart unto my native soil for burial I bestow,
My faith unto my friends I yield,—this is the will I make."

At the evening meeting in Ludlow, Mr. Gordon Hills read a communication, which he had just received from Mr. Jackson, of Leintwardine, respecting a discovery that had been made in some fields at Broadwood Hall, Creighton, near Lointwardine. There had been some draining and well-sinking going on there; and the workmen, in sinking one of these wells, had come upon a mass of spear-heads, some being very perfect, and others oxidised and welded together by the effects of wet. Some of these masses weighed as much as 1 cwt. A jar was also found, but, unfortunately, was broken; some of the fragments, however, were saved. These remains were found at a depth of 7 ft. from the surface. There were 3 ft. or 4 ft. of soil, and the rest was clay, except some gravel on which the spear-heads were lying. The writer said it appeared to him that the place was originally a morass, and the animals had been entrapped in it; for a great number of bones of animals were found, and among them quantities of teeth, apparently of large animals, probably some of them horses' teeth.

The Rev. W. Perton gave a description of an ancient and originally Saxon church at Stottesdon, near Cleobury-Mortimer, which was illustrated by drawings. The font was a fine specimen of a Norman font, with bold carvings upon it. Some coats of arms in the windows were referred to in one of the Harleian MSS. In 1840 the church was restored, when the beautiful rood-screen was pulled down, and most of it used for firewood, and a "three-story pagoda" was built for the parson and clerk; but a few fragments of the original rood-screen had been rescued, from which he hoped to be able to restore the whole.

Mr. Dillon Croker read a paper on Milton's "Masque of Comus," which was performed in Ludlow Castle in 1634. After reviewing the origin of this form of entertainment, of which "Comus" may be considered the most important, he glanced at the literary history of the work of Milton, tracing in certain passages of it a likeness to the writings of Chaucer, Spenser (in his "Faerie Queen"), Shakespeare (notably in the "Tempest"), and other authors; and in the plot a striking resemblance to a scarce old play by George Peele, called "The Old Wives' Tale"

(1645). The incidents were so similar that he thought there was much reason to believe that the old drama may have furnished Milton with the idea and plan of "Comus." Again, from Fletcher's "Faithful Shepherdess," and from Browne's "Inner Temple Masque," it was thought Milton might have taken some hints. But to whatever extent Milton might have been indebted, either to the ancient writers or to those of his own time, it could not be questioned that he had interwoven many new allusions and refined sentiments. The story, for which Ovid was the earliest-known authority, was that Lord Brackley, then aged twelve (who performed the part of the elder brother, and who was the eldest surviving son of the Earl of Bridgwater), accompanied by the Hon. Thomas Egerton (who enacted the second brother), with their sister, the Lady Alice (who could not have been at that time more than thirteen, and who acted the lady), were on their way to Ludlow from the house of some relatives in Herefordshire, when they rested on their journey and were benighted in Hayward Forest, and the incident (the Lady Alice having been even lost for a short time) furnished, it was thought, the subject of "Comus," as the Michaelmas festivity which was acted in the great hall of the castle, the occasion being the installation of the earl as president over the March of Wales, to which office he was nominated. The early edition, a small quarto of 35 pp., was simply entitled "A Masque presented at Ludlow Castle, 1634, on Michaelmas Night, before the Right Honourable John Earl of Bridgwater, Viscount Brackley, Lord President of Wales, and one of his Majesty's most Honourable Privie Counsell, &c., London. Printed for Humphrey Robinson, at the signe of the Three Pidgeons, in Paul's Church-yard, 1637." The "Masque" did not bear Milton's name until 1645. Between 1637 and 1797 as many as twenty-seven editions have been enumerated, and it is presumed that others existed. Entertainments of this kind having been discouraged, "Comus" was the delight of comparatively few until 1738, when it was produced at Drury-lane Theatre, divided into three acts, and adapted to the stage by Dr. Dalton, prebendary of Worcester, Lawes's music being rejected, and new accompaniments composed for the occasion by Dr. Arne. It was subsequently (1773) reduced into two acts by George Colman, and performed at Covent-garden; since which period it has been repeatedly presented on the stage, and was revived as recently as two years ago, at Drury-lane. In 1750 it was acted and published for the benefit of Milton's granddaughter, who kept a chandler's shop, an occasional prologue being written by Dr. Johnson, and spoken by Garrick. It was surmised that Milton produced "Comus" under his father's roof, at Horton, near Colnbrook, in Buckinghamshire (Milton was then twenty-six years of age). The poet went to reside at Horton after leaving Cambridge, his father having retired there on a competent fortune, and holding his house under the Earl of Bridgwater. There was no evidence to prove that Milton was ever present at Ludlow Castle during the representation of his work, though it was thought that the general theme of Milton's poem was chosen to rebuke the excesses of the inhabitants of that town.

Mr. Cocking read some remarks on the remains of the Austin Friars at Ludlow, which were accidentally discovered when digging on the site of the present cattle-market, in 1861. At that time Mr. Cocking was mayor of Ludlow, and fortunately being an archaeologist, the accidental opening of some of the foundations attracted his attention; a subscription was got up, and the whole of the foundations were uncovered, and having been accurately measured and drawn, were again covered over, and the cattle-market is now carried on over part of their site. At that time the existence of any such buildings was forgotten, though there was a street close to it called Friars-lane. The different offices were all clearly traced,—the friary, with the tower, nave, aisle, chancel, and apartments of friars and servants, refectory, &c.

On Friday evening the Rev. G. F. Townsend discoursed on "Mediæval Instruments of Torture." Mr. Townsend's remarks had especial reference to certain instruments of popular punishment that had been preserved at Leominster and Ludlow. He proceeded to describe the "mortar," the "cucking-stool," and the "brank." The mortar was a wooden utensil, made something in the fashion of an ordinary pail or bucket, which was used as occasion required. It was carried by the offender, or by a

beadle accompanying her, or a constable ringing a bell, the different processes being meant to effect the same end,—the provoking towards the culprit the laughter, ridicule, or contempt of the bystanders. The causes of a resort to this punishment were the offences of the tongue. As late as 1637, Boys, in his History of Sandwich, related that a woman was compelled by the magistrates to convey the mortar through the town hanging on the handle of a broom. After referring to the learned authorities on this subject, he described the cucking-stool. The original use of this instrument was in later years accompanied by immersion in water, and in process of time the name was changed to "ducking-stool." This mode of punishment held its place among the most acknowledged punishments of this country. He had fallen in with a gentleman (Dr. Walker) who remembered seeing it used at Leominster, about 1809, on a woman named Jenny Pipes. He next came to the branks. This instrument was closely allied in its motive and purpose to the two other engines that had been described. It was, however, a much more cruel and severe punishment, and was, he feared, more common. Mr. Jewett counted up thirteen examples in Chebire. Lancaster had only five, and that was the number found in many other counties. It was thus constructed:—The foundation was an iron collar, which fastened round the neck with a sort of hinge. Where this collar would touch the centre of the nape of the neck, another iron bar rose with a slope forward, extending to about the centre of the forehead, where it was fastened by a hinge to another bar, which passed across the nose, and was fitted with a gag, which, when the descending bar was fastened into the collar in front, pressed upon the tongue and caused exquisite torture. Another cruel instrument in the Ludlow Museum appeared to have been intended to dislocate the arm and to cramp and crush the fingers at the same time. He concluded by some remarks on the question how far our public law admitted the use of torture, and came to the conclusion that, although the letter of the law forbade it, the practice of the law permitted it. In the instructions to Sir Philip Sydney, among the records of Ludlow, was an authority to the Lord President and Council, to "put any person accused or suspected of any treason, murder, or felony to torture when they shall think convenient." There was, therefore, a direct commission to torture, and these instruments might or might not have been used for this purpose.

Mr. G. R. Wright, F.S.A., next read a paper "On Sir Philip Sydney in his relation with Ludlow Castle," which, in reference to one portion of it, wherein he referred to the character of the Earl of Leicester, led to a lively discussion. The Chairman (Mr. Hills) observed that the memory of the Earl of Leicester had no doubt suffered from the way in which it had been handled by Sir Walter Scott in his "Kenilworth," but he thought that Mr. Pettigrew, at the Newbury congress, had relieved his memory from the murder of Amy Robsart.

Mr. I. v. ien protested against the apotheosis of scamps. He thought Mr. Pettigrew had vindicated the character of Leicester as to his treatment of Amy Robsart. They knew he could also write fine letters; but they all knew what was said about "fine words" and the "buttering" of parsnips, and he thought public records showed that he had been a designing, cold-hearted, and cold-blooded man, and though he might have had one or two flukes, that could never vindicate him from the charge of being a thorough scamp.

Mr. Blaskell made some remarks on certain figures, carved upside down on the lintel of Stottesdon Church: various theories were advanced as to the origin of such reversed figures, which appeared in more places than one.

Mr. Goldsmid, F.S.A., observed that shields were reversed in the case of the last of a family, and also as a mark of disgrace.

On Saturday, Stanton Lucy and Diddlebury Churches were visited; and at Stokesay Castle the Rev. J. D. La Touche pointed out its interesting features, which he had already described in a paper read on Wednesday night. Bromfield Church and Abbey were subsequently examined, and Lady Mary Clive entertained the party at Oakley Park.

In the evening, on the return of the Association to Ludlow, short papers were read by the Rev. Probandary H. M. Scarth, "On Roman Itinera connected with Wales," and by Mr. T. Blaskell, "On the Half-timbered Houses of Ludlow."

THE BEECH.*

THE beech (*Fagus sylvatica*), if it be not the most magnificent of all British trees, certainly rivals the oak itself in size and majestic beauty; a grove of stately well-grown beeches on chalky loam is at once graceful and grand; the effect on the spectator is thoroughly awe-inspiring; the massive, smooth, upright fasciated trunks, and the far-spreading groin-like branches call to mind some huge cathedral nave; the trunks are pier-like, massive, bossed, and channelled; the branches like arches interlacing, curving, and entangling; and the roots moulded, curled, grotesque, and snaky, help to complete a scene of the most impressive character. The body of the tree is frequently stained of a vivid grass-green, produced by the growth of a parasitic lichen, the beauty of which is enhanced on a summer's day by the bands of pure gold projected on the limbs where the struggling sunbeams find a temporary passage through the dense umbrage above.

In the silent groves and avenues of beeches no sound is heard except the gentle moving of the foliage overhead, or the sharp crackling of last year's leaves underfoot; the fleet squirrel is frequently seen climbing the trees or flying from branch to branch, but it seldom disturbs the silence.

The value of the wood for building purposes is by no means equal to the beauty of the tree; for whether in a living state and full of sap, felled for use, or dried and made up into furniture, beech-wood is invariably riddled by a parasitic worm: this is one of the principal reasons why the wood is seldom or never used for floors and roofs. The wood, whilst apparently sound externally, is frequently rotten within, for on sawing up sound-looking but diseased or damaged beech furniture, the interior is commonly found to be one mass of decay, produced by the tunnelling of these worms; the same may be said of the tree in a living state, for sometimes the first storms of autumn will snap off at the root beeches that were apparently hearty, but really in a state of decay; owing to this and other causes, such as the rapid growth of the mycelium of fungi, large branches of this tree (as indeed of the elm) will frequently suddenly snap off without warning, and doubtless gave rise to the singular superstitions of bygone times. The beech, however, cannot bear the loss of branches like the elm, as it is very sensible to any damage; but the elm, as is well known, will bear any amount of lopping, and when the head and every branch has been cut off will sprout out as cheerfully as ever.

The wood of the beech, when green and sound, is singularly hard, and if used for purposes which require its immersion in water, it is perhaps second to no other British tree; but an enormous quantity of beech is used for making bedsteads, chairs, packing-cases, and furniture in general; it is used for the bottoms of vessels; carriage-makers use it a little, and sometimes gun-stocks and cannon-carriages are made of it. But amongst timber trees it occupies a very low place. Some years ago a French process was brought forward, for the purpose of indurating beech-wood, and making it equal to oak; but as nothing has been heard of it for a long time, it probably did not answer the expectations that were raised on its behalf. If the wood, however, be simply treated with corrosive sublimate, much will be done to preserve it both from insects and decay. It is a favourite fuel in some parts of Europe, and is now used to a great extent in this country, and admired for the glowing heat and agreeable odour which it emits. A well-grown beech is handsome and attractive in every way, it presents so many peculiarities, and is often so grotesque in its form and habits. Sometimes five, six, or seven trunks will become confluent at the base; at other times two or three trees will embrace, entwine, and entangle their main bodies and branches in the most fantastic manner. We have seen many instances of both these vagaries in Epping Forest, where there are a number of magnificent beeches still left. In one place there is a beech and an oak growing so closely together as to look like one tree: the gnarled roots of the two are twisted together like Celtic knot-work: about 6 ft. from the ground the beech trunk suddenly opens asunder, and throwing out two immense arms, tightly embraces the rugged oak, the foliage above being mingled in the most singular manner. No

one who has once seen a beech can have failed to remark the singular hemispherical bosses on the trunk; sometimes they are no larger than a very small nut; at other times they reach the size of a large orange. This singular growth is produced by the puncture of an insect. Occasionally beeches are afflicted with growths which resemble immense semi-globular tumours, attaining a gigantic size (sometimes 5 ft. or 6 ft. in diameter). These curious growths have caused one of the Burnham beeches to assume the form of a gigantic female torso, the curves of the breasts and body being surprisingly life-like and perfect. The roots, too, of beeches are frequently exposed, or appear to lift themselves out of the ground; they writhe, intertwine, and curve like pythons. The bark is very characteristic, generally smooth, of a cold grey colour, like plate-armour; and as it is easily incised, it usually bears the mark of the genus *homo*. But there is another inscription common on beech-trees, far more delicate and beautiful than ever Orlando carved to his Rosalind. It looks like a magic incantation from the realms of Fairyland, but is known to science as *Opegrapha scripta*,—"written lichen." It consists of a delicate white membrane (like fairy-paper), spreading over the beech trunks, and covered with small black characters, closely resembling the arrow-head inscriptions of the Assyrian sculptures.

The leaves of the beech are noticeable in many ways. The two sides are not shaped exactly alike, owing to the way in which they are folded in the bud. They are strongly marked with parallel ribs, running from the mid rib at an angle of forty-five degrees. The leaf entirely depends on this feature for its ornamental character. In the spring the beech-tree puts forth its flowers. The sexes are separated, the female flowers being on the upper part of the tree, and erect, and the male situated on the lower portions of the tree, and pendulous; the tree, therefore, would seldom fruit, unless aided by some external agency, such as that of insects carrying the fertilising element from one flower to the other, &c. When autumn has once set in, these leaves speedily change from a bright green to a brilliant yellow colour, which has they retain for some weeks,—indeed, till the first frosts of winter have fairly set in, when the leaves fall in showers of gold. It is at this time that beechen groves present the most interest and perhaps the most beauty. No animals will browse on the foliage of the beech, and it is very rare to find any plant growing amongst the leaves and debris. This is partly owing, perhaps, to the persistence of the fallen leaves, as it is long before they decay, remaining crisp as they do from one year's end to the other. Many country folks stuff their beds with dry beech-leaves in place of feathers, and they are highly approved by many.

Every one knows the fruit of the beech in the four-valved beech-nuts, or beech-mast, as it is called, and the oily kernel of doubtful quality. With the exception of a few cryptogamous plants, nothing will vegetate on this beech-mast. Beech avenues are generally quite devoid of all undergrowth. Several very pretty agarics grow upon and are peculiar to beech-nuts; and an account has recently been published of how a gentleman found a number of beech-nuts in a stream, apparently endowed with life and moving to and fro. The mystery was explained by finding that a colony of caddis-worms had secured the old shells for habitations, and were going hither and thither in search of prey, with their houses on their backs. The young beech-plants that spring from the fallen fruit, after putting up three or four leaves, perish in the struggle for existence.

One can never visit the Architectural Exhibition, or the architectural room of the Royal Academy, without observing certain trees with deep purple brown foliage, introduced as follies to other trees in the foreground of the coloured perspective drawings: this tree does, or should represent the curious black or purple beech; it has not been long known, and is much more common in shrubberies now than it was some years since, often in company with intermediate varieties of every shade between green and deep purple, sometimes the leaves are almost yellow or sienna, and at others full bronze. This object must not be confounded with young yews and cypresses common in church and cemetery chapel foregrounds. The artist, or designer, in search of animal life will find no lack of it where beech trees grow; although, with the exception of a few moths, comparatively few insects are to be found, rats, mice, squirrels, and other creatures

* For accounts of the oak, yew, elm, &c., see previous numbers of the Builder.

are common; hogs eagerly devour the fruit, whilst the branches are frequently alive with thrushes and blackbirds.

A large number of vegetable parasites attack the beech tree, and should any of them once become established they prove sure forerunners of destruction: a beech tree that was broken short off in a storm last year at Hampstead, had several specimens of the Sulphur Polyporus growing on its side; and a few days ago we gathered a large specimen of the *Liver fungus* (which afforded us a hearty meal) from a beech in Epping Forest; but, perhaps, the most beautiful plant growing on doomed beeches is *Agaricus muscidus*: this ivory-white mushroom-like agaric seldom attacks beeches north of London, but falls upon those in the southern counties, where we have seen it in hundreds growing from top to bottom of the trees; we never saw it elsewhere with the exception of a small batch on a beech stump in Lord Mansfield's wood at Hampstead; in its young state it is one of the most exquisite of fungi, but when matured, as the most expert of fungi, but when matured, as the most remarkable object sometimes takes up its place on old beech trunks closely resembling in colour and outline an immense cauliflower (*Hydnum caroloides*); it is extremely rare, but has recently appeared at Barnet on an ash. The mycelium, too, of *Peziza aruginosa*, sometimes permanently stains the wood to a great depth of a beautiful verdigris green colour.

W. G. S.

SOMETHING NEW CONCERNING SHAKSPEARE.

THE following really important royal sign-manual warrant of King Charles II., issued in the first year of his actual reign, is, strange to say, new to our dramatic history. I found it in an old Office-book, belonging to the office of the Lord Chamberlain. Oddly enough, it has been unnoticed by Malone, who examined carefully at times the books that were unrestrictedly open to him. Stranger still, Mr. John Payne Collier, who very rarely allows an entry of moment connected with our early dramatic literature to escape his detection, has passed it by; and yet, as George Colman's unpaid representative as licenser, he was allowed unrestricted access to the papers of the Lord Chamberlain:—

MS. Warrant Book of the Lord Chamberlain to King Charles II., vol. iv., p. 343.

CHARLES R.

WHERAS Sir William Davenant, knight, hath humbly presented to us a proposition of reforming some of the most ancient plays that were played at Blackfriars, and making them fit for the company of actors appointed under his direction and command; viz., the plays called,—“The Tempest,” “Measure for Measure,” “Much ado about Nothing,” “Romeo and Juliet,” “Twelfth Night,” “The Life of King Henry the Eighth,” “The Sophy,” “King Lear,” “The Tragedy of Macbeth,” “The Tragedy of Hamlet Prince of Denmark,” and “The Duchess of Malfi.” Therefore we have granted unto the said Sir William Davenant liberty to represent the plays above named by the actors under his command, notwithstanding any warrant to the contrary formerly granted. And it is our will and pleasure, and we do command, that no person or persons, upon what pretence soever, shall act or cause to be acted any of those above named eleven plays upon pain of our high displeasure, but only such persons as Sir William Davenant shall appoint. And we further grant liberty unto the said Sir William Davenant to represent by the actors under his command all the plays written by himself formerly for the Blackfriars; and it is likewise our will and pleasure, and we do command, that no person or persons, upon what pretence soever, but those under Sir William Davenant's appointment, shall act or cause to be acted any of those plays written by Sir William Davenant formerly, or what hereafter shall be written by him; and further, we command that no man or woman entertained by Sir William Davenant in the company under him for representations in places shall be received in the company that is under Mr. Thomas Killigrew's command, nor those, nor any of those men and women representing plays in the company under Mr. Killigrew shall be admitted in the company under Sir William Davenant without the consent of Mr. Thomas Killigrew and Sir William Davenant jointly.

And we likewise grant liberty to the said Sir William Davenant, during the space of two months after the date hereof, to cause to be represented publicly by the actors under his appointment the six following plays, viz., “The Maid Lovers,” “The Merchant of Venice,” “The Spanish Curate,” “The Loyal Subject,” “Rule a Wife and Have a Wife,” and “Pericles, Prince of Tyre.”

Given at our Court at Whitehall, December 12th, 1660.

By His Majesty's command,

EDWARD NICHOLAS.

Here are eleven plays assigned to Sir William Davenant, the patentee of “The Duke's Theatre,” one by Webster, “The Duchess of Malfi;” one by Sir John Denham, “The Sophy;” and nine by Shakspeare. We have here, then, fresh and startling evidence of the pre-eminent popularity of Shakspeare over other dramatists

in the reign of King Charles II. When the progress and history of Shakspeare's reputation first is written,—its immediate and its steady progress,—the warrant I now first print will, I feel, be referred to as proof positive and conclusive.

P. C.

THE BUILDING OF THE TEMPLE.

I.

One said, “What 'ist 'y you make?—
A vain, an idle thing;
Whence far and wide
Conceited pride
Would o'er the main folk vantage take.
What hath it else than shame
For sequel, save it bring
A conscience lame,
And slow to wake
A heart opposed to righteous blame?”

A second, “Vain and rude,
God wot!—the very stones would shape
Themselves in forms less crude.”

A third, “What, if this fool, scape,
All lesser fools about him ring?
They point but at the truth; we find
Within the kingdom of the blind
The one-eyed man is king.”

Slipped in a fourth, “And plain to me
He spake at heart yon ancient spire,
Forgetful of his own degree,
The churl! I rede ye such desire
Is scoring of appointed place,
Pride, discontent, and deadly sin;
Presumption thus persisted in,
Will work its fall.
Let be: mine eyes in sorrow trace
God's hand upon the wall.”

II.

Meanwhile the worker soar'd apace
From cave and trench in power and grace,
On vaulted pinnas fumed the air;
And strong of arm, as pure in art,—
Of sun and shadow unaware,—
Enwrought each inharmonious part
In slow design to promote fair;
He heard but as the windy rain
About the stormy gates of morn;
And heeded less, “Who strive in vain
Alone are meet to sit forlorn.”
He mused within, nor lift his face:
“They fret their little hearts with scorn;
But I must run my appointed race:
God grant that I attain!”

III.

“Begat of folly, borne of pride,
Vain emulation stultified,—
So spake they in the morn.
How find we in the eventide
The prophecies outbore?”

IV.

Magnificently o'er the sea
The eleven sun, low-lapp'd in fire,
Lay lying in the purple calm;
Wide, on the mountain sloped before
In green ways to the golden shore,
Uplift her pure face gloriously,
A Living Temple, perfect, fair,
From vaulted base to crowning spire;
An everlasting fane of prayer;
A carved chaut, a shrined psalm;
And vail'd each part of beauty thro'
“Less of gloria, Demos!”

ELGOOD FENCIBARD.

ON OLD HOUSES.

At the meeting of the Essex Archaeological Society in Dunmow last week, the Rev. C. Lesingham Smith read this paper:—

Though I am by no means competent to speak learnedly or authoritatively on the subject which stands connected with my name, I am glad to call the attention, not of archaeologists themselves, who need no hint from me, but of such persons as are merely interested more or less in archaeological pursuits, to those “old houses” which are so rapidly disappearing from every city and county of England. It is not wise to lament that decayed and inconvenient abodes are continually being changed for others more healthy and commodious; but we may reasonably regret that any structures of the olden time should be swept away before some zealous and skillful hand has photographed or traced with pen or pencil those peculiarities in them which tell us of ancient manners and throw light on the home-life of our ancestors. Few buildings of any kind now exist which date back a thousand years, and the age of our oldest dwelling-houses is confined to a much narrower span.

This is what might have been expected even before we had closely examined. At the dawn of civilization the first fixed abodes of man on the open surface of the earth must necessarily have been constructed of slight and portable materials, and were therefore doomed to speedy decay. It was not till the mechanical arts of shaping and moving large massive materials had

been discovered, that edifices could be reared capable of resisting the attacks of time and of the elements for any considerable period, especially in a climate like ours. Long after vast and solid structures of stone had been erected, dwelling-houses still continued to be almost universally built of wood, partly because of the facility of manipulating it and partly because of its far greater abundance in earlier times. Of course so perishable a substance seldom lasted for many centuries, and the consequence is that we have few houses in existence which are more than 200 or 300 years old; but even in those which are of this lower degree of antiquity there is something which usually at once arrests the attention of the most careless observer. The main lines and contours which diversify the exterior surface vary considerably from what we see in ordinary modern houses, which are comparatively bald and flat; and this surface, however concealed and defaced by the abomination of plaster or whitewash, generally exhibits decided traces of that picturesque complication of wood-work which constitutes the frame of the building, and is graphically described by Tennyson as

“A front of timber-crost antiquity,
So propt, worm-eaten, ruinously old,
He thought it must have gone.”

One of the most striking features of an old house is the usual projection of one story over another for the double purpose of enlarging the upper apartments and of securing more shelter from sun and rain outside. The deep shadows produced by this mode of construction add marvellously to the picturesque. From it also advantage was often taken to introduce that effective ornament which consists simply of the beam-ends of the intermediate floor visibly projecting outside below the ampler upper story, and supporting its wall. Ornaments of this kind, which arise out of the very construction of a building, are always particularly grateful to the eye, because they are at once perceived to have a meaning; such are the triglyphs in Greek architecture, which were originally nothing else but the slightly projecting ends of the beams of the flat wooden roof. There is a good example of this kind of constructive decoration in an old house at Takeley, on the north of the high road. It is not only the human artist that admires such a fabric as I am describing; the “temple-haunting martlet” also highly “approves” it, finding there many “a jutting frieze and coigne of vantage” for “its pendent bed and procreant cradle.” The continually projecting story was much used in Medieval cities, where increased room above and shelter below were so desirable; but the streets in these cities being usually very narrow, it often happened that the upper rooms on opposite sides of the street approached very near to each other; and to counterbalance the advantages mentioned, there was the terrible drawback of impeded ventilation, making these crowded dwellings nurseries for the plague and other pestilential diseases. London gained more in the sanitary point of view than it lost in the picturesque when the great fire devoured so vast a number of its ancient dwelling-houses.

From the general aspect of old houses I proceed to notice a few of their details, and we will commence with the highest point—the visible chimney. The first human dwellings doubtless had no vent at all for the smoke, which was allowed, as it is now in many a moorland cottage, to find its way out as well as it could, through door, or window, or crevice. Then came rude contrivances, such as are employed at this day in the Highlands of Scotland, where it is very common to see an old herring-barrel tilted a little out of the perpendicular and stuck into a hole in the rough thatch of the roof: this is intended to be an exit for the peat-smoke, but fulfils its purpose no better than those sarcastically described by Swift as

“Chimneys with scorn rejecting smoke.”

They were gradually, however, made more effective for their end, and assumed a more ornamental form above the roof, till at last they contributed in no slight degree to the architectural beauty of the whole building. Before the fire at Easton Lodge, there were some exquisite specimens in wrought brick: one stack still surmounts the roof; but the most beautiful and elaborate one, though little, if at all, injured by removal at the time of the fire, was sacrificed by the architect of the new building, and I know not what has become of it. Before we quit the

chimneys, and pass down to the hearth, communicating with them. In all old houses the hearth was of ample dimensions, yielding room, not only for a large fire, but also for a seat on each side, called the *inple* (a word supposed to be derived from *igniculus*), or the chimney corner,—the coziest place in the house, and noted proverbially for being the resort of idlers; thus Leale, an old writer, says of one who had told an idle tale, "perhaps he had it from an old woman in a chimney corner, or out of a romance." In a family house the hearth was the place of reunion for all the members; and was, as it were, the hallowed centre of the home. This circumstance must have rendered the "chimney-money" or "hearth-money" levied by statute in Charles II.'s time peculiarly odious; and the abolition of that tax was one of the many blessings conferred in the reign of William and Mary. The great size of the opening for the hearth, even in ordinary dwellings, tells of the abundance of forest wood in those days. Only a few specimens remain unaltered here and there at old farm-houses. Several in my own parish have, within my remembrance, been blocked up with a modern fire-place and grate, in order to spare the consumption of coal and economize the heat. A good example will be seen at Stone Hall. The roofs of old houses were generally more exposed to view than modern roofs, and had a steeper pitch, and the gables were often brought to the front. This arrangement is especially prevalent in the old English cities, from which so many of our late visitors have come,—such as Bruges, Ghent, &c.; and it gives a peculiar character of quaintness to the aspect of their streets. Certainly the sloping lines of the gable, with its far-projecting, deeply-shaded eaves, are infinitely more picturesque than the plain flat horizontal parapets, in which our modern street houses so generally terminate above. The space within the roof was always utilised, and it is not uncommon abroad to find lofty roofs with three, four, or even five and six tiers of windows opening from them, and as many stories within, available for garrets or places of store. The more important windows of old city dwelling-houses, and, indeed, of all old houses, were oftener bayed than modern ones. The architect of those days had no fear of the window-tax to cripple his designs, and so made the openings for light as large and as numerous as he pleased. We may well rejoice that this most injudicious impost, which has rendered the exteriors of so many modern houses dull and repulsive, has been for ever removed. The bay-window in the second story of an ancient street-house was a most cheerful arrangement, commanding a clear view of all the traffic and passengers below. Specimens may still be seen in Coventry, Chester, Conway, and other ancient cities. The same construction was also used in country houses for the sake of the prospect; and there is a very fine example not far from hence, at Rorham Hall, where are still preserved the tall and noble bay-windows within which Queen Elizabeth often sat to contemplate the view.

A large size of window was rendered the more necessary from the circumstance that the interiors of rooms were usually panelled with wood, which soon assumed a dark hue, and thus required a great deal of light to be thrown into the room. The effect of this paneling was often excessively rich; there was a beautiful specimen of it in the old drawing-room of Easton Lodge, destroyed by the fire. Many fragments of paneling remained to a late time in houses not far from this place, but nearly all have now disappeared, having been destroyed or removed and sold. Sir Brydges Henniker has landably preserved some from old Newton Hall, and my friend the Rev. Mr. Toke, of Burnston, has collected from various quarters many good specimens, with which he has adorned his rectory. I will add yet one more characteristic of old houses, of which very few examples survive in England. I mean the inscription of texts of scripture, or moral sentences, on the horizontal timbers or other convenient surface outside. This custom probably had its origin in the injunction to the Israelites, recorded in Deut. vi. 9, to write the commandments of the Lord "on the posts of their houses and on their gates." In Switzerland and Germany examples are continually met with, and the passer-by can hardly fail to look up to them with respect and reverence, for they lead him back to times when men were not only not ashamed of their religion but loved to proclaim it from their house-tops and sides.

THE AMERICAN INSTITUTE OF ARCHITECTS.

We obtain from New York some particulars of the American Institute of Architects, which may rightly find a place in our pages.

On the 23rd of February, 1857, a few architects, then practising in this city, met at the office of Mr. Richard Upjohn, for the purpose of forming an association for mutual improvement, and uniting their influence with a view to advancing the general interests of the profession. The following architects were present, and may be considered the founders of the present Institute:—Richard Upjohn, Edward Gardner, Henry W. Cleveland, Jacob Wrey Mould, Leopold Eidlitz, Henry Dudley, Fred. A. Petersen, Charles Babcock, Joseph C. Wells, Richard M. Hunt, John Welch, John N. Priest, and Richard M. Upjohn. Richard Upjohn was president of the meeting, and has ever since been president of the Institute. Joseph C. Wells was the secretary. Previous to the adoption of a constitution the following architects were invited to join in the movement; and, having accepted, became also original founders: Calvert Vaux, John W. Ritch, Frederick C. Withers, A. J. Davis, Frederick Diaper, Joseph Sands, Thomas N. Walter, of Washington; George Snell, Arthur Gilman, and Edward Cabot, of Boston; James Renwick, jun., R. G. Hatfield, S. A. Warner, and Detlef Lienan.

On the 2nd of April, 1857, a constitution was adopted, and the Institute was fully organized by the election of the following, who constituted the first board of trustees: Richard Upjohn, Thomas U. Walter, A. J. Davis, F. A. Petersen, J. W. Ritch, Frederick Diaper, Richard M. Hunt, Joseph C. Wells, and Henry Dudley.

On looking over the list of original members, we find the names of many who are still among the prominent members of the profession. First Richard Upjohn, architect of Trinity Church, Trinity Chapel, Trinity Building, the Madison-square Presbyterian Church, the entrance to Greenwood Cemetery, and churches in nearly every city in this country. The name of Thomas U. Walter will readily be recognised. It was he that designed the extensions and dome of the Capitol at Washington, and was turned off by the jealous army officers when his work was nearly completed. Mr. Mould first introduced in this country exterior colour decoration applied to buildings, in All Souls' (Dr. Bellows's) Church. He has since done better work in Trinity Parochial School, adjoining Trinity Chapel, on Twenty-fifth-street, and in the new Presbyterian church on Forty-second-street. In addition to these and many other churches and secular buildings, Mr. Vaux is well known in the Central Park. Mr. Vaux is well known in connexion with the laying out of the Central Park, of which he was consulting architect. Mr. Eidlitz has designed some of the most remarkable buildings of this city and vicinity, among which are the American Exchange and Continental banks, the Produce Exchange, the Brooklyn Academy of Music, the Tabernacle (Dr. Thompson's), and St. George's (Dr. Tyng's) Church. One of his most beautiful works is the Hamilton Avenue Ferry-house, on the Brooklyn side. Messrs. Dudley, Hunt, R. M. Upjohn, Rich. Withers, Diaper, Sands, Gilman, Cabot, Renwick, Hatfield, Warner, and Lienan are also engaged in practice. Messrs. Gardner, Petersen, Babcock, Welch, Davis, and Snell have retired from the profession. Two of the original members are dead: John W. Priest and Joseph C. Wells. Both were shining ornaments to the profession.

Objects.

The object of the organization thus completed cannot be better stated than by quoting from article 2 of the constitution, which said,—"The object of the Institute is to promote the artistic, scientific, and practical efficiency of its members, to facilitate their intercourse and good fellowship, to elevate the standing of the profession, and to combine the efforts of those engaged in the practice of architecture for the general advancement of the art."

How this was to be done is best explained by the following article:—

"The means of accomplishing this end shall be regular meetings of the members for the discussion of matters of professional importance, the reading of essays and original papers, lectures on topics of general interest, a library, a

collection of designs and models, and other means calculated to promote the objects of the Institute."

The constitution provided for three classes of members:—

1st. Professional members,—corresponding with the Fellows in the Royal Institute of British Architects,—who are architects that have been engaged as principals in the practice of architecture for not less than three successive years.

2nd. Associates, whose qualification is that they shall have studied for three successive years in the office of a professional architect.

3rd. Honorary members.

Meetings were held in the offices of the members until the 17th of November, 1857, when the Institute held its first meeting in its own rooms, in the University building. About this time the Institute was incorporated under the laws of the State of New York.

From its organization until March 19, 1861, it has held meetings regularly twice a month, except during the summer months. The first four years were devoted principally to self-improvement. At each meeting a paper on some subject connected with the profession of architecture was read by some member, and its subject-matter discussed. The members compared notes with reference to matters happening in their business experience, and were thus enabled to come to a mutual understanding about many matters of professional practice that were before unsettled. Thus the first object stated in the constitution was fulfilled.

Meanwhile the state legislature, in the session of 1859, recognised the assistance that could be obtained from the Institute in establishing a thorough system of superintending new buildings. The law passed at that session provided that no inspectors of buildings should be appointed until they had been examined with reference to their capacities by a committee of the Institute of Architects, and pronounced by them to be fit for appointment. Thus the Unsafe Building Act became and has continued to this day to be most effective in its operation from the fact that none but properly qualified inspectors can be appointed under its provisions. The committee of the Institute has several times been called in by the commissioner to assist in the survey of unsafe buildings, and it was through the instrumentality of this committee that the directors of the Academy of Music were compelled to take down the dangerous walls of the old building that they had tried to retain.

In the spring of 1861 the great excitement about the war, which then absorbed all minds, had its natural effect upon the Institute, as well as on many similar bodies. The meetings became less frequent, and at length stopped altogether; but the organization was still kept up. But what the war dispersed it also gathered together. The Metropolitan Fair became the absorbing topic in the spring of 1864, and the architects felt it to be their duty to contribute to the great undertaking. A special meeting of the Institute was held, and it was one of the largest and most enthusiastic meetings ever held by this association. The result was that the Institute contributed several portfolios of photographs, engravings, and original drawings to the fair. From that time meetings continued to be held, and the old spirit of the organization was revived. In March a room in Trinity-building was hired, and the meetings were from that time held twice a month, at three o'clock in the afternoon. A new constitution was soon adopted, and the meetings resumed their former attractiveness. Papers were read, and discussions of professional topics resumed.

In March, 1866, the rooms in Trinity-building were given up, and the Institute, in view of the desirability of holding evening meetings, moved to the Cooper Institute, where its meetings are now held.

Architects and Contractors.

The Institute has sought, first, self-improvement, with a view to the fact that thereby the work of its members can be improved. It has sought to elevate the standard to which an architect should attain, and to eliminate from the profession many immoral and dishonest practices which had tended to bring all architects into reproach. It is a well-known fact, and need not be disguised, that many architects are in the habit of receiving commissions and presents from builders who are performing contracts subject to their acceptance, and from dealers whose materials may be recommended by

the architect. With the almost sure prospect of making their fees in this way, and the utter impossibility of detection in such collusion, men calling themselves architects are often ready to offer their services to any one who will employ them for a mere song,—in fact, for less money than it would cost to make the drawings. Of the utter dishonesty of such practices, and the danger that may result to capitalists from the employment of such persons, it is unnecessary to speak, for they are self-evident.

The Institute has always frowned upon such evil practices, and endeavoured to keep its ranks free from all architects about whose honesty the least suspicion has been aroused. To this end it has established a uniform rate of commission to be charged by all its members, and thereby prevented all competition except that which rests on professional skill and reputation. It has endeavoured to establish by uniform practice the mutual relations of clients, architects, and builders. Fortunately, it has never attempted to set up a standard of criticism in matters of taste and style, and it is to be hoped that it never will. All attempts of the kind have ruined the bodies in which they have been originated. But the Institute can reform abuses, establish precedents, and educate architects. Such is its mission. Independent and fearless criticism, and the common sense of an intelligent community, will in time settle the question of taste and style.

The Institute of Architects contemplates in its organization, as will be seen, many things that it has not yet attempted. It has the nucleus of a good library of works of arts, and it is to be hoped that it will rapidly increase this department. It has in contemplation the establishment of a school and a course of popular lectures, both of which we will gladly welcome.

Meanwhile, it needs the material assistance not only of the architects, but of all who are interested in its objects and aims. It should have a good building of its own, such as the Academy of Design has, and one which of itself would be a model of good architecture. It needs the encouragement of the business community, which is so much benefited by it, in establishing a library and school, and we trust that the means will not long be wanting.

FROM SCOTLAND.

St. Andrew's.—The foundation-stone of a new cathedral church has been laid in this city, with full Masonic ceremonial, by Mr. J. Whyte Melville, of Bannockhill and Strathkness, Grand Master Mason of Scotland, in presence of deputations from numerous provincial lodges, and of a large assemblage of the inhabitants and neighbouring gentry.

Thurso.—The chief stone of a new Free Church School has been laid. The buildings consist of two school-rooms and a teacher's dwelling-house. The largest room is 52 ft. by 20 ft., and the second 26 ft. by 20 ft. The buildings will cost about 900*l*. When completed. The plans were drawn out by Mr. Duncan, in accordance with the instructions of the Central Education Board.

FROM AMERICA.

Germs of a New City in the Far West.—A new city has been laid out on the plains at Cheyennes, near the Black Hills, America. Coal, iron, minerals, and water-power are found in proximity. The Union Pacific will concentrate its great locomotive machine car shop at this point. It is confidently expected that the city will have five thousand inhabitants in less than twelve months. At present it is a bare prairie, but within four months it will be the terminus of the railroad.

Abundances of American Timber.—It is stated that over 100,000,000 ft. of logs are boomed on the Mississippi, above the Falls of St. Anthony, to be sawed into lumber. A nearly equal amount has come down the tributaries of the St. Croix, and the supply from the Upper Mississippi is now abundant enough to run all the mills upon the Mississippi as far down as St. Louis. Eastern Wisconsin and Michigan have likewise yielded increased supplies. It is believed the plentiful supply must cause a decline in the price of lumber, and that building enterprises will be stimulated thereby.

Bridging the Mississippi.—The plans for a new

bridge across the Mississippi river at St. Louis have been accepted, and it is to be commenced without delay. The new bridge will be an immense structure. It will accommodate two double tracks of rails for street cars, besides side walks for foot passengers, and will consist of three arches, the central arch having a span of 515 ft., and the two side arches 497 ft. The central piers will be nearly 200 ft. in height from the bed of the river. The estimated cost of this great bridge is 5,000,000 *dols*.

The Temple of the Mormons.—The great tabernacle of the "Saints" at Salt Lake City is now finished. It is 250 ft. wide, and furnishes comfortable sitting-room for 10,000 persons. *Edison*.—At present this city contains 18,821 dwelling-houses and hotels. Of these houses 1,720 are valued at less than 1,000 *dols*., nine at more than 375,000 *dols*. Two hotels are appraised at 115,000 *dols*. each; five, each at 120,000 *dols*., 125,000 *dols*., 145,000 *dols*., 150,000 *dols*., and 176,000 *dols*.; two at 225,000 *dols*.; one at 281,000 *dols*., and one at 325,000 *dols*.

THE CENTRAL HALL OF ARTS AND SCIENCES.

MR. LABOUCHERE in the House of Commons recently asked the Vice-president of the Committee of Council on Education whether he was aware that the charter of incorporation granted to the Central Hall of Arts and Sciences was promulgated without consultation with the subscribers; that much dissatisfaction was felt with respect to certain of its provisions; such as the appointment of an executive committee, and the power given to the provisional committee to withhold all accounts until one year after the completion of the hall; that under the powers given to the executive committee a contract had been entered into of a nature deemed by many subscribers to be improvident, and such as might fail to justify the hopes held out in the statement on the faith of which subscriptions were obtained; namely, that subscribers would obtain for their subscriptions a valuable pecuniary investment; and whether Her Majesty's Government were prepared, on application from subscribers, to revise the charter, and, if necessary, to issue an amended one, affording to subscribers the same powers and the same representation as was usual in joint-stock undertakings.

Mr. Bruce said that, perhaps, as he was a member of the Provisional and Executive Committee, his explanation would be accepted. The character of the charter was fully stated in the prospectus: each subscriber received notice of the charter, and agreed in writing to accept it. No one objected to it, and no complaint had been received by the Provisional or Executive Committee with respect to it. As to the contract, it had been entered into under powers originally conferred upon the Provisional Committee. It was a highly advantageous one; no complaint had been received against it; and the accounts were open to inspection. The management, including the preparation of legal documents, had been conducted without any charge to the undertaking. He was not aware that the Government had any power to revise the charter without the consent of the subscribers; but if the majority of them thought there should be a revision, he had no doubt the Board of Trade would advise Her Majesty to revise it.

PROVINCIAL NEWS.

Framlingham (Suffolk).—A "People's Hall" Company has been formed here to provide a hall for the general use of the town. For this purpose the company have purchased premises at the entrance to the town from the railway, which they are about to alter and enlarge for a public hall, with reading and committee rooms, library, &c. A new staircase tower, rising to a considerable height above the building, will be erected in connexion with the intended additions. The building throughout will be warmed by Messrs. Haden & Son's apparatus. Mr. Sugden, of Leek, is the architect to the company.

Droitwich.—The additions and alterations to the Town-hall and the new building for the police-station have just been completed. The new station is situated at the junction of St. Andrew-street and Friar-street, which latter street has been considerably widened. The

building is composed of red dressed brick, with Bath stone facings. The buildings have been erected by Mr. Beard, builder, under the direction of Mr. Rowe, architect, Worcester.

Eastbourne.—The foundation of a new Convalescent Hospital at Eastbourne has been laid by Lady Fanny Howard. Two years ago, through the exertions of Miss Brownlow Byron and the Sisters of All Saints' Home, Cavendish-square, a house was opened at Eastbourne as a hospital for convalescents; but the number of applications for admission was so great that the accommodation was found inadequate. Accordingly, a site of five acres at Meads, close to the sea, has been purchased from the Duke of Devonshire; and, a sum of 10,000*l*. having been subscribed, the plan for a new building capable of containing 100 patients was obtained. One wing is to be devoted to the reception of thirty incurables. It is stated that a sum of 12,000*l*. is still required in order to complete the hospital, the foundation of which has been laid.

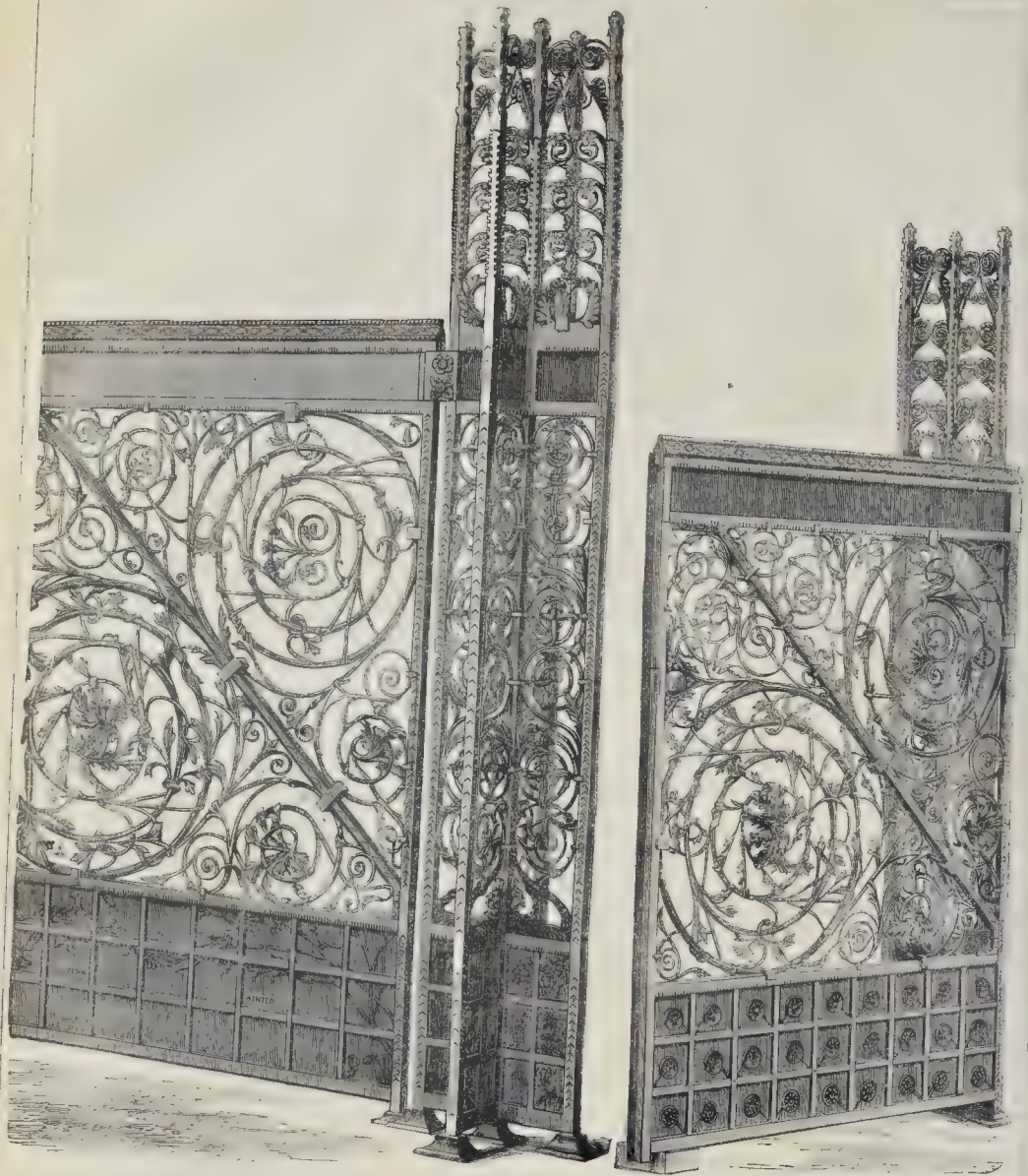
PROTECTION AGAINST FIRE.

THERE has now been issued the report of the select committee of the House of Commons appointed to inquire into the existing legislative provisions for the protection of life and property against fires in the United Kingdom, and as to the best means to be adopted for ascertaining the causes and preventing the frequency of fires.

The committee, after stating the course which they have pursued in making these investigations, and describing the general character of the evidence they have received, proceed to offer a series of recommendations.

They advise a general building act for all towns and places in the United Kingdom governed by municipal corporations, &c., similar to the Metropolitan Building Act and to the Building Acts of Liverpool, the suggestions of professional witnesses as to the thickness of walls and other details being taken advantage of in passing such an act. In all buildings composed of shops below and dwelling-houses above, the committee recommend that the floor immediately above the shop should be made fire-proof, and that there should be a ready means of escape from the roof; also that the floors of all large lodging-houses for the poor be made fire-proof, and that there should be ample means of escape. The architects, builders, and district surveyors who were examined before the committee, deposed that when a fire takes place in a warehouse, iron is of little use in stopping its progress. Generally speaking, they prefer wood well plastered for fire-proof purposes to iron, and some of them give a preference to wooden stairs instead of stone, as the latter crumble with the heat. It seems that bills for the supply of water by companies or local authorities containing clauses providing that the water need not be constantly laid on, have been allowed to pass without investigation, and the committee recommend that it should be made a standing order of the House that such bills shall be referred to the referees to inquire whether sufficient reason exist for such provisions. Where it is proved in an investigation that the fire was caused by culpable carelessness, the person or persons implicated should be deemed guilty of a punishable offence.

Other recommendations of the committee relate to the igniting point of mineral oils used for illuminating purposes, which ought not, they think, to be sold with an igniting point under 110° Fahrenheit. All such oils imported ought to be tested in this respect and marked before being stored, and more stringent regulations should be made regarding the storing in warehouses and keeping in shops, of turpentine, camphine, and similar spirits. In very few other towns save London and Liverpool is this subject attended to. There remain fires that are wilfully caused. On referring to the evidence, the committee find that these are to be traced to several sources. 1st, to individuals and organized gangs of men who make a trade of it to defraud the insurance companies; 2nd, to parties who have been unfortunate in business, and who cannot meet the claims made upon them; 3rd, to persons in warehouses to conceal theft of goods made by them on the warehouses. 4th, to malice. The witnesses concur in the belief that an inquiry made into all fires would reduce the gross number of them. The police, or fire brigade, should initiate the inquiry, and report to an



THE NORWICH GATES : PARIS EXHIBITION.

authorized officer, who, the committee think, should be the coroner, anything that appears in the least suspicious; the officer should examine witnesses, or, if he thinks proper, impanel a jury; and any person shown to be implicated should be prosecuted at the Central Criminal Court. The coroner should be paid partly by fees and partly by salary out of the rates. The committee specially recommend that no claim should be settled by any insurance company without a certificate from the police or fire brigade, or officer appointed to conduct the investigation into the origin of the fire; but this certificate should not debar the insurance officers from opposing the claim if they think proper.

SOME WROUGHT METAL - WORK IN THE PARIS EXHIBITION.

THE new part of the *Art Journal* Catalogue of the Paris Universal Exhibition maintains the high character gained by the previous parts.* It is amply illustrated, and with the view of showing the excellent manner in which this is done, we are enabled to reproduce the representations given of the Wrought-iron Gates by Messrs. Barnard, Bishop, & Barnard, of Norwich, described in one of our early articles on the contents of the Exhibition. The *repoussé* work on

the solid parts of the gates, at the bottom, for example, is scarcely made so obvious as it might have been.

From a previous part we give illustrations of the Albert National Memorial, now in progress; viz., the Spire over the canopy, executed by Mr. Skidmore, and the terminating Cross, drawn to a large scale, in order to show the details more distinctly.* The Spire is formed throughout of metal, with enrichments produced by inlays of crystals, jaspers, rich stones, and brilliant enamels. The total height of the cross from the ground will be 150 ft.

* Virtue, Ivy-lane.

* See p. 590.

RAILWAYS.

An experiment on the American system of railway travelling will, it is said, probably be made shortly in England. The bridge and viaduct at Runcorn Gap will save ten miles in the London and North-Western Company's line between London and Liverpool. On the completion of this work, the company are to put on express trains in which the convenience of passengers is to be consulted by the construction of carriages on the American principle. There will be a passage from end to end of the train, as we have long urged, together with retiring and refreshment rooms.

The new line to Tunbridge has been inspected by the directors of the South-Eastern. The line is about twenty-three miles in length, and shortens the distance between London and Folkestone, Dover, Tunbridge-wells, St. Leonards, Hastings, and other important localities reached by the South-Eastern, by about thirteen miles. The line has been constructed under the direction of Mr. Peter Ashcroft, the company's engineer, at considerably less than the contract price. The works are of a very heavy character, — the heaviest in the south of England in embankments, cuttings, and tunnels. There are four tunnels in the 23½ miles. Some of the cuttings are 90 ft. deep, and one of the embankments, of great length, is 80 ft. high. The brickwork in the tunnels was inspected by the help of the lime-light.

On the Great Eastern Railway the following legal notification has been affixed to the stations, carriages, &c. :—

"Take notice that all the fixtures, goods, chattels, and fittings in, about, and upon these premises are the property of the undersigned, Alexander Tracy, of Cambridge, in the county of Cambr., the contractor, William Booth, of Eastwood, in the county of Nottingham, esq.; and John McMahon, of No. 1, St. John's-grove, Brixton, in the county of Surrey, esq., and are used by the Great Eastern Railway Company as their lessees; and that any person or persons intermeddling or interfering with the same will do so at his or their peril.—Janson, Cobb, & Pearson, 41, Finsbury-circus, London, E.C., solicitors for the said Alexander Tracy, William Booth, and John McMahon."

The traffic receipts of railways in the United Kingdom amounted, for the week ending July 20th, on 12,823 miles, to 797,589l., and for the corresponding week of last year, on 12,560 miles, to 774,585l., showing an increase of 263 miles, and of 23,004l.

A TUNNEL THROUGH AN EXTINCT VOLCANO.

LYTELTON, NEW ZEALAND.

THE fertile "plains" of the Canterbury settlement, in the southern of the two great islands of New Zealand, are divided from the port of Lyttelton by almost impracticable hills, over which even a bridle-road was at first a difficulty. In course of time certain comparative improvements in this primitive mode of conveyance were effected; and in May, 1861, the local Government accepted a tender from Messrs. George Holmes & Co., of Melbourne, to complete a line of railway from Lyttelton to Christchurch, a distance of six miles, with the exception of the stations, in five years, ending June 1st, 1866, for 240,500l., the cost of a tunnel, 2,838 yards long, and called the Moorhouse Tunnel, being fixed at 195,000l. The first sod was cut in the Heathcote Valley on the 17th of July, 1861, and this may be said to have been the date of the commencement of the tunnel works, as up to this time nothing had been accomplished beyond sinking the trial shafts, and driving ninety-six yards of heading, viz., thirty at the south, and sixty-six at the north end of the tunnel.

The plan adopted by the contractors was to mine the whole work from a wide bottom-heading. To expedite the work, three additional shafts were sunk, one close to each front, and one in the clay cutting at the north end of the tunnel, whilst at the same time a gullet was driven up the cutting to meet the heading. Although the ground proved very wet in places, rendering it necessary to close-pole a length of seven chains through clay and sand, this plan was perfectly successful, and the timbering remained in good order until the commencement of the brick lining, at the end of the following year.

On the 29th of September, 1862, Mrs. Moorhouse laid the first stone at the north end of the tunnel, that of the south being laid by Mr. John Hall, in April, 1864.

The works were at first carried on under great

disadvantages, on account of the Otago gold fever and other causes; but the tunnel may now be said to have been completed, as on the 24th of May last communication was established between the two drives, by the miners on the port side breaking into a drill-hole sunk some days previously in the face of the Heathcote drive. After a few minutes spent in enlarging the opening, an iron rod was passed through from drive to drive, the distance between the two faces being 14 ft. The alignment and the levels were thus proved to have been perfectly correct.

The present tunnel affords, it is believed, the first instance where a complete section of an extinct volcano has been opened out. The elaborate drawings prepared by Dr. Haast for exhibition in Paris, will draw the attention of geologists to the fact, and doubtless afford the greatest satisfaction to the scientific world. The rock in the tunnel may be described as a series of lava-streams and beds of tufa, intersected by vertical dykes of phonolite. The lava-streams generally consist of scoria, overlying a coarse pink trachyte, which passes gradually through shades of grey, purple, and blue, into a black, finely-grained dolomite, intensely hard and tough; the lightest and softest rock being at the top and the densest and blackest at the bottom. Regarded from an engineering point of view, the work is considered eminently successful. Wherever difficulties have been met, they have been quickly and successfully overcome. A siphon 600 yards long was employed for the drainage of the upper half of the tunnel. The system of ventilation has proved perfectly adapted to the requirements of the case, and has been not only effective but simple and comparatively inexpensive. The engineers of the Mont Cenis tunnel have found it necessary to adopt similar means of ventilation in that famous work. In the first instance, air was driven in by fans worked by horse-power, but this soon proved quite insufficient; and when the works had extended some distance, much time was lost owing to the difficulty of getting rid of the smoke. To obviate this on the Lyttelton side, the upper portion of the tunnel was partitioned off by a floor or brattice, about 9 ft. above rail-level, forming a smoke-flue connected with one of the shafts, at the bottom of which was placed a furnace, which, by rarefying the air, caused a steady current up the shaft, and drew the smoke away from the face of the workings. A similar plan was adopted at the north end, the chimney of a forge being led into the shaft, and answering the purpose of a furnace, but the brattice was only continued for a short distance beyond the upcast shaft.

On the Lyttelton side this system answered perfectly well, and the ventilation has continued good ever since; but on the Heathcote side, where the work for the last quarter of a mile has been driven by a top-heading (the temporary floor being left above the permanent rail-level for drainage purposes), the ventilation at the close of the work became sluggish, and recourse was had to driving air on to the face by means of four fans driven by an 8-horse steam-engine. This proved perfectly successful.

The system employed to secure the correctness of the alignment of the two ends of the tunnel was very simple. A permanent mark was fixed in the centre line of the tunnel, on a tower built on the dividing range, nearly midway between the two ends. A transit instrument being placed on the meridian of the tunnel, as well as of the tower on the hill, it could be seen at once whether the flame of a candle placed in the centre line of the work inside the tunnel was in a vertical plane with the mark on the tower. But it was also desirable, in case of error, to have the means not only of correcting, but of calculating the amount of such error, and this could be readily done. The permanent mark on the central tower consisted of a batten 6 in. wide, with a black stripe 1 in. wide down the centre. The eye-piece of the transit instrument being furnished with five vertical wires placed at equal distances apart, the value of the space between any two wires at a distance equal to that of the mark on the tower could be ascertained by reference to the width of the batten, which thus gave a scale by which the error in the position of a light placed in the tunnel under the tower could be rated with great exactness. It has been by this means that the alignment has been tested from time to time, and the proof of the correctness of the system has been established by the present result.

In spite of the peculiar character of the work, the health of the men has been generally very good. Accidents have been of rare occurrence, and of comparative unimportance.

The total length of the tunnel, as nearly as could be ascertained at the moment, is, in round numbers, 2,870 yards, or about 30 yards more than the contract measurement; and the cost, according to the contract, is 195,000l.

According to the design, drawn as in London, the tunnel would have entered Lyttelton at a slight curve. This part of the plan was altered, so as to give a straight run throughout.

Mr. Edward Dobson is the engineer; and the work has been superintended throughout by Mr. Edward Walker and Mr. Harry Smith as foremen.

THE CATHEDRAL OF RATISBON.

In the year 1273 several buildings in Ratisbon, and amongst them the Cathedral, were destroyed by fire.

Bishop Leo, of the patrician family of the "Thundorfer," resolved to build a new cathedral, which was to be constructed of hewn stone; and his intentions were seconded by the rich burghers of the town, especially by the "Zande" family, one of the most prominent in Ratisbon. In 1275 the foundation-stone was laid. The work went rapidly on, so much so that in 1276 the choir was consecrated. Ludwig, who was the architect, directed the work after his plans. After the death of Bishop Leo (in 1277), the building advanced considerably under his successor, Heinrich von Roteneck, especially so towards the western side; and the choir was completed. The rapid continuation of the works was facilitated by the great abundance of provisions of every kind at that time, so that the wages of the workmen were very low. Bishop Heinrich von Roteneck died in 1296. His successor was Conrad von Lupburg, to whom Nicolas von Stachowitz followed in 1313. During his episcopate, which lasted twenty-seven years, much was done; but great difficulties and impediments were in the way for continuing the western side, and for beginning the building of the two towers.

It was necessary to remove several houses and chapels adjoining, in order to begin the towers now existing. Such changes, in those times, required difficult and much prolonged negotiations; but these were so far effected in 1325 that the foundation of the southern tower was laid. In 1380, at last, it was decided that the demolition of the Minster on the square was to be effected, and one year afterwards the difficulties were removed, which so many years had been in the way of completing the building of the cathedral; soon after which the second tower was built. The principal altar was erected of stone in 1404; it existed until the beginning of the seventeenth century. The present altar was erected in the year 1785.

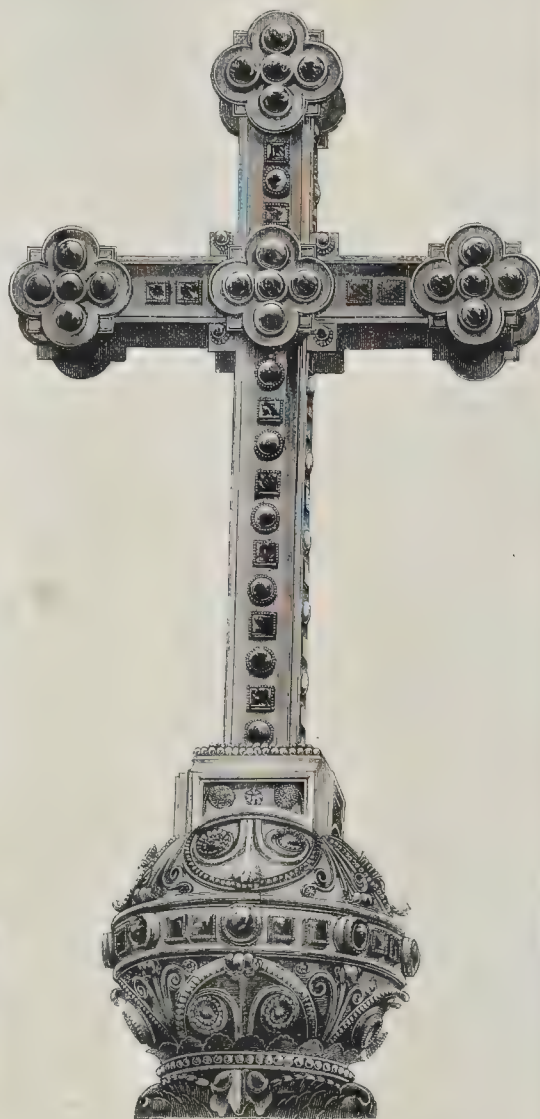
The building of the cathedral itself went on without interruption, though slowly, by means of many voluntary contributions, made principally by citizens of Ratisbon, who did everything they could to promote the work. But the doctrine of the Reformation taught by Wycliff and John Huss caused great excitement and disorder, and the Hussites laid waste the country, so that the funds for building the cathedral could only with difficulty be collected. When the Reformation was effected a total interruption took place, estranging a great part of the population from the Roman Catholic clergy. In consequence of the contributions coming in very sparingly, the tower reached in 1436 only the height of the roof of the church. The naves were vaulted in 1464, and the gable between the two towers was built in 1480. In 1496 the third story of the northern tower was so far raised as it was still seen in 1858. After the year 1496 but little was done towards completing the building.

The following persons were active as "building and working masters" (*Baubau und Werkmeister*) of the steeples:—Liebhart der Myrner, Heinrich Dirmstetter Wenzela, Andreas Egl, the three Koritzer, Conrad Mathias, and Wolfgang, father and sons. The last named, as ringleader of a rebellion against the magistrate of the town, was beheaded in 1514. After him followed Erhard Heydenreich, who died in 1524. Albert von Törring (1613-1649) caused the cathedral to be restored after the taste then prevalent. A rich iron trellis was made at the entrance into the choir, before the high altar two large candel-

WROUGHT METAL WORK IN THE PARIS EXHIBITION.



Spire of the National Memorial of the Prince Consort, Hyde Park.



The Cross on a larger Scale.

[See p. 588, ante.]

labra were placed, and the towers were provided with roofs. It was under the same Albert von Töring that the Thirty Years' War broke out. Duke Bernhard of Weimar captured the town, and the Protestants took possession of the cathedral, and kept it during nine months.

Under Bishop Clemens (a Duke of Bavaria) more attention was, at the end of the seventeenth century, bestowed on the building of the cathedral. Above the crossing of the nave Master Anton Riva, of Landshtut, erected a cupola according to the Italian taste, and from that time the works proceeded in the same sense and manner. The interior was overloaded with tasteless pomp, and the noble building was thereby disfigured.

King Ludovic I., of Bavaria, in the years 1834 to 1838, caused all that was contrary to good taste to be removed; the cathedral was ornamented with many painted windows; the altars

were renewed or restored in more appropriate style. The cupola, erected by Anton Riva, was taken down and replaced by a cross vault. These works were performed, under the direction of Councillor Gärtner, of Munich, by Inspector Nadler, of Ratisbon, who accomplished the noble but difficult task with praiseworthy and conscientious care. The restoration was completed in 1839.

In the year 1858 a society for finishing completely all parts of the cathedral was founded under the patronage of King Maximilian II. and of the bishop of the diocese: and Mr. Denzinger, architect, was appointed *dombau-meister*.

The object of the society is to procure the necessary means for completing the building, especially the raising and finishing of the two principal spires. These steeples, which, before the beginning of the work, had a height of 152 ft., are to be raised to a height of 365 ft.

Our view shows the cathedral as it is proposed to be completed.

A beginning was made in 1859, and with the raising of the steeples in 1860. Up to the year 1863 the pecuniary means at the disposition of the building-master were insignificant, and little could, therefore, be done. It was then that King Ludovic I. of Bavaria took upon him to promote the undertaking by a yearly gift of 20,000 florins (about 1,666l. sterling). Since that time the works have proceeded with more speed; but they would be carried on faster if additional means could be collected.

Since 1860, about 310,000 florins, or 26,000l. sterling, have been spent upon the building. The works, it is asserted, will be completed in the year 1870. The porch to the principal entrance, as shown in our view, is triangular on plan. Of this remarkable work we shall give a more complete illustration.

THE LAW COURTS COMPETITION.

We have reason to believe, though we do not speak quite positively, that the Judges of Designs have reported in favour of the plan we have from the first pointed out as seeming to meet the greatest number of the stated requirements,—that of Mr. E. M. Barry. Further, that in respect of the external design, they give the preference to that of Mr. Street.

FROM MELBOURNE.

The Intercolonial Exhibition Commissioners reported at the close of the Exhibition that the number of exhibitors from the respective colonies was as follows:—

Victoria	1,479
New South Wales	273
South Australia	103
Queensland	36
Western Australia	199
Tasmania	738
New Zealand	84
New Caledonia	36
Netherlands India	3
Mauritius	6
Total	2,856

The medallions and certificates distributed were as follow:—

	Medallions.	Hon. Certificates.
Victoria	398	61
New South Wales	80	30
South Australia	8	6
Queensland	18	21
Western Australia	72	89
Tasmania	10	22
New Zealand	10	17
New Caledonia	5	6
Netherlands India	1	2
Mauritius	1	2
Total	618	610

The finance committee have just issued their balance-sheet, showing their receipts and expenditure. The Exhibition was open for 106 days. During that time 150,896 persons paid admission at the doors, and the gross attendance, including season-ticket holders, free passes, &c., amounted to 268,634 persons. The receipts were 14,433l. 2s. 1d. The expenditure amounted to 14,177l. 18s. 3d. Of this total there are at 6,572l. 15s. 6d., which represent available assets in the shape of permanent works, which are to be handed over to the Government. The population of Victoria on the 31st of March, 1867, consisted of 364,746 males and 130 females, or 643,876 persons. The register-general remarks:—"During the past quarter there has been a total loss to the population twelve persons, arising from the fact that the excess of departures over arrivals (1,173), exceeded the excess of births over deaths (1,161) last number."

The new Post Office, which has been so long the course of erection, was to be opened for the first time on the 1st of July.

The cattle market special committee, and the committee, recommend that premiums of £1 and 50l. be paid for the best designs for pens for cattle and sheep, &c., to be erected at Mountgalla. Application is to be invited from candidates for the office of city surveyor.

A new Presbyterian church at West Melbourne has been opened for divine worship. The church has been completely finished within a few yards of the pulpit, at an angle of 30 degrees, a flight of steps being placed on each side. Stairs lead up to the entrances, which there are two, one at each extremity of the east end, and the passages within converge towards the pulpit in the form of the letter V. The church is stuccoed within, and set off with carvings. The usual form of construction has been followed in the roof, which is supported by members, and varnished in a wainscot style. Windows are stained in devices, including scrolls with texts of Scripture. At night the church is lighted by three large sunlights in the roof. The cost of the portion completed is £10,000, of which 5,000l. have already been sub-

scribed. Men engaged in repairing the Amherst embankment have discovered that the cause has been caused by the boring of water into the bank. The perforation has been stopped.

It is proposed to supply Pleasant Creek with water by means of an independent scheme, the scheme consists in the construction of a reservoir in the Black Range, of a capacity

of 90,000,000 gallons, and two smaller ones, one at Stawell, and one at the Reefs;—the reservoir already constructed by the Government at the Reefs to be made available as a storage reservoir, and the whole of these reservoirs to be connected by pipes. In the mean time it is proposed to construct the reservoir at Stawell of a capacity of 40,000,000 gallons, and that proposed at the Reefs of 5,000,000 gallons. The total capacity of the proposed reservoirs will thus be 135,000,000 gallons, independently of the reservoir already constructed by the Government. Landsborough is proposed to be supplied from a reservoir constructed on the Landsborough Creek, from which the water would be conveyed by means of an open channel. The supply is estimated at 600,000 gallons per diem, and the cost would be about 6,000l.

BIRMINGHAM AND MIDLAND BANK.

The corner-stone of the new building was laid on Monday last. It will be erected at the corner of Stephenson-place and New-street, Birmingham, and will be "Classical" in design. The front towards New-street will be in three, and that towards Stephenson-place in eight compartments, divided on the ground-floor by rusticated pilasters, having ionic pilaster caps on a plain substantial basement. The first floor will have three-quarter attached columns of the Corinthian order, with coupled pilasters at the angles. The upper cornice will be crowned by an open balustrade, the angles being carried higher, and treated as coupled pilasters, with separate caps and cornices. The public entrance will be in the centre of the New-street front, under a portico having four ionic detached columns, the shafts and bases of which will be of polished granite, each in one piece. The banking-room will be 92 ft. long, 49 ft. wide, and 30 ft. high, lighted by nine circular-headed windows, each 18 ft. high, and by a lantern-light in the centre of ceiling, 37 ft. by 18 ft. 6 in. The private entrance will be in Stephenson-place, and the board-room and ante-rooms on the first floor. The rest of the upper portion of the building will be occupied by the private rooms for managers and apartments for the resident clerks, porters, &c. The strong-room is removed from the external walls, and will have double doors. The books, bullion, &c., are to be lowered and raised by means of a hydraulic lift. The main fronts will be in Portland stone, and the interior walls and decorations of the bank and principal rooms in Martin's cement. The fittings will be of polished mahogany, and the bank and other principal rooms are intended to be warmed and ventilated by Dr. Van Hecke's system, introduced into this country by Mr. W. W. Phipson, C.E. The whole will be executed under the direction of Mr. Edward Holmes, architect. The builders are Messrs. John Cresswell & Son.

A SLIP AT ROMSEY ABBEY CHURCH.

Sir,—The Abbey Church of Romsey is well known as one of the finest specimens of Norman architecture in the kingdom, and much has been done of late years in restoring it, and for the most part very well done. To the Ecclesiastical Commissioners, as chief recipients of the rectorial tithes, belongs the duty of keeping the church in repair; and this, after long waiting for, is now being done. The lower tier of arches is opened, displaying the massive grandeur of the columns, which before was hidden, and producing a magnificence of effect hardly to be equalled. The clearstory and triforium arches are being restored, and a fine roof is in course of construction to replace the old dilapidated one, which formerly extended to the extremity of the building; but, having been destroyed by fire, was replaced by one nearly flat; and the present one, which is raised to the original pitch, instead of being continued to the end of the building, stops short some feet, and is furnished with a plain gable, of the barn style, and the battlemented parapet remains. It is not yet too late to remedy this, which, if completed, will always be regarded as a great mistake. The north transept was restored two years since, and the original one rises from the outer wall, and instead of being plain, has five fine arches, the centre one open to the interior, and now filled with stained glass. The restoration of the south transept is contemplated, and that, when carried

out, will correspond with the north; and then the chancel, which, if there were any difference, should have been more elaborate, will be plainer externally and internally, and with the incongruous parapet remaining. It is true the architecture of the east front differs from the others, as there are two fine Early English windows inserted; but this only makes the unsightliness of the present arrangement more conspicuous.

OBSERVER.

THE CHISEL.

"ANOTHER FREEMASON" writes,—I did not see the letter of your correspondent "Freemason" until the commenting of "Antiquary" in your last issue drew my attention to the query concerning the invention of the chisel. Perhaps it may be of interest to point out that the derivation of the name is probably from the old British word *chisel*, a stone; as, for instance, in the remarkable ridge of pebbles on the south coast of Devon, called from this circumstance, "The Chisel-bank." And, again, also (as local historians agree) in the word *Chelsea*, derived from *Chisel-ca*, on account of the nature of its gravelly or stony soil. These derivations would carry us back to the era of flint implements as the period of the invention of the chisel. Many of the specimens shown in museums were evidently intended for the same purposes as the modern steel tool, which has had appropriated to it, in industrial technology, the word originally employed to designate a shaped sharp stone, used for the purpose of hollowing out canoes, or other wooden conveniences of savage life.

THE INTERNATIONAL ARCHITECTURAL CONFERENCE.

LAST week brought to a close the Conférence Internationale projectée by the Société Impériale et Centrale des Architectes à Paris, of which M. Baltard is president. It was numerously attended by French architects, and Russia, Germany, Italy, Prussia, Portugal, &c., were well represented; but I am sorry to say only one Englishman attended, although it was made known to the Institute some time since. Had they taken a little trouble to have made it known to its members, Englishmen would have more fully responded. The nourishing this feeling of fraternity between the two nations is a great boon, at least to the younger members of our profession, for one learns more in an hour in the bureau of a friend than during a week *en villa*. It is there we can see and comprehend their system of planning, in which they excel all others. After the conference was ended the society gave a banquet at the Grand Hôtel du Louvre, inviting *tous les étrangers*. About 130 or more attended, and the evening passed off very pleasantly.

W. HOVENDEN HENDRY.

ST. STEPHEN'S, VIENNA, AND THE SULTAN.

Sir,—No doubt, when Abdul Aziz first beheld Vienna's greatest ornament, he was well aware of a family anecdote, highly creditable to the architectural taste, and perhaps some religious liberality, of an ancestor. But as the fact seems, strangely, little known, it may be well worth bringing into notice at this juncture. May that well-omened visit, as those to other countries, not least our own, be the harbinger of much peace and mutual benefit!

During the fearful Ottoman siege, under the Sultan of the time when the city was relieved, when sinking with its insufficient garrison of 11,000 men under Stahremberg, by the good ally John Sobieski of Poland (its then own master, Augustus, being of little worth), the Sultan appears to have been deeply struck with the noble spire of St. Stephen's Cathedral; so much so as to have revolted from its wanton destruction. He therefore sent a message to the authorities, that if his insignia and cypher were placed on the building, he would direct great care to be taken against its injury. This was promptly agreed to; and, to the credit of all, the insignia have never been disturbed, and are passed now by the visitor, at a high stare, during his ascent, which can be made nearly to the top, as at Antwerp.

This tower and spire of Vienna (of which there is a south-west view in Dibdin's "Tour") are perhaps the most beautiful in the world. Of towers alone, Ulm (300 ft. high) may come second; and the nearest approaches in England may be St. Peter's, Norwich; and Wrexham. The lower story of Vienna, outside the south wall of the church, is very large. From thence the gradual decrease or tapering is of wondrous beauty, to the summit, which is about 50 ft. higher than our St. Paul's.

In the words of a recent traveller, it is literally "frosted over" (only not excessively conspicuous), with carved ornaments. It has a clock, a kind of gallery for observations, and contains many large bells, the "great" one weighing about twenty-four thousand pounds. P.

COMPETITION.—BOARD OF WORKS, POPLAR DISTRICT, NEW OFFICES.

At the meeting of the Board, on the 30th ult., the report of the New Offices Committee, recommending the following designs, was received and adopted:—

Motto.	Name.	Premium.
Circinus.....	Mr. Fletcher, late Assistant Surveyor to the Board.	£50
Octagon.....	Mr. Arthur Harston, East-India road, Limehouse.	30
Cives.....	Mr. A. Wilson, Bow.	20

Forty-three designs were submitted.

SIR,—A short time since ten designs out of forty-five were selected by a committee of the Poplar Board of Works, and referred to Mr. Sancton Wood to report upon, but not in their order of merit, as the Board reserved to themselves the right of awarding the premiums, which they have now done to three competitors, who are intimately acquainted with the Committee.

The sum proposed to be expended, according to the instructions to competitors, was 5,000l. Mr. S. Wood estimates the first premiated design, "Circinus," to cost 5,436l.; the second, "Octagon," 6,080l. (!); the third, "Cives," 6,956l. (!)

There are, I understand, several designs sent in showing far greater artistic merit at a less cost than those selected for premiums.

The designs are to be exhibited for one week in the Town-hall, Poplar, and one week in the Vestry-hall, Bow, the admission to be by tickets. The following extract from the local paper (*East London Observer*) is sufficient to open the eyes of the ratepayers to a neat job:—

"We may state that it was reported that 'Circinus' is no other than Mr. Fletcher, the late Assistant Surveyor to the Poplar Board of Works; 'Octagon,' Mr. Arthur Harston, of East India-road; and 'Cives,' a son of Mr. A. Wilson, of Bow. Of course, the conduct of the members of the Board is unimpeachable, and there cannot be the slightest doubt but that they exercised their architectural knowledge to the fullest extent in the selection of the plans. But the fact that one of the three favourites has been connected with the Board, that another is about to form an alliance with a member's daughter, and that the third is a gentleman of considerable local influence, is so very remarkable that we hasten to endeavour to remove any idea that there has been the faintest tinge of favouritism or collusion between the parties, more especially as the committee, to protect the public (and themselves from suspicion), employed a surveyor to guide them in their decision, and have awarded him the magnificent sum of 25l. to give an unbiased opinion on the relative merits of the plans submitted to him."

DELTA.

BARRED STREETS.

Some attention has recently been directed to the number of streets in London having bars across them, which of course precludes any other than local traffic; and during a discussion in the Metropolitan Board of Works, a member stated that he lived in a street having a bar, and should it be done away with, he would expect to be compensated. It further appears that these streets are paved, watched, and lighted at the public expense, just as other streets are, where no such privilege exists, which leads one to wonder upon what principle of equity such an arrangement is permitted to continue. Surely there is something wrong in allowing individuals to lay out streets, and for their own privacy and convenience debarring the public from their use; and as in the case of Hamilton-place, a few persons, socially and politically powerful, con-

spelling the public to an outlay of probably more than 100,000l., to keep their little *cul de sac* quiet and secluded.

All these seem to show pretty clearly that every interest having sufficient political influence in this country is well protected, save the public interest, which has but small chance of success in the scramble of powerful cliques and coteries, armed with prescriptive rights, privileges, and franchises, which are in most cases, when closely scrutinized, founded upon usurpation or political corruption, if not something worse.

If, however, the claim be recognised, let us see how far it will take us. There has lately been a good deal said about opening out blind alleys, if for no other purpose than their ventilation, and few will deny the benefit of such a change; but will not the owners and occupiers of such places, in even the most unsavoury parts of the town, be entitled to compensation for having their courts and alleys disturbed by being made public thoroughfares? No doubt, if other things were equal; but "there's the rub."

To return to the subject of barred streets and streets ending in a *cul de sac*, I will venture on what may be deemed a rash assertion; that is, that to continue these streets and to abolish those bars would be to stop at once the cry for wider streets and more of them. Let me mention Long-acre, Old-street, Paternoster-row, Lincoln's-inn-fields, Judd-street, and scores of others too many to name. J. W.

BURLINGTON HOUSE SCREEN.

SIR,—Presuming that workmen have commenced the removal of the wall in front of Burlington House, permit me to suggest that the wall should be reconstructed on the inner side should be re-erected in one of our public gardens. It would be useful as a screen to any objectionable feature, and as a shelter to visitors from rain. Possessing some architectural beauty, and associated with memorials of Swift, Pope, Handel, Edmund Burke, and many other eminent men of the eighteenth century, I believe the question of its preservation well worthy of consideration.

Should this note have no other effect, it may serve as a hint that one of our best public buildings is about to undergo great alterations in consequence of a vote which silently passed the House of Commons, viz., 16,000l., for adapting Burlington House to the use of certain learned societies. H. E. P.

APPARATUS FOR BUILDING CONCRETE HOUSES.

SIR,—In your journal there is an advertisement headed "Tail's patent Apparatus for constructing Walls, Houses, and other Buildings," accompanied by a wood-cut of the said apparatus, which Mr. Tail in his advertisement claims the credit of having invented.

The apparatus in question was not invented by Mr. Tail, but is well known to engineers and architects as being fully figured and described in most of the standard elementary works on building.

For example, in "Rondet, de l'Art de Bâtir," vol. i., article 2, "des Pierres Artificielles," pp. 229–230, the apparatus is fully described and illustrated by sixteen figures, occupying the whole of plates 4 and 5 in the first volume of the folio atlases of plates accompanying the work.

In another well-known work, "Peter Nicholson's Architectural Dictionary," the same apparatus is described in p. 526 of the second volume, and fully illustrated on the plate facing that page by fifteen figures. Nicholson says that it has been in "use for some time in different parts of this kingdom, as in Bedfordshire, Lancashire, &c."

The apparatus is also fully described and illustrated by woodcuts in pp. 725, 726, and 727 of "Cressy's Encyclopedia of Civil Engineering."

The apparatus thus elaborately figured and described in these three very well known standard works is in all respects identical with that claimed and figured by Mr. Tail in his advertisement as his own invention. "The chimney core" figured in his advertisement has also been in common use in forming flues in rubble walls for the last ten years at least.

There are two other statements in his advertisement that invite comment. He states that the cost is only half that of brickwork, and the strength ten times as great. This is an enormous exaggeration. For equal thicknesses the strength of the concrete wall is not ten-fold, but only three-fold that of brick: as correctly stated in Mr. Chadwick's report on the concrete buildings at the French Exhibition.

In *construct*, S.H.

HENRI COMBARE.

FALL OF BRICKWORK.

LAST week the fronts of two shops in course of erection with others in the Gloucester-road, Old Brompton, fell just before the workmen left. One man was injured and taken to the hospital. The materials appeared to be good. The cause of the downfall seems to have been the giving way of that portion of the party-wall on which the bressummers of the two shops rested, there being no ties to keep the bressummers from being thrust outwards by the weight of the brickwork above, neither were the story-posts inserted. Too much care cannot be taken in carrying up a party-wall the end of which has, as is constantly the case, to support the weight of the fronts of two houses. It should be constructed of hard bricks set in good cement under the end of bressummer, with hoop iron bond about every six courses, and strong iron ties should be built into the walls, say 5 or 6 ft. long, passing over the top of the bressummer and securely fixed; ties should also be inserted to steady its centre. The stone templets under each end of bressummer should be, at any rate, the full width of the bressummer. The surprise is that there are not more accidents than even do occur from neglect in this particular. If builders would but think, they would see the risk they run, and that it might be avoided by a very small extra outlay. We have made more, perhaps, of this matter than might at first appear needful; but if this careless system of constructing the walling to carry so much weight be not altered, and requisite ties used to keep the bressummers in their proper position, some far more serious accidents must occur sooner or later than has hitherto taken place.

THE GUILDHALL, LONDON.

At the meeting of the Common Council on the 2nd inst., on the motion of Mr. Stapleton, chairman of the City Lands Committee, who stated that during the last fifteen years the Corporation had expended about 50,000l., in all, in adapting the Guildhall to great State ceremonial, it was resolved by a majority of 11 in a court of 97 members:—

"That the repeated and heavy expenditure which takes place at Guildhall on every occasion of public reception affords evidence of the insufficiency of the accommodation afforded by the Corporation for such purposes, while the space available for the library and museum has also been declared altogether insufficient; that, therefore, it is desirable some comprehensive and well considered plan should be prepared and laid before this Court, and that it be referred to such committee as this Court shall direct to obtain a plan and estimate accordingly."

On the motion of Dr. Saunders, it was resolved in effect to retain the building in Guildhall-yard recently erected for the reception of the Sultan for the use of the Corporation until after the 9th of November next, Lord Mayor's day.

It puzzles us to divine a reason why the style of the Guildhall was not followed in the erection of the temporary building referred to. The actual effect is very incongruous. By the way, we should much like to learn how many representatives of art, literature, or science were invited on the occasion of the recent visit of H.R.H. the Prince of Wales and the Sultan?

COMPENSATION CASES.

Lieut.-Col. James and Metropolitan Railway.—T. property required for the extension of the Moorgate Street Station, comprises some twenty-seven shops and warehouses, &c., known as Nos. 61, 63, 65, 66, 67, 69, 70, 72, 74, 76, 78, 79, 80, 81, 83, 84, 85, and 87, Fore-street, and No. 11, Little Moorfields, and it was agreed to refer the question of compensation to arbitration, the arbitrators being Mr. B. A. Withall, on behalf of the Company, and Mr. Geo. Fuller, of Fenchurch-way, on behalf of the claimant, who appointed as the umpire Mr. Charles Lee; and the case was commenced at the Westminster Palace Hotel, on Wednesday, the 29th ult., the claimant being represented by Mr. Hawkins, Q.C., and Mr. Littler, instructed by Mr. Geo. Stannard, solicitor, of Tonbridge, Kent; and the Company by Mr. Lloyd and Mr. Holloway.

Mr. Hawkins, in opening the case, maintained that the correct way of arriving at the value of property of this description, was by considering it as building land, and adapted to much more valuable purposes than the premises. A question had arisen as to the validity of certain leases granted by Col. James's father, and he would therefore produce evidence as to the value in either alternative.

Mr. George Fuller, arbitrator, valued the property at 58,671, or, valued by the said leases, at 77,575l. Mr. F. Aumon, architect, said his opinion was that whole of the land should be cleared, and it might then let on long leases in Little Moorfields at 2s. 6d. per foot in the eastern part of the estate, in Fore-street 3s. 6d. and the western part at 2s. 6d. per foot, with

capitalised, would give a sum, including the customary addition for forced sale, of £5,850, or allowing the disputed leases, 77,522.

Mr. Evans, of the firm of Eversfield, Home, & Co., valued the property at 57,163; or, allowing the leases, 77,522.

Mr. Farmer, of Messrs. Debenham, Tesson, & Farmer, said that the ground at the eastward end, if cleared, could be let at various sums, according to situation, averaging 2s. 9d. a foot; and that at the westward end some of the houses were of a very good description, and were worth a rental of from £100 to 200 per annum, the public-house and trade attached to it, and being worth 400 per annum. This would give a total of 87,887; or with the leases allowed, 79,600.

Mr. Trist, of the firm of Norton, Trist, Watney, & Co., was of opinion that if the leases were held to be valid, the eastern portion of the estate should be divided into blocks, each of which should be cleared at, and not until, the expiration of the longest lease in each block, and the land would then be worth on an average 2s. 6d. per foot, and the side of the estate might be taken at their present rental value. This would bring the valuation to 59,600; or, if the leases were invalid, to 71,432, but these figures did not include the reversionary interest in the public-houses.

Mr. Vigne dealt with the property in a similar manner to Mr. Trist, and valued it, in the event of the leases being good, at 65,681, or if in hand, at 81,897.

Mr. Ashpitel, architect, also divided the property into sections, but differently to the two previous witnesses, and valued it with valid leases at 68,463, or invalid at 82,176.

King v. The Royal Commissioners of the new Law Courts. This was a continuation of the claim at Courts of Justice Compensation Court, August 5th, before High Bailiff Westminster, and a jury, exceeding 20, (4), on the part of Mr. Kelly, the publisher of "Kelly's Directory," in Old Bowell-court, for the business premises and loss by removal. The case was appointed for half-past ten o'clock, and seemed to have created much interest.

Mr. Kelly, the plaintiff, and Mr. Horace Lloyd were for the claimant; the Attorney General, Mr. Jay, and Mr. Mahon appeared for the Royal Commissioners. A special jury was summoned, and only "one" attended, and he took his seat in the box for more than an hour while the parties negotiated to settle the matter for the property required for the new Palace of Justice. At length Mr. Hawkins announced that the matter was settled, and the solitary gentleman could give a verdict for £2,500, if he felt himself competent to give it alone. The jurymen said, "Oh, yes, for twice the amount." The Bailiff thought they should be sworn to give a verdict. The suggestion was acted upon, and a verdict by consent was recorded for 13,000, and the jurymen received their

Stevens v. The Royal Commissioners. This was a claim of £7,200, for premises required for the new Law Courts, at Bell-yard, and for less consequent on removal, as printer, warehouse for printing, &c., known as a "Cottage."

On this occasion the usual order was attended, and the cases consulted for some time to settle the matter.

Mr. Haden, for the Commissioners, said, and he learned from Mr. Lloyd had been so patient, that he had been more liberal than perhaps he ought to have been. The jury gave a verdict for 10,000.

Mr. Lloyd said, there were other conditions as to occupation to Lady-day, and the plaintiffs to be taken at 20d. A verdict was returned by the jury for 10,000.

CHURCH-BUILDING NEWS.

Paddington.—The foundation-stone of the church of St. Mary Magdalene, was laid on the 22nd ult. The edifice will be situated in Goodchester-street, Harrow-road. Mr. Street, the architect, and Mr. Cowland the builder. The church will be in the Gothic style, and built of brick and stone. The estimated cost will be about 20,000, a portion of which comes out of the Bishop of London's fund, the remainder being supplied by private donations. The edifice will accommodate about 1,000 persons.

Reading Green.—A gentleman, who has preserved his cognomen, has contributed 5,000, to the Bishop of London's Fund, for the purpose of promoting the erection of a new church at Reading Green, the district around which is rapidly increasing in population.

Broadwinser.—A new church has been founded at Drington, a hamlet in this parish. The cost has been defrayed by subscription. The whole of the stone was given by Captain Murray, of Catherstone, Charnouth, who is a donor in the parish, and this was drawn gratuitously by Mr. Potter, Mr. Shutter, and other farmers. The building is at the upper end of the hamlet. It has four single-light pointed windows on each side, with crosses between them, a three-light window at the east end, and a small window of three lights under a pointed arch at the west end, the only doorway. A bell-turret surmounts the west end. The church has an open wood and the pulpit and reading-desk stand at the corner of the chancel railings. The open benches supply seats for 90. The design was drawn by Mr. Allen, architect, Cromer, the building is by Mr. Chick, of Beamster, Mr. Holt, of Broadwinser.

Embsay.—The foundation-stone of the new church which is to be built in this parish has been laid. The contract has been undertaken

by Mr. A. Squibbs, of Bridgwater, builder, for 2,000. The architect is Mr. C. Knowles. The church is to be built in the Perpendicular style, and will accommodate 200 persons.

All Cannings (Wills).—The church of the ancient church of All Cannings has been restored by the Rev. T. A. Methuen, rector of the parish. A new pulpit of carved oak has also been erected by the friends of the rector as a memorial of his ministry for half a century. A brass plate beneath a stained-glass window, given by Mr. Sotheron Estcourt, bears this inscription:—"This window is dedicated to the honour and glory of Almighty God by Thomas Sotheron Estcourt, in memory of a friendship of more than 50 years between the houses of Methuen and Estcourt. 'We took sweet counsel together, and walked in the House of God as friends;' Psalms lv. 14."

Great Billing.—The church of St. Andrew at Great Billing, has been restored in the interior, and a new organ, built by Messrs. Bevington, of London, inaugurated. There is a mortuary chapel (generally called the Thomond Chapel) on the north side of the chancel, which contained, in addition to several mural monuments of the family, a huge family pew, with its first last century, looking more like an inferior drawing-room than a place for prayer. This has been removed, and an arch formed at the east end of the north aisle, and the organ now occupies the place of the pew. This mortuary chapel was formerly entered by an archway of bad Classic character and proportions. This has been removed, and an arcade of two arches, with carved foliated capitals of Early Decorated character, substituted in its place. The architects (Messrs. E. F. Law & Sons) originally intended to form an arcade of three arches, but on pulling down parts of the wall, for the purpose of inserting the arches, discovered two old square-headed Decorated windows, one at the east and one at the west end of the wall. These have been preserved and restored, and two arches only placed between them. All the old pews have been removed, and new open seats, with open-framed backs, and book and kneeling boards placed in their stead. The whole are executed in pitch pine. The church is heated upon Messrs. Haden & Son's principle; that is, arrangements are made for extracting the cold air from the church, as well as for forcing the hot air into it. A new oak pulpit, on stone base, of Decorated character, is placed on the north side of the middle aisle, and on the south side is an oak lectern of similar character. Much discussion took place as to the restoration or removal of an old oak screen of Perpendicular character which stood at the entrance to the chancel. At the request of the Architectural Society, as well as by the particular desire of the rector, and with the full consent of the architects, the screen has been retained and restored. The sanctuary is paved with encaustic tiles from the works of Messrs. Maw & Co., and on the face of the risers to the steps are inlaid the same description of tiles. The works have been carried out, under contract, by Mr. Banks, the woodwork being executed for him by Mr. Kightley, and the stonework by Mr. Belton. It is proposed to remove the flat ceilings of the nave, chancel, and chapel, and substitute open-timbered roofs. The seating, pulpit, and heating apparatus, arcades in chancel, which, except 50, contributed by the parishioners towards the heating apparatus, has been paid by Mr. Valentine Cary-Elwes. The chancel seats, sanctuary pavement, and chancel door, have cost 1,661, which amount has been met by the rector and his friends. The works have been executed from designs, and under the superintendence, of Messrs. E. F. Law & Sons, of Northampton. The organ (which is the gift of Mrs. Cary-Elwes) was built by Messrs. Bevington & Sons, of London, at a cost of about 1,400.

Worcester.—A new scheme, says the local Herald, is to be granted by the Court of Chancery for the government and expansion of St. Oswald's Hospital, which has been for many years "impounded" in that Court; under which scheme considerable alterations and enlargements to the charity, its almshouses and chapel, will take place. It is now proposed to take advantage of this new era in the history of the hospital by erecting such a church on the site of its present chapel as shall be fully adequate, not only for the requirements of the inmates of the institution, but for the accommodation of the Tything district generally. This plan is proposed as being in every way more

desirable than the erection of two churches so near together as would be the new one of St. Oswald's and the proposed new one opposite thereto. At all events, the chapel will have to be enlarged or rebuilt under the new scheme, and, with the addition of the funds already raised for the Tything church, ample means will be afforded for the erection of one good structure sufficiently capacious for the district. The bishop of the district is in favour of the scheme, and so are the Tything Church Committee. A public meeting has been held to consider the question generally, and to investigate Mr. Scott's plans for the new church.

Willenhall.—The new parish church, which has just been erected on the site of the old brick edifice, has been consecrated. The edifice is decorated, and stands partly upon the foundations of the former building, measures 105 ft. in length internally, and consists of nave, with north and south aisles, chancel, double transept on the north side, vestry on the south side of the chancel, and a tower, through which is the principal entrance, at the west end of the north aisle. The height of the tower is about 100 ft., and of the nave, to the apex of the roof, about 45 ft. from the ground-line. The walls are faced externally with red sandstone, from Codsall, and the roofs are covered with grey and red tiles, the ridges being surmounted by an ornamental cresting. Internally the columns, arches, and window-dressings are of stone, from Codsall, Hollington, and Bish, and the roof-timbers are of deal, stained, but not varnished. The sittings are all of oak, the greater part being new, and the remainder made from the oak pews taken from the old church. The chancel-floor is laid with encaustic tiles, from Mr. Thorne's works, at Broseley, and the aisles are paved with black and red Staffordshire quarries. The nave is divided from north and south aisles, of considerable width, by symmetrical stone pillars, over-arched by a pointed roof. The pulpit is of stone. The east window, which has five lights, is filled with stained glass, the gift of Mr. R. D. Gough. The lower part of the window is divided into ten compartments, each illustrating some special incident in connexion with the passion, death, and resurrection of our Lord Jesus Christ. The window has been put in by Messrs. Clayton & Bell, of London, and the cost is said to be 250l. On the north side of the chancel is a memorial window to a deceased son of the incumbent. The subject illustrated is Christ blessing little children. The windows on the south side of the chancel are also of stained glass, and contain representations of the armorial bearings of the Duke of Sutherland and the Earl of Lichfield. There is also a window in the north transept to the memory of Dr. Richard Wilkes, whose name is intimately connected with Willenhall. The window exhibits the family escutcheons and motto. The latter windows are the work of Mr. Holland, of Warwick. The church is intended to seat about 850 persons, and one-half of these are set aside as free. The warming apparatus has been fixed by Messrs. Blakemore, of Walsley, and the gas mains by Mr. Ready, of Wolverhampton. The total cost of the structure, including fittings and the necessary preliminary expenses, is expected to be about 6,700l., of which sum Mr. and Mrs. Gough have given, in various ways, 2,300l.

Carlisle.—St. James's Church, Denton Holme, has been consecrated. The new church is situated upon an elevated plateau of ground a few hundred yards to the south of Marrell Hill House. The architects were Messrs. Andrew & Pepper, of Bradford. The material used is red sandstone, relieved by white stone from the Howrigg quarries. The design is geometric. The total length of the edifice from east to west is 112 ft., and its extreme width 68 ft. The nave, which is 50 ft. in height from the floor to the top of the ridge, is flanked by two aisles, each of which is lighted by four two-light windows, enriched with quatrefoil tracery. The chancel at the east end of the building is of circular form, lighted by three trefoil windows; but the chief feature of the building is at the west end, where a square tower rises 54 ft. high, relieved by two windows on each side and surmounted by an octagonal spire, supplemented by pinnacles at each of the four corners of the tower, the other four sides of the octagon having projecting windows also filled with tracery. The spire is relieved by bands of white stone, and finished with an ornamental iron crest of foliated design, the gift of Mr. Head, of Rickerby House. A large five-

light window, the upper part of which is filled with tracery, in geometric design, is placed in the western end of the building; and at each end of the edifice a stone cross gives finish to the roof. Mr. Spooner acted as clerk of works, and the contractors were as follow: Messrs. Thomas Dodd, Carlisle, mason; W. Davidson, Carlisle, joiner; Irving & Lowthian, Carlisle, plumbers; David Canning, Carlisle, glazier & painter; Irving, of Stanwix, slater; Hampson, of Wigton, plasterers; Maw & Ingle, Leeds, and Pickering, Carlisle, stone-carvers; W. Slater, Bradford, metal work for doors. The edifice has been built at a cost of about 4,350*l*.

Kidbrooke (near Blackheath).—In consequence of the increasing population in the neighbourhood of Blackheath, especially in the part known as the Hamlet of Kidbrooke, it was determined to form a district out of the parish of Charlton, Kent, and to build a church for it. Lord St. Germans, having liberally given an acre and a half of land for a site for church and rectory, the church has been erected, and was consecrated on the 3rd of July by the Bishop of Rochester. It is in the Early Decorated style, and is built of Kentish ragstone with Bath stone dressings, and has a tower and spire at the north-east angle of the nave, 150 ft. high. The nave is 86 ft. long and 28 ft. wide; the side aisles 14 ft. wide; the chancel 26 ft. long and 28 ft. wide. The vestry is on the south side of the chancel, and the organ-chamber on the north side. The pulpit, reading-desk, font, and reredos were the result of collections among friends of the rector, and were designed by Messrs. Newman & Billing, the architects of the church. The works were executed by Messrs. Dove, at a cost of about 7,200*l*, exclusive of the gifts, carving, organ, &c. The organ was built by Mr. Robson. The carving of pulpit, reredos, and of the church generally was executed by Mr. Seale, of Walworth.

Sedlescombe, near Battle.—The ancient parish church having become dilapidated, and the rector being desirous of obtaining increased accommodation, a committee was formed, and necessary funds having been raised, the edifice has been restored, a new chancel erected, using the old windows, sedilia, &c.; the galleries and pews have been removed, new seating after the old model being put in, by which means upwards of 100 additional sittings have been provided. These works have been performed by Mr. Catt, builder, of Sedlescombe, under the superintendence of Messrs. Newman & Billing, architects.

DISSENTING CHURCH-BUILDING NEWS.

Wolverhampton.—The new chapel erected by the members of the Methodist New Connexion of this town, on an extension of the site formerly occupied by their old one in Horsley-fields, has been formally opened for divine service. The building is not quite finished. It is in the Anglo-Italian style. The front elevation has a slightly recessed centre with two wings, the principal feature being a portico of peculiar form, some 20 ft. long, with circular ends supported by four detached columns of Corinthian character with foliated capitals. Above the portico is a triple window, and on each side is a single window. The windows in the wing have ornamented heads, and are further decorated with small columns, foliated caps, and other embellishments. The upper part of the gable is formed into a pediment. All the windows are margined at the sides and down the centre with amber and ruby-stained glass. The pews have low sloping backs and scroll ends, and will seat about 800. All the woodwork is stained and varnished with a light colour. The walls inside are an imitation of stonework. The length of the chapel is 65 ft.; width, 42 ft.; height, 36 ft. There are three large vestries, also a large school, some 65 ft. long by 42 ft. wide, under the chapel, with classroom, and some other offices. The expenses attending the erection of the building, exclusive of the cost of site, are about 2,500*l*. The building will be heated by an apparatus furnished by Mr. Blake, of Leamington. The architect is Mr. C. Manton, of Wolverhampton, who has personally superintended the erection of the structure.

Eccles.—Zion Temple, at Eccles, in which the members of the Methodist New Connexion worship, being now too small for the requirements of the body, a site for a new chapel and schools has been obtained in Wellington-road, and the foundation-stone has been laid. The chapel is to be in the Italian style of architecture, built of brick with stone dressings. A

portion will be partitioned off for schools until the schools can be erected. Altogether the chapel will accommodate 450 persons, and the schools hereafter to be built, 300 children. Mr. Webster, of Manchester, is the architect.

Market Weighton.—The foundation-stone of a new Wesleyan chapel has been laid here. The new edifice will occupy a site near to the present chapel, having a frontage to the principal street. The building is designed in the Italian style, by Mr. W. Botterill, of Hull, architect, and externally will be executed in stock bricks of two colours, with dressings of stone from the Harehill quarries. The principal elevation will exhibit three compartments, in which are placed the doorway and window openings, divided by pilasters with moulded bases and carved capitals. The central arch connecting the pilasters will rise into the gable, which will be finished with a modillion cornice and an ornamental apex. The side elevations will also be divided by pilasters and arches, with two tiers of windows, the one below, and the other above the galleries. Internally the dimensions are: length, 54 ft.; width, 34 ft.; and height from the floor to the ceiling, 30 ft. The accommodation provided is for nearly 400 persons, and the cost will be about 1,500*l*. The contractors for the building are as follow:—Bricklayers, stonemasons, and plasterers' work, Mr. R. Pape, Beverley; carpenters and joiners' work, Mr. Jas. Jackson, Hull; plumbers and glaziers' work, Mr. H. H. Law, Market Weighton; slaters' work, Messrs. T. Smith & Co., Hull; and painters' work, Mr. J. Richardson, Market Weighton.

STAINED GLASS.

West Retford Church.—A window has been placed in this church in memory of the late Rev. Charles Dales Butterfield, rector of the parish. The window is inserted at the east end of the church, and is of three lights of an Early English character, and with the crips and spandrels floriated. The interior of the upper quatrefoils are principally filled with the representation of angels, having instruments of music, whilst the two centre ones contain each the figures of cherubim. The centre, and, of course, the principal compartment, contains an allegorical representation of St. Michael the Archangel (to whom the church itself is dedicated), holding scales in his left hand, and apparently "treading the clouds and walking upon the wings of the wind," below which are seraphim amongst stars. The upper dexter are the three angels announcing to Abraham the birth of a son; the lower portion, that of Samuel being led to the Temple; thus blending the Old Testament dispensation with the New. Messrs. Hardman & Co., of Birmingham, were the artists, and the cost was 200 guineas.

St. Mary's, Ryehill.—This church has just received an addition to its internal decorations in the shape of a stained-glass window. Mr. Bagley, long connected with the establishment of Mr. Wailes, is the artist. The window, which is in the Decorated period of architecture, consists of two openings, and is in the south transept: the design of the ornamented portion is the rose and lily, terminating in a floriated cross. On a red ground, the shapes in which the groups are placed are formed by entwining the stems. The subjects are explained by texts beneath—"Mary hath chosen that good part," &c.; and, "Jesus saith unto her, 'Thy brother shall rise again.'" "The Lamb which was slain" is the subject of the tracery. The window is erected by a lady, in remembrance of two relatives. The portrait of one is inserted in the lower part of the window.

St. Olave's, York.—A stained-glass memorial window, executed by J. W. Knowles, York, has been erected in this church. The window chancel is on the south side of the church, and is of three lights, with tracery of Late Perpendicular work. In the centre compartment, under a canopy, is represented the figure of Christ as the Good Shepherd, the side-lights and tracery being filled in with geometrical ornament.

St. Peter's Church, St. Albans.—Three stained-glass windows, by J. B. Capronnier, of Brussels, have just been inserted in the south side of the nave of this church, at a cost of about 400*l*. The windows are each divided into three principal lights. The subject of the first of these windows next the chancel is Our Lord's parable of the Good Samaritan. The second window contains a representation of Our Lord as the

Good Shepherd. The subject of the third window is the parable of the Prodigal Son. The stonework of the windows has been restored by Mr. Haselgrove. The other stained-glass windows in the church are also by M. Capronnier. In the east window, the figure of an elder, "harping with his harp," has been substituted for a symbolic pelican, which has been removed to another window of the church. On the north side of the chancel five divisions of windows have been reglazed with relics of stained-glass windows of the fourteenth century.

SCHOOL-BUILDING NEWS.

Ruthin.—The Grammar School, Ruthin, has been undergoing extensive alterations and additions, which are upon the eve of completion. The contractor was Mr. George Clark, of Chester architects, Messrs. Lloyd Williams & Underwood. The National Schools, Llanvachan, near Ruthin, were recently opened. They are commodious nearly eighty children, and were designed by the same architects. The contractor was Mr. Robert Williams of Rhyl. The cost was under 700*l*. The material for walls is pressed brick and free stone, all mullions, quoins, plinths, jambs, &c., being of the latter material.

Guernymynydd, near Mold.—A national school has been erected here, at a cost of about 300*l*. The walls are of stone, and the dressing of free stone. Mr. John Roberts, of Mold, was the builder.

Bodelwyddan.—The national schools at Bodelwyddan, Anglesey, have been designed by Messrs. Lloyd Williams & Underwood. The works are done day work, Mr. Nicholson superintending them. The cost was 600*l*. The walls are of limestone and the mullions and dressings of free stone.

Wincle (Cheshire).—The new school-building at this place, the gift, with the site, of Mr. T. J. Dainty, of North Rode, have recently been opened. They comprise school and master residence, with the requisite offices, and walled yards, and play-grounds. The buildings are erected of stone, and the school is faced internally with pressed bricks, blue and red, bands and patterns, the porches being faced with stone, as the exterior. The roof is open timbered, with a ventilating spirelet on top covered with plain and ornamental tiles, and the whole of the woodwork is stained and varnished. The site offered some difficulties, which have been satisfactorily overcome. The inequality of the ground have been formed into terraces round the building, and planted with shrubs. The school is warmed by Messrs. Haden & Son apparatus, and arrangement is made by which the entrance and staircase of the master's house can be warmed when desired. Mr. Sugden, of Leek, was the architect.

Kingsley (Staffordshire).—The new endow school-buildings at this place were opened on the 23rd ult. They are built of brick, with cast iron dressings and blue brick bands, and comprise boys', girls', and infants' schools, with class-rooms, and separate play-grounds, with the requisite offices, and residences for the master and mistress. The entrance-lobbies to the schools afford accommodation for hats and cloaks, and are also provided with washhand-basins in recesses in the walls. The roofs are open-timbered, constructed with collars and curved braces, covered with plain and ornamental tiles. At the intersection of the roof is a ball spirelet, which acts as a ventilator, and one of the front gables is mounted by a bell-turret. The residences contain sitting-room, kitchen, scullery, pantry, and three bed-rooms, with closets, &c., a separate yard and out-offices. Open fireplaces are provided both to the schools and class-rooms, but provision has also been made for the induction hereafter of the warming apparatus. Messrs. Haden & Son, of Trowbridge. Externally an expression of a domestic character has been given to the residences, which serves to distinguish them readily from the schools, but with any disturbance of the unity of the combined group of buildings. The works have been carried out by Messrs. Henry Goldstraw, Wesley Rocks, and Geo. Tipper, of Kingsley. Mr. Sugden, of Leek, was the architect.

Bristol.—New Wesleyan Methodist Day Sunday Schools are now being erected at Bay Mills, Bristol. A memorial stone has been by Mr. Holden, M.P. The architect is Samuel Hancock, of Bristol, and Newport in Wiltshire; and the builder is Mr. Summerville of Bristol.

RESTORATION OF KENDAL PARISH CHURCH.—A recent examination of the roofs over the two northern aisles, made by Mr. Crowther, of Manchester, architect, has shown that in certain portions of these roofs immediate repair of a substantial character is absolutely necessary to ensure their safety. The restoration committee have had contracts entered into to carry out the proposed work. The accepted tenders were those of Messrs. John Fisher and Samuel Compans, carpenters; Mr. Robert Winder, plumber; Mr. Robert Shaw, mason; Mr. William Jackson, painter and varnisher; and Mr. Joseph Steel, plasterer. The first three named were the contractors for the two southern roofs, which were restored in 1868-64. The total amount required, including the verandas (which is nearly completed), the architect's charge, and sundry expenses, will be altogether about 2,000*l.*, towards which 1,622*l.* have already been promised; thus leaving between 800*l.* and 900*l.* yet to be collected. The timbers and masonry will be repaired during the autumn and winter; and in the coming spring the work will be commenced. There is no intention to appropriate any portion of the 2,000*l.* required to any contemplated fitting of the interior of the church with gas. A Sunday evening service.

JARROW - ON - THE - HILL LOCAL BOARD OF HEALTH.—Mr. Jacob, of Crofton, pupil to Mr. Aldwin Latham, C.E., was appointed surveyor to this Board on Tuesday, July 30th. The other two selected candidates were Mr. Young, surveyor to the Watlington Highway Board, and Mr. Fraser, of the R.E., New Brompton.

DESIGNS FOR MANCHESTER TOWN-HALL.—The preliminary designs in this competition have been sent in. Several correspondents urge, and the request is a fair one, that a list of the various sets of designs with their respective motives, should at once be printed, so that the competitors may feel assured that their drawings have arrived at head quarters.

THE IMPROVED INDUSTRIAL DWELLINGS COMPANY.—The ordinary half-yearly meeting of this company has been held. From the report it appears that all the 1001 shares have been allotted, and 31,225l. have been subscribed in 25l. shares, making the total capital subscribed 81,225l. Six blocks of buildings, for 168 families, are being erected on the Britannia-street Estate; and nine acres of old houses and cottages at Bethnal-green are being purchased for laying out on an improved plan, for new blocks of buildings. The report was adopted. A dividend of 5 per cent. on paid-up capital for the last half-year was declared.

FINE ARTS COLLECTIONS.—Mr. Cowper moved in the Commons last week.

"For the appointment of a royal commission to consider and report what portions of the national collection of fine arts ought to be exhibited in the new National Gallery in Trafalgar-square, what provision ought to be made for the exhibition of the portraits belonging to the National Portrait Gallery; and what division ought to be adopted between the classes of objects to be hereafter exhibited in the following institutions:—The National Gallery, British Museum, the South Kensington Museum, the Museum of Patents and Mechanical Inventions, the Art Museum, the Edinburgh Museum of Science and Art, and the Museum of Irish Industry."

After some remarks by the mover and Mr. Beresford Hope, Lord John Manners said the Government was prepared to deal with such questions as should arise for consideration, there having already been several commissions in reference to this subject. The motion was then withdrawn.

SUNDAY STREET-WATERING.—When the Metropolitan Board of Works was established, it was generally anticipated that the state of our streets would be in every respect improved. There is no more patent or serious annoyance than the neglect of the authorities in most parts of London to water the streets on Sunday. All the great leading thoroughfares and streets on a hot Sunday are totally without this wholesome and refreshing sprinkling. If, as we are led to believe, cleanliness be next to godliness, surely sprinkling the streets to keep the people clean of a Sunday cannot be a sin. Contrast the streets of Paris on the day named with those of London. The state of our principal thoroughfares on the Sunday afternoon is really most offensive. If it was found needful for the efficiency of the Fire Brigade that the Board of Works should have full control over it, suggests the *Lancet*, why should they not really control street-watering, and at once remove this cause of complaint?

A WORKMAN'S FUNERAL.—A funeral of a somewhat unusual character took place at the Brompton Cemetery on Saturday last. A bricklayer, named Richard Duffield, who had been employed by Messrs. Corbett & McClymont, builders, on the Redcliffe Estate, West Brompton, accompanied the whole body of the workmen engaged by that firm to their annual dinner, at Colney-hatch, on Saturday week last. On returning the vans pulled up at the Swiss Cottage, and Duffield descended from his place on the roof. On ascending again his foot slipped, and he fell heavily head foremost to the ground. Medical aid was promptly obtained, but the man died immediately after being taken to the hospital. An inquest was held on Thursday last, at which evidence was given to show that at the time he fell the deceased was quite sober, and a verdict of accidental death was returned. His fellow workmen, in order to express their regret at his sudden death, and sympathy with his family, arranged a public funeral, the expense of which they (the workpeople) bore entirely. The funeral procession was headed by a band, and the workmen were joined by the members of the Foresters' Lodge of which deceased was a member. The deceased has left a widow and five children, and his fellow-workmen have, with great liberality, subscribed to a fund intended for their support.

THE SICK POOR IN WORKHOUSES.—The three committees of the Metropolitan Asylums Board of Managers appointed to look after the Lunacy Asylums, the Small-pox Hospital, and the Fever Hospital, are commencing business. The Lunacy Committee have appointed Mr. Wyatt, of Hanwell, as chairman. The committee have at once to provide for 3,000 imbecile and chronic lunatics. The committees are, according to the orders of the Poor-law Board, invested with the full powers of the general body. Any two members are empowered, in case of exigency, to meet and use the full powers of the Board, and their acts will be valid as acts of the Board.

TENDERS

For parochial infant schools, St. Mary's, Islington. Mr. Edmonstone, architect:—
Watts £1,132 0 0
Thorpe 1,099 0 0
Taylor 984 0 0
Dove 855 0 0
Carter & Sons 840 0 0

For erecting house and shop in the Ankerly-road, Upper Norwood, for Mr. W. H. Wright. Mr. Samuel H. Hope, architect:—
Messrs. Wood £1,397 0 0
Jennings 1,263 0 0
King & Repwell 1,238 0 0
Thorpe 1,190 0 0
Cressell 1,150 0 0

Leominster Water Supply and Drainage.—Contract No. 1.—For sinking a well and boring, erecting pumping establishment and covered service reservoir, providing and laying water mains, and for the construction of brick and pipe sewers. Quantities supplied. Messrs. Götto & Beccles, engineers:—
Coker £14,162 8 0
Dowell 11,678 7 8
Mackenzie & Abell 11,330 1 8
Bagbird 10,681 0 0
R. R. & W. Mulla 9,610 0 0
King & Godwin 9,155 0 0
Wells & Son 8,773 0 0

Contract No. 2.—For two horizontal steam engines, with boilers and pumps. —
J. & H. Gwynne £1,997 0 0
Handyside & Co. 1,830 0 0
Bridges & Bridges 1,450 0 0
Watt & Co. 1,350 0 0
Raston, Amos, & Co. 1,300 0 0
Anstbury & Sons 1,250 0 0
Burton, Son, & Co. 1,250 0 0
Claridge, North, & Co. 1,225 0 0
Lillieshall Company 1,095 0 0
Worcester Engine Works 1,050 0 0
Fielding & Platt 1,060 0 0
Mackenzie & Abell 1,050 0 0
Birrell, Rotherham, & Co. 865 0 0
Berrington, Topham, & Co. 860 0 0
Gimman & Co. 860 0 0

For building St. Paul's Church, Brentford. Messrs. Francis, architects. Quantities supplied by Mr. Joseph Robson:—
Colls & Sons £7,780 0 0
Adamson 7,345 0 0
Myers & Son 7,227 0 0
Gibson 7,090 0 0
Dove 6,985 0 0
Nye (accepted) 6,740 0 0

For building dye-house and other buildings at Ponder's-end, for Mr. Scotland. Mr. Aubrey, architect:—
Marland £2,495 0 0
Nightingale 2,495 0 0
Hall 464 0 0
Field & Son 450 0 0
Patman 449 0 0
Bays 415 0 0
Shurmer (accepted) 417 0 0

For altering No. 12, Palace New-road, Lambeth, into public-house, for Messrs. R. & W. Fitchard. Mr. S. Brooks, architect. Contract No. 1:—
Langmead & Way (accepted) £525 0 0

For alterations and additions to Nos. 4 and 5, Bowater-crescent, Woolwich, for Messrs. J. & J. Smith. Messrs. W. Gosling & Son, architects, by whom quantities were supplied:—
Morris & Brown £240 0 0
Wise 338 0 0
Brett & Bradbury 337 0 0
Ledbitter 333 0 0
Wicks 330 0 0
Vickery 315 0 0
Fenn 244 0 0

For the erection of a detached family residence, Louisa Mary, at Plunstead, for Mr. J. Flegg. Messrs. W. Gosling & Son, architects. Quantities not supplied:—
Brett & Bradbury £297 0 0
Smart & Fingar 980 0 0
Wise 888 0 0
Vickery 875 0 0
Ledbitter 750 0 0
Wicks 750 0 0
Fenn 695 0 0

For the erection of a public-house at Upton, Essex, for Mr. E. J. Ward. Mr. J. T. Newman, architect. Quantities supplied:—
Lugg £1,850 0 0
Mathews 1,770 0 0
Allen 1,654 0 0
Holgate 1,688 0 0
Runn 1,682 0 0
Wicks 1,655 0 0
Heuschaw 1,471 0 0
Aldous (accepted) 1,460 0 0

For alterations to Nos. 2 and 3, Honey-lane Market City. Mr. Lewis & Isaac, architect. Quantities supplied:—
Axford £280 0 0
Walker 869 16 0
Bamford 720 0 0
Prince (accepted) 725 0 0

For erecting five warehouses in Commercial-street E.C., for Mr. Moses, Mr. N. S. Joseph, architect. Quantities by Mr. Thomas Pearson:—
Axford & Co. £49,142 0 0
Piper & Wheeler 6,490 0 0
Newman & Mann 6,147 0 0
Brass 7,987 0 0
Brown & Robinson 7,980 0 0
Higgs 7,984 0 0
Corder 7,432 0 0
Ashby & Horner 7,980 0 0
King & Son 7,760 0 0
Hill & Keddell 7,348 0 0

For completing twenty houses, Alexandra-road, Kilburn. Mr. Thomas J. Hill, architect:—
Wood & Co. £11,450 0 0
Cushling 10,320 0 0
Colls & Son 9,020 0 0
White 9,120 0 0
Eydmann 8,972 0 0
Anley 8,740 0 0
Heuschaw 8,974 0 0
Webb & Sons 8,974 0 0
Smith 8,652 0 0
Taylor (too late) 8,501 0 0
Salter 8,247 0 0
A. & J. Smith 8,096 0 0
Corbieldick 7,710 0 0
Perry 7,896 0 0
Sabey 7,216 0 0

For the erection of a house and shop, Newington causeway, for Mr. Hughes. Mr. Henry Jarvis, architect:—
Turner & Son £2,639 0 0
Piper & Wheeler 2,548 0 0
Myers & Sons 2,525 0 0
Brown & Robinson 2,547 0 0
Lawrence & Baugh 2,549 0 0
Thompson 2,536 0 0
Heuschaw 2,505 0 0
Higgs 2,173 0 0

For additions to Nos. 3 and 4 Wharfs, Regent's Canal for the Honourable Commissioners of City Sewer Mr. W. Haywood, engineer. Quantities by Mr. Warburton Seal:—
Mowlem & Co. £2,460 0 0
Gammam & Son 2,381 0 0
Newman & Mann 2,347 0 0
Hill & Keddell 2,220 0 0
Crook & Son 1,687 0 0

For villa residence, at Ellersborough, Bucks. Mr. Freely, architect. Quantities supplied:—
House £278 0 0
Turner & Sons £1,221 0 0
Haddon 1,629 7 8
Jones & Sons 1,490 0 0
Espley 1,468 0 0
Sally 1,430 0 0
Cooper 1,225 0 0

For alterations and additions to the Gravesend Milton Union. Mr. John Gould, surveyor. Quantities supplied by Messrs. Curtis & Son:—
1st Estimate. 2nd Estimate.
Nightingale £6,178 0 0 £4,987 0 0
Handlaw 5,963 0 0 5,963 0 0
Colburn 5,969 17 8 5,947 15 0
Sollett 5,270 0 0 4,094 0 0
Naylor 5,145 0 0 3,860 0 0
Blake 4,900 0 0 4,700 0 0
Crook & Son 4,767 0 0 3,627 0 0
Lillystone, withdrawn 4,225 0 0 3,532 0 0
* Accepted.

For rebuilding Messrs. Howard's premises at Cleveland street, Fitzroy-square. Mr. J. Schofield, architect:—
Roberts £2,280 0 0
Gammam 2,087 0 0
Simpson 1,715 0 0
Corder 1,713 0 0
Nightingale 1,640 0 0
Lawrence & Baugh 1,537 0 0
Longmire & Burg 1,668 0 0

For Hinton House, near Conham, Hunts, for Mr. H. Tooker. Mr. Ewan Christian, architect:—
Longmire & Burg £4,978 0 0
Stevens 5,463 0 0
Fletcher 5,430 0 0
Jackson & Shaw 5,338 0 0
Barnes 5,660 0 0

For repairs to St. John's Chapel, St. John's Wood, the Marylebone Vestry:—
Spencer £25 0 0
Poole 88 0 0
Routen 80 10 0
Brown 81 10 0
Smith (accepted) 64 10 0

TO CORRESPONDENTS.

A. C. — An Architectural Oeuv. — H. C. L. — W. W. L. — M. O. C. — A. L. H. — F. R. W. — R. G. R. — J. T. M. — B. R. — T. F. C. A. — G. — B. — J. W. A. — H. C. — W. — E. — R. — M. — T. — R. — O. — A. — Son — Competitor — Naylor — T. C. C. — H. — W. — L. — H. — J. — W. — Manchester — H. — G. — R. — J. — G. — Son — J. E. (tenders already in our hands). — H. & W. — W. — E. — R. — M. — T. — R. — O. — A. (quantity of Lucas — W. B. (try the soap and aim application described in a previous number).
We are compelled to decline pointing out books and giving addresses.
All statements of facts, lists of tenders, &c. must be accompanied the name and address of the sender, not necessarily for publication.
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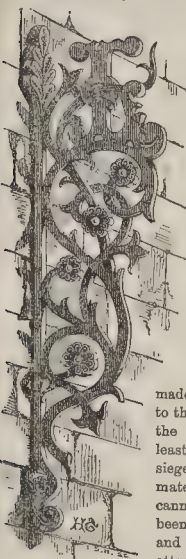
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The Builder.

VOL. XXV.—No. 1280.

Lucca, the Industrious.



LUCCA would delight the heart of our uncle Toby: it is as neat and compact a specimen of a town fortified on the principles of Vauban as he could desire. Perhaps he would have proposed a more satisfactory glacis; possibly, for the sake of humanity, he would have wished that it should, at least, once have been more satisfactorily invested; have

made gallant opposition to the commencement of the second parallel at least; have cost the besiegers its exactly estimated price, to a day, a cannon-shot, and a man; been battered in breach, and after a vain night attack on the trenches have been taken by assault, and occupied in the name of his Majesty,—

if his Majesty could be conveniently committed to a war at Lucca. Still the example is very complete as it stands: bastion and curtain, and ditch and counterscarp, ravelin and half-moon, covered-way, and all the rest of it taken together, are as neat and as obsolete as the diagram of the lecturer on fortification in any military college in New World or Old. There are even now no ragged suburbs without the walls, nor buildings that impede free circulation of troops along their circuit within. Corporal Trim might stand behind his honour's chair placed above a re-entering angle, and fight over again the combat at the gate of St. Nicolas; and whether they looked to fortifications or city-wards, forget occasionally that they were not still before the model and mutable town that encroached on the kitchen-garden at home, with its bridges and its batteries; its representative houses hooking on and off with such endless facility of re-arrangement; its toy-steeples and majestic cathedral.

Still Lucca is a larger place than it would be supposed from the impressions of a walk round the walls, or rather the ramparts; the fresh green of the well-watered flats around it, and the beauty of the mountains that close in the prospect, so beguile the time. Some word of intermediate dignity between hills and mountains is required to designate the spurs and ranges by which the Apennines here descend to the plain; certain barer overpeering peaks of the proper Apennines, to say nothing of memories of Alps not far remote, forbid us to call these nearer eminences mountains, as a certain majesty in outline, even more than magnitude, entitles them to promotion above the commonalty, with no inferiors more important than mounds and slopes and hillocks. More time is thus spent in making the circuit and pausing for admiration and the refreshment of cool airs

under shady trees than we are well aware of; and we find, when we descend, that the space enclosed admits of not insignificant open squares, and a network of streets, among which the objects of interest are distributed quite widely enough for the shortest cuts in hot days to be welcome. As may well be supposed, in the centuries when Lucca was a republic, it had walls of very different character; these have vanished, and there would be little interest now in tracing their lines or relation to a still earlier cincture in the Roman period. Enough that the Church of Santa Maria Farnesportam—without the walls—is now considerably within the present.

The city is most frequently entered from the railroad on one side, and from the opposite by the road that, following the embanked margin of the Serchio, brings back sojourners of the Bagno di Lucca. Those who have delayed their study of the city till after their enjoyment of the baths, and then for consistency in inversion take up the monuments as they present themselves, will so drop not unhappily; they will come first upon the Amphitheatre, the most important relic of Roman ages, and on the Church of San Frediano, the earliest in many respects of the Christian monuments. The lofty and elaborate facade of San Michele will then come into view; the interior will not delay even an archaeologist long, on the way to the cathedral, the great centre of the curious, the ornate, and the beautiful in Lucca.

The condition of the Roman Amphitheatre is very similar to that of one of the primeval *spongiadoes* that is detectable in a flint; the general form preserved, the internal markings quite recognizable on fracture; and here and there what seems externally a trace of yet unobliterated organic substance; some of the recovery of original details: their demonstration is due to comparatively modern clearances. Small houses and gardens cleared away have left the internal oval of the arena clear for a market; an elliptical line of street defines the external outline, the houses being raised on the foundations of the seats, and seeming to observe the divisions of the enveloping arcades; while the inner Piazza del Mercato is entered by passages that pierce the barrier, and admit us where abutments at least and a voussoir or two give indication that we tread the line of ancient *vomitoria*. Of proper architectural features not a trace remains; to find these we must follow them to the Church of San Frediano (Frigidianus), where within and without in small pillars and large, we may observe shafts and capitals manifestly transferred from Roman buildings. In every church of Lucca, indeed, that does not belong to the Renaissance, except the cathedral, we trace this utilization of Roman columns, and parts of columns, a proof, at least, that the ancient city abounded in public monuments. As in similar cases at Rome, their variety is remarkable, and a single church is found to contain ancient capitals in so many varieties as to imply either that a considerable number of structures were laid under contribution for one; or that in single structures of the later classic time a greater variability was affected than ever had toleration or vogue in the earlier. We may note as remarkable in San Frediano, that the small row of pillars, manifestly ancient, on the front, support not an arcade, but an architrave. Of the derivative character of these arcades we may find occasion to speak at the cathedral. In the interior the columns of classic proportions, and no doubt date also, however rude in many cases, support the nave arches of which the archivolt is quite plain and flush with the plain wall above, a very frequent model; the bases are Attic on plinths, and with no pedestal. Within, an immense font, with sculpture elaborate, but such as might be expected from a Robertus Magister in the twelfth century, illustrates a recommence-

ment of the art, and an altar, by Jacopo della Quercia, exhibits as decidedly the symptoms of decadence, date, though he does, only 1422. There are some frescoes, and a Francia for those who are worthy thereof; but sympathy will go rather with those who linger before a work, unnoted by the guides, of Luca della Robbia. The great charm of this is not in the Annunciation that fills an upper semicircle, still less in the enormous rolls of garnishing green and yellow leafage and fruitage that descend on either side, and are sustained for still another length by angels. It is on a frieze-like band below the upper subject in seven cherub heads symmetrically disposed, that we recognize the great artist of the bas-reliefs in the Uffizi. These heads are beaming with the tender and instinctive intelligence that not unfrequently dignifies feminine expression, but that art has most successfully rendered by its invention of forms infantine, and yet apparently mature. The cherubs of the Sistine Madonna are probably the highest example, but this row of life-size heads, the types of cheerful and rejoicing innocence, may be admiringly dwelt on even with Raffaele in our memories.

San Frediano, we are told, was the son of an Irish King who made a pilgrimage to Rome, returned and founded a monastery, came back to Italy—as it is still difficult not to do for those who make pilgrimages thither for whatever purpose. Not all can hope to have as good a reason for remaining. He was made Bishop of Lucca, and built a church. He was just the man,—for an inscription of the eleventh century testifies that he was equal, with the assistance—somewhat officious it would seem—of his canons,—to lift a slab of marble some 17 ft. by 7 ft., place it on a car, and not disdaining help from two wild cows, deposit it where we now see it against the wall of the choir, and where it has never answered any purpose at all. The inscription is in Latin, of course, and, along with the stone, will probably last with its marvellous aversion for centuries more. Latin is conservative of inscriptions. To this day we see at Metz an inscription conspicuous over a church which records still the gratitude and joy of France for the providential recovery from measles of Louis XV.,—he the Well-beloved,—whose memory still is sweet, it would seem, in brass and marble, and blossoms still unswept away by the flood of liberty, fraternity, equality, and imperialism that his corruptions and those of his race gave entrance to over the land. Even in this country may be seen from time to time Latin commemorative inscriptions erected by the ecclesiastical in their churches within the last few years that would scarcely live long in the full candour of the vernacular. The Latin inscription round the edge of our own Monument, ascribing the fire of London to the Roman Catholics, has certainly had its vicissitudes; out under Charles, it was obliterated by James; was recut under William III., and in our own time we remember (was it under the fourth William, or could it be still earlier?) it disappeared again by civic mandate, and its place is now seen as a channel so deep that the inscription will scarcely be able to house itself there hereafter. So a line of Pope is falsified, and—

London's column pointing to the skies,

no longer

Like a tall bully lifts its head and lies,—

but perhaps, as bully-like, prevaricates first, and then finally and abjectly retracts. May the citizens and their authorities right worshipful be as successful—if the work, indeed, is still to do—in falsifying the rest of Pope's satiric apologue, and the Sir Balaams of to-day come out, and even come to court, unscaathed—safer in simplicity than in "tower of brass,"

"Though all the demon make his full descent
In one continued shower of cent. per cent."

The citizens of Lucca, — Lucca "the Industrious," — lightened their purses, and, in so doing, their temptations, not to say sometimes their consciences, by no sparing outlay upon public monuments. It was ever, indeed, the way of the wealthy of Mediæval Italy to eschew lavishment whatever their means, in those indulgences that perish in the using. They know well how to put limits to that cacœthes of the money-spinner insatiability of revenue-yielding investments for revenue as it accrues — a mistake of revenue for capital sometimes as miserable as the spendthrift's treatment of capital as revenue. But they loved to disburse for the realization of enjoyments permanent, not only for themselves, but for generations after them, — for the commonwealth around. In this sense did the prosperous burghers bring back into the very circle of luxury those good old simple days described by Horace when private resources were spare, and those of the community unlimited. The Cathedral and Campanile of Florence, or the monuments of Pisa, are the most conspicuous instances; but even Lucca evinces no contemptible rivalry in the noble emulous.

Her most characteristic, as well as most splendid monuments, are certainly the Duomo and the Church of San Michele, so far as regards its façade. This latter work is assigned to the date 1185, and the architect Gindetto, and historically has of course to be considered as affixing on the monuments of Pisa. But, like Diomed in the Iliad, it evidently would fain

"Boast to be far better than its sire,"

and in this case also, not without a certain justification. The façade of the Cathedral of Pisa has a certain tameness in the uniform multiplicity, so to speak, of its arcades and pilasters; of which also the relative smallness reduces dignity. Gindetto clearly perceived the value of gradation, contrast, and more important magnitude in his intimate members. His work seems to have begun pretty high up, and in consequence — as in the spire of Fribourg, in Breisgau, and elsewhere — the new elaboration is somewhat out of harmony with the plainer basis. His work is entirely of white marble inlaid with black, except where some shafts of coloured stone are introduced. The fount, as at Pisa, is clothed with arcades in tiers, the pillars diminishing in height in the same way to accommodate the slope of the side roof. The shafts are variously carved with spirals and inlaid, and the spandrels and plain surface above them have inlaid black figures of animals and hunters, with patterns interspersed. There seems to be no peculiar appropriateness in these vague subjects, which at best only faintly reflect the victory of Michael over the great serpent that crowns the whole. Above the point where the side roofs meet the line of the nave, the façade rises loftily, with still new tiers; but here it is a pure frontispiece, for the building behind is far lower, and the piercing of the screen with window-like openings is but a counterpane. This screen-like surmounting of a western façade became quite a characteristic of Italian Gothic, and when it was cleared of the remnants of pretence became as justly available to confer dignity to dignified aspect, as a finial for completing a pinnacle.

The façade that was added to the Duomo by the same architect, was a later, a more elaborate, and, in some respects, a finer work. A strange work it assuredly is. Here the addition comprised a portico as well as a façade, and in consequence the general effect is more homogeneous; but to attain this the sacrifices, to say nothing of difficulties, were not slight. An ancient and very large campanile tower stood at the south-west angle of the church, detached so far as to admit good passage between them, but advanced to the north beyond the alignment of the south wall, though not so far as to screen from the front the entrance to the aisle. It, therefore, stood bolt in the way of the extension of the church by a portico westward, as it occupied precisely the site required for the southern angle; — occupied and occupies, for the architect determined, or was obliged to leave it, and yet did not give up his portico. Normally completed, it would consist of a nobly proportioned semi-circular arch before the central door, with two others smaller, one before either aisle door, and naturally matching each other. The campanile just leaves room for an arch on the south, that by attaching the abutment would range well in opening with the small aisle door. It was of course quite open to the architect, thus under constraint, to make his northern arch of

the same limited span, and get rid of the excess of margin at the northern angle by ornament and "treatment." He did nothing of the kind, wisely or not, he boldly made his north arch as wide as he could, and the southern, in corresponding position, as narrow as he must. Concealment of the state of the case is out of the question, and is not attempted. The southern arch is struck with a very irregular line, and seems stilted, not to say pinched; but still the designer wisely did not even forcibly make it as lofty as the northern, but seems to have considered that one great anomaly was best left to be kept in countenance by several others secondary. The real harmonizing influence is obtained by the regular spacing of the tier of carved and inlaid pillars above, and by the management that this regularity shall bring a pillar accurately against the side of the interfering Campanile. It is for the draughtsman and the photographer to reproduce the elegant caprice, — the capricious elegance of the enrichment of the front; it has the advantage of being usually arrived at from the happiest point of view, and the unaccountable charm of the composition takes full possession of the spectator before he has time to consider whether it is either to be accounted for or justified. The shaftlets of the several tiers have the greatest variety; there are plain white or coloured marbles, — white inlaid with black in rings of zigzags, in figures, twisted shafts with the most boldly-grooved and delicately-moulded spirals, compound shafts of four — knotted in the middle, and yet even so avoiding offensive suggestion of unrigidity; others are carved with a complication of animal and human figures in a manner to suggest the barbaric carvings of the new world, — of canoes or clubs, — but still are kept in subjection by rarity and by the rule of a pervading symmetry. Symmetry, however, has here a way of its own. In the three tiers of small arches we observe at once a care in matching the shafts, varied as they are, so that the contrasts of alternation shall be balanced by side answering to side; yet at the top this scheme seems wantonly departed from; a red shaft is central, but the alternate shafts are on one side red; on the other white marble. Why was not the white marble flanked by the two red shafts? It is much to be suspected that the overbalance here of the two heavier shafts on the north side was decided on as demanded by the overbalance of the wide northern arch below.

History gives the date of 1204 to this façade without hesitation. The cathedral itself is in an entirely different, and in many important respects very beautiful style, and worthy of most detailed examination, — the which it must dispense with here.

The portico of Lucca, therefore, was as secondary an addition to a pre-established plan as that of the Norman cathedral of Peterborough. The English architect was at least as bold a designer, and his imaginations were subjected to as stringent a condition. His solution of the difficulty, however, was of another nature entirely. The beauty he had in his mind to realize was evidently a triad of three lofty and deeply-recessed and shafted arches; but such is the spacing of the nave and aisles that, had he put the widest arch in the centre, it will be found that his piers would have blocked up or covered the entrances to the aisles. Had he reduced the width of the side arches in order to subordinate them to the present central arch, they would either have been of intolerably tall and narrow proportions, or he must have forfeited the principle of his composition by reducing their height and leaving the centre super-eminent. Thus beset he recovered his general proportion by giving extra width to the side porches against all precedent, and, although it involved an extension laterally beyond the breadth of the cathedral, he disregarded the inevitable false centering of the side entrances which hug the central piers, and trusted to the distinction of position and contrast to give sufficient weight to the arch of smaller span. The chief difficulty of the problem furnished him thus with his characteristic motive. There are differences of opinion as to both his commencement and his completions; but the world, on the whole, are agreed to applaud him, and take pleasure in his work.

The original cathedral, of which we must probably go below ground to find traces, was founded by the Bishop of Lucca, we read (in fact, in Murray), who, as Pope, presented William of Normandy with his consecrated

banner, and the favourite oath of William the Red was by that relic, before the shrine of which the city but a few years since hung up the lamp of solid gold, we see, out of alarm at cholera. Doubtless, the intercourse between Italy and the western islands in those early days had other results besides the exportation of Irish prince-bishops balanced in exchange by holy banners and profane oaths, and there is good reason to believe that the passion and principles of enrichment so pronounced at Pisa had a stimulating effect on invention and rivalry, that told in the choir of Canterbury still more effectively than in the façades at Lucca.

THE COAL-FIELDS OF THE FUTURE.

THE present annual production of the coal-mines of Great Britain is considerably more, not only than that of any other country, but than that of all other countries together, the English yield being estimated at 100,000,000 tons; and the total yield of the whole number of coal-mines now worked being little more than 170,000,000 tons. Next in production to Great Britain we find Prussia and the North American Provinces, the annual production in each instance being estimated at 17,000,000 tons. France and Belgium, after Russia and North America, rank side by side, each supplying some 12,000,000 tons. Germany, Russia, Spain, Italy, Asia, South America, and Australia together, only produce some 14,000,000 tons. The value of the total product is about the double of that of all the mines of gold and of silver in the world; that is to say, the annual earnings of coal-miners, rated at a money value, amount to twice the annual products of the industry of all the miners, diggers, and washers engaged in the collection of the precious metals. And it will not be forgotten that while gold and silver, apart from their use as articles of luxury, form, by their service as coin, the basis of the mercantile transactions of the world, the more bulky and more perishable mineral forms the very spring of manufacturing energy, renders habitable large districts of the earth that, without the use of mineral fuel, would be closed to civilized life, and enables the steam-engine to render services to mankind that exceed the wildest dreams of the most sanguine enthusiasts of the past century.

While the production of the United Kingdom is thus in advance of the total united production of all the other countries, there is one respect in which the activity of another country exceeds our own. If we compare the amount of production of the chief European coal-fields with the extent of their area, Belgium is in the van of the world. Our 100,000,000 tons are the yield, in round numbers, of 1,000 square leagues of coal measure, — at the rate, therefore, of 100,000 tons per square league. But the 12,000,000 tons produced by Belgium come from an area of only one-tenth part of the size of the British coal-fields, being at the rate of 120,000 tons per square league, or 20 per cent. more than our own rate of produce. Prussia, in this respect, ranks 15 per cent. below Great Britain, and France 25 per cent. below Prussia, the produce being at the rate of 85,000 tons per square league in the latter country, and 60,000 tons per square league in France.

While the actual produce of Great Britain and while the relative produce of Belgium thus evince the most active expenditure of their large but limited stores of the chief source of material prosperity, the tables are altogether turned when we inquire into the amount of stored up wealth which, in the different known coal-fields of the world, awaits the necessities of the future. In Europe, indeed, England maintains an unquestionable pre-eminence, her coal-producing area being ten times that of Belgium, and one-fourth more than that of the whole of Continental Europe. All other countries of the world together, with one exception, present a total area of 3,200 square leagues, less than the double of the 1,800 square leagues of the European measures. But this united surface of 5,000 square leagues is but a fourth part of the area of the enormous coal-fields of North America, including both those of the United States and those of the British provinces. Figures such as these are more eloquent than argument, and point with unerring certitude as to the locality of the great coal-fields of the future. The proportion of coal measures to surface unproductive of coal is not very different in North America, in Great

Britain, and in Belgium, the former being respectively a twentieth, a nineteenth, and an eighteenth of the total area; so that in proportionate coal-bearing surface, as well as in the activity with which that surface is utilised, Belgium ranks foremost in the world.

The actual service drawn by each country from the produce of its coal-mines may be estimated in different manners. We may consider either the gross amount of absolute value or the amount which is proportionate to the country. In either of these points of view the United Kingdom is first among the collieries of the world. The value of coal annually raised cannot be estimated at less than 50,000,000*l.* sterling. The amount raised per head of population is, in round numbers, three tons and a third per annum; the quantity actually consumed is not less than three tons per head. The City of London annually imports more than 3,000,000 tons of coal by sea, and very nearly as large a quantity by land. It exports less than 1,000,000 tons, so that the consumption of the metropolis for fuel, gas, and the manufactures and engine-power carried on within its limits, is at the rate of 1.7 tons per inhabitant. The consumption of Belgium is two tons per head; that of Prussia 15 cwt.; that of France less than 10 cwt. France consumes a third more coal than she produces. Prussia exports about one-eighth of her produce, Belgium one-sixth, Great Britain an eleventh only.

The service rendered to Great Britain by the consumption of an annual quantity of ninety millions of tons of coals is of a magnitude hard to realise. To value the results of this consumption, as we have done approximately the price of coal, at 10*s.* per ton, will fail to give any approximation to the amount of national wealth that is created by the process of combustion. If we set aside the consumption requisite for the comfort and health of the people,—for warming, for cooking, and for lighting,—if we then separate the large quantity consumed in the reduction of metals,—the remainder will be chiefly employed in the production of steam. For iron works alone, our annual consumption of coal must amount to from 20,000,000 to 25,000,000 tons. Some 2,000,000 tons more will be required for the reduction and working of the other metals. If we suppose the consumption for domestic purposes throughout the United Kingdom to be at the same rate per head as the total requirements of Prussia, we shall find that half our total consumption remains to be accounted for; and that we have to divide the useful effects of the application of this large quantity between manufactures and commerce, or, in other words, that we annually consume more than 40,000,000 tons of coal for the service of steam-engines,—marine, locomotive, and stationary. What amount of human labour do those forty million tons of coal represent?

The combustion of coal, chemically considered, is a phenomenon closely allied to the slow combustion which is a function of animal life. In the furnace and in the lungs the same process is carried on with greater and with less rapidity. Carbon, in each instance, unites with oxygen to form carbonic acid, which is liberated in the process. In the first instance, the heat thus obtained is made available as a motive power through the use of the convenient medium of water; in the second, we can only say that its production is very intimately connected with the phenomena of animal motion. We cannot, as yet, eat coal, but the same portion of oxygen may be united either to the carbon of the mine, or to that of the blood; it may be used to support either consumption or respiration. The quantity, therefore, of oxygen required for the combustion of 40,000,000 tons of coal would have been sufficient for the respiration of a certain number of human beings. We get thus a rough approximation of the service rendered to England by the invention of Watt. The approximation is rough, but it is instructive. It must not be forgotten that coal is not pure carbon. The proportion of combustible and non-combustible matter varies in every district and in every vein. But then, on the other hand, a large quantity of coal goes to waste as slack or as unwon coal, and is consumed in working the collieries; so that one may, for the sake of estimate, be set against the other. Again, it is true that the coal actually burnt is by no means consumed in the most economical manner, or in anything approaching such economy. But neither, on the other hand, are human beings invariably, nor even in a decided majority of cases, industrious. We lose at least as much by

human idleness as we do by wasteful consumption of fuel. Taking, then, the annual consumption of oxygen by a full-grown man as an element of calculation, we may reckon it to be about equal to that requisite for the consumption of 10 cwt. of coal; so that the equivalent for the 40 million tons of coal consumed in manufacture and in locomotion would be the annual labour of 80 millions of men. We have said that the estimate is rough, but it is not therefore one-sided. We cannot doubt that our coal-fields, besides all that they minister to our comfort, health, and police, render us the service of an army of helots of from twice to three times the number of our entire population. 350,000 workmen, employed in our collieries, place this amount of service at our command. Mechanical invention and capital—that is to say, the savings of labour—do the rest. Need we seek any further for the source of the material prosperity of Great Britain in the nineteenth century?

Valuable information on this important subject may be derived from a French work published at the close of 1866, *La Vie Souterraine*, par L. Simonin. We should express a wish to see an English translation, but for the consideration of the loss in spirit and life that would almost inevitably accompany the change of dress, and the hope that to most of those who wish to study the subject, the language of continental Europe cannot be a sealed tongue. The plates of minerals are almost as instructive as actual specimens, and have greatly the advantage in respect to portability. We have freely referred to a work hitherto little known, or unknown, in England, for data which it tabulates, which we thus feel bound to acknowledge. Our Colliery Commission will do well to place M. Simonin's work before them as a guide when they come to draw up their report.

It is as lying at the root of the national prosperity of Great Britain that we regard the industry of the collier. We have recently seen an able effort made to trace that prosperity to the introduction of railways. We took occasion to point out the fallacy of this view. We showed that, while increased facilities of transport were necessary, in order to allow the development of increased manufacturing activity, they were not in themselves a source of production. The manufacture might be checked by want of roads, but the improvement of roads was not the increase of production. Increase of national wealth means increase of production; means of intercourse, like *media* of commerce, require corresponding increase; but it is the increase of productive power, not that of transporting power, that is the main element of wealth. We traced that increase to the introduction of the steam-engine, and of the motive power of heat. We now see whence the food of these engines has been derived; how the heat of the sun, stored up for uncalculated periods in the strata of the coal measures, has been liberated to enrich our country by supplementing human labour by the service of machinery. Before, we indicated the source, now, we roughly point out the nature and extent of that source. We see the speed at which we are racing our most active competitors in rifling the treasures of the soil, and we see that, so long as our stores last, for the labour of every collier the mineral which he wins is capable of doing the work of more than 200 men. So long as the coal-fields of Europe hold out, those of England are not likely to be exhausted. But whatever be the duration promised to the civilisation of Europe, so far as it is dependent on coal, the future of the Western hemisphere exceeds it by 400 per cent. We seem almost to reckon the future, as we do the past, by geological rather than by astronomical time.

In England, in Belgium, and in the France, the production of coal now doubles in fifteen years. In Prussia and in the United States it doubles in ten years. But the most remarkable feature in this part of the case is one which is very decidedly in opposition to the theory that the extraction of coal is likely hereafter but little to increase, a theory which has been supported by an analysis of our present chief demands for combustion. The petroleum trade has sprung into existence, and poured into the market large supplies of a fuel which for many purposes replaces coal, and that without producing any apparent check in the growth of the coal trade. The United States, which in 1865 exported 28½ million gallons of petroleum, exported in 1866, 66½ million gallons. Yet London imported, by land and by sea, 111,000 more tons of coal, and exported 23,000 more in the

latter than in the former year. If seems, therefore, that any hopes as to the prolonged duration of our own coal-mines that are based on the expectation of a falling off in the annual increase of demand for coal, are inconsistent with experience.

It is dreary to look upon a blank wall, at whatever distance from the eye it may bar the prospect. That the material advantage possessed by Great Britain over other countries is chiefly due to her mineral wealth, can hardly be disputed. That at a date more or less remote, if our present rate of consumption continues, our coal-fields will be exhausted to a depth below which it will be unremunerative to work them, is a mere logical deduction from the fact that their contents are finite and not infinite. How soon it would become cheaper to import coal from America than to sink for it beneath our present working levels, is not the present question. Whatever be our expectation of life, as far as national life depends on coal, that of the United States is four times as great. It does not, however, follow that it will overturn the dome of St. Paul's when Englishmen shall have ceased to mine. Persons ignorant of mechanical science have called on mechanical men to name a substitute for coal, and have made suggestions for its replacement on a par with that of the royal lady who thought that a starving populace had better eat cake. Nature, herself, however, may yield a better reply. We owe the hardihood of our national character in great measure to our insular position. Our commerce springs from our early aptitude to encounter the buffets of the waves. In the enormous tidal power that is developed on our coasts, a power which no engineering Xerxes has yet attempted to yoke, we have a direct effect of the solar influence far exceeding in magnitude the amount of force which has been confined by the slow process of carboniferous vegetation. The mechanical power evolved by the rise of a 20 ft. tide over the surface of Milford Haven, or of Falmouth Bay, or of Cork Harbour, is capable of accurate calculation. The direction of that force to the production of heat by compression of air, or by other means, is a subject to which our attention has not yet been turned, nor is it likely to be practically grappled with while coal maintains its present price. But the economising of this vast source of power, and its direct application to the service of man, is not more foreign to many of our present mechanical procedures, than the lighting of streets and houses by the vapour of coal, convers of 1816. To warm our houses, or to drive our mills by the water-power now wasted on our coast, may seem a dream at the present day. Those of us who remember how long the time-honoured oil-lamps of Grosvenor-square disdained to be banished by gas, may well believe that the dream may be denounced as preposterous. For all that, the day will come, if the world lasts, when the present source of power will fail in England; and we cannot doubt that, as that day approaches, science will be able to make some use of the enormous tidal power that is now wasted on our coasts.

POPLAR OFFICES COMPETITION.

THE fact as stated last week that the authors of the three designs to which premiums have been awarded are all more or less closely connected with the Board might well at first sight seem to justify the objections that have been raised against the decision. An examination of the drawings, however, considerably lessens the strength of the objection. The fact is, that the majority of the so-called designs sent in are so horribly bad as to deserve no attention whatever. The number of properly-educated architects that have contributed could be counted on one hand of fingers. This ought to show Boards the condition to which competitions are being brought by the present system. The plan to which the first premium has been awarded, "Circinus" (25), has the entrance at the angle, and appears to provide all the accommodation required. The elevation, however, is terribly ugly, and we advise the Board to pause before they perpetuate it in brick and stone. An alternative elevation submitted by the author, hybrid Gothic in style, is somewhat less repulsive. The design, "Cives" (2), to which the third premium has been awarded, Italian in style, would make a much handsomer building, and the plan, too, is artist-like: but then comes the question of

expense. The designers were limited to 5,000*l.*, and this could not be carried out, we suppose, for that sum. The external appearance of the premiated plan marked "Octagon" (4) (this has a staircase tower at the angle), is also superior to that of "Circinus."

Amongst the other designs may be mentioned the set of drawings marked "Incognita" (9), as clever. These are Domestic Gothic in style, and the meeting hall has an open-timbered roof. In the elevation of the design marked "Civis Romanus" (10), the doorway is awkwardly placed; so too is the staircase, but the design has merit. "Utilitas" (27) seems to know what he is about; (30) anonymous, is a sensible design in Domestic Gothic style; and "Business Requirements well attended to" (31) is far superior to the majority of the designs. The last hung is marked "Quod," and that is where many of the competitors should be sent for their ignorance and impudence.

THE LATE SIR ROBERT SMIRKE, R.A., ARCHITECT.*

I HAVE to tender my thanks to you for permitting, and even encouraging me, to read before you a short memoir of my brother, Sir Robert Smirke. For this favour I can plead no claim whatever, nor any other qualification for the task, save only the long, intimate, and confidential intercourse which subsisted between us. The task might better, and certainly more naturally, have devolved on another member of our family; but I have reason to believe it to be one from which he would, under the circumstances, desire to be relieved.

In the beginning of the year 1796 my brother Robert, being of the age of fifteen, was, by the advice and recommendation of Mr. George Dance, received as a pupil in the office of Mr. Soane, then engaged on works at the Bank of England. In July of that year he became also a student of the Royal Academy. For reasons which I do not know, but can only conjecture, he was removed from Mr. Soane's office after the lapse of less than twelve months, with his father's concurrence and approbation. That his son took a lively interest in his architectural pursuits during that time, is evident from his contemporary letters now in my hands and addressed to his father; but any one having the slightest acquaintance with Mr. Soane's works, especially at the Bank and in the present Courts of Justice at Westminster, will have little difficulty in concluding that, although my brother probably received some benefit from his experience of practical work in that office, he certainly retained afterwards no trace of the characteristic architectural peculiarities, whether for good or otherwise, of his first teacher.

In December, 1796, he obtained a medal of the Royal Academy for architectural drawing. In 1797 he received a like medal of the Society of Arts; and in 1799 the gold medal of the Royal Academy for Design.

In 1801, my brother, having attained the age of twenty, went abroad with his elder brother, Richard, and attempted to visit Paris by way of Holland, hoping to pass for Americans, and to pay a sort of surreptitious visit to that city, where some of the great works of Italian art, the product of the cisalpine raids of Napoleon in Italy, were in course of accumulation. The excursion, however, was a failure, and my brother escaped (not without some difficulty) a permanent detention in France.

In 1802 the peace of Amiens opened the Continent again to English visitors, and my brother found himself on his way to Paris, with every prospect of an extension of his tour to the south of France and Italy. During the whole of this excursion, and, indeed, the whole of my brother's absence, a constant and very detailed correspondence between him and his father attests his devotion to the great objects of his visit, namely, professional improvement and experience.

In the course of the year 1803, writing from Pisa, he announced his earnest desire to extend his tour forthwith to Greece. My brother had already made himself pretty well acquainted with the publications of Stuart, Chandler, Le Roy, and others, who had before visited and described many of the remains of Greek art, and he was, therefore, well prepared to turn to account this

extension of his tour. Lord Elgin had, about this time, arrived at Rome on his way to Constantinople, with a corps of Italian and Russian (or Crimean) co-adjutors, and had already earned celebrity for the successful prosecution of those Athenian and other researches which eventually secured to this country those inestimable treasures of art with which we are all now familiar.

These researches were known to my brother, but it was not known to me until I lately examined his journal and papers, that overtures had been before made to his elder brother and himself (I believe before he left England), on the part of Lord Elgin, with a view to enlist them in his service.

It is well known that his lordship had much difficulty in securing competent aid to carry out his original intention, which at first contemplated only the obtaining of careful architectural drawings, casts, and copies of the most important remains of Greek sculpture and architecture. The terms of this negotiation are not specified by my brother, but only noticed as a matter that had gone off. The gentleman who was at last engaged to superintend the works carrying on at Athens on behalf of Lord Elgin, was Lusieri, a very accomplished Italian artist, whom my brother found still engaged in his lordship's service, when he visited Greece.

It was an additional incentive to my brother's earnest wish to visit Greece, that he had the good fortune to meet with such amateurs of classic antiquity as Lord Aberdeen and Mr. W. R. Hamilton, who had both been engaged in like researches, though, of course, with immeasurably more effective means at their disposal for indulging in their tastes than my brother could ever hope to possess.

His utmost ambition was to visit the Peloponnese, Attica, and the adjacent islands, then known to be teeming with the crumbling relics of ancient art belonging to the most illustrious period of Greek culture. He and his young friend, William Walker, only prefigured to themselves a rough journey over a charming country, on foot or horseback, unincumbered by passports, or firman, and with no other difficulties before them than those which health, youth, high spirits, and a good will, could overcome. When they landed in the Morea, they found themselves, to their great dismay, at the head of an escort of horse and foot, guides, and guards, to be paid, fed, and fed'd at their own costs, to the manifest detriment of their very slender financial arrangements.

Their stock of portable topographic information consisted of an edition of Pausanias, with the Greek and Latin text, and the memory of what they had learned before they started, or had picked up on their way. Occasional letters to a local consul afforded them their chief hope of assistance in difficulty, and letters of credit, that never got nearer to them than Naples, were their resource for supplies in a country overrun with insolent Turks, and Albanians, who performed the double functions of soldiers and robbers, especially the last.

With such aids and companions these young men scrambled over the Morea from Patras to Tripolizza, Sparta, along the valleys of the Eurotas and Alpheus, Messene, Arcadia, Argolis, Corinth, and Epidaurus to Athens, enchanted with the scenery, and well pleased to copy a fractured capital, or a mutilated inscription, with a janissary, armed with a loaded musket, on each side to protect them, and an armoury of small arms, swords, &c., round their own belts. Whether this district of southern Greece be now traversable without material risk or inconvenience since the expulsion of the Turks, I will not undertake to say; but I am informed that it cannot, even now, be regarded as a very safe or satisfactory excursion, at least to parties so little provided for it as the travellers of whom I am speaking.

At Athens the work of removal was still in progress, and my brother does not conceal his regret as he watched the rough removal of the bas-reliefs by crow-bars from the walls of the cell of the Parthenon, and could not help feeling it to be the signal for the annihilation of these interesting local monuments, though he is pleased with the prospect that they were destined for his own country, and that the exertions, which had been made by the French to secure them, would fail. Though he did not at first purpose to stay long there, he confesses that he never felt such interest at the sight of any of the most celebrated Roman works. "I wish," he says, "I could come day after day, and walk about these wonderful specimens of architecture." He

is everywhere forcibly impressed with the simplicity and dignity of the great works which 2,000 years of decay and destruction had left behind; and the memory of those grand architectural features was ever after present in his mind, constantly counteracting the more popular inclination to superficial decoration, in which, I think, he was always disposed to indulge but sparingly in the exterior of his buildings.

On my brother's homeward voyage to Messina he became apprised of the renewal of the Continental war and threats of imminent invasion, and began in his letters to express a mournful apprehension that, on his return to England, he should have to resign himself to the disappointment of his visions of professional advancement, and to "put on a red coat and shoulder a gun" for the rest of his days.

His anticipations were only so far verified that he and his two brothers and father were, on his return, enrolled in that defensive voluntary force which has, in our time, received so large a development; but, happily, his professional prospects, as we shall see, were in no degree impaired. It is worth notice, that he became the author of a small illustrated manual called "A Review of a Battalion of Infantry," on the drill of infantry, which continued in use in the regular forces as late as 1840, and, I have heard, even to a still later date. His name was alone attached to it, but there is a family tradition that his father had some unwavering hand in it.

On his return from Greece he made a detailed examination and careful drawings of some of the architectural remains in the island of Sicily, and he determined to visit the principal cities between Rome and Venice, so far as the hostile occupation of French troops would permit.

When at Rome, he found that his remittances had miscarried, and he resolved to return on foot with a young Italian to Naples, and to visit the buried cities of Campania; and, meantime, to trust (as he expressed himself in his letters) "to Providence and the highway" for the deficient funds, and "to live on bread and water" sooner than give up his visit to Pompeii. One of those resources, viz., the highway, was one to which he had, as a patient, become tolerably familiar in the mountain passes of the Moesa.

In his way through the principal Italian cities the copious criticisms on them in his letters mention with satisfaction the works of Palladio; but he rarely speaks with much approval of what is usually termed the Italian, Mediæval Italian, or Gothic, so far, at least, as regards the architectural features of them. He remarks that "there is too much of a mixed style in these works, to be agreeable to me," and he refers to the prevalent practice of introducing, both outside and within, horizontal stripes of dark-coloured stone every 2 or 3 ft. in height, which are carried through the columns, pilasters, and everything, and which, as he remarks, "essentially injure the effect of the building." He even goes so far as to express his doubts whether the long stay of a student, in the presence of those examples, may not be as likely "to hurt as to improve him: for the eye may grow familiar with such practice, especially when associated with very superior work, till it ceases to be sensitive of its defects."

My brother's tour was prolonged by a stay of several months in those parts of the Tyrol and Germany which were not under French occupation. In this part of his excursion the visit to Berlin seems to have best pleased him. He returned to his own country and home early in 1805.

Among the first fruits of his return was the announcement of an illustrated work with "specimens of continental architecture." The first part consisted of coloured engravings of Italian buildings and interiors, which we may suppose to have been specimens of those which had been most consonant with his tastes at that time and in that country. The series, however, was soon discontinued. In fact, a year had not expired since his return before he received the first and one of the most important of his professional commissions—viz., the erection of Lowther Castle in Westmoreland; a commission which he owed to the united recommendation of Sir George Beaumont, bart., and Mr. George Dance. From that year, down to the time of his final retirement from all further professional engagements, it may be said with truth that there never was any interruption in his continuous employment.

If I were to remind his surviving friends (of whom, I fear, there are now not many) of his

* By Mr. Edward Smirke, M.A. Read at a meeting of the Royal Institute of British Architects.

various professional works, even confining the number to works of a public character and to considerable private mansions both in England and Scotland; it might seem a somewhat ostentatious catalogue, and might wear an aspect of self-glorification in which, if I knew him rightly, he would not have permitted himself, or wished his friends, to indulge.

An enumeration of this kind, extending over nearly fifty years (for he may be said to have declined every new engagement after 1845), would not be very easy to make; accounts would have to be examined, and even buildings inspected, in order to distinguish mere reparations, or unimportant additions, from a building or mansion that was practically a new work. Perhaps, however, we may be able hereafter, to a certain extent, to accomplish this object.

His earliest employment on public works was in connexion with the Board of Trade, at the nomination of Lord Bathurst, in July, 1807, and on the new Mint in 1809. Eventually, he became one of the attached architects of the Board of Works upon the subdivision of the office on the decease of Mr. James Wyatt. Among the latest prominent works extant, in that character, were the General Post-office, the British Museum, and King's College, London.

Lowther, Eastnor, and Kinfans (N. Britain) castles, are surviving and important examples of this domestic architecture on a princely scale. As to courts of justice, council houses, and the like, I am really unable at present to enumerate them, if I were disposed to do so. Nor would it be pertinent to this memoir to particularize those various buildings, on which my brother had to perform the less ostensible, but rather important and responsible, office, of upholding or reinstating the work of some less fortunate of his contemporaries, whose constructive character had suffered by the knavery or negligence of contractors. Among these I will merely remind you of the Custom House and Penitentiary. There was on occasions such as these (of which I could mention several others), that his friend, Mr. Croker, formerly Secretary of the Admiralty, was pleased to designate him as the "Dr. Bailey of architects," whose painful office it was to be attendant on the last hours of a sinking patient.

I believe that I am justified by the published writings, as well as private letters, of General Sir Charles Pasley and others, in attributing to Sir Robert, not indeed the first use or invention of concrete foundations in lieu or in aid of piles, but the habitual and systematic use of concrete in suitable situations to a far greater extent than had been theretofore applied in civil architecture. I have made this statement, not on his authority, or any claim of his own, for I find none. In fact, it was a sort of controversy on which his habitual disregard of assumption, or self-assertion, would have made him an impassive, unconcerned, bystander, rather than a party litigant.

About 1845, at the close of his general practice, Sir Robert was placed by Sir Robert Peel on the Commission for London Improvements, on which he attended for two or three years, but with a strong sense of his increasing inability to serve the public by any active exertions.

Let me venture to offer to the members of this Institute, which may fairly be taken to represent the highest development of recent architectural art, some observations on one or two of Sir Robert's earliest works, already referred to; and to offer to them in no spirit of criticism, or evidences comparison, or of depreciation—sentiments which, in your presence, I feel no title, or inclination, to indulge in.

Lowther Castle was the first great work which he undertook. Eastnor Castle was not much later in the series, and in both the Medieval style of castellated architecture, utilized and modified for the purpose of convenient occupation by a nobleman of the nineteenth century, was deliberately adopted. Sir Robert, therefore, cannot be quoted as an authority by those who consider Medieval forms unsuitable to domestic architecture. These occupy two of the finest sites in England.

I need not remind you that when the first stone of Lowther was laid, the public taste had been but scantily educated by the careful study and delineation of the details and forms of the style usually called Gothic. The folio volumes of John Carter were known, and Mr. Britton had only just commenced his series of excellent drawings illustrative of English ecclesiastical architecture.

Since that time, a host of young architectural draughtsmen, and other aspirants to ecclesiology, have arisen, who have laboured, and with great success, to familiarize—I had almost said to saturate—the public mind, clerical as well as lay, with detailed examples of our most notable fabrics of Medieval design; but whatever had been done, especially in England, in that way, before the close of the last century, had been of such a character, that our present race of amateurs would have been well satisfied if it had been left *undone*.

Under the guidance of my brother's early and valued friend, Mr. Samuel Lysons, whose varied researches embraced the whole range of ancient and Medieval art in England from the vestiges of Roman rule, included in his "Reliquie Britannico-Romane," to the sacred and civil architecture of the Middle Ages, comprised in the "Magna Britannia" and other monographs of local antiquities, it was impossible that my brother should be uninformed on these matters, or unacquainted with the earliest and best examples, although he was not, and could not well have been, provided with those superabundant materials which are now at the disposal of even an architectural tyro, who has never stirred out of his study. Among the engraved illustrations of those well-known works of Lysons, you will find many proofs of my brother's early connexion with them, testified by very careful and correct drawings, from which the larger prints were engraved. Yet, with all such drawbacks and such difficulties, I venture to doubt whether, after the lapse of sixty years, the design and forms of those majestic masses of towers and terraces at Lowther and Eastnor, which overhang Ulswater, or crown the lesser heights of Malvern, have since been excelled in their dominant features.

I have already admitted that, so far as regards the Teuto-Roman Gothic in North Italy, my brother's experience (not, perhaps, a very mature one at the age of twenty-one) had not left an agreeable impression on his memory. He looked on it as a heterogeneous phase of art, though not unaccompanied in some remarkable instances with very striking effects, and very admirable decorative details—how could it be otherwise, at a time when the arts of sculpture, colour, and architecture were found so often concentrated in a single highly-gifted genius!

Whether this opinion of Sir R. Smirke in 1803-4 has been since reversed or over-ruled, at least by those of his successors who appreciate the purity and beauty of Anglo-Gothic models, or admire the marvels of French and Flemish Medieval genius, I know not; for, though I occasionally meet with recent works, which, I presume, mean to represent "Italian Gothic" of the fourteenth or fifteenth century, I am imperfectly acquainted with the extent or success of the late attempts to naturalise it in this country.

Again, let me offer a few remarks on the late theatre at Covent Garden, erected by my brother on the site of the one burnt down in 1808.

On the application of John Philip Kemble and Mr. Harris, then proprietors, he was engaged to build a new one. From the papers before me I infer that he was left at liberty to adopt such design as he thought fit. The funds were considerable, and my brother turned to the fond recollection of his first architectural love, and determined to make the new building an occasion for realizing his early ideal of Athenian architecture and art, which we have seen exercising so strong an influence over him on his visit to Greece. The façade of the Propylæa, rather than those of the Doric temples, appears to have been the more immediate idea in his mind's eye. The vast and severe simplicity of the Doric shaft, capital, and entablature, were, for the first time on a large scale, to be exemplified in this metropolis, in which draped statues, types of the dramatic art, were to occupy niches, while sculpture in the low relief, which he had so much admired in the Phidian cella and sculptures in the Acropolis, was to enrich the masonry of the surface. To these the classical genius of Flaxman and the careful execution of Rossi were made contributory.

In the interior an upper saloon, appropriated in the original design to the circle of private boxes, with its ranges of Sienna marble pilasters and statues, recalled the internal taste and decorations of an Italian villa or palazzo; but this disappeared many years ago and lapsed into a disreputable appropriation.

The natural life of a theatre is generally a short, though it may be a cheerful, one. Its

"little life" (as Prospero would have said), "is rounded with a fire." But that to which I refer survived its perils for fifty years, though, in the course of those years, much of the interior, and many of its important external features, had undergone strange mutations for the worse before its final extinction in 1856; and nearly all the precautions against fire designed by the architect, so far as regarded the fabric, and counselled by the great chemist of the day, Sir Humphrey Davy, with reference to the more inflammable materials of scenery and drapery—had been removed and forgotten. The details of the original design now exist only on paper.

The correspondence on the occasion of this building between Mr. Kemble and my brother is extant, and is full of entertaining matter, to which that great and very accomplished actor was the chief contributor. The work was at the time prodigiously eulogized and admired by the Hopes and Aberdeens of that day.

With the close of Sir Robert's professional life, this Memoir ought also to end. Any notice of his private life has no proper place here; and if I were to yield to my personal inclination to portray him in his domestic character of a very dutiful and affectionate son, and a brother to whom we were all attached, and from whom we never failed to receive constant proofs of kindness, my testimony would be of little worth. But a reference to some of those qualities, which certainly conduced to his success, will neither be inappropriate nor fairly liable to the suspicion of fraternal partiality.

It was said by the biographer of an accomplished Roman, that a man's moral habits are the mould of his character—"eui cuique mores fingunt fortunam,"* a saying which I believe to be the origin of the motto adopted by a great architect, William of Wykeham, and expressed in his archaic phraseology—"manners makyth man." My brother was eminently the architect of his own fortune. We have seen that no difficulty, personal privation, or personal risk, ever discouraged him in the zealous and laborious pursuit of his adopted vocation. From the school, to which he was indebted for a very solid classical education, he turned into a wider world with an aptitude for assiduous labour which left no time idle on his hands. In 1796 he wrote to his father—"I am writing alone in the office [Mr. Soane's] at 8 p.m., and I send this to you to let you know how I am getting on here" [and then follows a long folio letter of three sides]. From the dawn of actual practice down to the final suspension of all his labours (1845), and his permanent retirement from it to his pleasant villa at Stanmore, he was daily up and at work long before any one else was stirring in the house.

Another habit, which also conduced to his satisfactory transaction of business, was the methodical and orderly manner in which all his arrangements were made.

His remarkable equality of temper and uniform moderation of language in oral intercourse were known to all with whom he had relations of business. I imagine that it must have been a very difficult thing to provoke him, or to find the materials for a quarrel with him. I can undertake to say that I do not recollect a single client with whom he had important transactions of a professional kind who did not in the result become his fast personal friend. I do not recollect, nor have I found in his most exact and methodical private accounts, the occurrence in a single instance of any difference or dispute between him and his employers in relation to his professional practice, or the settlement of his accounts, or any complaint on the old subject of estimates exceeded. In this respect I speak from the constant intercourse of some fifty years and upwards of my own life, and from the assurances of those who had habitual transactions with him both of a private and public nature. When the Office of Works was remodelled and his services dispensed with as an attached architect, Lord Melbourne personally told him that knighthood was conferred on him to testify that no ground of complaint or dissatisfaction existed personally against himself.

It is well known that he never prepared designs for public works in competition with any of his professional brethren. It is true that, on two occasions, he was invited at the instance of the Government to prepare designs. The Houses of Parliament may be cited as an instance of this, where the design and execution were eventually intrusted to another gentleman, a

* Corn. Nepos, c. xi.

most distinguished architect, in consequence of the subsequent adoption of the principle of competition by order of the House of Commons. On such occasions my brother withdrew wholly from the arena,—not in dudgeon, but for reasons which will readily suggest themselves to those who may have themselves been placed in the like position.

With respect to architectural works, founded on special votes of the Commons, it seems probable that this sort of qualified commission will at this day be generally resorted to. In such cases it is not likely that gentlemen who occupy the position in which Sir Robert Smirke then stood will usually consider the terms of such a conditional engagement acceptable; for their time would be too valuable to tempt them to the possible loss of it. With others, and especially younger practitioners, the state of things is different, and the invitation may naturally and reasonably induce them to embark in an adventure that may perhaps terminate in a lucrative and creditable engagement. This principle of competition can, as we all know, plead very orthodox precedents in the best days of Italian art. We know that Cosmo designed to invite the emulation of all the sculptors of the Academy to provide models of statues in competition for the Sacristy of Lorenzo; but we also know that he looked to one of the greatest of them all, then eighty years of age, to guide and direct him in his judgment, and thus the real difficulty was, in that case, surmounted,—namely, the selection of such judicial referees as may at once secure the public from a lamentable failure of judgment, and obtain for the competitors a fair, unbiased consideration of their claims. Whether the former of these objects has always been practically secured, at least in architectural works, is, I fear, still open to question. It must be obvious that, in architectural rivalry, even the most attractive designs and admirable drawings do not necessarily imply competent constructive ability to direct and superintend the execution of the work.

On the retirement of Sir Robert Smirke, he was gratified with the presentation of a marble bust, admirably executed by Campbell, as a testimonial by his various surviving pupils. Of this excellent portrait bust, I have laid on the table for your acceptance a very good photographic copy.

In 1853, this Institute honoured him with their gold medal, a testimony of respect which he greatly prized, as, indeed, he could hardly fail to do, when we look over the roll of names of those who have received this compliment.

When he permanently quitted London as a residence, he resigned the readership of the Royal Academy of Arts, after holding it for thirty years and upwards. He was elected an academical in A.D. 1811, and had at all times been warmly devoted to its prosperity and interests. Feeling, too, that he was no longer able to render any material assistance to that body by participating in its duties, he tendered to the president and council his resignation of the style and title of Academician, and her Majesty notified to them her sanction of their acceptance of such resignation, with an expression of "her full appreciation of the motives which actuated Sir Robert in tendering it."

I should mention that his willingness to take this step had been before expressed to Sir Charles Eastlake, through your late president, Professor Cockerell; but, in consequence of other arrangements then pending, with a view to some permanent modification of the constitution of the Academy, my brother's intentions were not carried into effect.

The voluntary task which I have undertaken in memory of Sir Robert Smirke, and as an imperfect notice of his life and labours, must here close. I am sensible of the embarrassment which is inevitable when a biographical sketch, and especially that of a professional life, by a near relative, is attempted by one who, like myself, can lay claim to no critical or practical knowledge of that profession, or to any qualification beyond a sincere love of art, and the memory of many long years of sympathy and friendship with some of its most esteemed professors in various departments of it. If, in the course of this notice, I may appear to have formed too partial an opinion of his merits, I must pray you will have me excused. But most of all I should regret if I shall have had the misfortune to convey to any an impression that Sir Robert was used to assume an air of critical superiority with regard to the works of his brother architects. Far from it. As for his

own, he was really as little accustomed to talk of them, as he was to talk about himself, either for self-display or otherwise. Upon such an occasion and such a topic no one would have more willingly acquiesced in the judgment of the Spartan patriot, and in the words of our own poet, he would have said,—

—“Be the Spartan’s epithet on me,
Sparta has many a worthier son than he.”

HOWDEN AND SELBY.

THE ARCHEOLOGICAL INSTITUTE.

In the course of the recent congress Howden and Selby were visited.

The Collegiate Church at Howden is of great size, and has a total length of 255 ft. The church belongs to the thirteenth century, but a good portion has been added since that date. All the chancel is in ruins, as well as an octagonal chapter-house standing beside it. Originally Howden Church was a rectory parochial, but in 1267 it was made collegiate. When Henry VIII. dissolved the college, the structure suffered in consequence, and in 1630 the chancel had to be deserted, being considered unsafe for the celebration of divine worship. Sixty-six years later the roof of the chancel fell. The building is in the form of a cross, with lofty square tower at the intersection of the transepts. In the west front, which is very elegant, there are four divisions, formed by buttresses ending in crocketed pinnacles. There is a fine window of four lights, divided by a transom, displaying much beautiful tracery. Mr. J. S. Petit and the Rev. W. Hutchinson, vicar of Howden, officiated as honorary guides. Beginning with the exterior of the western front, Mr. Petit said that that part was of the fourteenth century, or at least the end of the thirteenth. The transom was of a later origin. No doubt the beautiful general effect was much heightened by restoration not having been made. He should be very sorry to see the figures in the niches replaced by others. Although the tower was almost wholly without ornamentation, still it would be agreed that it had a character of great richness, owing to the carrying up of the lines and the buttresses, and giving subdivisions in a vertical direction. Then, again, though one of the tallest towers in proportion, it still had an air of massiveness,—a characteristic that was not always gained by a much shorter tower. That he considered to be due to the fitness of the tower, and its being without pinnacles. It was said by Stanley that the tower was built by Bishop Skurlow as a refuge from the floods. It was not very likely that the floods should ever come up to that height, flat though the district was; but it was very possible that the tower was erected as a land-mark, for which it would serve most distinctively, owing to its great height and individuality, there being no tower like it in the district. Indeed, there were very few towers resembling it.—Mr. Parker said that, if the vanes on the corners of the tower were original, no pinnacles would be intended. It was stated, however, that the vanes were not original, because some one remembered their being placed there.—Mr. Petit continued that the tower had a shaft of early date. He pointed out the south transept porch, which, he said, was given historically as of the time of Edward II. This would confirm the date of the porch, which would be of the fourteenth century. The south transept was of Early English date. Early decorated characterised the windows of the transepts; in fact, there was the earliest type of the real tracery. The easternmost window of the nave aisle was an earlier type of geometric tracery than the others. The others, though geometrical, had not the same severe form. On coming to the chapter-house, Mr. Petit said there could be no doubt that it must have been executed at an early period of Bishop Skurlow’s life. He died at the beginning of the fifteenth century, 1405, but the chapter-house, he thought, must have been executed long before that time. It was a very beautiful specimen of the perpendicular, retaining a great deal of the feeling of the decorated. There were a few circles and quatrefoils, that showed the reigning spirit of the time, and the chapter-house must have been built in an early period of the bishop’s life. The choir was of an earlier character, that was rather early in the fourteenth century, and was pure decorated. When it was constructed, the style must have reached its completion. The windows, though they had a geometric feeling

about them, still gave outlines which were flowing. There was no doubt that the flowing of the curvilinear tracery was established at this time, but very likely in this case, for the sake of uniformity, a geometric character was nevertheless introduced. The work reminded him a little of the chancel in Nantwich, Cheshire.—At this stage it was remarked by a member that the sum of 107 had been left in 1387, toward the building of the chapter-house.—The chance Mr. Petit afterwards proceeded to say, was thoroughly unique in arrangement. There were some very beautiful fronts of chancels remaining but he did not know of any more beautiful than this. The great east window seemed to retain lines of geometric. There were, no doubt, part geometric, but there were also some flowing parts. Mr. E. Sharpe had drawn and described a restoration of the east front. The buttresses were, what he believed Rickman to have pronounced them, the most beautiful examples of the decorated style he had. The pinnacle over the top of the central window was unique, he thought. The parapets were hexagonal, but all set the same way. Notwithstanding its ruinous state, the front was altogether most beautiful.

From 1300 to 1320 was assigned as the date of the chancel by Mr. Petit.—Mr. Sharpe remarked that he was rather inclined to put it down from 1315 to 1320.—According to Mr. Parker, 1327 was pronounced not to be too late.—Mr. Petit, as regards the tower, said he should be sorry to have any addition made to it, but there was one addition he should like made, and that was a lightning conductor, as during thunderstorms it might possibly be injured. Upon proceeding inside the church, Mr. Petit alluding to the transept part of the structure said the first building after the early English would be the tower arches and the windows. That might be after the time the church was made collegiate, which was in 1267.—Mr. Parker said Bishop Skurlow came there in 1380. The chapter-house must be a little later, perhaps from 1380 to 1390.—All having examined the building, Mr. Freeman made some remarks of the history of the church.

Wressel was arrived at shortly after noon, and the Castle there was forthwith inspected, Mr. Parker acting as guide. This castle was built in the time of Richard II. by Thomas Percy Earl of Worcester. Originally the building formed a great square, but in the time of Charles I. three sides were pulled down by the Parliamentary army to prevent the stronghold being occupied by the Royalists. The south front now remains, flanked by two square towers round which ivy was twined. Small as in part, it came very near destruction by the fire which occurred when the building was used as a farm homestead.—Mr. Parker quoted Leland’s description of the castle, and added a few remarks of his own from his work on “Domestic Architecture.”—Mr. Clarke, of Maddingford, stated that the Earl of Northumberland of his day, to whom Anne Boleyn was betrothed, died broken-hearted here, and left the place to Henry the Eighth, who in September, 1541, passed two days in the Castle. He was then in company with Catherine Howard.

At Selby, where the excursionists reached at three o’clock, a visit was at once paid to the renowned Abbey. Denuded of its tower, Selby Abbey still appears majestic and stately, and whilst possessing the beautiful decoration of the fourteenth century, has also some fine Norman work, and almost every period down to the curvilinear. The abbey is believed to have been founded by William the Conqueror in 1069, who bestowed many privileges upon the institution. When Henry VIII. dissolved the monasteries, Selby Abbey, then in a state of great splendour, was made a parochial church. Mr. Sharpe acted as guide. He remarked that since reading his paper at Hull, he had been put in possession of documentary evidence of a valuable character in an account of Selby and neighbourhood and the Abbey Church, by Mr. Morrell. In Selby Church the Institute had for the first time in the Hull district met with a very interesting example of the Norman period of architecture. No such prominent example of Norman work had yet been seen. Four of the principal portions of English architecture were represented characteristically in the building; first, the Norman work of the transepts and the crossing. Only a certain portion of the nave was of the same period. Then, in point of date, there was a very interesting example of the transitional period, with the ornamentation so peculiar to that class of building, in the western portion of

the nave with its porch and doorway. There was then a very interesting example of the lancet period, or Early English, in the upper part of the nave, on the south side; and, lastly, there was just the commencement of the beautiful choir in geometrical style, and its completion in the curvilinear period, when flowing tracery was prevalent. The building had been conducted on a very grand style, and, as has been remarked, was frequently the case in Yorkshire, the magnificent choir that was constructed in the fourteenth century was of equal length with the nave. The edifice was therefore cross in form. In the nave there was a tri-partite division, which was also shown vertically, there being a lower storey, a middle of blind storey, and the clearstory above. The north transept still remained of the Norman period, and the curious string-course then used was observable. From some excavations which had been made it would be observed that the south transept had been in the same style. The first four compartments of the south aisle westward from the tower were Norman, and four piers were left alternately circular and compound, an arrangement that was common in Norman buildings. Whether the Norman builders completed the church according to the plan now seen, or whether the work was arrested in its progress at the fourth pillar on the south side of the nave owing to want of funds, or whether the design was completed and afterwards accidentally destroyed, could not now be determined, but something like seventy years must have elapsed between the completion of the first part of the work and the commencement of the work of the second order he had named. Although our early Norman architects did not vault the centre portion of a church, they always vaulted the side aisles, and in the south aisle could be seen what they would have done. In the first bay there was a very good specimen of quadrupartite vaulting. He attributed all the early Norman work to the year 1090. Mr. Morrell, in his book, gave the life of the man who built that part. It was commenced by an abbot of the name in 1067, and he occupied the greater part of his labour in building the church. Mr. Sharpe then considered the second portion of the architecture, to which he ascribed the date 1170. The Norman work did not reach to the roof, to the full extent of the four compartments in the south aisle. In the blind and clearstories only two compartments were constructed; and these, if the Normans left off their work at that point, would act as buttresses to the tower. In the continuation of the works, the round Norman arch was preserved, instead of the pointed arch of the transitional period, evidently for the sake of uniformity. Between 1145 and 1190, he presumed, the whole of the north aisle was built. On the capitals of the middle story pillars clustered together in the style of the lancet period, Mr. Sharpe pointed out the peculiar transitional volutes.

The party then proceeded to the west front, where in the doorway Mr. Sharpe stated that there was represented one of the most beautiful examples of the ornamentation of the transitional period. Mr. Parker said the volute ornamentation spoken of came from Syria, and was, he believed, one of the styles introduced by the crusaders. In reference to the north doorway, Mr. Sharpe said there was the same ornamentation as was on the west front. There was the transitional volute exhibited again; and, excepting the doorway itself, the pointed arch overrode the whole of the work. It was curious that the rounded arch was always treated with more decoration than the pointed arch. The party having re-entered the nave, had the characteristics of the Lancet Period pointed out to them on the middle story of the south aisle. Mr. Sharpe compared the east end of Howden, Wisborough, and Ripon churches with that of Selby, which he said probably dated about 1320. A style is remarkable for buttresses and gables, unmounted by crocketed pinnacles. In the course of the proceedings recorded above, Mr. Sharpe announced that an interesting discovery had been made that day. In digging excavations to find the foundations of the fifth Norman transept, a tombstone was come upon inscribed with the name of Alexander. This tombstone was found at a depth of about 6 ft., and was bordered with dog-tooth moulding, indicating the date 1220. Under the coffin, a wooden coffin was discovered with skeleton, complete as skeleton could be after remaining in process of decay for 700 years. The skull is perfect, and no doubt an adept at phrenology could have told whether the worthy eccle-

siastic was great in the intellectual and moral faculties, or, like many of his cloth, had much of the animal in his temperament. One woman, with true womanly characteristic perception, said he evidently had an excellent set of teeth, the white enamel still being greatly visible. Mr. Sharpe stated that in the history of the church there was an abbot, named Alexander, who was appointed to the abbey in 1214, and resigned in 1221, he being twelfth abbot. His name did not usually occur in the catalogue.

As to the date of Early English architecture, Mr. Parker said that it was proved that Lancet Gothic was certainly of English origin. Saint Hugh built the choir of Lincoln—the earliest Gothic—in 1190 to 1200. Chies Church was consecrated by him A.D. 1192, as shown by an inscription still remaining, and that church is in the same style. These examples were twenty years in advance of anything of the kind on the Continent.

THE LATE MR. THOMAS CUNDY, ARCHITECT.

THE death of this gentleman, one of a family long known in Pimlico, took place very suddenly at his residence in Chester-square. Mr. Cundy was born in London in 1790, and was brought up in the office of his father, who, the founder of his own fortune, was extensively engaged as an architect and builder. He succeeded to his father's large connexion at the age of 36, and thenceforth practised as an architect only. The principal works he was engaged upon at that time, were Howell Park, for the Earl of Plymouth; Tottenham Park, for the Earl of Ailesbury; Moor Park; Grosvenor House and Gallery, for Earl Grosvenor; with many others both in town and country. In later years he was engaged in the erection of several of the West-end churches,—the Holy Trinity, Paddington, St. Barnabas, St. Paul's, St. Michael's, and others in Pimlico. But he was more especially known as surveyor to the extensive estates of the Marquis of Westminster, an appointment he held for upwards of forty years, during which period the extraordinary speculations entered upon by the late Mr. Thomas Cubitt were commenced and completed. Mr. Cundy was an honourable and courteous gentleman, and maintained the dignity of his profession.

THE LAW COURTS COMPETITION.

ALTHOUGH we have no official confirmation of the belief expressed in our last, we have no reason to doubt its correctness. Bismarck, always busy when facts are kept back, says further that the Judges' Report occupies only five lines of note paper; and that the Treasury are dissatisfied with the decision on the ground that the Judges were not competent to name two architects. If this statement be accurate, and we believe it is, and should the Treasury insist upon the Judges' naming one architect, it is not unlikely that the report would then take something of the form of the Report on the National Gallery Competition.

Mr. Scott has sent in a protest to the Treasury. He is reported to have stated that his plan cannot, even at the worst, be considered as less than second to Mr. Barry's, while his architecture is superior, and therefore in fairness he ought to have had the award; for he, too, considers that the Judges had no right to name two.

THE SUSSEX ARCHEOLOGICAL SOCIETY.

THE annual excursion, or general meeting, of this society took place this year at Midhurst, on the extreme western portion of the county, perhaps one of the most inaccessible, certainly the most difficult to reach, by persons coming from the eastern part of Sussex.

Brighton was made the rallying point, the London and Brighton Railway Company having consented to run a special train from Brighton to Midhurst. A large number of persons, between 200 and 300, were set down at the Midhurst Station after a two hours' ride through the most diversified tract of country and picturesque scenery. With so short a distance to travel before the first point of interest was

reached, the majority of the company preferred to walk; and the vehicles were, therefore, chiefly freighted with ladies.

A few minutes' walk sufficed to gain the parish church; and thither all proceeded, the character and principal points of interest connected with the building being explained by the Rev. W. Haydon, M.A., the incumbent.

Leaving the church, the members and their friends proceeded to the Grammar School, as the most convenient place for holding the "business-meeting" part of the day's proceedings.

Mr. William Townley Mitford, M.P. for Midhurst, was elected to the chair.

Mr. William Durrant Cooper had promised to read a paper on "The Lords of Midhurst and its Inhabitants," when a visit was made to the Cowdray Ruins; but, as the weather looked threatening, he proposed to read a digest of it before the meeting broke up. It was, he said, prepared for publication in the next volume of the Society's works; but he thought some idea of it might be formed from an abridgement, which he accordingly gave.

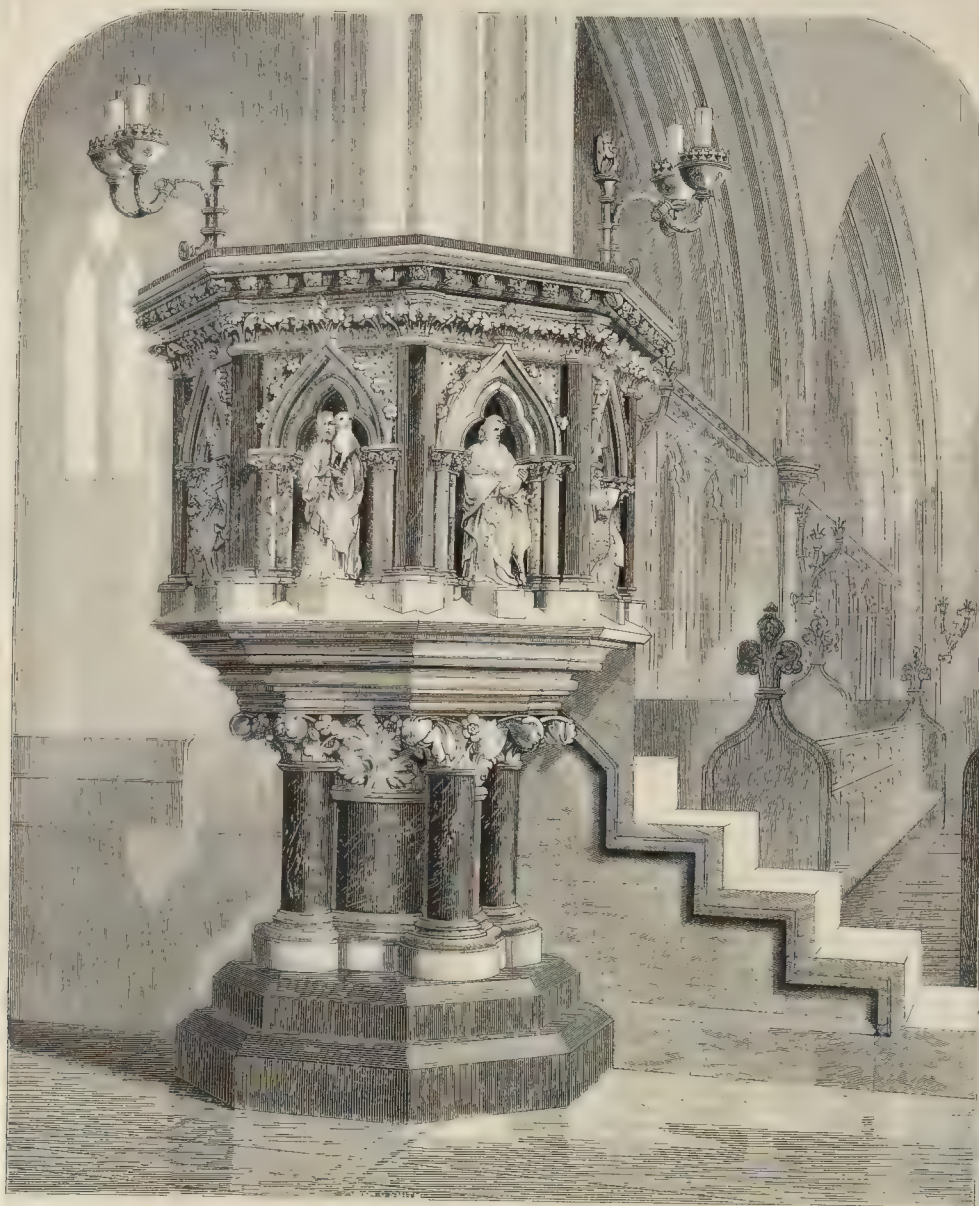
Sir Sibbald Scott, who had consented to act as cicerone, led the way to the Cowdray Ruins, which were thrown open by Lord Egmont, the present proprietor; and his lordship, to show more distinctly the delicate tracery of the stonework of the windows, had given orders for the ivy to be cut away which envelops the ruins. Sir Sibbald pointed out various features of interest as he led the company from one portion of the roofless building to another. The grounds and town were visited, and the priory, the village of Eastbourne, &c. About three o'clock they returned to the grounds at Cowdray, where a cold collation was provided in the Society's marquee, to which upwards of 200 sat down. Mr. Mitford, M.P., took the chair.

CONDITION OF NEWPORT PAGNELL.

THE guardians of the peace here are in want of guardians of their health. In other words, the Newport Pagnell police-station presents such abominable conditions in a sanitary point of view that every officer condemned to it has suffered from disease; while the lock-up is altogether unfit for the retention of prisoners. Bad drainage and the immediate proximity of a bad sewer are set forth by the medical officer of the town as the chief causes. The drainage of the town generally is very defective and calls loudly for attention, if the inhabitants desire to retain their health and would avoid the outbreak of an epidemic. We have particulars before us of the condition of some of the outcrops that show an altogether abominable and discreditable state of things. The lady-visitors should state what they know, and Mr. Surgeon Bailey and the local *Gazette* must not relax in their endeavors. The good people of Newport Pagnell should know that bad health and premature death are very expensive and damaging things.

PULPIT IN THE CHURCH OF ST. MARY MAGDALENE, TAUNTON.

THE idea of a new pulpit which should be worthy of this church, originated with Mr. Taylor, the senior churchwarden, and received the cordial support of the vicar, and the other churchwardens. The design was furnished by Mr. Ferrey, F.S.A., under whom the restoration of the church, in 1845, was conducted, and who, with Mr. Scott, was more recently architect for the rebuilding of the noble tower of the church. The carrying out of the design was entrusted to Mr. Davis, the builder of the new tower. So far all was well. But afterwards a few persons commenced a vigorous opposition to the scheme, protesting that it was contrary to the wishes of the parishioners. This objection was set aside by a majority of about four to one in the vestry. But a new difficulty arose. A solicitor in the town, who had been acting for the churchwardens, threw them over, and shortly after declared himself the opponent of their scheme, and induced two or three others to oppose it, on the ground that there were figures in the niches of the pulpit, which might occasion the danger of idolatry! A judge was found who held these objections to be valid, and refused a faculty for the pulpit. A compromise was entered into, and the figures were withdrawn, upon which the



CARVED PULPIT, ST. MARY'S, TAUNTON.—MR. B. FERREY, ARCHITECT.

faculty was allowed. The place of the figures is at present occupied by diapered panels. The pulpit is built of Ham-hill stone, and is of octagonal form, having five sides complete. Each side forms a niche, with a trefoil arch, crocketed and diapered, supported by four spar columns, with moulded bases and carved capitals of white lias. The central niche was filled with a figure of Our Lord, represented as the good Shepherd; the other niches filled with figures of the Four Evangelists: the angles are of polished green marble shafts, supporting a carved cornice, carried upon a Ham-hill moulded corbel, raised upon a carved capital, with polished

dark marble columns, and mould base of white lias, the whole being raised upon two polished black lias plinth stones.

SIR.—I have lately returned from viewing the new pulpit designed by me, and recently fixed in this noble church, St. Mary's, Taunton. I can scarcely repress my feelings of indignation at finding the pulpit robbed of the beautifully carved statues of Our Lord and the four Evangelists, which filled the niches, and are represented in the accompanying illustration. The senseless opposition which has been raised against these figures has so far exceeded, that permission to erect the pulpit has been granted solely on the condition that they should be omitted. There is something so inconsistent in this, that one cannot understand it. This church has not been the

scene either of extreme ritualism or clerical vestments. The zealous vicar fills his church through the earnestness of his ministrations, and no suspicion on the ground of excessive display in the mode of conducting divine service can be alleged against him. At this very moment a reredos is in course of erection at St. Cuthbert's Church, Wells, containing figures in high relief, representing the Last Supper, some of them showing much action. This group is put up without let or hindrance; and in the church at Buckland St. Mary, a few miles distant (lately built under me), there are heaps of statues; but it is not necessary to look farther than to the exterior of the new tower to this church, the niches of which are furnished with figures; indeed, no work of any high art can be executed without them. I must, therefore, in the cause of art, protest against this stretch of delegated authority, by which the pulpit has been stripped of its chief features.

BENJAMIN FERREY, F.S.A.



ANGULAR POLCH, RATISEON CATPEDRAI.

THE PORCH, RATISBON CATHEDRAL.

To the view of Ratisbon Cathedral given in our last, we now add an enlarged view of the triangular porch from a drawing purposely made for us on the spot. A history of the building accompanied the previous view.*

THE EARLY CAVES IN THE CHALK.

At the recent annual meeting of the Kent Archaeological Society, which was held in Dartford, Mr. F. Spurrell read the following paper upon the Early Caves in the neighbourhood:—

I have to call your attention to those excavations, so numerous in our county, known by the names of "wells," "chalk-holes," or "chalk-wells," "souds," "swallow," and "dene" or "Dane-holes." On the surface of the ground the pits present several aspects according to the perfect and obliterated. When perfect, there is but a small opening about 3 ft. wide, the edges of which are flush with the surrounding level, presenting in a wood or grassy field no mark for the eye to catch at more than about a dozen paces off; sometimes the ground around the opening of the mouth breaks away and leaves a great crater, but more frequently they are quite filled up, only leaving a more or less gentle depression of varying diameters, from three to thirty yards. It is in these latter cases that the common accident happens of a horse whilst ploughing, or cow feeding, being engulged, all the soil but a remnant at the surface having settled, and leaving insufficient support for their extra weight. They are generally found on the slopes of hills, but also on high land and in valleys near the origin of winter springs. Hereabouts the shaft is always of such a depth as to penetrate the chalk a few feet only before it is lost in its expansion for the cave, and consequently it varies in length with the distance of that rock from the surface of the ground, which may be any distance to about 70 ft., I believe. Its diameter varies from a little less than 3 ft. to more than 8 ft., though I suppose that to have been originally only 3 ft. It is usually uniform all the way down, circular and perpendicular, and terminates generally in the middle of the cave. There are some shafts which penetrate the chalk about 100 ft., and seem to have no enlargement below. The cavern widens more or less horizontally from the shaft, a few feet below the upper edge of the chalk, forming a very large space. There were three methods adopted in forming the cave; the simplest was merely to continue the shaft with a rapid enlargement of diameter, making it of a sort of vertically elongated beehive shape, having the angle formed by lines drawn from opposite sides of the bottom and meeting at the top a right angle or less. The second form is that in which the shaft, having been enlarged by one or two diameters, has three, sometimes four chambers or recesses, of about equal width, and made at about equal distances from each other round it. The third form consists of a boring at opposite sides of the bottom of the shaft for about 6 ft., and then each excavation is continued on each side in two directions at right angles to the first horizontal cutting—it was proceeded with by cutting away the chalk and leaving pillars. The floors of such as can be seen are shallow, basin-shaped, and smooth. The roofs are, in many cases, fallen in, the diggers having been too impatient to proceed horizontally to have secured a sufficient thickness of chalk above, to allow for a certain quantity falling down without endangering the whole. They are very large and lofty, one being in two greatest measurements at right angles to each other, 49 ft. by 38 ft. The probable depth of its floor from the surface is over 70 ft.; this has pillars to support it. I have been able to make out very little of their contents—the amount of earth thrown down and broken from the roof being in general too great to remove conveniently, in several that I have dug in; nothing was found but shells and bones of large and small forest animals, and also of tame ones; but the very fact of the ones I attempted being so clear of rubbish at the present day as to make it a tolerably easy task to get at the bottom, was enough to lead one to expect nothing, they having been, without doubt, worked for chalk of late times. Some are filled to the surface with sand, with which is intimately mixed black organic matter, and bones and bits of Roman

and Romano-British pottery. Such an instance is described in our society's transactions, by Mr. Robert B. Latter. The sand and chalk were loosened by picks, the numerous and varying marks of which resemble those at present made. The access to the pits is provided for by holes or steps cut in opposite sides of the shaft, some of these holes being from 6 in. to 20 in. deep. I suppose that sticks were placed across like a ladder, perhaps only at intervals—as rests: it is probable that in the latter part of the descent a tree or notched pole was required in some pits. I have not been able to find two caves communicating by a passage below ground, but have seen one or two cases in which I conjectured such to have been the case, and from the extreme proximity of some caves, should suppose it would have been the ultimate intention to unite them. A connexion is traced between them by means of fosses and banks above ground, which are plainly to be discerned in the woods from the comparatively undisturbed state of the ground. These I take to have been paths or leading marks through the forest. Others inclose small spaces of land, whilst the batches of pits themselves are generally surrounded with them. Such is also the case at Compton, in Berkshire, and at Fisherton, in Wilts. I may say that the whole of the country between the Thames and the hills bounding the Weald on the north, and extending through Kent, Surrey, and even into Berkshire, is thickly studded with them, being found, I believe, in White Horse Vale at Compton, in the latter county—also in Hampshire and Wilts, where, at Fisherton, near Salisbury, a remarkable settlement has been found by Mr. Adlam. This, though different, I think it necessary to notice. The pits, which are single or in clusters, and communicating below, are dug in a drift gravel resting on chalk, are entered by a circular descending shaft, are carried from 7 ft. to 10 ft. into the soil, and have their floors of chalk, which are from 5 ft. to 7 ft. across. At the surface they are from 2 ft. 6 in. to 3 ft. 6 in. across, and were covered by moveable covers of stonework covered with burnt clay. Worked bones, flints, and pieces of pottery were found in them. Within this area are some particularly well-known instances—as the Hogdale pit, described by Hasted, near Faversham; the Clubberlubber's Hole, in Swanscombe Park, which somebody described in 1803 as having been stopped up thirty years, yet as being a wonderful cavern, divided into detached cells, and so large as to require candles to traverse it. Of its present appearance, he says that its entrance, which was sloping downwards, has now a foss of ten or more feet deep, and even its principal is a well-like hole, which the guide judiciously considered was a fall of the earth over the crown of the cavity, and called Cæsar l'Arbre's chimney. There is also the Chiselhurst Swallow, and the one in Camden Park. They were probably rather numerous in Norfolk, depressions and falling in of earth similar to those we have here occurring at North Elham, Dereham, &c., and I have seen signs of them all along the road between Norwich and Aylsham, also southward of Norwich near Boyland Hall, and on Mousehold Heath, and at Stratton Strawless. There is an admirable example at Royston, in Hertfordshire; this, however, has been much mutilated. They are numerous in South Essex on the chalk hills near the Thames about Grays, the Chadwells, and East Tilbury, &c. There are some pits the description of which answered somewhat to that of the present ones at Ashton Cold, Gloucestershire, possibly at Perth, in Scotland, and Newbattle, near Edinburgh, according to Pennant, who says that they agree with Tacitus's description of the ancient German manner of forming their caves. It is to be noticed that they are not found south of the Weald, that is in the Sussex downs, &c., that I can learn. The most remarkable clusters here are several in Joyden's wood, in a wood called Staveley, near it, and in Little Tharrock in Essex. It will be seen by this that the number must have been very large from the traces left, and from Lambard's, Hasted's, and Camden's remarks, &c., which do not now hold good, as the existence of undestroyed examples is comparatively rare. I will now consider the probable uses of these pits. Their form is admirably adapted to that of dwellings; they are dry and warm enough in winter to be very comfortable; not needing a fire, it is probable their continued occupation in summer was not required. They are always found in clusters, never isolated; I am convinced that if one should be thought so,

on further examination one or more will be discovered near. From thirty to forty may be found in as many as three or four acres sometimes. The great similarity of form in the caves at Fisherton may be considered in favour of their having been inhabited. In France on the banks of the Somme, from its mouth to Peronne, are caves descended into by a well-like opening in the chalk, which though obviously superior in design and appearance to ours, as to be recognised at once as habitations from their plan only, yet by their general description they bear a relation to them. No human relics were found in the Peronne caves. I think that evidence may be obtained from foreign usages in favour of their having been used as dwellings. Tacitus says of the Germans, "They dig subterranean caves and cover them with much litter; these they use as winter retreats and granaries; for they preserve a moderate temperature, and upon an invasion, when the country is plundered, these recesses remain unviolated either because the enemy is ignorant of them or because he will not trouble himself with the search." Which use Lambard has adopted in our case, calling the Germans the "verie Syros of these Saxons" "our ancestors" who he supposes made them. Xenophon, speaking of the cold country of the Armenians, says that "their houses were underground. They were like the mouth of a well, but spacious. Below these were passages dug into them for cattle, but people descended into theirs by ladders." Ainsworth commenting on this says,—"This description of a village on the Armenian uplands applies itself to many I visited at the present day," and he says the object of the one small hole is to keep out the cold. Also, before him, Bertrand de la Broquiere mentions them. Dr. E. Browne also mentions that at Clesch, in Topolchan, when the Turks and Tartars invaded the country, the people retired and hid themselves for long periods in such cavities whence they could only be withdrawn by stratagem. As to their having been granaries, we have the assurance of Diodorus that the "Britons stored corn" which seems to the point. According to King, in his "Monimenta," Le Bruyn met with many pits and wells near Rania, in Syria, which he was told had served to keep corn and grain in; and, by throwing down stones, he discovered they were very deep. In Mingrelia, and in a hundred places in Tartary, the inhabitants place their corn, &c., as do all the peasants of the East, in deep "fosses" which are called "ambers," that is to say magazines, which they cover so evenly that the earth does not seem to have been disturbed, according to Chardin; and M. Langles says that the Arabs of Barbary keep theirs so too; which Shaw confirms by saying that he has seen 200 or 300 together sometimes, the smallest of which would contain 400 bushels. Hirtius mentions this in his "Bellum Africanum." Dr. M. Russell says that the granaries near Aleppo are subterranean grottoes, the entry to which is by a small hole like a well. Of their having been used to obtain chalk we have the direct evidence of Pliny, who says "another kind of manure is the white chalk that is used for cleaning silver." It is taken from a considerable depth in the ground, the pits being sunk in most instances as much as 100 ft.; these pits are narrow at the mouth, but the shafts enlarge very considerably in the interior, as is the case in mines. It is in Britain that this is employed." These pits are often found where the chalk is on the surface, or within a few yards of where it becomes so, and where of course there was no necessity for this laborious method of procuring it, making it unlikely that they were merely dug for that purpose. It seems that there was a regular trade in chalk between England and the continent as proved by inscriptions, yet that chalk obtained by these difficult inland means for exportation has been asserted, should be preferred to that obtained from our cliffs, for the picking, it is impossible to believe. Some suppose them to have been burial places, but they have as yet produced no signs of such a use in this country, though one exactly answering in the main points to ours, having the cave with descending shaft and steps in its sides, &c., but carefully finished and furnished with a supplementary stairs and gallery with a well, &c., was found in Rome, with niches in the sides and cinerary urns standing in them. Some have supposed them to be sand-pipes or galls, the empty ones being those emptied of gravel for use, Mr. Prestwich even describing some as such

* See p. 559, ante.

on the Stour, and accounting for the engulfing of small intermittent streams by them (which is a very common circumstance) as simply sand-pipes in more violent action than those that are "blind." It is plain that though called Danoholes now they were in existence anterior to the Danish invasion. It is plain they were not Saxon as Lambarde, Camden, Hasted, and others say, being in existence when the Romans were here, as we learn from Pliny. Though the Romans and Saxons may have dug some, such is probable, copying ours from their suitableness to certain uses, yet that either originated them is unnecessary to consider after Pliny's notice of this British peculiarity. The Romans made use of them either as conveniently ready-made places for getting rid of the remnants, worn-out implements, and ashes, of the sacrifice. 2. As purlions or common receptacles for the poorer dead whether burned or not. 3. Or as common rubbish pits, cesspools, &c. The shafts closely resembling the rubbish pits which are often seen outside the boundary of some Roman towns. Some of the old pits have been worked at a late date for chalk, and I am told that some have been dug lately and may be now in use. The earliest history of them after Diodorus and Pliny's is that contained in a charter concerning which I will quote from Mr. Lister's paper in our transactions. The swallow near Camden Park appears to have been a boundary mark in A.D. 862, mentioned in a Saxon charter of Athelbert, King of Wessex, to Dryghtwald, his minister, granting ten carucates of land in Bromleag.

"Danne fram Swelgende, Crefetna haga to Liothilthre."

"Then from the swallow, the Craysettlers dwelling to the gibbet mark." Perhaps it is the same as that afterwards mentioned in the "Carta Etheldredi Regis qua concedat terras in Bromleghe" in these words:—"To spelsende paune fram spelsende cressetmahaga to siorthilthre." In Morant's Essex, while speaking of the cave field in East Chadwell, there is a remark to this effect,—"Tradition will have it that here were King Canobelo's gold mines." Upon the strength of this notion countenanced by a passage in Dr. Plot's Natural History of Oxfordshire, one of the bubbles or pernicions projects set up in the year 1720, was for extracting gold or silver out of the soil here, with this title,—"For improving a Royalty in Essex." Part of the passage in Dr. Plot's book reads:—"This probable, at least, that here (in Oxfordshire) may have been formerly such a mine, stopped up, as I first thought, by the Aboriginal Britons, upon the arrival and conquest of the Romans or Saxons, who not being able to recover their country within the memory of man, it might be lost like the gold mine of Glass-Hitten in Hungary, when Bethlem Gabor overran that country, or the gold mine of Canobelo in Essex, discovered again temp. Henry the fourth, as appears by the king's letters of mandamus bearing date May 2 an 2 (1401 A.D.) (Rot. XXXIV.), directed to Walter Fitz-Walter concerning it, and since then lost again." The date of Dr. Plot's book is 1676. Camden mentions them, and Hasted in 1778.

At the conclusion of the paper, Mr. Bloxam moved a vote of thanks to Mr. Spurrell for attempting to throw light upon the subject, which was seconded and carried unanimously.

ART-UNION OF LONDON EXHIBITION.

The pictures and other works of art selected by the prizeholders of the current year, 142 in number, are now being exhibited in the gallery of the Institute of Painters in Water-Colours, Pall-mall. As we have already given a list of all the pictures from those of 20*l.* in value upwards, it will be unnecessary for us to recapitulate to any great extent: amongst the most important will be found "Dean Swift and the Peasant" by T. P. Hall (150*l.*); "Scene from King Henry VIII." by W. Bromley (200*l.*); "Beatrice in the Arbour," by E. J. Cobbett (100*l.*); "Carrickfergus Castle," by J. Danby (100*l.*); "The Life-boat," by E. Hayes (150*l.*); "Away from Smoky London," by J. Tennant (150*l.*); "The Wharfe" (water-colours), by P. J. Naffel (73*l.* 10*s.*); "Judge Croke," by Margaret Gillies (80*l.*); and "Kenbaan Castle," by H. Gastineau (150*l.*). The print for the ensuing year, by Sharpe, after Maclean, "The Play-scene, Hamlet," is a fine work. Each impression will be worth much more than the amount of the subscription.

Amongst the miscellaneous works exhibited is a reduced model, by Mr. Woodington, of "The Nelson Memorial, Trafalgar-square." It is proposed to produce this in bronze, and distribute examples of it as prizes. It will be an admirable work.

We may mention, a little in advance, that the council are about to offer a premium of some amount for a series of drawings illustrative of events in the history of the country during the present century; and will even increase that amount should any series submitted be marked by peculiar excellence.

THE LAW OF THE BUILDING OF CHURCHES.*

WERE it not for the labours of text-writers, who have reduced into something like order numerous important heads of our jurisprudence lying scattered in chaotic confusion, amidst many hundreds of bulky volumes of statutes and law reports, it would be well-nigh impossible, even for lawyers to ascertain or judges to administer the laws of England.

Many subjects, however, still remain, if not untouched, certainly not thoroughly investigated by legal authors. Amongst these may be reckoned the important subject taken in hand by Mr. Trower.

The necessity for such a work will be readily acknowledged by all who have had anything to do with the building of churches, parsonages, and schools, as well as by those who in administering the law, are compelled to elicit some meaning from the statute law relating thereto, and who rarely mention the Church Building Acts, except in terms of well-merited condemnation. "I need not comment," says one judge, "upon their obscurity; that is a matter of public notoriety; and of them—the Act of Lord Blandford—(19 & 20 Vict. c. 104)—is entitled to pre-eminence for obscurity and difficulty of construction" (per Doctor Lushington, in *Gough v. Jones*, 11 W. R., 108). And again, "It has been no easy task to discover the meaning of the Local Act" (then under construction); "but that Act is light itself compared with the obscurity of the Church Building Statutes" (per Dr. Lushington, *Varty v. Nunn*, 2 Curt., 893). And Vice-Chancellor Kindersley has characterized them as "ill-drawn and obscure, and extremely difficult to assign a meaning to, presenting a labyrinth of ambiguity, rendering it difficult in the last degree to discover the intention, no less than twenty-five Acts having been passed on this single branch of the law alone in the last forty-five years" (Tuckness v. Alexander, 2 N. R., 480).

To reduce these statistics and the decisions arising out of their construction as far as practicable into clear and logical order was the task Mr. Trower took upon himself—a task by no means inviting, but one which the author, evidently looking upon it as a labour of love, anxious to throw light upon an obscure but most important subject, governing, as he well observes, "in sacred things millions of our fellow-countrymen," has performed in a manner which does justice to the subject and credit to his own reputation as a scholar and lawyer.

In order to give our readers a fair notion of the work, it may be well to notice briefly the contents of the ten chapters into which it is divided. The first chapter gives very clear and able definitions of the various important words occurring in the work. The second chapter is on sites for churches and chapels in parishes, and for church and chapel yard approaches, accessions, and curtilages thereto; and on sites for cemeteries and burial grounds, and burial lodges and chapels. Chapter third is on sites for rebuilding, enlarging, and improving (and, therefore, altering) churches and chapels; and on enlarging, repairing, altering, and making additional church and chapel yards, cemeteries, and burial grounds. Chapter fourth is on the building of churches and chapels without or before a district assigned to them (i.e., before division). Chapter fifth, on the taking down, rebuilding, restoring, repairing (otherwise than by rates), enlarging, altering, and improving of churches and chapels. Chapter sixth is the divisions of parishes and places. Chapter seventh discusses the subjects of

* The Law of the Building of Churches, Parsonages, and Schools, and of Divisions of Parishes and Places, By Charles Francis Trower, M.A., Barrister-at-Law; late Fellow of Exeter College, Oxford. London. Butterworths, Fleet-street. 1867.

augmentation, annexation, conversion, and substitution. Chapter eighth treats of the dissolution and union of benefices and places. Chapter ninth on clergy residences, houses, and glebe; and chapter tenth on sites for schools (for the poor) and for schoolmasters' residences, and on the building thereof.

There are also some useful appendices to the work, containing remarks on Banns of Marriage, Queen Anne's Bounty, the Charily Board, the Curates' Augmentation Fund, the Additional Curates and Pastoral Church Aid Societies, the Redemption of Tithe Rent-charge, Land given in commutation of Tithe Rent-charge, Mr. Hadfield's Bill, the Ecclesiastical Commissioners, and Church-building Contracts.

This brief analysis of the work will, we think, show that Mr. Trower's book will not only be useful to lawyers and clergymen, but also to many of our readers who are in various ways either interested or employed in the building of churches. Attempts have been recently made to consolidate this branch of law, by embodying it in one comprehensive statute. These attempts have hitherto failed; but at no distant period we hope to see such a measure successfully carried out. One thing, however, is certain, that Mr. Trower's treatise will greatly facilitate future legislation on the subject.

MANCHESTER TOWN HALL COMPETITION.

At a recent meeting of the City Council, the Mayor said 136 sets of designs had been sent in, many of which were very beautiful. He thought there would be no difficulty in making a selection of about a dozen. The estimates of the architects ranged from 150,000*l.* to 400,000*l.* "It was decided that the public should not be admitted to see the designs, as some of the architects made it a consideration that their plans should not be seen by the public until the final selection had been made."

We cannot congratulate the architects whose letters have led to this unwise determination. It is to be hoped that the Council will obtain proper professional assistance in making their first selection. To select about a dozen would be a matter of no difficulty, as the Mayor said; but to select the best dozen is another matter. Further, let there be no hurry.

LOWESTOFT, IN SUFFOLK.

The fine old perpendicular church of Lowestoft, in Suffolk, is now under a thorough restoration. Mr. Christian, of London, is the Surveyor-General of its wants, and of what it needs to look again what it once was like. It is a long-backed church, of good East Coast of England proportions, with a tower and, sad to say, an intrusive modern churchwarden steeple of the All-Souls, Langham-place, London, character and characteristics. To all Shakspearian idolaters and students of Elizabethan literature this is a church of great interest; for Nash, the satirist and, in some degree, the antagonist of Shakspeare, was the son of the minister of Lowestoft. See a communication on this subject in the papers of the Shakspearian Society from information supplied by Mr. Albert Way. Antiquaries will be sorry to hear that the whole south side of the church has been so much undermined (unnecessarily so) that, "nodding to its fall," it has to be shored up for future but uncertain safety.

THE NEWSPAPER PRESS FUND.

The report read at the annual meeting of this Institution, on the 10th inst., showed that the recent dinner presided over by the Right Hon. W. E. Gladstone, M.P., had benefited the fund to the extent of more than 800*l.* The number of members then on the roll-book of the Society was 200, of whom 139 were annual, and the remaining 61 life members; the whole being composed of 142 metropolitan and 58 country members. Seven new life members had been elected since the last annual meeting. Two members of the Institution had died, and in each case the widow had received a liberal grant from the Fund. Other grants had also been made to applicants.

The assets of the Association now amount to £700, well invested. The chairman of the meeting, in moving the adoption of the report, expressed the surprise and regret with which he heard the number of members enrolled. Considering that all who are connected with newspapers throughout the United Kingdom could entitle themselves to participate in the advantages of the Fund, by a merely nominal annual payment, the number could be nearer 2,000 than 200. The Association appeared to be managed with care and economy, and he thought the members of the provincial press, if on selfish grounds alone, would hasten to become members on being fully informed of its scope and character. We shall be glad if this memorandum serve to advance the desired end.

ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY OF NORTHUMBERLAND AND DURHAM.

The third general meeting of the members of the Society has been held at the village of Bothal, sitting at Morpeth shortly after mid-day, the members of the Society proceeded along the river side walk, inspecting on the way the ruins—very scant now—of the Lady Chapel. On reaching Bothal, the company at once proceeded to inspect the church. Mr. R. J. Johnson (Messrs. Jastin & Johnson, architects, Newcastle), described the edifice, but prior to entering it, a paper was read respecting Bothal Castle, by Mr. W. G. Gifford. Leaving the church, the company went to the castle, which is occupied by Mr. Temple, the agent of the Duke of Portland, & owner of the Bothal estate. Here, after having walked three or four miles, a welcome invitation was given to the company by Mrs. Temple (Mr. Temple being absent), to enter the castle and partake of refreshments. Having viewed the remains of the castle, the company turned to Morpeth by way of the fields, arriving at the Queen's Head Hotel, they sat down to dinner, the Rev. W. Greenwell, president of the Society, in the chair. The chairman addressed the meeting chiefly on the subject of the restoration of St. Andrew's Church, Newcastle. He severely condemned the "restoration" which had been carried out by the churchwardens and incumbent, and pointed out what the Society had done to prevent the destruction of the original features of the church. The east end had been entirely destroyed, and the whole is a very ugly thing.

FATAL ACCIDENT IN NOTTINGHAM.

RESPONSIBILITY OF CONTRACTORS. A fatal accident, resulting in the loss of two lives and seriously endangering another, has occurred at Chaucer-street, Nottingham. Three labourers, the employ of Mr. Thumbs, contractor, were engaged in excavating for a new culvert, which was being constructed by the Board of Health, up a centre of Chaucer-street. The culvert runs 10 ft. or 13 ft. deep, but opposite the Midland Institution for the Blind (where the accident happened) the depth was not nearly so great, being at the point where the excavation had ceased. There was no shoring to the excavation, and the three men were throwing out soil, when a side of the cutting gave way, and they were literally buried alive. Two of them were completely covered by the earth which fell on them, and died, but Brooks's head was above the ground, and the coroner's jury, after hearing evidence, returned the following verdict in one of the two cases:—

That the said Henry Wagstaff died from having been accidentally crushed by the fall of earth in a culvert in Chaucer-street, in this town of Nottingham, where he was engaged as a workman; and it appears to a jury that his death was brought about by the neglect of proper and necessary precautions by the contractor, William Thumbs, and the clerk of the works, Thomas Gascoyne, in protecting the lives of the workmen employed in the dangerous nature of the work, and the jury expressed their desire to express their strong opinion, that in all such works in Nottingham of a nature like those in Chaucer-street, the town authorities should insist that the nature of the cuttings be properly shored up, and be placed under more efficient superintendence.

A similar verdict was returned in the other case.

The coroner, previous to reading over the verdict, called Mr. Thumbs into the room. The coroner then said,—It has been with consider-

able difficulty that the jury have decided not to return a verdict of manslaughter against you. Had they done so it would have been my duty to have committed you, and the charge would have been laid against you and Mr. Gascoyne. That the accident arose from a want of precaution on your parts, no one who has heard the evidence can doubt. I very much regret that you should have taken a statement to the effect that timber was taken to that street and from thence to another. Nobody saw it but yourself, and you only saw it in imagination, although you swore to it as a fact. That your statement was untrue was borne out by the facts; your statements were contradicted by every witness who was examined; and after it had been flatly contradicted you said it was mere hearsay. I think you will remember, with feelings of pain, that the deaths of those two men have been brought about very much by your neglect.

Ten jurymen, it is said, were strongly in favour of returning a verdict of "Manslaughter," but were compelled to give way to the others.

ST. MARYLEBONE BATHS AND WASH-HOUSES.

The Vestry of St. Marylebone have just been gratified with the information that the mortgage incurred by them in building and fitting up the above establishments, in the vicinity of Lisson Grove, has been entirely paid off. For the future, the baths and wash-houses of the parish will not only be self-supporting, but will return to the parish exchequer a clear sum exceeding 1,000*l.* annually. Since the opening of the baths in 1849, the number of bathers has been 2,497,109; and the number of those availing themselves of the wash-house has been 388,431. The almost insurmountable difficulty of getting a site at the eastern end of the parish is the sole reason why the Vestry have not hitherto erected similar establishments in that district of the parish also.

THE MARYLEBONE MORTUARY.

The decision of the vestry of St. Marylebone to erect a mortuary in the Paddington-street burial-ground has caused great opposition amongst the inhabitants of the immediate vicinity, and the vestry held a special meeting on Tuesday last, the 13th inst., to consider the propriety of rescinding the resolution. After discussion, Mr. Tyler said there had been no less than three requisitions from corners' juries at different times asking the vestry to erect a mortuary, and, though there was a semblance of opposition by the inhabitants of the district, he would undertake to get more signatures from the neighbourhood of the burial-ground in favour of the erection of the mortuary than could be got against it.

Professor Marks quoted from personal knowledge several instances of the ill-effects produced on the health and the morals of the poor by the absence of such useful places as mortuaries.

The chairman put the motion for the rescinding of the resolution of the vestry that the mortuary be erected, with the following result: For rescinding, 16; on the contrary, 25. The result is that the mortuary will be erected. We may add that it is to be placed in the centre of the burying-ground, will be surrounded by trees so as to be nearly invisible to the public, and will be at a considerable distance from the adjoining houses.

THE WINCHESTER DRAINAGE PLANS.

There were sent in eleven plans by competitors for the three premiums. From the eleven plans the committee selected four, because they all proposed to distribute the sewage in the Chilcomb Valley, which some consider to be objectionable for the purposes of profitable utilization. The committee returned the other seven to the respective engineers, knowing nothing, or next to nothing, of their merits. Not being able to decide upon the four selected, they called in the assistance of Mr. Bothams, the surveyor to the town council of Salisbury. Mr. Bothams has decided the plan No. 7, motto "Experience," to be the best of the four, and consequently enti-

tled to the premium of 150*l.* It also appears that he has decided that the three others are so defective, from inaccuracy of levels and other important omissions, that they are, in their present state, practically useless. But the committee must now decide how the second and third premiums are to be disposed of. A special meeting is to be held, to settle this somewhat perplexing point.

WINCHESTER DRAINAGE COMPETITION.

Sir,—The unfairness, not to say dishonesty of the Winchester Local Board, in the matter of their recent main drainage competition, demands the fullest publicity, and the rejected competitors hope to enlist your powerful aid in exposing the gross injustice to which they have been subjected by the Board.

The "printed particulars" issued by the Local Board say, "The plans and specifications to set forth the best place and method of disposing of the sewage." From this it would appear as if the Local Board had not determined upon the place in which to dispose of the sewage, and accordingly we carefully surveyed the entire district, and selected a locality which was best adapted, in our opinion, for the disposal and profitable utilization of the sewage. We did not, however, select the Chilcomb Valley, and for this, and this only, our designs were rejected. It matters not with the members of the Winchester town council what were the merits in other respects of the seven rejected designs. With these self-constituted judges it now appears to have been a *sine qua non* that the sewage should waste its fragrance in the marshy air of Chilcomb Valley, and any engineer, no matter what his judgment or experience might be, who recommended any other locality, thereby deprived himself of the consideration and courtesy which he had a right to expect at the hands of the council. Upon these grounds we protest against the decision which has been given. The advertisement was a delusion and a snare, and the authors of it obtained designs and awarded premiums under false pretences.

COMPETITORS.

PROPOSED NEW SYNAGOGUE, LONDON.

Sir,—In the *Builder* of the 3rd inst., a letter appeared signed by Mr. H. H. Collins, one of the unsuccessful competitors in the late competition for the above building, in which it was stated that—"Mr. Philip Hardwick was not consulted, nor did his opinion guide the committee in drawing the merits of the designs submitted."

Both these statements are quite inaccurate. The absence of Mr. Hardwick from London has prevented our noticing this letter previously. Immediately on his return to town, however, we saw Mr. Hardwick on the subject, and we have his authority to state that he was consulted, and reported to and advised the committee upon the merits of the designs submitted.

We have further the permission of various members of the Building Committee, whom we have seen, to state that the report submitted by Mr. Hardwick was duly considered by them, and was mainly instrumental in their arriving at their ultimate selection.

THE SUCCESSFUL COMPETITORS.

BUILDER AND ARCHITECT.

Sir,—The complaint of your correspondent "Architect" is one of long standing and too frequent occurrence, the only remedy for which, I believe, is for us architects to adopt the system of keeping down the extras in our own accounts and those of builders.

Exceeding the amount claimed are desirous of spending, and following the example of lawyers in making our charges, often are the cause of these about to build placing themselves at the tender mercies of builders who adopt the plan of ignoring the architect's existence, except in cribbing his ideas.

As an example of this, allow me to state that in my immediate neighbourhood a fresh-blown speculating builder is engaged in erecting a private residence for a client, and so far is this light-house builder superior to drawings (except upon his client frequently) that he designs (?) the building as it is carried up, trusting to Providence how the next story may turn out.

What such building will end in, is some satisfaction to us slighted professionals when we contemplate the safety of the foundations, and of the persons who think themselves so cute in being so cheaply done for.

W. E. B.

ROUND NUMBERS FOR THE HOUSE OF COMMONS.

Sir,—I take as a text a passage in the *Builder* of July 27th (p. 512), "The establishing of schools and museums . . . would cost a good deal less than half as much as one of those floundering iron-clads which appear to be superseded on an average about every six months."

When a comparison of expenses of this kind is to be submitted to Parliament, I wish to assume an analogy between that august assembly and the partners in a firm of contractors who are on the eve of putting in a tender for a large job. Suppose that the priced bill of quantities lies on the table before the leading partners, while the sleeping ones occupy the back benches of the concave, supported by the managing clerk and other subordinates, in readiness to furnish all required information. I take it for granted that a very natural proceeding on the part of an anxious partner will be, to look at, in round numbers only, the several heads under which long castings of figures are ranged; for instance, if the trade "wood-carver" casts up to \$600, 19s. 3*d.*, cost price, he will look at it as "1,000*l.*" perhaps, too, he will fortify his judgment by taking a scrap of paper and scribbling down the round sum.

Now, my proposition is, that the House of Commons be furnished with a black board and white chalk, by

cherries of beauty without heart. The incident is less uncommon than some would suppose. Extravagant in parts, the story has the merit of interesting the reader. The author sees in the life of his unfortunate hero a protest against the worship of the sensuous in art. "Surely," he exclaims, "in the religion of Art there is a higher and purer form of worship than at which begins and ends at the feet of earthly art."—Mr. Winwood Reade's paper in *Nigeria*, "The Gorilla as I found him," is an example of plain speaking seldom equalled. He says M. du Chaillu is a liar, while he gives him much credit for the difficulties overcome in penetrating to Ashango Land. If M. du Chaillu ever shot a gorilla, in former days he would certainly have shot a Reade had he so spoken. Reade properly gibbets Sir Roderick Murchison for his impertinent intrusion into discussion on which he knows nothing. *Lesley's Magazine*, edited by Mr. Edmund Yates, goes well, Dr. William Russell, Mr. Shirley Locks, and other well-known writers ably operating with him. The aim of its energetic and clever editor must be to give it character of its own.—*The Broadway*, other new venture (Routledge), is addressed equally to New York and London, but its first number contains nothing, beyond a brief review of W. Cullen Bryant, from or actually appertaining to the other side of the Atlantic. It is, however, a very amusing part, and a remarkably good sixpenny worth.—Martin Chuzzlewit, the second volume issued in the "Charles Dickens Edition," has special aims upon us, setting forth, as it does, the man architect Pecksniff, and the miserable way in which the poor were, even are, attended to in sickness. In all his writings Mr. Dickens has never omitted an opportunity to show forcibly the crying want of sanitary improvement in the dwellings of the labouring classes. In addition Martin Chuzzlewit "is a capital story, a book that will live."

Miscellaneous.

EFFECTS OF A STRIKE.—Upwards of 600 men, formerly engine-drivers and firemen on the North-Eastern Railway, the victims of the memorable strike on the 10th of April last—were virtually starving.

THE PARIS EXHIBITION.—The Imperial Commission of the Universal Exhibition has just issued a notice that the date of the 31st October, fixed for the closing, will be punctually observed. The materials of the palace and park will be promptly offered for sale.

DISASTERS AT SANDOWN, ISLE OF WIGHT.—It is said that the late Major Smyth has left £2000. to be expended in the erection of a block of almshouses for the widows of naval and military officers on the plot of land at the top of Sandown-street. £2000. have also been left to provide bells and a belfry.

THE ARTISANS' AND LABOURERS' DWELLINGS BILL.—We regret very much to observe that the bill has been discharged. Mr. McCullagh, in moving the discharge of the order relating to the bill, complained of the implacable hostility shown to the principles and provisions of the bill by a small section of the House, but pledged himself to bring forward a similar bill at the next session, when, it is to be hoped, the Government will give him real support.

TESTIMONIAL TO MR. ROBERT THOMPSON, OF THE ROYAL HORTICULTURAL SOCIETY'S GARDENS.—The retirement of Mr. B. Thompson from active life in the service of the Royal Horticultural Society has been thought by his friends to offer a fitting occasion on which to present him with a substantial testimonial, expressive of their cordial sympathy with him in his declining years, and indicating also their high appreciation of the many services which he has rendered to horticulture and meteorology during a long and useful life. The council of the society have taken the initiative by inviting several gentlemen connected with horticulture to attend a preliminary meeting, at which a committee was deputed to carry out the proposed object. The services rendered by Mr. Thompson, both horticultural and meteorological science, are well known to those who are actively engaged in the pursuit. For upwards of forty years he has held a prominent position in the working of the Royal Horticultural Society.

REPAIR OF TOULOUSE CATHEDRAL.—This cathedral is to be repaired by means of a lottery; tickets, 2½d. each, giving an investor the chance of winning 4,000l.

HASLINGDEN WORKHOUSE.—A correspondent writes to complain that the guardians have appointed an architect for this building, without going to competition. We really cannot blame them.

A SECRET TELEGRAPH.—M. E. ARNOUX, a superior officer of the French naval artillery, has endeavoured to ensure the secrecy of telegraphic despatches by a contrivance which he has described in a pamphlet entitled "La Lettre Electrique: Nouveau Service Télégraphique." We cannot enter into the minute details of his system, which is intended to apply, with some modifications, to all the various telegraphs now in use. It is not too simple.

GREAT FIRE IN NEWCASTLE.—There has been great destruction by fire in the pile of buildings known as the Central Exchange. The fire was only extinguished after a free course of about five hours. The erection is a triangular block of lofty stone buildings facing into Market-street, Grainger-street, and Grey-street; it was a great feature in the scheme of town improvement carried out by the late Mr. Richard Grainger, and the domes at the angles facing Grey-street and Market-street, Grainger-street and Grey-street, and Market-street and Grainger-street were prominent objects from whatever point the town was viewed. The fire commenced in the upper story of the hotel. Property to the value of 60,000l. has suffered.

A PUBLIC HALL FOR TUNBRIDGE WELLS.—Some years ago a public company was formed, having for its object the building of a large central hall, with which should be connected public offices, reading-rooms, baths, and other conveniences. For some reason the undertaking fell through, and the company collapsed, but recently a somewhat similar plan has been suggested by a gentleman known by his efforts to improve the condition of the working classes. His idea appears to be to build a large hall where all the business of the various friendly societies in the town, including a very large number of working men, might be transacted. It is said that he has, in conjunction with other gentlemen, expressed his willingness to advance 2,000l. towards such a building, free of interest, provided that members of friendly societies and others interested would raise a like sum in shares on the limited liability principle.

A NEW SAFETY LAMP.—Mr. Samuel Higgs, jun., of Penzance, has invented a safety-lamp, the principle of which is to enclose the ordinary Davy Lamp in a case, or tube, made partly of glass and partly of gauze; by these means, it is said, there is no diminution of the light; no possible chance of an explosion, however strong the current of air; nor can the lamp be tampered with, as the inner lamp is locked with one description of fastener and the casing with another. The pricker, or trimmer, is done away with; a flat, prepared wick being substituted for the ordinary coarse wick; and the lower part of the casing being of glass, a better light is obtained. The lamp has been subjected to severe tests. Highly explosive coal-gas—gas which elongates the flame and causes the Davy lamp to become red-hot—has no perceptible influence on Mr. Higgs's double Davy, nor can any amount of blowing force the lamp-flame through the two surroundings of gauze.

NEW MUSIC-HALL FOR SHEFFIELD.—The plans for the proposed new music-hall, which is to be erected fronting Barker Pool and Burgess-street, have now been prepared by Messrs. Flockton & Abbott. The principal entrance is in Barker Pool, and it is proposed to extend a portion of an ornamental character over the pavement, so as to enable persons to enter dry-shod from their carriages. The gallery entrance is at the upper angle in Barker Pool. There are also two subsidiary entrances to the hall in Burgess-street. The building will be about 70 ft. high up to the square. The basement story contains dwelling for the hall-keeper, large kitchens, with cooking accommodation; a bar for refreshments, and cellars. On the ground floor is an entrance-hall, 27 ft. by 24 ft., opening from the portico, and communicating also with retiring-rooms for ladies and gentlemen. On the floor of the large hall there are rooms for a variety of purposes. The large hall is 126 ft. long by 60 ft. wide, and 56 ft. high.

JOINER'S WORK FROM ABROAD.—At the recent meeting of the Company for Providing Improved Dwellings for Artizans in the Metropolis, Mr. Henry Edwards, M.P., the deputy-chairman, said that the doors, windows, and other carpenters' work used in the buildings now in course of erection were made and brought from Stockholm at a cost of 25 per cent. less than they could be produced for in this country.

MONUMENTAL.—When the *Alabama* was sinking, after her action with the *Kearsage*, its surgeon, Mr. David Herbert Llewellyn, refused to enter the crowded boat, and thus perilled the safety of the wounded; and remaining on board the vessel, went down with her. All honour to his memory! To commemorate his heroism a tablet has just been placed in the lecture theatre of the Charing-cross Hospital, in which he was once a student. Though simple and unpretending, the memorial is suitable. Mr. W. T. Hale was the designer and sculptor.—A statue of Napoleon I. is to be inaugurated on the 18th instant, at Montevideo. It will stand on the spot where the emperor uttered the words, "The bullet which is to kill me is not yet cast."

AMENDMENT OF TRIAL BY JURY.—Progress is being made with this much needed amendment. The first report has been made to the Law Amendment Society by the special committee on the preservation and amendment of trial by jury. The scope of the report is limited to that part of the inquiry which relates to the devising a better and more equitable system of registration and summoning; and was prepared with a view to its being put in evidence to the select committee of the House of Commons (nominated a few weeks since), by Mr. Sergeant Pulling, chairman of this committee, who was the first witness examined. Next session it is the intention of the committee to resume its sittings for the consideration and discussion of other branches of the subject. The committee have necessarily been at considerable expense, and they solicit a little assistance in support of the fund.

THE ATMOSPHERE OF THE UNDERGROUND RAILWAY.—Sarah Dobner, aged 56, died at the Bishop's-road Station of the Metropolitan Railway on Tuesday before last. Deceased had complained of a great difficulty of breathing while on the underground, and while waiting for the second train she said she was in great pain. A medical gentleman advised her removal to the hospital, but it was then believed she was dead. Mr. Anderson, one of the surgeons at St. Mary's Hospital, who made the *post-mortem* examination, said the deceased was labouring under disease of the bronchial gland, and undoubtedly the suffocating air of the Underground Railway had accelerated death. The corner, at the inquest, said he had experienced the depressing effects of that railway, and he therefore avoided it as much as possible. The tunnels and stations should be ventilated, but he supposed that would not be done until some shocking loss of life from suffocation had occurred. The jury returned a verdict of "Death from natural causes, accelerated by the suffocating atmosphere of the Underground Railway." It is to be hoped this verdict will lead to the adoption of some such means of ventilation as have already been suggested in the *Builder*.

THE VELOCIPEDE.—Self-moving carriages on a small scale, especially if some motive-power, such as that of condensed air, steam itself, or even watch-movement on a great scale, could be applied to them, might become very serviceable to those who cannot afford to "keep a gig," and to workmen, clerks, and others, living at a distance from their places of business. The *Builder* has often recurred to this idea; and in Paris the extension of the velocipede seems now to be taken up in earnest, and not, like with us, as a mere toy. Not only is there now in Paris a velocipede driving-school, but also a velocipede-club. The Prince de Sagan, M. Aguado, M. Blount, and twenty other gentlemen riders, have taken it under their patronage; and the Duke de Bassano has just ordered a velocipede in aluminium. In America, too, the *Builder's* idea is taking root. A new style of carriage appeared in Boston recently. It was a light open buggy, carrying two men, and had no visible means of locomotion save a slight apparatus under the box. The vehicle came along a street on the track just behind a horse car; but when the car stopped the buggy was turned aside and passed by the car, and was guided as easily as if a horse had been attached.

THE TRADES MOVEMENT IN IRELAND.—The Amalgamated Building Trades of Dublin have passed a resolution indignantly denouncing the Sheffield outrages, and "repudiating all connection with the trades unions of England." The presidents of the bricklayers, carpenters, house painters, plasterers, and slaters were present, and assented to the resolution.

WINDOW GARDENING IN LONDON.—The inspector of nuisances to the Holborn District Board of Works has given formal notice in his district to those having flower-pots in their windows to remove them immediately, otherwise proceedings will be taken to compel their removal. It is right that such flower-pots should be secured, for the public safety, and we have not only urged this, but pointed out plans for the purpose; but the safety of the public does not require their removal; and we hope the district board will withdraw the order given, and substitute another ordering the securing of all window-gardening apparatus, so as to ensure the public safety.

THE YORKSHIRE MEMORIAL TO THE LATE EARL OF CARLISLE.—The foundation-stone of the county memorial to the late Earl of Carlisle was laid on Tuesday last, on the summit of Bulmer Hill, at the southern end of the long avenue at Castle Howard. The design was selected by the committee of subscribers from a competition of four architects, that of Mr. F. P. Cockerell being adopted. This is a Grecian column, standing on a square platform, rising from a flight of steps on one side, with pyramidal ornaments at the four angles. The column has a capital with a pendant wreath, and supports a metal tripod holding an urn. The cost of the memorial (county) will be about 2,000l.

MAGNETISM IN THE IRON MANUFACTURE.—A new mode of manufacturing iron, patented by Mr. W. Robinson, in February, 1865, was recently introduced at Brown & Company's works, Sheffield. The inventor having discovered that certain files and smooths proved to be magnetic, began to inquire why? and found that such files were always superior in quality, whether the magnetic power was the cause or the effect. His subsequent experiments showed him that a current of magnetism through the molten metal made the iron or steel so produced remarkable for its purity, density, and toughness. Mr. Robinson claims that the effects of magnetism have never yet been fully tested, and believes he has discovered a process which is destined to revolutionise the manufacture of iron and steel.

CHARGING CROSS HOTEL COMPANY (LIMITED).—The seventh half-yearly meeting of this company has been held at the hotel; the Hon. J. Byng in the chair. It appeared from the report read by Mr. G. S. Haines, secretary, that the directors' anticipations of increased business had been fully realized. The receipts during the six months amounted to 39,603l. 5s. 8d. After placing 2,000l. to the credit of the fund for depreciation and rewards, charging the interest on debentures, and 690l. 14s. 9d., the balance of the cost of the South Shades, there remained 9,091l. 13s. 1d. The directors recommended that a dividend at the rate of 10 per cent. per annum, free of income-tax, be declared, which would leave a balance of 1,091l. 13s. 1d. to be carried over to the next half-year. The report was adopted unanimously, and the dividend declared.

THE NORTH POLE AS A WINNING POST!—Who will first reach the North Pole? Britons, Americans, Swedes, or Frenchmen. Hitherto the rivalry has been between Britons and Americans. Now it is to be between Swedes and Frenchmen. The Swedish expedition has lately been announced, and now it seems that fifty distinguished Frenchmen have sanctioned a similar enterprise. M. Gustave Lambert, of the hydrographic department, proposes to reach the open Polar Sea and the Pole itself by a route never before tried. We hope it is by the route first of all pointed out in the *Builder*, by the warm gulf stream between Iceland and Scandinavia. The project has been well received, and a subscription has been opened. As soon as 600,000 francs are obtained the enterprise will be carried out. Among the fifty names appended to the announcement are those of Elie de Beaumont, Chasseloup Laubat, Michel Chevalier, Drouin de Lhuys, Gaizot, Emile de Girardin, De Quatrefages, Leonce de Lavergne, Leen Say, Alfred Maury, and Milne Edwards. The Emperor has given his full approval to this spirited project. England ought not to give in.

THE LABOURERS' DWELLINGS QUESTION AT LIVERPOOL.—Some conversation on the subject has taken place in the local Health Committee. Mr. Robertson Gladstone asked as to the present position of the question, and stated that 500 labourers' dwellings were to be erected, on the most modern and approved principles, near Edgeland, on the London and North-Western Railway route. The rental of each dwelling would be 5s. a week, including taxes, and a free ticket for morning and evening train. Mr. Robinson said that Mr. Gladstone was perhaps aware that before the standing orders were completed the House of Lords asked for information with regard to the labourers' dwellings. He believed under their New Improvement Act they should have to eject some thousands of persons; and Lord Redesdale asked what provision the corporation meant to make for them, and the borough engineer assured him they had bought land and passed plans, and were about to proceed with erections of that character. They had also a clause in the Improvement Act by which they were to give eight weeks' public notice that they intended to pull down. They could only pull down fifteen houses before giving notice. The working man had a great aversion against going any great distance from his work; and the experiments in London in attempting to take men one or two miles away from the scene of their labours had proved entire failure. Some of the buildings had not paid 1 per cent., whilst others had been unoccupied. But those houses that abutted on the immediate neighbourhood of their work had yielded from 8 to 12 per cent. He trusted that no such difficulty would be experienced in Edgeland as was felt in London.

TENDERS

For the erection of two houses, at Addlestone, for Mr. Thorn. Mr. B. Taberner, architect:—
Dove, Brothers £1,385 0 0
Knight 1,285 0 0
Forster 1,172 14 0
Princes 1,147 0 0
Keys (accepted) 1,115 0 0

For pulling down and rebuilding No. 8, Pilgrim-street, Ludgate-hill, for Alderman Sir B. S. Phillips. Mr. H. H. Collins, architect. Quantities supplied by Mr. George Mortimer:—
Wills £733 0 0
Sales 716 0 0
Enoch 2,070 10 0
King & Sons 653 11 0
Newman & Mann 615 0 0
Henshaw 611 0 0

For Holy Trinity Schools, Dover. Mr. Clarke, architect. Quantities supplied by Pain & Clarke:—
Pepper £2,358 0 0
Muckensie 2,070 10 0
Fagg 2,023 7 0
Adcock (accepted) 1,668 8 6

For building Christ Church, Park-gate, Yorkshire. Mr. William White, architect. Quantities by Mr. Samuel Field:—
Aslow £2,951 0 0
Ainsworth 2,324 0 0
Ripley 2,822 0 0
Chadwick (accepted) 2,827 0 0

For the erection of a range of stables and coachhouses, covered stable-yard, and dwelling-house, for Mr. Lewis, in Newington Green-lane. Mr. H. W. Budd, architect:—
Carter & Sons £1,962 0 0
Bishop 1,814 0 0
Adams 1,659 14 3

For the abutments of a small girder bridge, Leicester. Mr. Stephens, borough surveyor:—
Ratcliff £235 0 0
Hutchinson 234 19 0
Kellott 234 10 0
Durbury 230 0 0
Paul 228 0 0
Herbert 228 13 6
[Very close tendering.]

For restoration, Priory Church, Dunstable. Mr. G. Somers Clarke, architect:—
White £9,000 0 0
King & Sons 6,480 0 0
Myers 6,383 0 0
Huddleston 5,912 0 0
Garido 6,837 0 0
Chappell 6,822 0 0
Petincoe 6,867 0 0

For additions to Bath House, Hounslow, for Mr. G. H. Barber. Mr. Gordon Stanham, architect:—
Massey £1,347 0 0
Newman & Mann 2,263 0 0
Nye 1,185 0 0
Nicholson 1,179 0 0
Adamson 1,117 0 0

For erecting workshops, Euston-road, for Mr. G. J. Bowyer. Messrs. Wadmore & Baker, architects:—
No. 1 £240 0 0
No. 2 548 0 0
Scrivenor & White 685 0 0
Ryde 625 0 0
Dove, Brothers 625 0 0

For building new lock ward, and other additions, to Royal, Portsmouth, Portsea, and Gosport Hospitals. Messrs. Baker & Rawwell, architects. Quantities supplied:—
Absalom £2,919 0 0
Simms & Marten 2,911 14 9
Lawrence 2,850 19 8
Light, Brothers 2,725 0 0
Backhurst (accepted) 2,715 0 0
For incidental works, &c.
Lawrence (accepted) £685 0 0

For finishing six houses, in Cornwall-road, Kensington, for Mr. Thos. Joyce. Mr. W. King, architect:—
Deer £3,510 0 0
Thos. Joyce 3,306 0 0
Mundy & Co. 3,100 0 0
Wilcox 2,825 0 0
Palmer 2,744 0 0
White 2,680 0 0
Colley 2,555 0 0
Jenkins 2,500 0 0
Wills 2,471 0 0
Martin 2,447 0 0
Moore 2,420 0 0
Gads 2,155 0 0
Salter 2,145 0 0
Lloyd & Cockerell 2,073 0 0
Foale 2,051 0 0
Vere (accepted) 1,980 0 0

For finishing two houses, in Cornwall-road, for Mr. Thos. Joyce. Mr. W. King, architect:—
Mundy & Co. £1,180 0 0
Wilcox 1,016 0 0
Steele 1,013 10 0
Deer 991 0 0
Palmer 968 0 0
Jenkins 960 0 0
Martin 954 0 0
Colley 883 0 0
Wills 873 0 0
Austin 847 0 0
Moore 750 0 0
Salter 742 0 0
Foale 720 0 0
Lloyd & Cockerell 717 17 0
Vere (accepted) 683 0 0

For building additions to two houses in the Clarendon-road, Kensington, for Mr. Bowron. Mr. W. King, architect:—
Deer £555 0 0
Salter 550 0 0
Lane 542 10 0
Martin 620 0 0
Colley 490 0 0
Manley & Rogers 447 0 0
Weickind 410 0 0

For finishing four houses, in Aston-road, Kensington, for Mr. George Ansell. Mr. W. King, architect:—
Farr £690 0 0
Humphreys 885 0 0
Clark 978 0 0
Austin 960 0 0
Bowles 875 0 0
Martin 868 0 0
Salter 825 0 0
Foale 780 0 0

For farmstead, six cottages, and lodge, at Wadnstead, for Mr. J. Gee. Mr. J. Wimple, architect. Quantities supplied by Messrs. Birdseye & Stoner:—
Homestead Cottages, Lodge
Kilby £7,516 £2,297 279
Newman & Mann 7,140 2,665 531
Piper & Wheeler 7,310 2,316 320
Asford & Whittier 7,259 2,350 749
Brass 6,735 2,223 789
Myers & Son 6,476 2,240 542
Ainscombe 6,316 2,188 778
Punnett & Son 6,437 2,181 653
Widdicombe, Son, & Oakley 5,830 2,103 736

For town-hall and market-house, Cinderford, East Dean, for the East Dean Town-hall and Market Company (Limited). Mr. Edwin J. Reynolds, architect:—
Coleman £3,000 0 0
Clutterbuck 2,400 0 0
Durke (accepted) 2,220 0 0

For alterations, at 76, Upper-street, Islington, and workshops in rear, for Mr. J. H. Machin. Mr. R. Farris, architect:—
Seabey £2,340 0 0
Taylor 2,208 0 0
Gordon & Co. 2,080 0 0
Franklin & Lamming 2,001 0 0
Blackmore & Morley 1,870 0 0
Grover 1,845 0 0
Cubitt, Brothers 1,785 0 0
West (accepted) 1,733 0 0
Waters 1,670 0 0
Foxon & Smith 1,547 0 0

For taking down and rebuilding three cottages, with shops, at Greenwich, for Mr. J. Buskin. Messrs. Bird & Walters, architects:—
Williams & Son £237 0 0
Newman & Mann 338 0 0
Ebbe & Son 827 0 0
Manley & Rogers 793 0 0
Kelly, Brothers 774 0 0

For making up Avenue-road, Acton, Middlesex, and for other works, for the Acton Local Board. Mr. Edward Monson, C.E. surveyor to the Local Board:—
Waterright £1,600 0 0
Pounds 973 0 0
Hubbard 973 0 0
Moxon & Mutton 973 0 0
Goodair 825 0 0
Parsons 894 0 0
Williams 880 0 0
Brewer 845 0 0
Porter 788 0 0
Stegles (accepted) 783 0 0
Pizzeys 752 0 0

The Builder.

VOL. XXV.—No. 1281.

Still
in London.



N those comprehensive and instructive glances which the accomplished naturalist casts from time to time over the surface of the planet Earth, he regards with interest those migratory movements by which furred or feathered wanderers follow the declination of the sun. The clouds

of quails which fly by night over the Mediterranean, and, alighting on the Italian shores, set forth (so many of them, at least, as escape the pouched nets erected for their reception) on a rapid pedestrian journey into France, may be awaited almost to a day. The great swift, that whirls through our villages, shrieking with delight, or with eagerness, in pursuit of his insect prey, has travelled to our shores from Senegal, at the rate of seventy miles per hour, a speed now no longer attained by the express trains of the Great Western Railway. The number of degrees of latitude covered by this rapid traveller exceeds the ordinary range of any except human wanderers; but wherever the map of the Old World may be studied at appropriate periods, we shall find marks of the constant self-adjustment of animal abode to the change of season.

Artificial, conventional, civilised life is subject to the same element of disturbance, and follows, to some extent, the same laws. A philosopher of that modern school which, after unceremoniously throwing overboard the greater part of that which is most surely received among us, has been compelled to invent the facts on which the previously invented theories are to be supported, would probably astonish us with the synchronisms to be remarked in our own island in the months of August and September. Three days before the festival of the Assumption of the Virgin, he would say, a remarkable migration of a large gallinaceous bird called the Tetrao takes place into the United Kingdom, and specimens are to be met with not only on Cumberland and Scotch moors, but simultaneously, and in great numbers, in the streets of London—no doubt exhausted by fatigue—so that the inhabitants of that metropolis, who remain there for that express purpose, invariably celebrate the Feast of the Assumption by partaking of the flesh of that bird. Seventeen days later a similar phenomenon may be expected to occur with the same regularity, it being remarkable that the second influx of birds consists of those of another species, smaller in size and lighter in colour, but appearing in the same sudden manner over the whole country. It also has been observed that the species of club, or rhetorical exhibition, which has come to replace the ancient Saxon wittengemote, usually comes to a close between these two gallinaceous immigrations, and that this

event is invariably preceded by the capture in the river Thames, in the vicinity of Greenwich, of large shoals of a very small fish, peculiar to the river and to the season, on which the Cabinet Councillors are, by virtue of their oaths taken on appointment, bound annually to feast in the hospital erected in that town.

If we exchange the style of language and of thought borrowed thus from our German neighbours for our own plainer vernacular, we shall have occasion to congratulate such of our readers as are more or less restricted to a metropolitan residence, on one result of the Parliamentary session of 1867. Before rushing northward or westward for the solemnities of the 1st of September, or at least for that mouthful of country air which the torrid heat of 86 degrees of Fahrenheit in the shade has rendered so absolutely necessary to comfort and to health, the Legislature has passed one measure highly calculated to save the time of the residents in, and visitors to, London, from its most amazing mode of consumption. While men of all parties and of all antecedents have been gaily consenting to take a more unprecedented leap in the dark than English history has yet witnessed, but of which we are not at all afraid, we find with no less surprise than gratitude that a practical measure of real and necessary reform has actually escaped the murder of the innocents, and struggled into legal existence. The Legislature which could calmly and with perfect indifference survey the ruin which its own ill-considered and contradicting action had brought on that great interest to which the internal communications of the country have been committed with so little precaution, has been moved to forbid obstructions to the Cabs in which honourable members may have occasion to visit their stockbrokers. There was of course a great outcry. It was held to be a tyrannical invasion of the rights secured by Magna Charta, to prevent any resident in a great thoroughfare from having in his coils or his beer at any moment which either he, or his coal-merchant, or his brewer, might find most perfectly convenient, the incidental block of the entire east and west traffic of the city for five or ten minutes being one of those trifles with which such independent resident had no concern. Why should the coal-heaver be forced to get up an hour or two earlier in order that the banker's brougham might save a quarter of an hour in the middle of the day? Could any specimen of class legislation be more odiously unfair? Where is the hereditary freedom of the Englishman if he is liable to be ordered by a man in a felt helmet to go through one of two parallel streets rather than through another, for the simple reason of expediting the general movement of a city traffic? These champions of inconvenient freedom have, however, at length, been worsted, and it will now be distinctly the fault of the police authorities if London continue to be the city in which, while the traffic is the most enormous in the world, it is at the same time the most confused and unregulated. That a moderate amount of activity and intelligence on the part of the directors of the police would have done much to render the Bill for the Regulation of Metropolitan Traffic unnecessary, we think few who have watched the neighbourhood of St. James's-street on Court-days can doubt. But now, at all events, all doubt as to the full legality of preventing persons from inconveniencing one another by sheer pig-headedness is at an end, and we trust that regulations at once simple and efficient will be intelligently made and unhesitatingly enforced.

The importance of the relief which the introduction of system in the place of irresponsible confusion is calculated to give to the street traffic, has received, within the last few days, an illustration from an unexpected source. If the emoluments of the coroner depend on the number of fatal accidents as to which he may be called

upon to hold an investigation, the independent and defiant liberty with which every carman and cabman in London has hitherto driven across his neighbour's path, must have been a great source of gain to that legibus functionary. But a new field has opened to his exertions. When the engineer suggested that the traffic of London might be carried on in two stories, and that a new system of thorough communication might be wrested from the dominion of the rats, the water-pipes, and the sewers, it might have been expected that the palpable necessity of providing a respirable atmosphere for the intended passengers would not have been left out of sight. How completely and inexorably this has been done we have not now for the first time to complain. Very few persons who have come underground, say from Edgware-road to King's Cross, about three or four o'clock in the day, will think any language that we can venture to print sufficiently strong to reprobate the intolerable and stifling atmosphere into which those passengers have to descend who seek to shun the fierce sun of the streets, and the intermitting torture of the public conveyances. But now that we have the authority of the coroner for attributing death directly to the atmosphere of the Underground Railway, we trust that the directors of that enterprise will feel convinced that it will pay to attend to the ventilation of their pestiferous tunnels. The traffic on the railway is enormous, and, conducted as it is by fully adequate locomotive power, and unimpeded by the delays caused by junctions, or by the charging and discharging of luggage, it is calculated to relieve the streets almost entirely of a large amount of through traffic, were it not for this one grand obstacle, want of ventilation. There can, we should think, be little doubt that a due attention to this essential requisite of comfort would very largely increase the traffic of the Metropolitan Railway. If people could convey their own oxygen, like water spiders in an aquarium, very few would hesitate between the cost of a cab or the discomfort of an omnibus on the one hand, and the punctuality, speed, and easy motion of a railway carriage on the other. As it is, the long lines of omnibuses are not only far better served, but appear to be more numerously supported than was the case before the piercing of the tunnel under the New-road. How much of this active support of the more cumbrous, interrupted, and crowded mode of transit is due to the stifling atmosphere of the tunnel, we suppose the Metropolitan directors have never calculated. But a little reflection only is necessary in order to arrive at the conclusion that nature in this, as in other cases, tacitly asserts her rights. The man who now hesitates whether to take a ticket by railway or to reach the City by some above ground conveyance, may not be at all aware how much his choice is influenced by dim remembrances of former escapes from suffocation. But, on the other hand, supply the shorter and easier route with respirable air, washed and dried if you like, like that furnished to the Houses of Parliament, but at all events not overloaded with the products of respiration and of combustion, and he will not hesitate at all. One would no more think of going from Paddington to the City by omnibus than of posting from London to Birmingham, were it not for the fact that it is difficult to respire on the route when conveyed underground. Now that it appears that what all travellers have felt to be a painful difficulty may in a given case become a positive impossibility, we trust that those responsible for the metropolitan traffic will not be in vain appealed to in that most sensitive part of the official organisation—the pocket.

One other reflection may occur to the fugitive from London, pursued as he is by the dreary aspect of brick-making suburbs down to West Drayton and even to Slough, or met by the heavy veil peculiar to the island metropolis when

wafted by easterly winds almost to the Royal Keep of Windsor. The Thames has actually ceased to be an open sewer; the quality of the drinking water supplied to the metropolis has engaged much and beneficial attention. Our ways are about to be set in order; and in the rapid rebuilding of many districts of the hundred and twenty square miles of town, many noticeable artistic features are daily springing up. The river-wall of the Thames is rising. But we all remember, with a scarce suppressed shudder, that during the part of the year when the game are all shot, the croquet grounds made unpleasant by the damp, the compulsory inactivity of John Doe and Richard Roe is at an end, and duty or necessity, in one form or another, is re-peopleing the dense abodes of the metropolis, it is not the normal state of things for London to be visible. The November fog season awaits our return: the combination of the vapour of the Thames valley with the unconsumed and floating dust arising from our wasteful and unmechanical mode of burning our daily supply of fourteen thousand tons of coal, which makes all London at times somewhat of a subterranean city. Even here there is hope. Mighty is the power of the pocket. To burn coal economically, instead of to volatilise 30 per cent. of that which we purchase in the form of smoke, and to send half of the heat produced up the chimneys, has been as yet too hard a task for us to accomplish. Gradual and enlightened reform in a matter of this kind, perhaps of any kind, is not altogether germane to the English character. But when a new feature is introduced, when a new power comes into play, great and salutary improvements often accompany it, as if of their own accord. Such seems to be the promise of the consumption of petroleum. If all that we hear of the economy and convenience of this material as a fuel be true, there can be little doubt that it will rapidly supersede coal for manufacturing if not for domestic purposes. In such case, a smokeless London is not an impossibility. Let our photographers not omit to perpetuate some of the effects of picturesque gloom which, during August, 1867, have shrouded the leeward districts of London as if under perpetual thunderclouds. The residents in a smokeless London would find it hard to understand how their predecessors should have supported life in the metropolis as it existed during the dog days of the present year; and no photograph can enable those happy future citizens, if such be about to succeed us, to tell how far the chief necessary of human life, the air we breathe, has been poisoned by the improvident development of commercial activity, and by a gradually accumulated neglect of the prime laws of comfort and of health.

OUR WATER SUPPLY.

PUBLIC attention is at this moment turned to the present state and future supply of water to London and the provincial towns of the country; and it is sincerely to be hoped that the inquiry now being conducted will lead to some sound and practical system, founded upon a full and clear elucidation of the subject, exhausting all the skill and science that can be brought to bear upon it, and which have been zealously devoted to it now for a considerable period in the conduct of works, and acting up to the absolute wants and spirit of the age. In aid of that object we tender the following remarks:—

Water is a necessary element of life; in all civilized countries and in all ages it has been the special object and care of the supreme and ruling authority to secure an abundance of this indispensable and vital element in human, animal, and vegetable economy.

In the palmy days of ancient kingdoms, even the imperial heads of states did not consider it beneath their position or dignity to confer upon their subjects these inestimable blessings; and the funds for carrying out the necessary works of supply were not exacted directly from the people, but flowed freely from imperial resources and princely revenues. With us it has been the prevailing practice to allow all our great works to emanate from the spirit, enterprise, and resources of the people, guided in a slight measure by Government and our Parliament; and thus has sprung up and been satisfactorily established such an extent of roads, canals, railways, waterworks, &c., as no other country can boast of, even in ancient or modern times. Still it must not be supposed, because we

have succeeded in carrying out these very extensive and magnificent works,—that all that has been done in designing, laying out, and carrying into effect,—every object has been attained, every want satisfied, every requirement fulfilled, and all that we have now to do is to reap the harvest which the spirit, enterprise, skill, and science of the age have so widely and extensively sown.

But if the antecedents of our water-works speculations come to be closely analysed, it will be found that as many bad speculations and errors have been made in originating and projecting them as now unhappily exist in our railway system, which our great capitalists have found out to their serious cost. A relative of the writer turned his attention at an early period to railways, as an originator and projector of the railway system; in 1821 he obtained an Act of Parliament for a line of railway for general purposes, and from that period he, in conjunction with William James and others, urged upon the public by every means in their power the importance of availing themselves of the great advantages of the railway system. In the year 1830 he published a map of Great Britain, and upon it he laid down a system of railways, such as he thought possible and practicable, from his topographical knowledge of the country, and the requirements of trade and commerce.

This map was urged on the attention of the Government of that day, and also upon the leading men of the aristocracy, the Parliament, and the commercial world; and he suggested that these lines should be surveyed, sanctioned, and adopted by the Government, and carried out by private enterprise, and no other lines be permitted to be made until these the main arteries were completed; as they are now absolutely done, closely resembling the lines he laid down. By the adoption of the plan suggested, all controversy and competition would thus have been avoided, and such costly suits as (opposition railway bills would not have been heard of, and our railway system, instead of costing us the unprecedented sum of 500 millions of money, would have cost us only 300 millions, and thus we should have saved 200 millions, the loss of which has ruined and broken the heart of many a hapless shareholder, and added considerably to the cost of railway transit.

The Government evidently afterwards saw the error of their ways, as in the year 1838, when railways were first talked of in Ireland, they directed the country to be thoroughly surveyed, and lines were laid down and adopted by them, and were thus carried out with better success. They saw that if the same system had been carried out in poverty-stricken Ireland as had been adopted in England it would have been attended with ruin and disaster, as Ireland had no surplus wealth to throw away in speculation and unprofitable works. And even now, under this better and more economical system, the Irish lines of railway are not commercially successful, and what would they have been if the foresight and forethought of Government had not adopted a different line of policy to that of Great Britain?

In France the same system of Government initiation and sanction secures, in a measure, the convenience of the public and the commercial success of the undertakings, and nothing is left to chance, competition, or speculation. On the other hand, in the United States the utmost facility is afforded to projectors, reckless speculation is the order of the day, and the result is badly-constructed lines and little or no dividends; the heavy wear and tear of the lines and rolling stock, numberless accidents, and other causes absorb nearly all, if not quite all, the profits in many cases.

This line of argument applies forcibly to the system adopted in carrying out the water-works of many of our towns: they are treated too much, in many instances, as commercial speculations, and but little care or attention is bestowed on the mode of supply, the quality of the water, or the wants and necessities of the inhabitants.

If the necessity is now felt for the state to possess our system of railways, telegraphs, &c., to amend what is wrong and remedy abuses, though how to accomplish the object is at present beyond the scope of our present legislators, how much more necessary is it that every municipality should possess its own system of water-supply, and that no body of capitalists should have power to tax us heavily for this vital and necessary part of our existence. Water should be supplied at the lowest, cheapest rate, just

sufficient to cover the expenses of establishing the works, their maintenance, and working expenses, and not that enormous dividends and bonuses should be exacted from an otherwise heavily taxed and burdened people.

To elucidate the position that water-works are not always well executed or attended with success, we could instance Rotherham, Sheffield, and many other places if requisite. In the former place the works were laid out under the power of the Public Health Act (1848); a fine scheme was projected to obtain a supply of water from springs and existing wells, and about 30,000*l.* were expended in constructing elevated service-reservoirs for high-pressure supply, large pumping-engines, an extensive system of mains, &c.; and after all these fine works had been completed, it was discovered there was yet one thing needful to render these large preparations profitable and useful, viz., a supply of water. For years that district has had less than 100,000 gallons of water to supply about 15,000 inhabitants. The magnificent works were looked for first, and that which was to render them useful to the inhabitants was only a secondary consideration. But the spirit of the inhabitants would not be balked by this bungling engineering, and in 1864 they determined to go to Parliament again, for further powers to obtain an adequate supply from other sources, from gathering grounds in the neighbourhood; and this time the Parliamentary estimate exceeded 26,000*l.* These works are partially carried out, and upwards of 20,000*l.* have been expended of that amount, so that in that suffering and heavily-taxed district their waterworks have already cost about 56,000*l.* (and are still far from complete, requiring impounding reservoirs and other works that will amount to about 20,000*l.* more), for supplying so small a population; and from the limited character of the gathering-ground, and the probable supplies should the population rapidly increase, as it is expected to do, being a manufacturing district, other sources of supply will have to be looked for, at a further heavy outlay.

In this instance the failure was in the municipality; but this arose from their want of discernment and discrimination, in selecting competent and experienced engineering talent to advise and direct them, and which ought not to have been left to their discretion.

Sheffield, also, has been unfortunate and unlucky with reference to her water-supply works. That town is supplied by a company, from water collected from the high moors and land situated about seven miles distant to the west of the town, and collected in reservoirs at Redmires, Crookes, and other places. For many years past grievous complaints have been made of the extreme shortness of water; and their works have been extended from time to time to increase the supply, and to meet the public demands; and even this year a Bill has been passed to increase the supply, and to meet the demand of the inhabitants, and the feeling of opposition created by the disastrous failure of the Bradfield reservoir, and its attendant consequences, which occurred in the year 1864, generally supposed to be from imperfect design and improper workmanship; but, from whatever cause it arose, it is patent to the world that the reservoir works failed, and that, if every proper consideration had been given to its design and construction, the substrata on which it rested, and every subject matter connected with it, the reservoir ought to have been successfully carried out, and not so much as failure dreamed of in their philosophy. At Bradford, Halifax, Dublin, Londondale, and many other places, reports of failures and defective works have been made public, and these, doubtless it will be said, arose from unforeseen causes and matters beyond the control of the designers and constructors; but if such are the facts, the causes of the failures may be very interesting subjects to engineers to investigate; but the public judge in every case of these works solely by the constructive, commercial, and other success of the undertakings.

We have alluded to the preceding cases as examples of the manner in which the water-supply works of some of our towns have been conducted, and for the purpose of showing that, like the defects of our railway system they have arisen from causes that should have been within the control and supervision of imperial authority and regulations. It is quite as important that the future water-supply works of our population should be matter of consideration and investiga-

tion as much as our mode of travelling from place to place. Even in these railway days everybody does not travel: it is just possible to find people who have never travelled a mile by railway; but it is not possible to find a living soul who could dispense with the use of water, and therefore it is a more general necessity.

It would seem that just as much as it was necessary for Government to select lines, and lay down our system of railways, they should devise and originate schemes for the water supply of the inhabitants, and it might be accomplished in this manner.

Let correct surveys be made of the water-sheds of all our rivers and their tributaries, or outline copies of the Ordnance Survey be obtained from their mouths up to the points whence they take their rise. Let accurate meteorological observations be made on each water-shed, and the rainfall carefully noted, making use of those data which already exist, and where they are trustworthy, but extending them so that they may embrace the whole drainage area of the respective rivers.

On each water-shed let a correct census be taken of the towns, villages, and other populations residing thereon, pointing out their present modes of water-supply, their position, and deficiency, if any. Let the quantities of water necessary to supply them be computed, estimating 20 gallons per head, if not a manufacturing population, and 80 gallons per head if a manufacturing population. Let impounding reservoirs be provided in the best and most suitable localities on every water-shed, to collect the water that falls during the rainy season, taking care to select it at the best moment when it is least affected with filthy matter, or discoloured with floods, and so regulating the supply of the water in the reservoirs, by occasionally letting it off and taking in a new supply, as to keep it fresh and pure at all times; and these impounding reservoirs should be held as a reserve to keep up a continuous supply of water to each district even through the driest seasons known to man.

This system of collecting and storing up water is not new; it is well known to travellers who have visited tropical countries, as there in the rainy season it is the custom to collect and store up the water in reservoirs and tanks sufficient to supply the inhabitants through the period of drought. And these sometimes extend over a great length of time in Central America. We have known it to be six months without a drop of rain, when vegetation becomes sickly, dried, and withered up with the powerful rays of the tropical sun, and it is quite a novelty at those times to see a green leaf or blade of grass.

But to render the water of our rivers and their tributaries proper and useful for the supply of our population, further means must be taken to prevent the inhabitants from pouring their sewage into and polluting them, rendering the water filthy and unwholesome, wasting a valuable fertilizer, and spreading disease and misery along their verdant banks. It is already an offence against the laws for the authorities of towns to do so, and in some instances parties aggrieved have obtained injunctions to prevent it; but, nevertheless, the evil continues to be acted upon and extended, and some more stringent steps should be taken to prevent this crying evil, as a perfect remedy in all cases is open to the inhabitants if they only would avail themselves of it.

These preliminary steps suggested on the part of Government are necessary in consequence of the alleged necessity, or expressed intention, on the part of certain parties to look out for other sources of supply for London, Liverpool, and other places. London, at present, obtains its supply of water from several sources: the Chelsea, Grand Junction, Southwark, and Vauxhall, Lambeth, and West Middlesex, procure their supply from the River Thames and the New River; the East London chiefly from the River Lea; the Kent Company from the River Ravensbourne; the Hampstead Company from artesian wells at Hampstead and Kenwood, and the New River; the Plumstead, Woolwich, and Charlton derive their supply from a well and boring sunk into the chalk above the town of Woolwich. The whole of the water so obtained is filtered (with the slight exception of a small quantity supplied by the New River Company), pumped into elevated reservoirs, and passed by gravitation to the tanks of the consumers. These supplies of water are comparatively modern, as they were carried out under the Metropolis Water Act (1852), and yield, it is said, a supply of 81 mil-

lions of gallons daily, which has been obtained at a total cost for works of about 7,161,523*l*.

There are several sources of supply talked of for London,—the Lakes in Cumberland, the source of the River Severn, and other projects, which, doubtless would yield an abundance of good water; but these crude projects require close and rigid investigation, and the fullest and most complete inquiry, by all and every party interested. The estimated cost of the former project is about 8,600,000*l*., and the latter 12,000,000*l*., to bring the supply to London; and this cost is, we believe, exclusive of the purchase of the existing works and plant, and exclusive of compensation, and other expenses, that will materially add to the total of the gross estimates.

Liverpool, also, complains of a shortness in the supply of water, although it is not much more than nine years since they constructed large and extensive works at Rivington, about twenty-five miles distant; the rainfall of the district was carefully taken, and, impounding reservoirs made calculated to supply 13 million gallons daily, but this has been found to fall short, producing for many years not much more than 9 million gallons; and this, with the addition of about 6 million gallons from the wells in the red sandstone formation beneath the town, makes a total of about 15 million gallons, while the present wants of the inhabitants exceed 18 million gallons, irrespective of a supply for their future necessities. In consequence, preliminary surveys have been made, with the view of changing their source of supply, and Bala Lake, Ullswater, Haweswater, and other places have been mentioned as the future probable source.

The tendency of modern engineering science is to look out for large and easily acquired sources of supply for such places as London, Liverpool, and similar places. Glasgow is already supplied from Loch Katrine and other lakes; it is brought a distance of thirty-four miles, is 360 ft. above tide-level at Glasgow, and is conveyed through an 8 ft. aqueduct to the service reservoir at Mugdock Castle, 311 ft. above the level of the sea; thence it is carried through two lines of pipes to the city.

Manchester is also supplied from a distant point, some twenty-six miles off. The water is collected in the Longdendale series of reservoirs, Woodhead being the largest and principal, and which may be seen from the line of the Sheffield and Manchester Railway. The water is collected from an extensive gathering-ground, abounding with mosses, and consequently is not the most desirable ground to collect from, nor is the water of the best and purest quality; but reservoir space is found for upwards of 611 million gallons, for the supply of the inhabitants, which is conveyed through aqueducts and pipes, by gravitation, to supply the city.

Bristol has long been supplied from a distance. The water is collected from the Mendip hills, some sixteen miles distant from the city, and is conveyed by means of aqueducts and pipes, by gravitation, for the supply of the inhabitants.

Bradford has been recently supplied from gathering-grounds and springs, some thirty-three miles distant to the north-west of the town, from a district which is particularly interesting and picturesque, and where the Wharfe, Ribbles, and other rivers take their rise, its principal reservoirs being Grimwith, Barden Park, Chelker, Silsden, and Heaton, and their total contents of water is about 1,525 million gallons.

We have mentioned these four places to show that it is not without precedent that London and Liverpool should seek a more distant and purer source of supply than they at present possess; but what should be specially guarded against is, that these important, powerful, and wealthy places should not be allowed to secure and monopolise the important sources of supply in the country, and leave numerous and less important places, situated not far distant, "out in the cold" or with a supply inadequate for their present purposes or future necessities.

The district adjoining where it is proposed to take these large volumes of water from to supply distant places, is becoming every year more thickly populated, and it is not unfair to calculate, as population increases, that, at no very remote period, many of those places must necessarily seek these very sources to obtain a supply of water. Besides, it has not yet been shown that the water-shed of the Thames, if properly reserved and economised, is not equal to the requirements of London; and it is probable that recent legislation, if effectually carried out, will relieve the river of its many foul impurities. It

is calculated that the lowest summer discharge of the Thames is from 360 million gallons to 360 million gallons of water per day,—more than four times the present supply of London; and, of course, the discharge in winter and in rainy seasons is very much greater.

For the sake of illustration, let us observe that the drainage area of the river Thames is generally admitted to be about 3,086 superficial square miles; and if we calculate the rainfall on that area at 24 in. per annum, and allow 66 per cent. for evaporation and absorption (which is an extreme average), we have the enormous quantity of 157,137,429 cubic feet, equal to 982,000,000 gallons of water to be dealt with, and to be rendered available, if necessary, for the supply of the respective towns situated on its drainage area,—more than equal to the supply of the inhabitants of Great Britain and Ireland calculated at thirty gallons a head of the population.

Many of the towns of England, France, Prussia, and the United States are supplied from rivers, and it is generally found that the water is usually softer than that derived from wells, springs, and small streams, and contains a less amount of mineral salts than either of these; at the same time it is commonly more impregnated with organic matter, and this may be accounted for from its flowing over a great variety of geological formations and many different varieties of soil; but this is capable of easy removal by subsidence and filtration.

The system of land drainage now so universally adopted has had the effect of lessening the summer discharges of rivers, and increasing the volume in times of floods, so that flood discharges are much more rapid than formerly, and springs are, therefore, not so copiously fed.

Much controversy has taken place on the supply of water to London from deep wells sunk in the chalk formation; and although there are many wells in and about the neighbourhood of London, Cheshunt, Watford, Southampton, Brighton, and other places yielding a copious supply, it is not certain that it can be obtained in sufficient quantity to supply continuously a large population.

It is a singular fact that although the capacity of the new red sandstone for absorbing and holding water has been much insisted on of late years, in the valley of the Eden, on the western side of Lancashire and Derbyshire, on the eastern side of Durham, Yorkshire, and Nottingham, the midland district south of the great Derbyshire coal field, and in the West of England, how few towns situated in those districts and on that formation have availed themselves of the opportunity of obtaining a supply of water from deep wells; the long and severe contests in Liverpool, Manchester, and Birmingham on that subject have satisfied them that deep and expensive wells are no longer objects to be eagerly sought after and secured, as two of those places have already obtained large supplies of water from extensive gathering grounds situated at a distance from them, and the latter town would probably have done so but for the fact of the numerous private wells that exist in the gravelly and porous strata on which the town stands.

Most of the towns situated in the districts above mentioned are supplied from rivers and from gathering grounds, and but few from wells; the latter include Sunderland, Northalton (shallow), Nottingham (partially), Liverpool (partially), Wolverhampton, Bridgworth, Coventry, Warwick, and Wells; and out of these there are only two towns, viz., Nottingham and Coventry, that can be said to be satisfactorily supplied by public wells.

Doncaster is now supplied with water from the filthy river Don, notwithstanding the extreme foulness of the river, occasioned by the drainage of Sheffield, Rotherham, and other places being improperly thrown into it; and the authorities of that place have endeavoured for some time past to obtain other sources of supply, and some time ago they commenced to sink an Artesian well, and they carried it to a depth of 900 ft., and incurred an expense of 1,500*l*., but they failed to obtain a supply of water and they abandoned the attempt.

The conclusion arrived at in Liverpool some years ago by Robert Stephenson, and subsequently by the present engineer, is that it is not desirable to sink additional wells to obtain a further supply of water, but to look out for other sources from lakes, rivers, or gathering grounds at a distance, rather than incur the risk, expense, and uncertainty of obtaining a full

and adequate supply from wells. Since this article was commenced, Liverpool has decided to abandon the new sources of supply at present; and they have determined to construct an additional reservoir at Rivington; to collect the additional supply required. If the cost of London wells is to amount to as much as those of Truman's or Reid & Co.'s brewery (the former cost 4,056*l.*, or 21*l.* per foot, the latter 7,454*l.*, or 29*l.* per foot, and the latter yields 227,200 gallons per day), and to produce 81 millions of gallons of water, as now supplied by the companies, it would require about 300 of these wells, and thus at the average cost of those above mentioned, it would amount to 1,726,504*l.*, irrespective of the extensive machinery required at each pumping station, and the complicated character of the work.

But it is by no means certain—indeed, it is extremely problematical—that if this large expense is incurred in sinking wells, anything like that average quantity of water will be obtained, as it has been discovered at Liverpool and other places that the yield over a given area has not been *pro rata* to the number of wells sunk, as one well has been found to drain the area of another, and to lessen considerably the supply of that well; so no correct or definite calculation can be made from the yield of one well as to what others will produce. Indeed, out of seven wells sunk for the supply of Liverpool, five out of the seven yield a decreased quantity, and that decrease was very considerable between the years 1854 and 1865, as appears by the following table—

	1854, Max. yield in 24 hours.	1865, Max. yield in 24 hours.
Bootle	1,121,000	643,679
Bush	333,884	
Soho	669,628	512,204
Hotham-street	364,000	360,690
Water-street	578,357	416,218
Windsor	1,024,000	968,316
Green Lane	2,605,812	2,775,842

And the yield from the above wells in 1854 was considerably less than in 1850, and it is, therefore, fair to suppose that that decrease will continue. It is thought that, in the instance of the Windsor and Green Lane wells, the yield is considerably increased by infiltration of water from the river Mersey. It will be inferred from the preceding remarks that we are inclined to the belief that the proper source of supply of water for London is her own fine noble river Thames, by impounding up her surplus waters in suitable and convenient localities, and in sufficient quantities, that would afford an ample supply through all seasons, even the driest known.

Of course care must be taken to perfectly purify and filter the water, and this it is possible to do, by putting in force the powers of the new Bill, so that all sewage and filthy drainage water may be religiously excluded, and by the construction of large impounding reservoirs, that would also serve for the purpose of subsidence and purification.

And while on the subject of reservoirs, it would be desirable that some better and more substantial system should be adopted than in the construction of some modern works. If a system of impounding reservoirs is to be carried out generally in the country so as to preserve a regular and continuous supply of water in all seasons, it becomes a matter of serious consideration so to design and construct them that they shall become permanent and substantial works, as is so well exemplified in the works of our old canal engineers. In their days there is no record of such disastrous failures as those that have occurred at Bradfield or Holmfirth, nor the lesser defects of those at Longdendale, Roundwood (Dublin), Halifax, Bradford, and some other places.

The great fault in the construction of the former works arose from the tops of the embankments being too narrow (Bradfield is only 12 ft. wide; Holmfirth, 16 ft.); and therefore the banks are too light to resist the weight of water, the inner and outer slopes of insufficient angle, the earth of which they are composed being of an improper character, loosely, badly, and hurriedly put together, not carried up in thin lifts or layers, and one lift being thoroughly punned and consolidated before another is laid on.

In the case of Bradfield the embankment was carried up by means of tramways and earth-wagons in lifts of many feet in thickness, and before the bank had become consolidated the water was turned in, and resulted in that terrible catastrophe. The core or puddle wall was not of good substantial tenacious clay in the centre of the bank, or carried up sufficiently

high above top-water level. The inner face of the bank should have been faced with a strong apron of puddle, and protected from the wash and abrasion of the water by a durable stone pitching. The face of the outer slope to be soiled down and sown with grass seeds, or the turf that is stripped off the base of the embankment may be used for the purpose of securing a green sward, as a protection to the face of the slope. Many of the reservoirs that are now used for the supply of our canals are now approaching closely upon half a century old, and yet they stand enduring and lasting monuments of man's handiwork; and we see no reason why modern works should not be similarly constructed, if only the same painstaking and labour were bestowed upon them as was the prevailing practice of our forefathers.

Economy now appears to be the order of the day; but it is false economy to construct works carelessly and inefficiently, merely to save a little in the space of time or a few pounds in the first cost, as works like these are generally found the least expensive in the end that are well and substantially executed, regardless of time or expense. According to modern practice there seems to be no given rule for the construction of reservoir embankments. At Longdendale the compensation reservoir bank is 27 ft. wide at top, the inside slope 3 to 1, outer side 2 to 1, and 90 ft. deep (the Crowden reservoir, by the same engineer, is only 15 ft. wide at top with similar slopes), while the Bradfield reservoir was only 12 ft. wide at top, with inner slopes 2½ to 1, outer ones 1½ to 1 (as I found them), and 95 ft. deep. The Round Wood reservoir, near Dublin, has a 30 ft. width of top bank with a depth of 60 ft., while the Holmfirth reservoir was only 16 ft. wide at top, inner slopes 3 to 1, outer 2 to 1, and with a depth of 96 ft. At Oldham the Pythou reservoir has a width of top bank of 30 ft., with a depth of 60 ft. of water, while a reservoir which failed at Over Darwen had a width of top bank of only 8 ft.

Most of the reservoirs were designed and carried into effect by eminent engineers, and yet the practice so widely differs as to be quite incomprehensible; either the larger dimensions are too strong, or the smaller ones ridiculously weak: it is evident "there is something rotten in the state of Denmark," and this must be patent to the most casual observer.

We do not find these defects and errors of design amongst the works of our Telfords, Walkers, Rennies, and other worthies. Telford's usual practice was to proportion the top width of his embankments to be equal to two-fifths of the depth, with inner slopes 3 to 1, outer slopes 2 to 1, and many of these works have withstood the invaluable test of time, and are more than half a century old. Molesworth, in his *Tables on Reservoir Dams*, gives the top width of *high* dams at from 7 ft. to 20 ft., without particularly specifying a definite width for height of embankment, although it is important and absolutely necessary there should be a sufficient body and strength of embankment to resist the weight of water pressing against it, as the pressure of water is as the square of the depth, therefore the resistance should be in a similar ratio.

The inner slopes he recommends should be 3 to 1, and the outer ones 2 to 1, the generally admitted proportions for slopes.

It may not be considered out of place here to allude to the modern fittings of water supply; and although we would advocate the system of high-pressure supply for the waterworks of towns, it leads to a very considerable loss and leakage of water, without great care. Of course the pressure being always on the pipes, they are all put to a very severe strain in every part, and leakages frequently occur, that have been going on probably for some time until it attains sufficient volume and force as to break up the surfaces, and when it does so, it carries everything before it, as was evidenced in Liverpool a short time ago, and in some other places. There is also a considerable leakage at the taps, which not even the use of the "screw-down tap" effectually prevents.

There is something more required to preserve the water, and to prevent it being wasted, than the mere screw-down tap. Probably each house should be supplied with a "stop-tap" also, so that there may be a double check on the escape and waste of water. The stop-tap might be fixed within the premises, and in a position easily accessible to the inmates. Stop-taps are generally fixed on the service-pipes outside the premises and in the street, so that the water may

be shut off at any time, and to facilitate repairs; but that is of no service at any other time, and does not aid at all to prevent waste or the escape of water.

These remarks have been extended to a greater length than was intended, but it is a subject of national importance, and needs full and ample discussion.

LOSS OF THE CATHEDRAL AT FRANKFORT.

ALL those who take an interest in the memorials of former times or delight in the glorious monuments which the Middle Ages have left us, will have heard with grief the news of the destruction of the cathedral at Frankfort-on-the-Main. The fire which destroyed this noble church must be looked upon by Germany as a national calamity, as this cathedral was the electoral church of the German empire. It may not be uninteresting to our readers to give a short historical sketch and a description of the late cathedral. The first notice we have of a church on this site dates back as early as the year 874. In the year 882 this building is referred to as "the Chapel of St. Saviour." This chapel was rebuilt in the year 1239, but of this second structure there are probably no remains, as the church was again rebuilt on a much larger scale in the fourteenth century, and the building then erected formed the late cathedral. The foundations of the church were laid in the year 1315, under Louis the Bavarian. The choir was completed and used for mass in 1338. The nave and aisles were completed in 1352, and the vaultings in 1410. The great glory of the cathedral, the noble western tower, was begun in the year 1415, and carried on until the year 1512. The architect of this noble work was Madern Gertner. The church when completed was dedicated to St. Bartholomew.

The plan of Frankfort Cathedral is a very singular one. It consists of a choir of great length, a very short nave (only three compartments long), aisles, and immense transepts, each of five bays. Each transept is considerably longer than the nave. The nave and choir are also much lower than the transepts, so that it is difficult at first to realize the fact that the church was not built north and south, and that the two large transepts are not a great nave and choir. There is a tower nearly 40 ft. square at the west end, and over 300 ft. in height. Leading from the transepts are chapels. The whole church is vaulted. The choir contained a fine set of stalls, with frescoes by Stephen, of Cologne, adorning the wall-spaces below the windows. These paintings were executed in 1427. In the south transept was a statue of the Madonna, with a splendid lofty stone canopy. In two of the chapels leading out of the transepts were fine old stone altars, with canopied reredoses. In the north transept was the remarkably fine monument of John Holzhausen, 1371. A new pulpit of good design and an organ had been recently erected. The beautiful tower was of a very similar design to that of Freiberg, except that it was crowned with a dome instead of a spire. The lower part of the tower is square, with noble buttresses; the upper portion is octagonal. The corner spaces or *broches* were carried up with noble groups of pinnacles to the full height of the octagon. The whole had been recently restored. It is quite impossible to say yet what injury this noble edifice has sustained; but it is much feared that little or none of it will be in a sufficiently sound condition to remain standing, particularly the tower, which has suffered very much from the quantity of wood used in the construction of the belfry floors. The bells fell through the vaulting under the tower, and smashed the organ, setting fire to the interior of the church. Until the building can be carefully examined by an experienced architect the real damage cannot be estimated. We understand the cathedral is heavily insured, and we feel that the Frankforters will use every exertion in their power to restore, or, if necessary, rebuild this, the greatest ornament and most interesting building of their civilised city.

TO LOOSEN A RUSTY SCREW.—If you have a screw rusted into wood, or a nut or bolt that will not readily turn, pour on a little kerosene and let it remain. In a little while it will penetrate the interstices, so that the screw may be easily started.

SKETCHES IN ANNANDALE.*

THE district of country which lies to the north-west of Carlisle in the conterminous counties of Cumberland and Dumfries is possessed of a certain curious, weird, historical interest which is peculiar to itself. After crossing the splendid viaduct which bridges the river Esk, we get into the very centre of that celebrated debateable land which is sacred to the memory of the Moss-trooper, where we are beset on all hands with traditional lore of Border feuds, tales of adventure, and records of battle-fields. The times are somewhat changed—some will say degenerated—since Kinmount Willie and Will o' Deloraine used to ride on the opposing shores! The Lords Wardens of the neighbouring marches sleep with their fathers; and the Howards and Percies have long abandoned their hereditary feuds with the Maxwells and the Douglasses. The general features of the country are indeed unchanged. We have still the distant Cheviots and the Northumberland fells. The stately forehead of Skiddaw still reposes in wreaths of vapoury clouds; and the distant peak of Criffel may still be seen keeping solemn watch and ward over the estuary where Solway tides roll in their rapid and impetuous career. It is only when we come to observe the improved agriculture of the district, the farm-houses dotted here and there, the nicely situated gentlemen's seats, the pleasant villages, and the peaceable aspect of the people that we can form an estimate of the social improvement which the security of Government and the fruits of peaceful industry have wrought since the union of the two countries. Even yet the old feudal fortresses, as we have seen, are still conspicuous objects in the landscape; and many a romantic and secluded dell is yet rich with the ruins of the ancient abbeys, whose monks derived a splendid revenue from the illegal spoils of their ferocious neighbours. The vesper-bell is now silent; the feudal castles are tenanted; the Moss-troopers' descendants are sheep-farmers; and the mosses themselves are in process of being reclaimed. Yet we must not suppose that such vital and organic changes in the Border society were suddenly brought about, or that this progress was the work of a generation or even of a century.

The vivid and most accurate description which M. Thierry† has drawn of the manners and customs of the population, or what is more properly translated *the peoples*, of this Border debateable land at the time of the Norman invasion still characterised it long after the blessings of peace had spread over the country; and indeed very strong traces of their lawlessness and insubordination may easily be found at the present day. For those who under the film of a somewhat enforced and artificial civilization choose to penetrate the crust of outward appearances may still observe that the force of habit as to the disregard of property law has by no means died out. Even yet it sometimes holds—

"The simple rule, the good old plan,
That he should take who has the power,
And he should keep who can."

The Border population surrounding the Solway is, in fact, still largely composed of people half gipsy, part smuggler, part poacher, who are not at all enchanted with the rules of peaceable and orderly society; not given to marriage, for example, nor sobriety; and above all, most woefully deficient in the exercises of religion. Whoever chooses to read the account which the popular parish-minister of Gretna once gave of his wayward and backsliding flock will not, in all probability, seek for other proofs or illustrations. Indeed, the offices of a parish clergyman are very much at a discount in that quarter of the country; and notwithstanding it sometimes happens—where the Church of Scotland, or any or all of its formidable troop of dissenters, fail to evangelise a poor and lawless district—that the Roman Catholic priest has met with signal success, even he has totally failed in the debateable land; and in fact there is neither chapel nor priest to be found in the neighbourhood. The poor Scots-Irish of Maxwelltown and Dumfries have their spiritual wants amply supplied, but the missionaries of the Roman Catholic church have not yet reached westward further than Annan. We mention this as a curious circumstance which may partly

account for a social phenomenon which for many years has puzzled our legislators and played a conspicuous part in the marriage-customs of England. There can be no doubt, we think, that it was from this lax and irreligious condition of the people that those habitually irregular marriages sprang which ultimately concentrated at Gretna Green and has made that obscure village immortal,—customs which the law of Scotland still tolerates, and which have only, thanks to Lord Brougham, been recently declared illegal by the English Legislature.

From these causes, also, seem to have sprung the circumstances which made Bewcastle, Rockcliffe, and that neighbourhood the head-quarters of the gipsies. This is a fascinating subject; but we must not dwell here on the curious details of gipsy life. The whole subject has recently been investigated with much skill and learning by Mr. Simson,* who seems to have established to his own satisfaction that many noble families in Scotland have gipsy blood in their veins! It is a wonder, by the way, in these days of ethnological analysis, that no such candid inquirer has taken Burns for a gipsy. His swart complexion,—

"The vellum of the pedigree they claim,"—

his raven locks, his brilliant black eyes, together with his stooping though muscular shoulders, gave all the requisite physical signs, as we are expected to believe. And then the erratic and undisciplined character of his genius! Shade of the illustrious Blumenbach, how many theories of race could be half as well established? How many Aryan mysteries could be so simplified and solved? We only hope that any future writer who pursues the subject will not forget to remember, as the fashion is, that we had thrown out such a hint. There might, perhaps, be certain geographical difficulties in connecting him with the gipsy tribes of the Solway; but what of that? are they not merely branches of one great trunk—lineal descendants of one great family? *Quod erat demonstrandum*. We need say no more. The well-known Act of Geo. III., which brought the poor gipsies under the penalties of the law by designating them rogues and vagabonds, made sad work, under the vigorous administration of the squirearchy and the justices of the peace, with their villages and cantonments; but even yet the pedestrian who is fond of prowling into unexplored nooks of the Border country, will meet perchance with an aged sybil who can trace the pedigree and the locality of her tribe for 200 years.

To the gipsies succeeded, in the natural order of things, a community of smugglers, who have only of late years become extinct. It is very remarkable how little information we possess respecting the Solway smugglers; indeed, what we do know seems to be altogether derived from the pages of fiction: their adventures are chiefly enshrined in the themes of forgotten ballads. There can be no question, however, but up to a very recent period—probably to the very date of the equalization of the spirit duties between England and Scotland—that this desperate profession did, in fact, engross the attention of a very large section of the population. Their plan of operation was simple enough and well understood. The Isle of Man was the great depot for the kegs of brandy, kilderkins of hollands, runlets of old Jamaica, bales of Virginia tobacco, parcels of Valenciennes lace, and other wet and dry commodities, which the British Legislature in its wisdom, thought fit to lay under the embargo of heavy duties. The whole secret, therefore, of the Solway smuggling was to transport these goods from the island by means of a swift sailing-lugger,—that is to say, a small vessel carrying three masts, with a running bowsprit and lug sails,—to any of the numerous ports, or rather landing-places on either side of the shore. A party of people were always ready to receive the vessel on a preconcerted signal, which invariably returned by the same tide. Sometimes, in cases of extreme danger, the cargo was hid in pits dug in the sandy beach; but, generally the spreading shadows of the night favoured the debarkation, and the bales and casks were speedily landed, slung on the backs of horses and "run" over the adjacent country. Such a traffic—illegal, immoral, and in the highest degree dangerous—was, nevertheless, lucrative; and many loyal and unsuspected traders had, it was quietly understood, a share in its profits. Traces of its wide-spread influence may still be

found, if cautiously sought for; and among these we may venture to point out—of course with the manner of charity—the large amount of *cellarage* and storage that one may see in such places as Bowness and Skinburness, as well as Port Annan and Ruthwell. Indeed, the cellars in the little towns of the Solway are quite a curiosity in their way: there is not an obscure village baker's, butcher's, or even shoemaker's shop that is not supplied with a capacious cellar as large as that of a London gin-shop in Oxford-street, or an ironmonger's store in Upper Thames-street. Such cellars for the most part have large and substantially-built openings, 6 ft. by 4 ft., at the very least, and are usually supplied with stout double-folding timber hatchways hinged on the sides, and opening outwards. There are iron stanchions and gratings across the daylight openings, stout gangways and ganties, iron rings batted into kerbstones; in short, all the facilities for getting in and out a puncheon or a hoghead with the utmost secrecy and despatch. We had the curiosity to inquire of an old inhabitant of Annan, the meaning of this extensive range of cellars, which seemed, we said, to be as much part and parcel of the plan of the houses in that royal burgh as a kitchen are in an ordinary house in London or Edinburgh. We were told very quietly in reply that Annan had once possessed a considerable wine trade! Upon another occasion, while walking on the sands near Burrock, we got into conversation with an old sailor, one of those curious lounging amphibious animals, half fisherman, half smuggler, and whole poacher, who seem to be indigenous to the Solway. He was, we found, as well acquainted with the Cumberland as with the Dumfriesshire coast; and could point out to our great astonishment every cove or headland in the bay, where a lugger might be run in with safety, and a cargo bumped ashore. "I have been on the top of that mountain, sir," he said, pointing to Skiddaw, on the opposite coast, over which a curious atmospheric effect was at that moment visible. "Indeed," we replied, "in search of the picturesque?" "No," "Shooting partridges?" "No," "Studying the rocks?" "No," "What, then?" "Well, sir," he replied, with a most knowing squint, "I was showing a red light!" It is possible the old salt might be tampering with our credulity; for unless on a very clear frosty night it would require an immense stretch of imagination to suppose a solitary signal of that nature useful at so great a distance. But, on the other hand, it is undoubtedly within the range of possibility; the story is, at any rate, a good one, and so we have written it down. We will only add respecting the smugglers, that the ancient spirit is still kept up, it is reported—but we must own, as far as we are concerned, without a jot or tittle of evidence—by the practice of illicit distillation. On this subject, and with the recent New York revelations before us, we can only observe that the present high duties on Scotch whisky—notwithstanding all the vigilance of the inland revenue officers—is sufficient to tempt certain classes of the people into secret crime. This is an abstract question, which has very nice limits, and is of course beyond our province to discuss; but it does seem odd, we must confess, that this commodity alone, of all our national products, should be taxed at the rate of 500 per cent. If, as it is sometimes supposed, the high duties promoted temperance, then we might safely affirm that the legislative wisdom of Mr. Gladstone had reconciled one of the greatest paradoxes in taxation, to wit: by the levying of high duties he had also improved the public morality. But, unfortunately, it turns out that the Scotch people consume as much of the dear whisky as they did when it was cheap. There is plenty of evidence with regard to the poachers, but we need only refer our readers on this point to the district returns of crime. The Solway poachers,—of whom there are two sorts,—land rats and water-rats,—seem to suffer great temptation under the laws which preserve the grouse till August, and from the Acts which constitute an annual close time for the salmon, that is, from August till February. The close time, indeed, seems to exercise a most pernicious influence on the character of the Solway fishermen, who are every year pulled up and fined or imprisoned for divers intricate and very often ill-defined breaches of the Salmon Fisheries Acts. The fishermen complain bitterly,—and, as it seems to us, not without reason,—of the great injustice done them by these recent Acts of Parliament; and, in nothing more than this, that they are uniformly tried before the local justices, who are chiefly

* See p. 563, ante.

† *Vide* "History of the Norman Conquest."

‡ See Statistical Account of Scotland.

* History of the Gipsies. London: S. Low, 1865.

upper proprietors in the neighbouring rivers, and, consequently, their mortal enemies.

The Solway fishermen, we ought to explain, are divisible into three classes at least. In the first place, there are the regular lessees of the salmon fisheries,—men of considerable capital,—who fish the Solway by means of the stake-nets, that give so much offence to riparian owners. These are the sort of persons to whom Billingsgate is chiefly indebted for its regular supply of the finest fish. In the second place, there is a class of small farmers, who are known in the district as "Pendiclers," from the circumstance, we presume, of their farms consisting generally of small pendicles of land abutting on the shore. These men have usually the right of Solway fishing *enadversus* of their lands, as a condition of their lease; and between the two farms,—the sea and the land,—it is said that they manage to pay a tolerable rent. One curious fact concerning these "Pendiclers" is their stating. It is said they can only afford to keep one horse; consequently, when about to plough, each has to borrow another horse of his neighbour.

There is a sect of foreign invaders, we should mention, who have within the last few years sprung into existence in the "crawlers," who come from Morecambe Bay in Lancashire, and who are supposed to confine their operations to the capture of shrimps and cockles. Such interlopers do not come within our category; but we may mention that these travelling gentlemen, under the colourable pretext of dredging for those molluscs we have just named, have of late years contrived to do a good deal of illegal fishing for salmon.

The third and last real division of the Solway fishermen is that numerous class who fish for everything that comes to the net,—for the most part according to conscience,—a quality of the Solway mind which, we need scarcely add, possesses great flexibility and powers of digestion. There is an old saw current on the Solway to this effect,—that the conscience of a fisherman is like the stomach of a fish; and we may add another which belongs to the Channel Islands, which is, however, better expressed in the Guernsey patois,—"they are like the fish they catch: they walk backwards!" To this law, if it be one, the fisher folk of the Solway form no exception; for, like most fishermen, they strive to keep as much behind the age as the agricultural and manufacturing population do to keep abreast of it! The ingenious author of the "Origin of Species" ought, we think, to give a glance at the unprogressive character of these people before committing himself to a theory of transmutation. No doubt much may be said for their want of education, and so forth; but we ought to consider, at the same time, that no possible form of scholastic training could teach them better than their own instincts and experience to catch fish! The bad effect of an irregular calling also tells on them,—the interruption by storms and floods, Acts of Parliament, and, what is worse than all, the scarcity of fish. Besides, it should always be remembered that they suffer more than other handicraftsmen by exposure to the weather and all its attendant evils; and, finally, they run a risk more or less constant of eventually finding a watery grave.

It is curious to trace the influence which centuries of English companionship has exercised here; for unquestionably there is a strong tincture of the same civilization on opposite banks. The very names of places, a sure symptom of kindred races, are often identical. There is a hill, for example, called Saddleback in the neighbourhood of Derwentwater: there is a hamlet of the same name in Moffatdale. There is a Wigton in Cumberland and one in Galloway. There are two villages called Bride Kirk in the opposite counties, and there are likewise a couple of Daltons. Thorthorwald, in Annandale, is pure Saxon; Murray Thwaite is an importation from the Lakes; and Lanrig, Mealrig, Longtown, West Newton, and such like names in Cumberland, have numerous correlatives in the south of Scotland. It is also very remarkable that both English and Scottish districts have their share of Irish immigrants with all their Milesian influences; and it is curious in both cases that these colonies are chiefly confined to the western coasts.

Similar analogies might be drawn from the dialects of the common people. The term "statesman" for landed proprietor is often used on both sides of the Solway. "Ca thee came" is a proverb indigenous to both districts; and we may easily detect by a little attention,—amidst

the profusion of rough and guttural expletives which adorn that horrid drawing, snivelling patois which is distinguished by Prince Jerome Bonaparte into Low Country Scotch,—that peculiar broad, open pronunciation of the "a" "u" and "o" which is peculiar to the vernacular language of Cumberland; which is, we are told by philologists, to be clearly assigned to a Danish origin, and which constitutes, indeed, nearly all the vocal traces that we have left in these islands of a Scandinavian supremacy.

These analogies of course indicate plainly an early and continuous intermixture of the different races. The population which has lined the shores of the Solway seem to have migrated indiscriminately from time immemorial, from the south to the north, and from the north to the south. It is a singular fact, but it is nevertheless true, and all good observers come to the same conclusion, that there are more Cumberland people in Dumfriesshire and Galloway than there are Dumfriesshire and Galloway people in Cumberland. Does not this fact rather tell against the universality of Dr. Johnson's maxim,—that a Scotsman's best prospect was the high road to England? But in whatever light we may view it, there can be no doubt of the intermixture and the consequent identity of the popular manners and customs. The food is the same,—not so much oatmeal and milk, as bread, bacon, and beer. The dress is the same, only that is not so much to be wondered at in the era of Moses & Son. But the fashion of wearing clogs, for instance, in place of shoes or boots, which is universal among the peasantry of the north of England, is also common to the south of Scotland, and these are worn by all ages and both sexes. This, we partly suspect, is a necessity of the rough pavements of the district; for such towns as are situated at the mouths of the rivers are usually paved with the small round, hard, and water-worn boulders derived from the bed of the neighbouring stream. To walk over a pavement so constructed is not unlike the ancient penance inflicted by the Church of Rome, on certain holy pilgrims, of walking to the shrine of Loretto with pebbles in their shoes!

Again, a market day in Cumberland and one in Dumfriesshire are so entirely similar in their manifestations, that it would puzzle the keenest observer to detect the difference. There is the same curious exhibition of caravans, steam-horses, rare shows, wax works, giants, equestrians, clowns, and wild animals at the half-yearly fairs; the hiring markets are also characterized by the same stupid, antiquated, and pernicious fashion of the ploughmen and farm-girls exhibiting themselves like lower animals, and showing their points to the farmers like the slaves in the market of Constantinople! Other circumstances there are which flow from these hiring fairs in which the two countries have, unfortunately, a common experience; but on this sickening subject we will not dwell.

A much more gratifying *point de ressemblance* may be found in the gymnastic games which are common to both sides of the border; and it is curious that Dumfriesshire, in the matter of fox hunting and horse racing, is almost entitled to the character of an English Midland county. For example, the Annan race meeting which, after a lapse of ten years, was revived in 1865, and which has risen since that time from comparative insignificance into something like respectability, came off the other day on the usual course on the sands of the Solway. There was a very large attendance of sporting gentlemen, and the course was crowded by less interested spectators. The Marquis and Marchioness of Queensberry graced the meeting with their presence, and took great interest in the proceedings of the day, the marquis riding the winner in the Hurdle Race, and his own horse in a match with Mr. Lindsay.

Undoubtedly, however, the greatest elements of similarity are perceptible in the striking resemblance of the architecture. We do not speak so much of the churches and other public buildings,—although even here, to give an illustration, the town-house of Keswick and that of Annan possess a distinct and well-marked congeniality; horrible gaol-looking buildings both of them!—as we do of the villas, farmsteadings, and cottages. It was, we confess, new to our eyes; but with much pleasure did we trace in the south of Scotland a few of those features which are inseparably associated with our old English village architecture. Here is a villa perched on the side of a sloping hill, with neat triangular roof, dormers, iron windows, bargeboards, finials, and tasteful dressings, such as

we see any day in the neighbourhood of Carlisle or Durham. There we may see a modern farm-town, as they are called; in other words, a decently-constructed steading, with proper and convenient offices, showing some traces of design and fitness of purpose. Of course, the strong similarity of the building materials add to the effect. In street architecture, the principal houses of a town such as Annan or Lookerbie are built of the beautiful red sandstone of the district,—a continuation, the geologists say of the Permian system of Cumberland,—which admits of every variety of treatment; but there is also abundance of brick,—sometimes particularly coloured,—plenty of combed, plastered fronts, and painted imitations of freestone; together with Welsh slates,—dark blue and dark green,—often tastefully intercourses on the roofs; and finally, a profusion of different patterns of terra-cotta ornaments, ornamental red tiles, and stone-ware chimneys.

One sometimes wonders where all the curious old-fashioned designs in those ornamental articles are disposed of. The mystery is solved at once by the study of the sky-lines of a Border town. One very curious point of resemblance we observed in the chimney-pots, which are often composed of four mired slates connected with copper wire; pots which prevail all over the Cumberland lake district, where slates are abundant, and are here imported into Annandale where no such materials exist! Speaking of chimneys, we may notice the very picturesque feature which is incidentally obtained by constructing the stalks of a chimney separately and diagonally on the plan—an arrangement we observed in this quarter for the first time in Scotland.

One or two important lessons may be gained by studying the respective qualities of the opposite counties with regard to the question of site. We need not enter on the nature of the climate; but in the selection of a site for villas, for example, two or three considerations occur. If we examine the slopes of the Solway basin on the Cumberland coast, we shall find that it wears a darker hue as it ascends from the shore to the heights of the Skiddaw. Slanting downwards from the sun it has a much darker shade than the opposite slopes of Scotland, which face the sun, and are consequently in possession of the southern exposure. The difference, therefore, of the climate of the north of England and the south of Scotland is in favour of the latter. But, on the other hand, the northern coast is more exposed to the ravages of the south-west wind, which during certain seasons blows uncommonly fierce and strong, from which the southern coast is protected by the Cumberland mountains. It ought to be remembered, therefore, in planning a house north of the Solway, that the ordinary law of southern exposure ought to be modified; and that it might turn out a happy accident if the proprietor got a hill or a forest between his prospect and the "Atlantic south-wester."

With respect to the general plan of houses, the English form is everywhere visible. There are no flats on the Solway. Even in the neighbourhood of Dumfries, although there are numerous specimens of the antiquated and barbarous pent-roofs, there are few of the Edinburgh and Glasgow tenements and common stairs. As to construction, we may state that the mason-work is generally very good. Some houses, near Annan, we examined, that were being built by Mr. Hugh Ker, were quite of a superior execution. The joiner-work is not so deserving of praise; but this is not to be wondered at in a country district. A curious fashion seems to have prevailed in the slater-work, of commencing at the eaves with slates probably 2½ ft. by 2 ft., gradually diminished in the upper courses, and finishing at the ridge with slates 9 in. by 6 in. The plumber-work is not very far advanced. But the combed is carried to a pitch of imitation that almost deserves the name of high art; and we are of opinion that the craft of plasterer exists here in a very high state of perfection, or, at least, of development. For example, we shall see in any small country town, houses of precisely similar plan and elevation, much diversified in their external coating: one is plastered and painted imitation free-stone—a darker and lighter shade of raw sienna alternating all too regularly on the wall-courses; another is done to represent a slate-coloured whin-stone,—very small blocks, very well cubed, and exquisitely pointed; while a third gives a glaring neutral tint of real sand-stone irregular rubble, with contrasts of colour in cornice,

lintels, quoins, and string-courses, which, on the principle that good wine needs no bush, seems much less carefully constructed than its artificial neighbours. To conclude this subject, we may suppose the painters not to be so plentiful, or that paint on the northern shore was very scarce. Some doors and windows we observed in Annan appeared as if they had not been painted these twenty years.

The cottages on the Solway are, upon the whole, favourable enough specimens, very superior indeed to what we have seen in other parts of Scotland. The worst are those rude, ill-built, and diminutive hovels, with barely any light, and scarcely any room to stand upright in, which we may see clustered around any fishing station. The best are those on improved estates, such as that of Lord Mansfield. The late General Dirom gave a prodigious impulse to the improvement of cottages, in the carrying out and building of the village of Brydekirk, so far back as the beginning of the century; and although these little houses are now antiquated and too small, still they are capable of being clean and well aired. Even before his day there seems to have been a spirit of improvement abroad. We observed on the road to Ecclefechan, a group of cottages bearing the date of 1766, substantially built of sandstone, and slated, with sashed windows, ceilings 8 ft. in height, and decent-sized rooms of the ordinary "but-and-ben" plan. This was, we confess, a surprise to us. It was not so good to see one of them that had been built in 1866—a century afterwards—of the very same plan, mould, type, variety, and form! The very dimensions of the small windows had been slavishly copied. Surely there was an utter absence of the spirit of progress here. One gratifying fact we may record; the cottagers generally seem to cultivate a taste for flowers, which may be due, perhaps, to the circumstance that Annandale is celebrated for its gardens and for its horticultural trade. But there are other manifestations which lead us to believe that the love of art is innate in the poorest classes of people. The pavement we have mentioned is generally composed of smooth water-worn boulders,—or chunkie stones, as they are termed in Scotland,—and we need not say that a river which takes its rise in a granitic rock, and drains a district of red sandstone, superimposed upon clay slate, and lined over its banks with glacial debris and conglomerates,—that such a river will produce a great diversity of boulders, in form, composition, and colour. In fact, a proper selection can at any time supply all the positive colours, most of the intermediate combinations, and many of the most brilliant shades. With these materials, then, the inhabitants of Annandale construct their pavements, after the manner of mosaic work or parquetry; in fact, they make a rude sort of tessellated pavement, mostly of regular geometrical designs, such as a rhomboid enclosed in a parallelogram. But this is not all. There is a fashion among the peasantry, and also the servant-girls, with regard to door-steps which would greatly delight Mr. Henry Cole, or any art-master of Kensington who dreams about popular intuitions in our schools of art. The steps are usually constructed of red sandstone; but, at all events, in cleaning the steps a piece of very deep red sandstone—keel, in fact—is commonly employed. This constitutes the groundwork of the picture, over which a series of graceful curves, after the manner of engineering, are produced with a piece of white pipe-clay! The effect is then heightened by touching off with white the corners of the steps, which, from long rubbing, become regularly chamfered, and seem as if they had been so constructed as to afford a ground for the belt of colour.

Hitherto we have pointed out, as far as we can, the similarity which exists, under certain circumstances, between the two populations on the opposite shores of the Solway; and we should now, like good artists, proceed to describe the difference—to reverse the picture, so to speak: put in some shadows, and throw some light on the background, but our space is exhausted.

THE PARIS EXHIBITION BUILDING.—The Novels says the Exhibition building will not be pulled down as soon as the Exhibition is over, but will be used for an international bazaar, in which the productions of all parts of the world will be offered for sale. A canal is to be made between the Seine and the Champ de Mars, so as to place the building in direct communication with the river.

THE YORKSHIRE MEMORIAL OF THE LATE LORD CARLISLE.

We may add to our previous memorandum that the site selected for this monument is Balmer Hill, not far from Spittle Beck. It is so placed that when the proposed alterations are completely effected, it will stand in the centre of a magnificent avenue of trees, extending from the top of Singsby Hill down to Barton Hill Railway Station, and having in a line with it the arch of the Crow's Nest Inn, Castle Howard, and the Marlborough Obelisk. The column will spring from a square platform, about 13 ft. high, having pyramidal supports, and approached on the Castle Howard side by a flight of steps. The height of the platform and column will be about 120 ft., and the hill on which it stands may be taken as from 350 ft. to 400 ft. above the level of the sea. An ornamented capital will crown the column, and the column itself, in addition to a pendant scroll of flowers on either side, will be fluted to a depth of 6 ft. or 7 ft. on the upper part of the shaft. Surmounting the column will be an iron tripod supporting a mass of flame. The monument will be constructed of Bolton Cragg moor stone. Mr. John Chick (agent to Sir E. A. E. Lechmere, Bart.), of Whitwell, has undertaken to superintend the works. The contractors are Messrs. G. Bailey & Son, of York.

MURRAY'S SCOTLAND.*

WHEN Mr. John Murray chooses to present the world with a Handbook, it should be received in the light that we accept a Russian bond from Rothschild. The subject may be open to doubt in a variety of ways; but the doubt can in no way apply to the banker. Mr. Murray is the colossus of guide-book publishers; and it is hardly necessary to observe that in such a business experience is worth its weight in gold. There can be no doubt, for example, that the method which has been so successfully employed in conducting thousands of bewildered travellers over the Alps or up the Rhine would be at least as serviceable in the Scottish Highlands or the Hebrides; and accordingly Mr. Murray's title to be heard—to pursue, as our Scotch legal friends would say—on the subject of Scotland is beyond all question. How he may have conducted his case is a different affair, and, in fact, we must confess that we looked for this handbook of Scotland with some anxiety, and we will explain why.

Scotland, although it has now been for more than a century and a half an integral portion of the British empire, is, nevertheless, in many respects, less known and understood by the mass of Englishmen than any country on the Continent taken at random. Its whole system of jurisprudence differs from ours; and to that curious extent that at this moment England in the eye of Scottish law is a foreign country! Let us ask any average man on this side of the Tweed what he knows about the Scotch marriage laws, for example, or the tenure of land, or that complicated legal process which is called a multipointing, or an action of declarator and putting to silence, or a warrant in *malitiationes fugas*? You might as easily get authentic information about the political state of Patagonia or the climate of Kamachacka! Again, the Scottish theology is so very peculiar,—partaking, to a much greater extent than most people would suppose, of the ancient Jewish economy, or, rather, of the dogmas and doctrines of the Pharisees. With all this pretension to superior sanctity, the statistical returns of the Registrar-General show an amount of absolute immorality which is not surpassed by any country of Europe. Alas!—

Not all the blood of beasts
On Jewish altars slain—

can wipe out this sad blot on the national escutcheon. We will say nothing about the consumption of whisky, nor of certain other little profanities, of which the Jedburgh people found themselves guilty the other day. We have said enough to show what, however, requires no demonstration, that our northern countrymen are a peculiar people. If we pass from a consideration of the society in Scotland to that of the physical character of the country, the change is like some beautiful transformation

scene; the feeling is nearly as grateful and refreshing as that which we experience on emerging from a long, dark, suffocating railway tunnel to a fertile champagne country, rich with verdure, and sparkling with silver streams. Take it all in all, there is no country under the sun so varied, and upon a certain scale so magnificent in its natural beauty as Scotland. The highland hills of course cannot be compared to the snow-clad Alps. Loch Lomond must veil its beauty when compared with the Lake of Geneva. Even the Hebrides must sink into insignificance beside the islets of the Grecian Archipelago. But for all that, Scotland is a country eminently calculated to arouse the flame of patriotism, and inspire the soul of poetry and song. Hence it is that the very soil, so to speak, is impregnated with poetry, and the very woods are vocal with music. In fact, we must confess, speaking for ourselves, that after a good deal of patient observation and study of the multifarious subjects, moral, intellectual, and physical, which may be comprehended under the head of Scotland, we are very far indeed from getting to the root of the matter.

For these reasons, among others, we looked, as we have said, with some anxiety to the appearance of Murray's "Scotland." But we are glad to find that the compiler has risen to the occasion; and on the whole, this handbook will amply sustain the high reputation of its publisher's red-covered series. Of course, it would be unreasonable to expect that among the numerous subjects of which it treats no mistakes had occurred. Unless a man possessed the encyclopedical genius of Hermes Trismegistus he could hardly combine the elements of history, poetry, philosophy, archaeology, topography, and geology without falling into some blunders. Accordingly there are both sins of omission and of commission in this respect. The Solway Firth, for instance, is not mentioned at all, although the traveller passes close to its northern shore. Holyrood Palace was not built on the grounds of Drumsheugh, from which it is distant nearly two miles. There is no mention of "artistic granite" in Aberdeen, one of the staple manufactures of that flourishing seaport. Kinrara belongs to the Duchess of Gordon. Some errors are obviously typographical, as, for example, where we are told to pronounce monie as monee. John Milne & Son, in Edinburgh, are brass-founders, and not type-founders, &c. &c. These and such like errors we must view with leniency in the first edition of a book which possesses many solid qualities to recommend it, and we will not dwell upon them. It is a more pleasing task to indicate its merits.

In the first place, there is nothing of the turgid, verbose, and rapid descriptions of scenery—untruthful for the most part—which distinguishes the most of Highland guide-books. This fault originated, we believe, with Dr. Macculloch and his disciples, whose accounts, notwithstanding a copious interfusion of scientific jargon, are habitually exaggerated. Even Mr. Geikie, the most recent exponent of this school, rather allows his language to govern his ideas when he talks, for example, of the "long, lonely moor of Rannoch." Of course a moor is not a meadow; but there are many lonelier moors in Scotland than Rannoch, as we know to our bitter experience; and what is worse, plenty that are far more barren of birds. The editor, in making use of such materials, very judiciously prunes away much of their surplus eloquence; and in place of that we get some account, in a rational way, of the industrial resources of the country. We select for quotation the following interesting paragraph upon "Coal and Iron":—

"These products are, perhaps, the most important and characteristic of Scotch industry, employing indirectly at least seven-tenths of the population of the Lowlands. For legislative purposes the collieries of Scotland are placed in two divisions, West and East. The former includes W. Lanark, Ayr, W. Strirling, Dumbarton, Renfrew, Argyll, and Dumfries, and embraces 223 collieries, which produced in 1866, 6,250,000 tons. In the eastern district are E. Lanark, Fife, Clackmannan, Haddington, Kinross, Edinburgh, Leithgow, E. Strirling, Peebles, and Perth, including 274 collieries yielding 6,400,000 tons. Of canal coal 325,000 tons were raised in 1865; and the consumption of the Bosphorus coal, which is so extensively used for distillation into paraffine, &c., is equal to nearly 100,000 tons per annum. It may be of interest, as the oil trade from coal distillation has become so very important, to mention that the Bosphorus coal produces 128 gallons of oil per ton, while the other coals vary from 72 to 90. As regards the iron trade, there were in 1865, 141 furnaces in blast (producing 1,163,000 tons of pig iron), which consumed upwards of 13 million of tons of iron ore, all raised in the district. Next to Staffordshire, the Scotch iron market is the most important of any. The principal iron shipping ports are Glasgow and Ardrossan, on the Clyde, and Bo'ness and Grangemouth on the Forth" (p. 30).

* Handbook for Travellers in Scotland, with Travelling Maps and Plans, 8vo., pp. 368. 1867.

In the second place, the arrangement of routes, the wayside divergences, and the variety of schemes introduced for tours of one, two, or three months, in order to suit the different periods of time at the disposal of tourists, are, we find, all that can be expected or accomplished. The clear and precise series of charts from Stanford's geographical establishment, in themselves a most valuable feature, are so introduced as to give the utmost value to the letterpress. The architectural notices are much superior to those in other Scottish guide-books. We quote the description given of Sir Walter Scott's Monument, in Edinburgh:—

The Scott Monument is the most beautiful work of art in Edinburgh, but it is not well placed. It was completed in 1844, from the designs of George Kemp, an architect, who was previously unknown to fame, and did not live to see his plans completed. He was an intense admirer of Melrose Abbey, and has endeavoured in this monument to combine all the characteristics and proportions of that building. Four grand Early English arches support the whole superstructure, which serves as a canopy to the statue. To these main arches four others are attached at the corners, affording to the former a strong lateral support, and sustained themselves by strong exterior buttressed piers, surmounted by pinnacles. From these spring four flying buttresses, which serve to support the arches of the second story. Three galleries of the same style rise above this, so that the monument may be said to consist of a pile of arches in the Early English style, gradually decreasing in size till the whole terminates in a single pinnacle. An interior staircase (admission 2d.) conducts to the top, which is 300 ft. from the ground. Above the principal arches, and in various parts of the structure, are fifty-six niches, which are to be filled with statues representing the most prominent characters in Sir Walter's novels: of these, nine have been completed and put up. Beneath the main arches is placed a statue of Sir Walter Scott and dog, by Steel, a first-rate work of art; but the situation is an unfortunate one, the loftiness of the arches making the figure seem insignificant.

Upon the whole, then, what we have to say of Murray's "Scotland" is to recommend it warmly to our readers, particularly to those who are going north of the Tweed. If they do not find it a "guide, philosopher, and friend," they will probably discover that it possesses as much of that ternary compound as can be conveniently stuffed into a knapsack or packed in a portmanteau.

FROM MELBOURNE.

A HANDSOME stained-glass window was lately on view at the works of Messrs. Ferguson, Urie, & Lyon, Curzon-street, North Melbourne. It is designed for the chancel of St. Peter's Church, Woolloomooloo, near Sydney, and it is the gift of Mr. James Gordon. The window is composed of three lancet lights, and is 16 ft. by 7 ft. in size. It has nine separate subjects, the centre being a large figure of our Saviour. The other subjects bear on the principal events in the life of St. Peter. No. 1 is the calling of St. Peter; No. 2, Peter witnessing the Transfiguration; No. 3, Peter awakening Jesus from sleep during the Tempest; No. 4, the Last Supper. In No. 5, Christ's agony in the Garden of Gethsemane; Peter is shown sleeping, leaning on his sword; No. 6 represents Christ supporting Peter on the water; No. 7, the Crucifixion; No. 8, Christ's charge to Peter,—"Feed my sheep." The style is Early English.

The same artists designed a chancel window for St. John's Church, Launceston. The central figure is the figure of our Saviour in the Transfiguration, and in the two side lights are the accessories. Beneath is Jesus at the Last Supper with the bread and wine. In the three top lights are the Dove and the Alpha and Omega.

The new post-office is nearly completed. In February, 1866, and June last, the *Australian News* gave views of it, an exterior and interior one. The central hall is 80 ft. long by 30 ft. wide, and 47 ft. high. It is lighted during the day by the windows in the roof and sides of the building, and at night by four large sun-lights. The Elizabeth-street frontage is at present 194 ft. long, the intention being to extend it to 316 ft. An arcade runs along the front of the building, affording access to the receiving and delivery windows, registration, sale of stamps, inquiry windows, and private letter-boxes. The opposite side is appropriated to the letter-carriers and receiving-rooms for inward mails, which enter the building by the mail-yard, on the eastern side from Bourke-street. On the first floor access is obtained by corridors to the offices of the corresponding branch on the right or east side, and to the accountants' branch on the west side. A view is obtained from the corridor of the operations on the ground floor, but it is intended to carry a screen round of sufficient height to intercept the view. The necessary supervision will be obtained at the north end, which it is

also intended to screen off, but to leave peculiar openings, by which means a watch may be kept up without the cognisance of the Post-office employés. The furniture fittings, which are of New South Wales cedar, cost something like 6,000l. The rooms are lofty and well ventilated. Around the arcades which extend along the sides, or fronts of the building, tessellated pavement is being laid down of an expensive description. The contractor for the building is Mr. Samuel Amess; and, when ready for occupation, it will have cost close upon 140,000l.

The works at Stony Creek, for the supply of water to Geelong, are progressing satisfactorily. There are at present nearly three hundred men in the employ of Mr. J. Chappell. The embankment has been built up to the height of 61 ft., and the stonework of the front of the tunnel is nearly completed, two-thirds of the fencing round the reservoir has been erected, and labourers are sinking shafts at the site of the proposed reservoir at Lovely Banks to ascertain the kind of strata.

The Victorian Chemical Works, Footscray, for the manufacture of kerosene from Sydney shale, consist of a main building for the manufacturing processes, and another building some distance apart from the main one, for containing the oils, and for packing operations. The main building, in which the retorts, stills, and refinery are, is constructed of iron, and measures 100 ft. long, 20 ft. high, and 60 ft. broad. The other building, detached from the main one is also of iron, and measures 66 ft. long by 33 ft. in width. The works are situated at Footscray, on the bank of the Saltwater river.

From the Registrar-General's report on the vital statistics of Melbourne and suburbs during the month of April, we learn that the deaths during that period amounted to 393, being a daily average of 13.10, against a daily average of 14.16 in March. The deaths, however, exceeded those of any previous month of April since 1860, with the exception of 1865, when the number was 399. The deaths of children under five years of age numbered 221, of which 115, or about 52 per cent., were of males, and 106, or nearly 48 per cent., were of females.

The first part of the population statistics of Victoria, for the year 1866, has been presented to the colonial Parliament in the form of a blue-book. The number of immigrants who arrived during the year was 32,173, divided into 21,142 male adults, 7,639 adult females, and 3,397 children. From the United Kingdom the arrivals were 4,071 adult males, 3,133 females, and 1,310 children; total, 8,514. From foreign ports the arrivals were 1,439 adult males, 133 females, and 97 children. Of the arrivals from the United Kingdom, 3,610 were warrant holders, and 684 were Government immigrants. The number of warrant-holders was nearly equal of both sexes, but of the Government immigrants there were 513 adult females to 42 males and 29 children. From the neighbouring colonies there arrived 15,632 adult males, 4,373 females, and 1,990 children. From New Zealand, there arrived 5,043 adult males to only 624 adult females. The number of emigrants who took their departure from the colony was 27,629, leaving a balance in favour of the colony of 4,549. The number of Chinese who arrived was 974 against 1,043 departures. The total number of the population on the 1st January, 1866, is given at 626,639, of whom 357,515 were males, and 269,124 females. At the end of the year the number was 643,912, or 365,317 males and 278,595 females; the increase being 17,273, or 7,802 males and 9,471 females. About three-sevenths of the entire population are given as on the gold-fields, the number being 257,264. The aboriginal population is estimated at 1,908 men, women, and children.

There are sixty-two municipal bodies in the colony, including the City of Melbourne and the town of Geelong, containing an estimated amount of rateable property valued at 20,241,073l., having an annual value of 2,314,594l. The revenue they receive amounts to 341,429l., the expenditure being 315,475l. The estimated population of the municipalities amounted to 315,939, and the dwellings they contained numbered 68,968, their area 241,930 acres.

In 1865, the imports into the Australian colonies reached 35,000,000l., and the exports 30,000,000l. Within the last sixteen years New South Wales and Victoria have yielded 150,000,000l. worth of gold, and New South Wales has produced 5,000,000 tons of coal. South Australia has also, within the last ten years, exported 5,000,000l. worth of copper. The tonnage of vessels which arrived at Australasian

ports in 1865 was 2,000,000, and a similar amount of tonnage left those ports during the same period. Forty years ago the number of horses, cattle, and sheep in Australia was under 400,000; the number is now nearly 35,000,000.

A copy of the Official Record of the Intercolonial Exhibition held at Melbourne 1866-67, has been sent to us by the Commissioners. It is a goodly volume of many pages, and besides a business-like Introduction by the secretary and general manager, Mr. J. G. Knight, and the Catalogue of Exhibits, Guide Reports and Awards, it contains eight valuable Exhibition Essays on the Progress of Victoria; its mining and general statistics; its physical geography, geology, and mineralogy; its gems and precious stones; its agricultural resources; its zoology and paleontology; and its climate; and on Australian vegetation. There is also an appendix containing much further information as to New South Wales, Queensland, South Australia, Tasmania, New Zealand, and Western Australia.

THE NEW THEATRE ROYAL, LEEDS.

THE new Theatre Royal, Leeds, is in the Italian style of architecture. The entrance to the boxes, the floor of which is tessellated pavement, is by a broad stone staircase, with gilt balustrades, and it is lighted from the dome by a chandelier, and a number of figures in niches in the wall, holding globes. The boxes are entered from corridors, and will be furnished with chairs, instead of inconvenient benches, and besides the front circle of boxes at the sides, there are twelve private and other boxes, approached by separate entrances, that will hold about eight persons each, and the entire boxes will accommodate 220 persons. The pit, reached by an entrance at the side, will hold about 1,100 persons. The gallery is approached by a stone staircase at the back of the theatre, down Waterloo-street, through a covered passage forming part of the building. It will seat 1,150 persons. The entire accommodation of the theatre is 2,516 seats.

The stage was laid down by Mr. Richard Hubby, and was built away from the theatre in pieces. The width of the proscenium is 25 ft., and the height 28 ft., and the depth from the front to the back of the stage is 55 ft.

The architects are Messrs. Moore & Son, of Sunderland. Messrs. Nicholson & Son, of Leeds, are the builders.

The entire cost of the building is roughly estimated at from 15,000l. to 20,000l.

FROM SCOTLAND.

Johnstone (Renfrewshire).—Subscriptions for a new public hall having been got, a committee was some time ago appointed to get designs for the buildings. Several architects were asked to submit plans, and the designs of Mr. Lamb, of Paisley, were selected as the most suitable of those sent in. A site was obtained at the corner of Ludovic-square and Church-street. The building will thus have a double frontage of 50 ft. to the square, and of 90 ft. to the street. The principal entrance is from Ludovic-square, on the south, by a hall and staircase to the public-hall floor. The ground-storey has a games or amusement room, about 62 ft. by 23 1/2 ft., with a 17 ft. ceiling. It is lighted from the side walls. The reading-room or newspaper-room is 45 1/2 ft. long and 16 ft. wide. The library is 16 ft. square; and the directors' room is 16 ft. by 11 1/2 ft. There is an entrance from Church-street, from which all the rooms on the ground floor can readily be reached by a corridor. There is also by this entrance a special staircase to the public hall, and for concerts or similar entertainments it may be used for the first-class seats. The two staircases and wide entrance-doors give ready means of exit. On the ground-floor are lavatories, bath-room, and other accommodation. On the upper floor is the public hall, 62 ft. long, 46 ft. wide, and 26 ft. high. The hall is entered from both ends of the building, and has a large platform at the north end, with a suite of retiring-rooms for ladies and gentlemen. Attention has been paid to ventilation. The architect has selected modern Italian as the style. The door-piece, with an ornamental balcony over it, is the central feature, and enriched Venetian windows balance the door-piece and light up the upper story. The build-

has been contracted for, the contractors being for the masonry department, Messrs. D. Jaffray & Son, Johnstone; for the carpenter and joiner work, Mr. Robert Whyte, Glasgow; for the slater work, Mr. John Robertson, Johnstone; for the plumber work, Mr. John Stewart, Johnstone; for the plaster work, Mr. James Hutchinson, Paisley, & Kirkwall (Orkney).—The new iron pier at the harbour, extending 500 ft. in total length from the head of the East Quay, is now nearly completed. Messrs. Laidlaw & Son, of Glasgow, were the contractors. They were to complete it by the 18th of October, 1866, for a lump sum of £10,490l. The progress of the work was slow at first, owing to delays caused by the rocky bottom near the head of the quay deflecting the iron piles, and also by an unfortunate accident which befell the crane, and which terminated fatally in the case of one of the workmen belonging to the town. The narrow part of the pier, extending 332 ft. from the top of the East Quay, is provided with a tramway, which has a crossing in the central part, and a raised-off promenade for foot-passengers, floored with hard wood. Between the broad iron rails of the tramway there is a pavement of asphalt, 4 ft. 4 in. in breadth. The tramway rests on twenty-eight cast-iron piles, connected by arches. The pier, which has an upper and under platform, is 38 ft. in breadth from rail to rail, and 168 ft. in length, making the total extent of the structure 500 ft. There are, at the head, sixty-four iron piles and twenty-three fender piles of strong oak wood. A speciality of the pier is that the timber bracing is separate from the iron framework, so that any jarring done to the fender piles by the concussion of vessels driving alongside leaves the iron part of the structure unharmed.

PROVINCIAL NEWS.

Macclesfield.—The foundation-stone of a new infirmary has been laid here by Earl Grosvenor, &c. The intended new institution takes its origin in an endowment of the sum of 30,000l., bequeathed by the late Mr. Joseph Tunncliffe. A eligible site has been chosen—a vacant plot of ground bounded by two new streets, Cumberland-street and Westminster-road, and adjoining a public park. The building will be erected on a pavilion plan, and be made to accommodate fifty patients. The architect is Mr. Stevens, of Manchester and Macclesfield; and the contract has been let to Messrs. Nield & Sons, of Manchester, for 12,650l., exclusive of the furnishing, lighting, &c., which it is estimated will cost 2,000l. more. The existing Macclesfield Dispensary will be incorporated with the new institution.

Stafford.—The new Manchester and Liverpool District Bank is now almost completed. The new building is of red brick, with Hollington stone dressings, and the shafts which support the cornice in the windows and doorways are of a Mansfield stone. The style is Gothic, treated with considerable freedom, and a good deal of carving and other ornamentation. The front is divided into three gables, terminating with pediments. The whole width is 44 ft. All the door and window openings inside and outside have shafts of red Mansfield stone, supporting carved capitals. The bank itself is 40 ft. 6 in. long by 11 ft. wide. It is entirely lighted from the top by a large lantern with side lights all round it, and which is also partially roofed with glass, an intervening ceiling of ornamental glass in panels serving to soften the effect of the vertical light. The architect is Mr. Robert Griffiths, county surveyor; and the work has been carried out by Mr. H. Lovatt, contractor, of Wolverhampton.

Hoylake.—The Stanley Hotel, at Hoylake, has been formally opened. The building was commenced about four years ago by Mr. Cookson, and owing to a want of funds it remained for a considerable time in statu quo. Recently it was taken in hand by the Amalgamated Brewery Company, of Birkenhead. The building stands on about an acre and a half of ground, and it is a frontage of something like 300 ft. The hotel is intended chiefly as a place of resort for excursionists, and, with this view, it has been planned to meet the requirements of all parties. It commands a view of the race-course, as well as the neighbouring neighbourhood. Mr. J. Bratton, of Birkenhead, was the architect; and Mr. Evans, of Hoylake, the builder.

Stafford.—The covered market has been enlarged. The space between the Guildhall and the covered market has been cleared of the old police barracks, and entirely enclosed, adding a

covered space, 93 ft. by 33 ft., to the market. On each side of the entrance is a shop, and above these, and extending the whole width of the market, an armory for the volunteers has been provided, with an entrance at each end, and a place at the back for cleaning arms. The new part of the market is ventilated by louvres. Mr. Griffiths, the county surveyor, was the architect, and the contract was taken by Mr. Christopher Espley.

MANCHESTER TOWN HALL COMPETITION.

READERS will learn with satisfaction that the Corporation of Manchester have carried out the suggestion made in our pages, and have printed a list of the designs received under motions or devices. It will be found in our advertising columns, so that all competitors will know if their designs have been received. We are in a position to state also that the committee have called in professional aid to assist them in making their first selection of not fewer than six nor more than twelve, thus offering further evidence that a strong desire exists to do full justice to the competing architects.

We would suggest to the two or three competitors who have addressed letters to us on the subject that they should at least wait until the Committee have done something before saying that they have done wrong. So far as we have the means of judging, the Committee appear, and we have said this before, to have the strongest desire to do justice and to bring about a satisfactory conclusion.

SEFTON PARK, LIVERPOOL.

SOME few years ago the enormously increasing size of the borough of Liverpool (which had nearly trebled itself in twenty years), induced some of the leading members of the council to consider the best way of preserving open spaces for breathing room, while the land was yet to be obtained at a reasonable rate at the outskirts of the town. They already possessed the Newsham House Estate, situated on the extreme northern boundaries, and by the munificence of the late Mr. Richard Vaughan Yates, the Princes Park was in existence at the south-eastern boundary. Yet the connecting link between the extreme northern boundary of the borough and the southern was not completed. Mr. James Nowlands, the excellent borough engineer, suggested that, if sufficient space was not to be obtained to continue the *cordon* of parks, an inner and outer boulevard, of wide dimensions, should be substituted, well planted with trees, to connect the two divisions of the town to the north-east, east, and south-east, while the noble river Mersey completed the circuit of this densely populated town. But at this time a most popular gentleman, Mr. Robert Hutchinson, late mayor, presided over the Improvement Committee, and he was determined that the whole of the *cordon* of parks should be accomplished. In accordance with this determination the council purchased a large tract of land, some 160 acres in extent, from the Earl of Derby, at the extreme north of the town. This is now being laid out as the Stanley Park under the direction of Mr. Edward Kemp, of the Birkenhead Park. The corporation then purchased the site of Shiel Park, named after an old and esteemed member of the council, which is now completed and open to the public. This completed the circuit up to the Newsham House Park. The Waverley Park and old Botanical Gardens continue the line to within a short distance of Parliament-fields, still unbuilt upon. The Princes Park here joins, and at the Ullet-road boundary of this park the Sefton Park commences, and stretches over hill and hollow to Mossley-hill and Aigburth.

The area of the park is 400 acres, distributed thus:—

Building sites surrounding Park	a.	r.	p.
Botanical Garden	113	0	0
Area of Lake and running water	15	0	0
Area of Roads and Drives	14	0	0
	64	0	0
	210	0	0

The 190 acres left will be planted and laid out with carriage-drives and walks.

At the latter part of last year the corporation of Liverpool offered liberal premiums for the best designs for laying out the land as a park. Besides the sites for building lots and botanical

garden, the council required a review ground capable of reviewing the local Volunteers, a large cricket-ground, and, lastly, a grand boulevard of 75 ft. wide (having a gallop or Rotten Row running beside it), forming a connecting link with the Croxeth and Princes Park roads, which give the chief access to Liverpool from the esteemed quarter of Mossley-hill, Garston, and Aigburth.

Twenty-nine competitors sent in designs, and after calling in and consulting Mr. Nesfield, the distinguished metropolitan gardener, the Council awarded, as we have before now stated, the first premium to the authors of this design—Mr. Edward André, of Paris, and Mr. Lewis Hornblower, of Liverpool; the former gentleman having charge of the public parks and gardens of Paris, and the latter being a local architect, who had the advantage of experience in these matters under the direction of the late Sir J. Paxton.

We give a bird's eye view, which will explain the whole arrangement proposed. The boulevard is in the foreground, running from Croxeth-road on the left to the Garston-road on the right, a distance of one mile and a quarter.

The Park proper is enclosed by a carriage-drive 50 ft. wide, with side footpaths.

The Botanical Gardens are enclosed with iron railings, and are centrally situated, with a south-western aspect. Nineteen acres are devoted to this department. It seems well arranged, and includes many modern improvements.

The contour of the land shows a valley running longitudinally down the centre of the park, while about half-way down this valley another joins, coming from the Mossley Hill side. Both valleys have a great fall 45 ft. towards the lowest part of the land. This fact, and the small streams which issue from the heads of each valley, suggested to the designers a series of cascades leading from the heads of the valleys to the lakes at the lowest or Aigburth-road entrance to the park.

These cascades are eleven in number, varying in the depth of fall from 12 ft. to 6 ft., and are formed with ornamental rockwork and other accessories. Five bridges will span the streams at various selected spots, each bridge varying in design and size. Footpaths of 10 ft. wide follow the windings of the rivulets, and intersect the ornamental plantings surrounding the lakes, &c.

Secondary carriage-drives of 30 ft. wide follow the courses of the lake, and intersect with the main drives round the park. At many commanding spots kiosks and other ornamental buildings will be erected. A large band pavilion, first and second class restaurants, a cricket pavilion, with markers' pavilions, covered sheds for equestrians, boat-houses, deer-house, &c. &c., will be provided.

Lodges will be placed at all the entrances, and it is the wish of the council that these should be habitable as well as ornamental. Houses for the curator of the gardens, grand conservatory with monumental cascades, fountains, &c., will be introduced. Some few of the elevations of these buildings we have engraved.

The park and garden are estimated to cost 140,000l., and it is expected that the sale of the building lots, 290 in number, varying in size from 1,250 to 6,000 square yards, will nearly repay the council for their outlay in the purchase of the land and laying out the park; at any rate, the difference will be amply repaid by the large open park area of 190 acres secured to the public for ever.

The staking out of the roads and drives is now being proceeded with rapidly; but it is intended, when the fences are down and before the earthworks are commenced, that an opportunity shall be given to the county of Lancaster and its northern neighbours to show what their Volunteer army can do in a review on a grand scale; and it is expected that, on the 3rd or 4th of October, some 25,000 Volunteers of the northern district will be reviewed by H.R.H. the Duke of Cambridge.

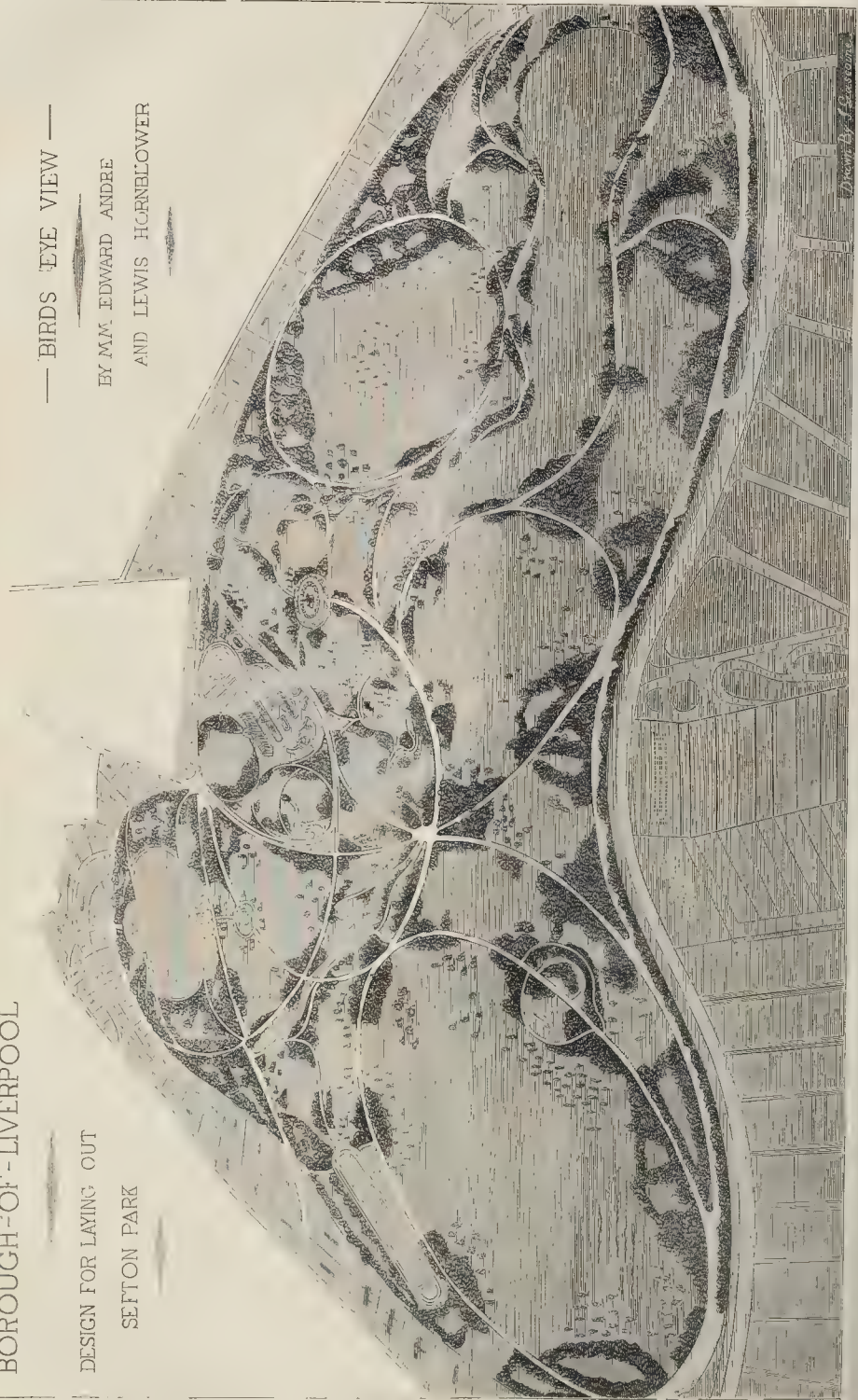
It is expected, and indeed arranged, that the whole of the works will be completed in two years from the date of the contracts. We may state that, since the resignation of Mr. Hatchinson from the council, the corporation have selected Mr. Joseph Hobbs as the chairman of the Improvement Committee, under whose auspices every encouragement is given to the designers to carry out their work in its entirety and without interference.

The views we give represent, in order, beginning at the top, The Main Lodges and Gates; The Head Gardener's House; The Shepherd's House; and the Cricket Pavilion.

BOROUGH-OF-LIVERPOOL

DESIGN FOR LAYING OUT
SEFTON PARK

— BIRDS EYE VIEW —

BY MM. EDWARD ANDRE
AND LEWIS HORNELLOWER

BUILDINGS DESIGNED FOR SEFTON PARK, LIVERPOOL



DISCOVERIES IN KILDALE CHURCH, YORKSHIRE.

In the course of the works here, just within the line of the north wall of the church, a series of interments, laid east and west, and with the head of one near the feet of the next, were found to the number of seven or eight; and with them a number of weapons of iron and articles of bronze. Among the former were three swords, an axe, three or four daggers (presumably: from the state of corrosion it is hard to say decisively that one at least is not a spear or javelin-head), a knife in a bone handle, portions apparently of spurs, &c. Among the last is a pair of tweezers, a curious object consisting of two legs, each 2 in. long, set square in the ends of a cross-bar (about half the length of the legs), and terminating each of them in movable rings, not unlike a means of suspension for some object or objects unknown; the remains of two hemispherical bowls of thin metal, about 2½ in. in diameter at the mouth, and perforated with four small holes near the rim, which probably or certainly formed parts of a balance. A plug of lead also was met with, which, from the green metallic matter about it, seemed to have come from a bronze or bronze-lined socket; and a shield-shaped and decorated plate of bronze, which may have been the chape of a sword or dagger-sheath. A small wooden frame was also found, with a movable panel, inclosing a small plate of lead, about the thickness of half-a-crown, and ½ in. by 1 in. in dimensions.

A writer in the *Yorkshire Gazette* considers, — the axe-head, and one at least of the swords, are so characteristic that they belong to the period of the Danish occupation of Cleveland. The dispossessed owners of Kildale, named in *Domesday*, were Orme and Ligulf; and there can be no reasonable doubt that they were theirs—at least successors—to others whose nationality was as distinctly declared by their names, as in the case not only of these two, but in that of twenty-one more out of the twenty-seven owners in *Cleveland* specified in the *Domesday Book*. It is scarcely a mere surmise that some of the earliest of these settlers—perhaps not quite the earliest—might be buried within the limits of a Christian edifice and yet not without the accustomed weapons of their heathen forefathers. The swords lay with the blade obliquely across the bones of the leg, the hilt at one right hip. The axe lay on the instep of its one-time owner, so that its helve must have reached up to or towards his right hand.

THE TRADES MOVEMENT.

A subscription has been set on foot for the purpose of raising a testimonial to Mr. W. C. Leng, the editor of the *Sheffield Daily Telegraph*, for the important and mainly part he took in reference to the recent outrage commission, and a sum of about 200l. has already been subscribed. After the New Hereford-street outrage a December last, Mr. Leng advocated the appointment of a commission with extraordinary powers, for the purpose of making a thorough investigation. He also broadly stated that there could be no doubt of the complicity of some of the trades unions in that and similar outrages which had disgraced the town, and meetings of trade societies were held at which the accusation was denied with great warmth, Broadhead being, perhaps, the most emphatic and energetic in "hurling back the foul imputation." While Mr. Leng was writing on the subject, one of Broadhead's accomplices (Hallam)—who subsequently gave most important evidence before the commissioners—called upon him and made a confession, which was communicated to the public, and proved to be of the greatest value, notwithstanding threats of vengeance, and continued efforts to damage the circulation of his paper. Mr. Leng persisted in his demands for a commission. In this he was cordially assisted by merchants and manufacturers of the town. In speaking of the efforts of the local press, it should not be forgotten that in a less prominent but in a firm and courageous manner, this exposure of dangerous rascality was materially promoted by the editor of the *Sheffield Independent*. We may here note that the Saw-Grinders' Union have virtually and formally confessed themselves to be accomplices of the respectable Broadhead, at least after the fact, if not also before it. It is to be hoped Parliament will know what use to make of this confession.

Liverpool.—The Operative Carpenters and Joiners have met to consider the new trade rules proposed by the masters. Several amendments to the proposed rules were submitted and carried. The eighth rule proposed by the masters was as follows:—

"Each employer shall conduct his business in any way he may think advantageous in the matter of letting piece work, employment of society or non-society men, taking apprentices, using machinery and implements, and in all details of management not infringing the individual liberty of the workmen."

The adoption of this rule was strongly opposed, and the rule was rejected.

Glasgow.—The masons are on strike at the University Buildings. The original cause of the dispute was the employment by Mr. Thomson, the contractor, of certain non-union men, and his refusal to dismiss these when requested by the unionists to do so. The immediate result of the misunderstanding was that nearly all the builders and hewers then engaged on the works, numbering 180, threw down their tools, leaving on the ground only labourers, quarrymen, smiths, and joiners. Mr. Thomson, however, adhered to his determination to employ non-unionists if he saw fit. In the absence of masons employment was given to the labourers and quarrymen in obtaining stone, and thus at least one important branch of the work was vigorously pushed on. Meanwhile, masons continued to come in on Mr. Thomson's terms, and by this time, it is said, the full complement would have been made up but for the unionists. The result is that only some seventy-eight masons have yet come in, the number required being about 250. Some of those who have accepted employment were unionists.

THE METROPOLITAN MUNICIPAL GOVERNMENT BILLS.

BESIDES the scheme proposed by Mr. Ayrton's committee, two Bills were brought into Parliament by Mr. Mill, M.P., under the auspices of the Metropolitan Municipal Association, 1, Adam-street, Adelphi. In introducing the second of his two Bills, Mr. Mill said the Bill embodied the remainder of the plan which he had introduced in another Bill at an earlier period of the session. It could not be expected that the Bill could be carried into effect that session, and his object was simply to have it printed, so that it might be laid before the public with a view to its being considered next session. It provided for a central government, and proceeded very much in accordance with the recommendations of a commission which had considered the question. It enlarged the City corporation into a municipality for the whole of London, leaving so much of the present corporation in the City as was necessary for purely local purposes. There would be a mayor and two aldermen for each district, they being those candidates for the common council who had the greatest number of votes. The corporation property would pass into the possession of this larger municipality. The City, it was right to say, had not yet authorised this session. It was proposed that the City should have twice the number of representatives in the common council that its population would justify; it would thus have six aldermen. It was proposed that the county of the City of London should become the county of all London, and should have one commission of peace, of which all the aldermen should be members. As a temporary measure it was proposed that the Board of Works and all the present aldermen should be added to the council, Sir John Thwaites being appointed chairman of the standing committees at his present salary, provided that he was willing to accept the office.

The Metropolitan Municipal Association have issued, in a printed form, "Notes in explanation" of these two Bills. The first of the two, they state, is so framed as to be capable of passing into law alone, although the two form in reality one whole, and could be passed, *pari passu*, with an enactment in the second that the two should be construed as one. The objects of the two are thus summarized in the "explanations":—

- 1st.—To extend throughout the metropolis that local municipal life which is characteristic of our towns, but which in the metropolis has hitherto been confined to the City of London.
- 2nd.—To retain the Corporation of London as one of a group of district municipalities, all henceforth to be represented in a common council.
- 3rd.—To establish a central municipal authority over the whole metropolis, absorbing into it the Corporation of the City of London and the Metropolitan Board of Works.

The term "London" in this summary means the whole of the metropolis, and "City of London" the City proper only.

In contrasting Mr. Ayrton's scheme with this one, it is submitted that the humbler scheme embodied in the Metropolitan Municipalities' Bill and the Metropolitan Municipal Government Bill offers over Mr. Ayrton's the following advantages amongst others:—

- 1st.—It is self-acting, and can be put to work without any Government interference.
- 2nd.—It is based upon principles and embodied in forms which are approved by experience and familiar to the people.
- 3rd.—It makes use, as far as possible, of all existing municipal agencies, and develops instead of destroying them.
- 4th.—Whilst far more moderate in its immediate aims, it affords a basis broad enough to include hereafter every reform which experience may show to be desirable.

Mr. Ayrton's scheme, it is maintained, is "characterised by centralization and official interference," while Mr. Mill's, though introducing a vast change in the municipal administration of the metropolis, avoids these characteristics, and is essentially conservative.

THE COST OF METROPOLITAN PAVING.

A REPORT from the Highways, Sewers, and Public Works Committee of St. Pancras has just been printed for the consideration of the vestry, showing the outlay for paving purposes, as well as the additional sum thrown upon the parish by the abolition of tolls, by which that vast monopoly, the London General Omnibus Company, has derived enormous advantages, without affording the public any adequate benefit. The report sets out by stating that for 1866 the rates levied for paving purposes were insufficient by 4,600l. to meet paving requirements, whilst at the same time extraordinary expenses had to be incurred out of the general rate, making a total under this head of 2,975l. The cost of works in relaying footways and paving intersecting portions of adjacent roads in connexion with paving certain of the late turnpike roads, had been 6,976l. The total cost of paving these roadways amounted to 49,661l., for defraying the cost of which 50,000l. had been borrowed by the vestry. In consequence of works executed there was a large quantity of surplus material in the depot, which being available for other streets requiring repair, might be regarded as an asset to the value of 1,600l. Amongst the estimates for 1866 was an item for repairing the carriageway and footways of Tottenham-court-road at a cost of 8,288l., but the old paving could be dressed for other thoroughfares of lesser traffic. After referring to the payment of great works on roads, such as Gray's-inn-road and others, out of the general rate to the extent of 13,000l., which they considered a great mistake, the committee report that the cost of maintaining the roads thrown upon the parish by the abolition of tolls was 11,000l. per annum; but the vestry having borrowed the 50,000l. referred to, and paved with granite those portions of the old turnpike roads that were subjected to the heaviest traffic, had reduced the cost of maintenance, including the payment of the instalment of loan and interest to 8,400l. per annum, which was equal to a rate of 2½d. in the pound. The appendix to the report thus shows that the amount required for paving works in the parish of St. Pancras in 1864, the year in which tolls were taken off and turnpike roads thrown on the parish, had been: March, 18,097l.; September, 17,710l. In 1865,—March, 18,517l.; September, 21,607l. In 1866,—March, 18,794l.; September, 21,710l. In 1867,—March, 21,842l.;—total, 138,277l., the amount for all purposes required under the general rate for the same period being 170,166l.

HOW TO COOL HOUSES?

CAN any of your correspondents oblige me with information on the following subject? I must premise that I have been for many years a resident in India, and am about to return there. A cool house is an object I seek with earnestness, as essential not only to the comfort but to the health and happiness of myself and my family. Some fourteen or fifteen years ago, Professor Piazzi Smyth suggested that this object might be accomplished by the expansion of compressed air cooled down while in a state of compression to the temperature of the surrounding atmosphere. It is well known that air will give

out its heat under compression, and will, in consequence, be colder on its re-expansion than it was before. Professor Smyth's idea was that it would be practicable to compress the air in strong vessels outside the house, and then allow it to expand, after being cooled down, in the interior, to which it would be passed through pipes. In 1854 I met with a paragraph in the *Calcutta Literary Gazette* which stated that a paper had been read on behalf of Mr. Macquorn Rankine, at the meeting of the British Association for the Advancement of Science, which described how this mode of cooling houses might be applied; and which stated that a one-horse power steam engine with a bell receiver would compress 66,000 cubic feet of air per hour to so great an extent as to reduce its temperature 30°, say from 90° to 60°. A much less quantity would be sufficient to cool an ordinary house as greatly as would be necessary or pleasant, and the plan, therefore, seems to be as practicable and convenient as could be desired. Yet, strange to say, though the comfort and happiness of great numbers in India, where families are constantly broken up by the ill-health produced by heat, would be secured by its operation, I have been unable to learn by any inquiries that I have had in my power to make either in India or England, that it has ever been tried, or that any notice has been taken of it. The only mention I have seen made of it was in a short paragraph in the *Friend of India*, in which it was spoken of as too expensive for use; but this could not be if Mr. Rankine's statement was correct. What I now seek is information about this mode of cooling houses, whether it has ever been tried, and with what result, and I should be extremely obliged to any one who could afford it. Steam-power I could not command; but I suppose that of a one-horse power engine could be obtained by the use of oxen. I cannot say that I understand, from the imperfect description given in the paper I have referred to, the mode of operation propounded by Mr. Rankine. The plan which appears to me the most feasible would be to compress the air by means of a condensing pump, in a long air-tight cast-iron tube, running through a small canal of water, and opening into the house, the end in the house being closed with a valve so loaded as to produce the requisite degree of condensation.

INDICES.

HOUSE DRAINAGE AND VENTILATION.

SIR.—Our experience before and since our combined works of water supply and drainage came into operation (at Leek) is so exactly in accordance with the views expressed in your recent leader (p. 581), that I cannot help forwarding you some practical detailed results as to our case. A large portion of my time during the last ten years has been devoted to the important question upon which you write so forcibly. The system of ventilation you advocate has been practically tested here during the last six years. Atmospheric air is admitted into the main sewer at the lower levels, and sulphuretted hydrogen and other light poisons are carried off by 3 in., 4 in., and 6 in. pipes from the drain heads at the high levels. Nature is thus allowed to do the whole work of ventilation herself. I have frequently demonstrated chemically the truth of what you say as to the propriety of ventilating every drain. Where a drain, quickly ascending off the main sewer, is not ventilated, fill one vessel with the atmosphere of the drain at the drain-head, and another from the street sewer, where the drains enter, and in nearly every case the latter will support life, while the former will not.

Experience justifies me in stating that I know of nothing so mischievous as allowing slop-stone pipes to be directly connected with the drain; when this was allowed here, I found 40 to 50 per cent. where the bell-trap was either defective or removed, and a constant stream of gaseous poison entering the house. Taking the slop-stone pipe through the wall unto a trap outside, in the manner you suggest, would, in my opinion, if universally carried out, save thousands of lives.

I do not approve of street gullies being untrapped, except here and there one at very low level, where, if a few dry shavings are kindled, the draught is forced inward.

Our town drainage was executed by Mr. C. Slagg, C.E., now borough surveyor at Kingston, at a total cost of about 10,000l. We have lately gone through the mains, and I do not think a

hundredweight of sub-soil could be found in the entire length.

The chief advantage has been derived by the poorer classes. The following is an example in proof:—During the six years previous to the drainage works the mean number of members belonging to the Leek Burial Society was 5,178, and the total number of deaths 984, and the average age at death 18.66 years. During the six years since the new drainage works came into operation it stands thus:—Mean number of members 5,988, number of deaths 608, average age at death 27.06 years; showing the decrease in the number of deaths, corrected for the increase of members, to be 475, which is equal to a decrease in the annual rate of mortality of 18.24 to 1,000 of the living. The increase in the value of life is 8.4 years. I estimate the total number of weeks' sickness prevented amongst these persons during the last six years to be upwards of 40,000. It is found that one-third of the total amount of sickness experienced occurs between the ages of fifteen and fifty-five years. Supposing each male between these ages to earn 10s. per week, and each female 6s. per week, and the medical and other expenses attending each person sick to be 10s., and the cost of each funeral 5l., the total saving to this portion of the community, under these heads, during the six years, amounts to 2,000l. more than the entire cost of the whole of the drainage works. And supposing the same state of things that has existed during the last six years to continue during the after-life of the present members of this society, the total saving that will have resulted to them under these heads, when the last shall have died off, will be 61,978l.

ROBERT FARROW.

THE LAW COURTS COMPETITION.

SIR.—I beg to offer a few words in correction of a statement in your impression of this week.

What I said in reference to the reported double award of the judges did not amount to a protest, but only to a suggestion of the question, whether or not such an award would be consistent with fairness to the competitors, and the impression under which they had entered the competition. The opinion said to have been offered by me as to my own claims and to my position in the competition would have been most unbecoming as proceeding from me, and I need hardly add, was not expressed.

I will only add, that I have no kind of doubt that Mr. Barry and Mr. Street would produce an excellent building, my only doubt being as to the justice, according to the customary rules of competitions, of thus, as it were, clubbing together the merits of different competitors. Should this, however, be thought right by those best authorized to judge, no protest shall proceed from me; but I shall rejoice if a noble result is the consequence.

GEO. GILBERT SCOTT.

P.S.—I am sorry to observe that my cause has been taken up by an over-zealous friend, in one of the papers, in a tone which I should never have for a moment sanctioned had I been consulted.

BATHING.

It appears to me that all our watering-places should provide enclosed bathing-places, so as to be available "at all times of tide;" either in form of "floating baths," or fixed ones formed of an enclosure of piles, and a timber grating rising and falling with the tide. Nothing can be more gloomy or uninviting than our machines, with their hoods behind drawn down, excluding sun and air. If the "Continental mode" is objected to by the fastidious here, separate the sexes; but why confine them to the limit of a small machine? There is no bathing in the proper sense of the term here.

Owing to the tides bathing is rendered very difficult at the proper hours. Is a remedy so difficult? What is wanted are proper baths and bathing-places. NATAROS.

FUTURE COMPETITIONS.

SIR.—Will you allow me a line to repeat the suggestion I made some time ago as to the future of architectural competitions? It is that in all cases the architects competing should be required to furnish bond-fide drawings of the future building and its details.

Suppose in every instance, as a just free trade trial, a plan, section, and elevation only be sent in the actual drawing of the architect himself as evidence of his power as an artist, not all clerks' work and the result of hired assistance. So much for the general competition open to the world. The next process should be to reduce this number to three or six or twelve, according to extent of the work, and to demand of those competing illustrations

drawings so as to show the design fully, and these drawings to be paid for as in the instance of the Manchester Town Hall competition. Thus would two ends be gained,—first, the whole art could and would have its chance, without the excessive labour of complete drawings, but yet enough; and, second, the real competing architects would feel that they were earning their wages fairly by the being paid for, to a certain extent, profitable and assured work; and finally, and not the least, a blow would be struck at the present system of putting forth a series of drawings, and evidences of fine art capacity, wholly the handwork of others, who never appear in it, except, perhaps, to hear it told to the world afterwards as the reason of the short coming and final failure that they, and not their employer, who gets everything, are the real and primal cause of that failure. The whole future of art in reality depends on the following of this course and principle of action,—that of the bond-fide work of the exhibiting artist becoming a sine qua non. I think this idea has already begun to live, and that the result of the Law Courts competition partly proves it; and surely, sir, it is the interest of every artist and architect and artist workman, to help to make the public aware of its absolute necessity. Until this be done an architect's competition is an impossibility—the resultant work is "starved," for the real workers are starved! C. B. A.

BOARDS AND SURVEYORS.

SIR.—The enclosed application for the office of "District Surveyor" has been sent to the Watlington District Highway Board, Oxon, in reply to an advertisement in your pages, the character of which should not be passed unnoticed. S. T.

(Copy.)

SIR.—I wish to apply for the post of district surveyor for Watlington, having been brought up in that line, and I can produce first-class testimonials from all the most eminent London surveyors. I have passed the examination at the Royal Institute of British Architects, which is necessary under Act of Parliament, before one can perform the duties of a district surveyor.

Having hitherto found the scope for my intellectual powers rather confined in London, I look forward with "Great Expectations" to an open tract of 150 miles of country, with a salary of equal amount.

My incidental relatives offer to advance the security of 200l., which might be deposited at interest with the Society for the Prevention of Cruelty to Animals for the benefit of the horse.

Gathering from the obscure wording of the advertisement that the Board find the horse, but that I should have to find the board, I wish to ask whether his appetite is good, and how are his poor feet? Do the Board pay the impurities? Do the horses go quiet in harness, or do they expect to find an ass to ride him?

The advertisement does not give me a chance of judging of the handwriting of the Board, but having been educated at Oxford I will undertake to write as clear English.

Should I be entitled to parochial relief from each of the thirty-nine parishes? My wife takes in washing. Would the Board undertake to push the business in influential quarters? Should I be allowed time for turning the mangle? and how much of my "whole time" could be devoted to sleep? CLAUDIA VILATOR.

To the Clerk to the Watlington Highway Board, Oxon.

WINCHESTER DRAINAGE COMPETITION.

SIR.—The blundering one idea of the Winchester Local Board (the utilization in Chilcomb Valley) having been completely nullified as to the second and third premiums, the only honourable course open to them seems to me, to at once recall the rejected designs, and submit them all to Mr. Butcher, or any other competent engineer, as they ought to have done in the first instance.

In the Farnham Drainage Competition the Local Board fortunately had the advice of an eminent civil engineer residing in the neighbourhood, and upon his suggestion they at once sent the whole of the competing designs to Mr. Leather, for him to decide their merits. These amateur engineers at Winchester, however, were above (or below) advice, including that of their own surveyors and now behold the result.

The arrangements suggested above, though not including the first premium (which I imagine is now unavoidably awarded to "No. 7") will show that the Winchester Local Board are willing to acknowledge their error, and refute the unpleasant (though not unreasonable-looking) statement of your correspondent "Competitors," that "they have obtained designs under false pretences."

USE OF THIS REJECTED.

APPARATUS FOR BUILDING CONCRETE HOUSES.

WE have received a communication from Mr. Tall in reply to Mr. Conybeare's letter (p. 594 ante), stating that he only claims "improvements in apparatus," and that his apparatus is superior to that referred to. Those who are interested can compare for themselves. As to the strength of concrete, the writer adds:—

"In order to prove to the public and to 'H.C.' how erroneous his statements are, I will make a beam of concrete, and let him make a beam of ordinary brickwork, and if my concrete beam is not only ten but twenty times stronger than his brickwork beam, I will forfeit 500l. to him, and if he is as strong as I, I will forfeit 500l. to him. And further, as he says my apparatus is 'in all respects identical' with the one he professes to know so much about, I challenge him to make one of them, and build a wall, say 40 ft. high, and I will use my apparatus and also build a wall, and if I do not build twice as fast, with the same number of men, that is 2 ft. to his 1 ft., I will forfeit 500l., he also to be subject to a like forfeit if I do so."

WANTED: INFORMATION.

OBSERVING in your interesting number of the 3rd inst., a statement about a new cement, the main elements of which are magnesia and chloride of magnesium, I presume many of your readers have by this time experimented thereon. Would you be so good as to ask some of them to contribute the result of their experience, together with the information where the above materials can be readily procured, and the cost of each article, and oblige, A SAND-RAIL.

VARIOUS inquiries continue to reach us as to what was described in our pages some time ago as "Italian plaster," and said to be obtainable in Ipswich. We shall be glad to receive precise information on the subject. The recent rains have penetrated brick walls and stone walls in all parts of the country. Some means of rendering walls waterproof are anxiously asked for by a dozen correspondents. At present we can but refer them to previous numbers of the *Builder*, wherein various remedies have been at different times discussed.

DEERING AND WYATT.

SIR.—Your correspondent P. C. says (p. 568). "We came now to Joseph Gandy, elder brother of John Peter Gandy. He took the name of Deering," &c. &c. Joseph Michael Gandy should be styled A.R.A.: he was the most celebrated architectural draughtsman of his day, but he did not take the name of Deering as stated, that name being taken by his youngest brother, John Peter Gandy.

Drury Lane Theatre was the work of Mr. Benjamin Wyatt, son of James Wyatt. Apsley House, "as we now see it," was designed by Mr. Benjamin Wyatt and his brother Philip, and not by S. and B. Wyatt. A. B. C.

COTTAGE PLANS.

A CORRESPONDENT of the *Suffolk Chronicle* states, in reference to the cottage plans exhibited at the late Royal Show, that the Suffolk Agricultural Society have offered 10*l.* towards the publication of the two prize plans, upon condition that each of the members should have copies, and have appointed a committee to carry the matter through, and if the amount of subscriptions is sufficient, to publish other plans with them. The expense of reducing and publishing 500 copies each, containing a dozen plans (giving elevation, section, ground, and chamber arrangements of each cottage) would be about 60*l.* For 10*l.* or 15*l.* more an additional 500 could be struck off. A subscriber of 1*l.* will probably have ten copies; one of 10*l.*, four copies. Subscribers' copies to be from the first impressions, and copies not subscribed for to be sold to pay expenses.

We have received a letter, signed "Alfred Creer," stating that the design for which the Suffolk Agricultural Society awarded the second premium to Mr. Shaw (see p. 575 ante) was in reality by the writer; and that our "error" as regards the authorship "has occurred through a friendly arrangement having been made between Mr. Shaw and himself for a simple exchange of names in the matter of this competition." It is somewhat cool, certainly, for a man who has written a lie to tell those who believed him that they have committed an error. We advise Mr. Alfred Creer to avoid all such "dodges" in future, and to stick to his own name before he is made ashamed of it.

LABOUR AND PRICES IN SYDNEY.

SIR.—I am not surprised that you should have been led to write as you have done upon receipt of the "memorial" from the Sydney operatives, although I cannot but regret that towards the conclusion of your article you were sensibly led to confess to some misgiving as to the accuracy of the averments in the "memorial." If I can satisfy you that the statements in the "memorial" are false, your whole argument falls to the ground. Although I do not append my usual signature, I am not unknown to you, at least, by report, and you will admit I am in a position to speak on this subject, and that what I write may be relied on. I am bound, however, to preface what I have to write by acknowledging I am a resident in Melbourne and not Sydney; but so far as comparison of wages with cost of living is concerned, my visit to the latter place and frequent correspondence enable me to

state that the Sydney operatives have the advantage of their brethren here. There is one other matter favourable to the "memorial." I have also to admit; that about the time it was despatched the prices of meat were ruling higher than they are here now.

Having thus somewhat cleared the way, let me now institute a comparison of wages and cost of living in Melbourne; and just now there is pretty keen competition, particularly in the building trades. All the operatives in Melbourne work only eight hours, for which, as is stated, they receive from 3*s.* to 1*s.* 6*d.* per diem, some working piece-work even more. Labourers engaged on building receive 6*s.* to 7*s.* The proportion of employment is much higher than stated. I do not say that men are never out of employment, but I constantly hear contractors complaining of the difficulty of getting men; and of this I am certain, that because good workmen are so scarce many men are employed here who would not be tolerated in England. A good workman in any trade here can always ensure employment.

Then as to living, let me give you some of the prices quoted to me in the market this morning. Large cabbages 1*d.* each, cauliflowers 3*d.* each; last week 3*d.* each. Turnips 1*d.* and carrots 1*d.* per bunch. Mutton from 3*d.* to 3*d.* 6*d.* per lb.; by the side 2*d.* Milk is selling at 3*d.* to 6*d.* per quart, according to locality. Bacon and cheese at 1*s.* and upwards per lb. Tea from 1*s.* 3*d.* upwards; sugar from 3*d.* 4*d.* All groceries can be had of the best quality and at very reasonable rates. Boots and shoes can be had good and at fair prices. Rents vary, of course, as to locality from 6*s.* and 8*s.* upwards for 4-room cottages. I think I have already jotted down sufficient to show you that our operatives are not so badly off as some would have you believe. I could name some in several trades who are letting house or houses to others. These are among the poor oppressed workmen who warn their fellows in England not to come to Australia. Was there ever a more hollow pretence? I am sorry to say that, with scarcely an exception, the leaders of these trades unions are not the most successful or most reliable men in their several callings; that there are good workmen connected with the unions I admit; but they generally join in self-defence, the roughs, like seum, rising to the top.

You were misled when you wrote,—"There are no well-lighted . . . shops," &c.; "no lofty smithies, with engines for turning lathe for fitters," &c. &c. Not only have we steam, but water-engines employed. Indeed, machinery to a very large extent is used in various trades, and but few builders are without proper accommodation for their workmen. While well-appointed laundries supplied with every appliance, engine-driven lathe are in almost every such establishment, while already some two or three steam-bath-houses have also found their way to the colony. If you recollect that we are only a small community, some 700,000 in the whole colony, these facts will stand out much more prominently, and prove that our men are made of the right stuff, are full of indomitable energy. To the man who is not afraid to work and knows his business, I there is plenty of room; let him come. MELBOURNE.

P.S.—Since the above was written the following clipping appeared in the Melbourne *Argus*:—

"The whole of the moulderers employed in the Victoria and Phoenix Foundries, Bullarut," says the *Post* of Monday, "have struck work, in consequence of a proposal by their employers to reduce the rate of wages from 15*s.* to 13*s.* per day."

THE THAMES EMBANKMENT.

THE engineer to the Metropolitan Board of Works has reported on the progress of the embankment. We give a condensed abstract of the report. "Contract No. 1, between Westminster and Waterloo Bridges—The dams are completed, and portions removed from the works where sufficiently advanced; 3,262 ft. of the low level sewer, 3,244 ft. of the subway, 2,925 ft. of the smaller sewer for intercepting the drains from the foreshore, and 284 ft. of the flushing culvert are also complete. About 320 ft. of the Westminster Steamboat Pier and the face wall next the bridge, the main wall, return wall, screen and retaining walls, &c., are all in a very forward state; 586 ft. of the adjoining river wall are complete, and a further length of 134 ft. has been brought to a height of 3½ ft. above Trinity high-water mark; 100 ft. of the York-gate submarine are brought to a level of about 1 ft. above that mark; 260 ft. of the river wall adjoining are complete, and a further length of 463 ft. is constructed to a height of 3½ ft. above Trinity datum; 45 ft. of the Charing-cross Pier are brought to the same level, and excavating, concreting, and brickwork are proceeding within the dam for the completion of the remainder of this pier; 302 ft. of the river wall adjacent are brought to heights varying from 1 ft. to 3½ ft. above Trinity datum. The works to the Adelphi landing-stairs are brought to 1 ft. above, and 398 ft. of the river wall adjoining those works are brought to levels varying from 1 ft. below to 3½ ft. above that mark. In connexion with the Waterloo Steamboat Pier works up to the junction with the No. 2 Contract, the works generally are brought to levels varying from 1 ft. below to about 1 ft. above Trinity datum. Filling in behind the walls and in the works has been carried out to the extent of about 500,000 cubic yards. The Victoria and Regent-street sewer outlets are complete. Approximately the cost of the whole of these works amounts to about 394,200*l.* Contract No. 2, between Waterloo Bridge and Temple Gardens.—The low-level sewer, subway, and smaller intercept-

ing sewer are complete, the river wall is constructed to its full height, and the parapet is being formed thereon. The new Temple Pier is also approaching completion. The approximate value of the whole of the works completed amounts to about 215,490*l.* Contract No. 3.—The drawings are completed. They comprise a viaduct from the eastern end of Inner Temple Gardens to Blackfriars Bridge, and will complete the line of embankment between Westminster and Blackfriars Bridges; but this section of the work awaits certain negotiations pending between the board, the Metropolitan District Railway Company, and the City Gas Works. The roadway along the whole length of the embankment cannot be completed until after the construction of the Metropolitan District Railway. Southern Embankment.—A length of about 2,570 ft. of the dam, and 2,870 ft. of the staging is complete, and in the construction of which about 287,000 cubic feet of timber, 13,000 cubic yards of clay puddle, and 185 tons of iron have been used. Within the dam about 240 ft. in length of the river wall have been brought to a level of 1 ft. below, and 2,060 ft. of the wall to levels varying from 1 ft. to 7½ ft. above Trinity high-water mark. For the construction of this wall about 87,000 cubic yards of earth have been excavated, 30,000 yards filled in, 22,000 yards of concrete deposited, 580 yards of brickwork laid, and 123,000 cubic feet of stone bedded. The total approximate value of the work done is 107,000*l.*"

SHOREDITCH NEW VESTRY HALL.

At a meeting of the Shoreditch vestry, held on Tuesday evening, a long discussion took place with reference to the Vestry-hall its course of being erected in Old Street road. The principal point raised was in respect to the painting of the interior, which, in terms of the contract specification, was required to be "painted in four oils to all stucco work." The contractor having put a solution of vitriol on the wall next the lime, the clerk of the works, Mr. Merriop, condemned it as being contrary to specification, and stopped the work. On the matter coming before the building committee they ordered the paint to be removed and the vitriol size taken off, at the expense of the contractor. The discussion in vestry arose upon the report of the committee. On one side it was contended that the vitriol was used to kill the active properties of the lime, and prevent the paint becoming embedded, so that more paint being made to appear on the surface of the wall when dusted than had been used, the desired purpose of the projectors of the building had not been effected. On the other hand, the process was said to be in accordance with the practice of the trade in such cases, and the difference of opinion thus expressed was the real bone of contention. The clerk of the works was called, and he perjured that he had acted properly, and for the interest of his employers, by insisting that the contract should be duly executed according to the terms of the specification. The architect, Mr. C. A. Long, was not present during this discussion, although he had attended the meeting of the committee when it was resolved that the paint should be taken off and the vitriol size removed, which was done with his concurrence. The result of the discussion was, that the vestry adopted the report of the committee, and confirmed the decision at which it had arrived.

CHURCH-BUILDING NEWS.

Northill.—The first stone of All Saints Church, Caldecote, has been laid. The late rector's widow gives 1,000*l.* towards its erection. Mr. Harvey has presented a site, adjoining the school-house, for the church and a burial-ground around it, valued with his subscription at 250*l.* Other contributions bring up the list to about 1,660*l.*, the estimated cost being nearly 2,000*l.* Plans for a church to hold 400, and to be constructed for the most part of brick, after a Romanesque design, have been obtained from Mr. A. Blomfield, of London, and the execution of the works has been entrusted to Mr. Warren, of Stevenage.

East Brixton.—The foundation-stone of St. Jude's Church, Dalwich-lane, East Brixton, was laid by Mr. Joshua Blackburn, of Brookwell Hall, on Saturday last, the 3rd instant. The archdeacon of Surrey delivered the address, the service being read by the Rev. N. A. Garland, assisted by the local clergy. The church will accommodate nearly 1,100 persons, on the ground-floor. One-third of the sittings are free. The building is designed in the Early Decorated style. It is faced with Kentish rag and Bath stone dressings, and is arranged with nave and aisles divided by arcades, sustained on circular stone piers with carved capitals. There are shallow transepts and a deep chancel, the tower and spire being situated in the angle between the end of the north aisle and the side of the chancel. Mr. E. C. Robins is the architect, and Mr. John Kirk is the contractor, whose tender

for the erection and completion of the church is under 6,000l.

Pembury.—The parish church of Pembury has been re-opened, after extensive repairs. The restorations have been carried out under the direction of Mr. R. Wheeler, of Brewholy, and embrace the removal of the galleries and high square pews. These have given place to open benches. The walls have been repaired and renovated throughout the building. The east wall has been partially rebuilt, and a new eastern window inserted. A vestry has been erected on the north side of the chancel. The nave roof has been stripped of the plaster which covered the old timbers, and opened to view. A new roof of the same pitch as the nave has been constructed over the chancel, and has taken the place of the former flat plaster ceiling. The internal part is formed in panels and ribs, with moulded principals. All the windows, doorways, &c., have been restored as far as possible in accordance with the ancient work, the old architecture being retained where decay had not rendered this impracticable. The chancel is seated stall-wise, and is raised two steps above the level of the nave. The communion is approached by three steps of polished marble. The floor of the chancel is laid with encaustic tiles, the altar floor and foot pace being composed of different coloured marbles. This portion of the work is the gift of Mr. William Amhurst Tyssen Amhurst, of Didlington Hall, Norfolk, some members of whose family lie interred beneath the sanctuary floor. The reredos is a composition of marble and alabaster. Beneath a carved canopy are inlaid marbles of divers colours, on which are incised the sacred monogram. In the spandrels are carved subjects of the pelican and Agnus Dei. The works have been executed by Mr. Punnett, of Tonbridge, at a cost of about 1,300l., exclusive of gifts in kind.

Beighton (Sheffield).—At a meeting of the inhabitants of Beighton, held in the vestry of the parish church, to consider the propriety of restoring the church, it was resolved that plans for this object, which had been prepared by Mr. S. Rollinson, of Chesterfield, architect, should be adopted. Earl Manvers, the patron of the living, has headed the subscription list with a donation of 500l. All the seats in the church, when restored, are to be open and unappropriated.

Manchester.—The last portion of the Philips Park Cemetery, that to be devoted to the Church of England, is now so near completion that it has been consecrated by the Bishop of Manchester. The cemetery, of which we have before spoken, has been constructed by the Corporation of Manchester, and occupies the site on which St. Ann's Rectory formerly stood, to the north of Philips Park, from which it is separated by the River Medlock. Altogether, the corporation purchased about forty-six acres of land, stretching for more than half a mile along the banks of the Medlock. They then advertised for designs for laying out the grounds, and for chapels to be erected; and out of the forty designs submitted, those of Messrs. Paull & Ayliffe, architects, of Manchester, for the chapels and other buildings, and of Mr. William Gay, landscape gardener, Bradford, Yorkshire, for the engineering works and for the laying out of the grounds and approaches, were selected. The main feature of Mr. Gay's plan, which has been carried out, was the fixing of the principal entrance at the north-west corner, being the nearest approach to the city, and the arterial road running from it through the centre of the ground to the eastern end. The approaches and boundary roads have reduced the area within the walls to 41 acres. Of this the western end, 19½ acres in extent, has been appropriated to the Church of England, next 14 acres to the Dissenters, and at the eastern end 7½ acres to the Roman Catholics. Each portion of the cemetery is made complete within itself, having its chapel and lodges, and those appropriated to the Dissenters and Roman Catholics have separate entrances, independent of the main entrance. Though all the chapels are in one style,—the transitional period of Gothic architecture,—each is distinct in design. The whole of the buildings are treated rather severely, no elaborate ornamentation being permitted. Mr. W. Storr, of Stalybridge, was the contractor. The road making, drainage, and earthworks have been carried out by Mr. Israel Thornton, under a schedule of prices; and the laying out and planting by the corporation, who employed a number of cotton operatives who had been thrown out

of work during the cotton famine at day labour. The total cost of the cemetery, including land buildings, engineering works, &c., is estimated at about 60,000l. Since the dissolution of partnership between Messrs. Paull & Ayliffe, the works have been completed under the superintendence of Mr. Paull.

Ipswich.—At a vestry of the parish of St. Margaret, Ipswich, it has been resolved "that Mr. Barne, the architect, be requested to survey the church at California to ascertain what amount would be required to put it into repair and what amount would be requisite to enlarge it so as to hold 400 persons and in order to make it suitable for consecration by the bishop."

Leicester.—The spire of St. Martin's Church is now completed. The total height of tower and spire, from the floor-line to the top of the vane, is 218 ft. 6 in., the tower being 107 ft., and the spire 111 ft. 6 in. The style is Early English, to correspond with the tower, lately restored. The architect was Mr. Raphael Brandon, of London, and the work has been carried out by Messrs. W. Neale & Sons, of this town. The weathercock was put on by the vicar.

DISSENTING CHURCH-BUILDING NEWS.

Liverpool.—The foundation-stone has been recently laid of a Wesleyan Chapel at Old Swan, near Liverpool. The building will be in the Gothic style, of red sandstone, and contain 478 sittings. It will have a large school-room and a minister's vestry at the back, and three class-rooms on the basement. The estimate is 2,117l. 10s. This includes the cost of heating, boundary-wall, and fittings. The architects are the Messrs. Green & Parslow, of Liverpool, and the contractor is Mr. John Westmorland, also of Liverpool.

Scarborough.—The exterior of the new Baptist Chapel, which was recently opened, is designed in the Geometric Decorated style of Gothic architecture, and its site is the centre of Albemarle-crescent. The south-east corner of the principal front is occupied by a tower and spire, rising to a height of 110 ft. The windows of the upper stage of the tower are moulded, filled in with tracery, and surmounted by crocketed canopies rising high up the four faces of the spire. The centre portion of the facade consists of a vestibule entered by triple arches springing from circular shafts with moulded bases and bands and sculptured capitals. From this vestibule the entrances to the ground and gallery floors of the chapel are reached. Above the arched vestibule is a large six-light window, filled in with tracery. The facade is flanked by the gallery staircases. The materials used are Bradford Wall stones, with dressings and spire of Whitby ashlar. Internally the chapel consists of a nave and aisles, divided by iron columns, and supporting an open-timbered roof. The transepts correspond in height with the nave, and have each a large five-light tracery window; while behind the pulpit is an ornamental baptistery with an apse end, the three two-light openings of which are filled in with memorial windows. Vestries are situated in each side of the baptistery, and a large lecture-room is built on the ground behind. An organ-chapel, a minister's vestry, and a gallery across one end of the chapel complete the accommodation provided, which is for 750 people. The cost of the building, including the land, is estimated at 5,500l., and it has been erected by Mr. John Barry, contractor, of Scarborough, from the designs of Messrs. Lockwood & Mawson.

Buckley.—A new Wesleyan chapel is to be built for Buckley. The edifice is to be situated on land given for the purpose by Mr. Craven. Its dimensions will be 56 ft. by 36 ft. and it is calculated to seat 300 persons. The style will be a modified Gothic. The architect is Mr. Krolow. The total cost is estimated at about 600l.

Walsall.—The memorial-stones of a new Wesleyan chapel, intended to be built at the corner of Queen-street and Bridgman-street, have been laid by four ladies. The new structure is designed and will be built by Mr. J. Wilkes, of Darlaston. It will partly supplement and partly supplant a school chapel, which was built on an adjacent plot of land nearly three years ago, and which, on the completion of the new structure, will be used for school purposes only. In style it will be a mixture of Gothic and Italian and, as regards capacity, it will seat 350 persons. At present there will only be one end gallery for the school-children put up; but the building

will be so arranged as to admit of the addition of side galleries hereafter. The total outlay is set down at 900l., rather more than one-half of which has now been raised.

Hanley.—The corner-stone of a Methodist New Connexion chapel has been laid here. The Building Committee engaged the services of Messrs. Scrivener & Son, of Hanley, architects, to design a suitable edifice, at a cost of something like 2,000l., more than one-half of which amount has already been raised. The chapel will be 72 ft. long, 37 ft. wide, and 36 ft. from floor to ceiling. The style is Gothic of the thirteenth century. It will be built with white bricks and stone dressings. The main front (which is south) is gabled, and has a series of six windows, with lancet heads, divided by columns with moulded caps and bases. Above this is a four-light traceried window. On the east side of the front is a porch entrance. The porch is carried up as a tower, and has stone pinnacles with carved finials rising from the angle buttresses. At the west corner is a square tower, with angle buttresses, rising to a height of 46 ft., and from the tower is a spire rising to the height of 76 ft., making a total height of 122 ft. This tower is the principal entrance to the chapel. A doorway with columns and deeply recessed mouldings is the main feature. The sides of the chapel are formed into bays by buttresses with stone weatherings. In each bay is a single-light window with traceried head. The interior is fitted up with open benches in red deal, and with a rostrum of novel design. Behind the rostrum are the vestries and organ-gallery and choir. There is a gallery at the south end; the gallery fronts are framed in quatrefoil panels, which are filled in with crimson cloth. The roof is open timbered, the spandrels being filled in with open tracery. The ceiling is pentagonal in section and covered with red deal boards; all the wood-work is stained and varnished. The heating is by hot air, and the system of ventilation is what is now termed the "natural," the fresh air being admitted through ducts covered with wire gauze, and the vitiated air carried off through the ceiling into the apex of the roof, and thence into the atmosphere. The chapel is being erected by Mr. C. Woolridge, of Hanley.

Whitby.—The commencement of the new Congregational Church, West Cliff, Whitby, has been celebrated by a devotional service on the site. The foundation stone will be laid on September 11th, by Mr. S. Morley, of London, who has contributed 300l. in aid of the building fund. It is expected that the church will be opened for worship in twelve months. The architect is Mr. Pritchett, of Darlington, and the builder Mr. R. Robinson, of Whitby. The total cost of the building, including land, will be about 4,000l., 1,400l. of which have yet to be raised.

SCHOOL-BUILDING NEWS.

Tamworth.—The foundation-stone of the new Grammar School at Tamworth has been laid by the Marquis Townshend, who, as Viscount Raynham, represented the borough in Parliament for some years. The site is on the outskirts of the town, on the Ashby road. The position is elevated. Considerable delay has taken place in the erection of the building, owing partly to Sir Robert Peel, the senior member for the borough, having taken objections to the site and other points in the proposals of the trustees, and besides urging his views upon the Charity Commissioners, having addressed meetings at Tamworth on this and other local topics. The right hon. baronet moved in the House of Commons for the correspondence on the subject with the Charity Commissioners to be printed, and the blue book containing this was, with the newspapers of the day and coins of the present reign, deposited in a cavity of the stone. Mr. Nicholas Joyce, of Stafford, was selected as architect; and the building is being erected according to his designs by Mr. Charles Clarkson, of Tamworth, builder, for 2,800l. The walls were up a considerable height when the ceremony took place. The front of the building is about 140 ft. in length. In the centre is the master's residence, with sitting-rooms, dormitories, and other accommodation for twenty-five boarders. At the north end are the servants' apartments and domestic offices, and at the south end the schoolroom, 42 ft. long and 20 ft. wide. On the ground-floor is a large room in which the public library will be placed. This is an old library belonging to

town. The building will be of Gothic character, the walls faced with pressed bricks, enriched with dressings of Bath stone, and the roof covered with Staffordshire tiles, in ornamental patterns.

Carlisle.—The new schools in connexion with the recently erected church of St. Stephen's, in this city, have been formally opened. The building has been erected at the west end of the church. It is of brick, faced with white stone. The building consists of three rooms. The architect was Mr. Jas. Nelson, jun., of this city, who also designed the church; and Mr. Milburn, of this city, was the builder.

STAINED GLASS.

St. Thomas's, Rhyd.—An east window has been presented to this church as a memorial of the sympathy given by the Bishop of St. Asaph in its erection. Messrs. Ward & Hughes are the artists.

Raistrick Church.—A memorial window has been placed in the parish church of Raistrick, near Brighouse, Yorkshire, in memory of the son of Mr. Thomas Bradbury, Longroyde, Brighouse. The window is composed of two lights, crowned by a transom, and contains in the lower division subjects, namely, the "Nativity" and the "Presentation in the Temple," framed by pinnacles and mosaic borders. The upper parts of the window are filled with medallions, containing angels; and the base is formed with mosaic work, under which is placed the inscription. The window is from the works of Messrs. B. Edmundson & Son, of Manchester.

Books Received.

Irrigation in Spain. By J. P. ROBERTS, C.E. London: Spon. 1867.

The author has compiled this essay from information collected during a residence of several years in Spain. He is of opinion that irrigation works, when properly carried out with a regard to economy, must, besides being beneficial to landed proprietors and farmers, be exceedingly remunerative to those who embark their capital in them, if the district to be irrigated be judiciously selected. The district of Spain, in which he resided for years, has for centuries been irrigated, and the subject is thoroughly understood. He is professionally engaged for some time in examining projected irrigation works; and as he knows very little is known on this subject in England, he rightly says that his notes contain matter of sufficient importance to merit publication, especially in connexion with the agricultural improvement of our possessions in Spain.

VARIORUM.

SYMONS'S Monthly Meteorological Magazine (London, Charing-cross) for August contains a useful information on rainfall, especially in the first paper, on the excessive rainfall of 26th of last, which is illustrated by a map and useful details, given by various observers in the vicinity of the Thames and Medway, showing the enormous amount of rainfall in some places compared with others not far off. Thus at Stratfield Turgies, Winchfield, Hants, Rev. C. H. Griffith found the amount of fall on that occasion to be 1.25 in.; and at Melandres, West Hothly, Sussex, Mr. J. H. Gageon records 1.33 in.; Dr. Ballard at Compennance, Islington, Middlesex, gives 2.22 in.; J. J. Glaisher at Greenwich Observatory, records 3.67 in.; and Mr. W. Bland Marlethip, Sittingbourne, in Kent, 5.04 in. The value of these observations is great. **Stevens & Hole's School Series: The Standard Arithmetical Copy-book.** By Henry Combes & John Hines. Longmans & Co. "Stevens & Hole's School Series: The Complete Writer." By Henry Combes, E. T. Stevens, & C. Hole. Longmans & Co. The first of these series of books forms a carefully-prepared course of arithmetic, advancing step by step from the simplest elements to the higher branches of the science, arranged so as to ensure good figures, clear methods, and correct results. There are a few of them. The principle upon which the course is constructed is that of showing,

by example, how the work should be written out, and then leading the pupil step by step to do similar work for himself. The idea is a decidedly good one, and will probably be found far more effectual than the older or more usual modes. "The Complete Writer" comprises a course of sixteen carefully graduated narrative copy-books, designed to lead to good and correct writing for upper and middle class schools. The poetical and other selections given as copies are a great improvement on the old jog-trot system.

Miscellaneous.

WROXETER.—The excavations at Wroxeter have been proceeding for more than three weeks by the liberality of Mr. Meyer. Three or four men have been employed in clearing out the ground on the north angle of the buildings generally termed the enameller's workshop, and between this, and what has been supposed to have been, a basilica. A good many feet of ancient wall have been laid open, and are being measured and laid down to a scale by Mr. H. Davies, and much curious subterranean building has been discovered. Various articles have been found, almost all of which are, by this time, to be seen in the Museum.

FURNACE CHIMNEY.—A chimney has been built at the works of the West Cumberland Hematite Iron Company, near Workington, from a design by Professor Hankine; the builders are Messrs. William Wilson & Son, of Glasgow. The following are the principal dimensions: height above ground level, 250 ft.; depth of foundation below ground level (including a bed of concrete 3 ft. deep), 17 ft.; basement, 30 ft. square at the bottom, diminishing to an octagon at the ground level, pierced by four apertures for flues, each 7 ft. 6 in. in diameter; outside diameters of cone, at bottom, 25 ft. 7 in.; at top, 15 ft. 3 in. The cone has a straight batter of 1 in 48; thickness of brickwork in cone, 2½ bricks at bottom, diminishing by steps inside to 1½ brick at top, and including fire-brick lining.

TOWNS' SEWAGE.—An important Bill, known by the title of "The Sewage Utilisation Act of 1867," for facilitating the distribution of town sewage for agricultural purposes, has just been printed, in the form in which it left the House of Commons. Briefly stated, its provisions empower Local Boards to provide any works for receiving, storing, disinfecting, or distributing sewage within their respective districts; and in districts where no Local Boards exist, a special authority may be created for the purpose. Such Boards or authorities may purchase any requisite lands, and for agricultural objects may lease land for a period not exceeding seven years, or may contract to share the produce, or farm it and dispose of the produce. Different districts may unite for these ends. Authorities under the Act may also agree to contribute to any outlay on the part of private capitalists or public companies for carrying sewage plans into execution, and as regards companies, may become shareholders. All assessments under the Act are to be included in the poor-rates.

FALL OF A HOUSE IN LIVERPOOL.—A portion of a house situated in Prescot-road, Old Swan, nearly opposite the police-office, has fallen. At the rear is a chasm between 40 and 50 ft. deep, evidently an old quarry, and the back parts of the houses project over this, and are supported by massive stone pillars. It is supposed that the foundations of these pillars were not sufficiently firm to sustain the superincumbent weight, and that those supporting Mr. Haslam's house sunk, and so caused the catastrophe. A police-constable named Eastham, on being informed that there was a female inside unable to get out and in danger, at once ascended to the upper floor as quickly as he could, snatched the young woman out of bed, and brought her down in his arms. He narrowly escaped, for just as he had reached the foot of the stairs the flooring gave way beneath him, and he and his burthen would certainly have fallen into the frightful pit beneath had not five or six of the more courageous of the crowd rendered their assistance, and dragged them both out. The adjoining houses of the row appear also to be in a very dangerous state, the pillars supporting them to the rear not seeming to be in a reliable condition, and cracks in the walls, sinking of floors, and other unpleasant signs, give strong indications of danger.

CARELESSNESS IN STACKING BRICKS.—Three boys have been buried by a stack of falling bricks at the Liverpool new Exchange buildings, but fortunately they were rescued without loss of life.

FIRE IN A CHURCH AT VENICE.—A great fire has occurred here in the Church of St. John and St. Paul, Venice. Titian's painting of Peter the Martyr and many other master-pieces of art were burned.

WHITE LEAD.—An invention has been provisionally specified by Mr. Bonville, of Paris, for obtaining white lead direct from the ore, by pouring the molten metal into cold water, to render it as porous and bulky as possible; it is then dissolved in sulphuric acid, and the sulphate is treated with pyroligneous or oxalic acid, combined or not with tincture dissolved in water, and next dried over the fire on trays. The vessels employed are either made of stone or wood, lined with lead.

GLASS WALLS FOR FRUIT TREES.—A contrivance for more thoroughly ripening fruit, noticed or suggested in the *Builder* some years ago, has been introduced in this shape. Small bars of wood are driven into the earth about 3 ft. from an ordinary brick wall, and being grooved easily receive plates of glass. The fruit trees are trained against this glass wall on the inside, and so besides the light and heat obtained on the one side through the glass get the reflected heat from the wall opposite. With two glass walls about 4 ft. apart in the open trees can be trained on the inside of both, and in either case the tops can easily be covered in case of frost.

THE NEW BUNHILL-FIELDS PARK.—Agreeably to the new Act, which has just received the Royal assent, for the preservation of Bunhill-fields burial-ground, the Corporation of the City of London is now to perform its part in the implied contract, and convert the burial-ground, which contains the bones of so many eminent men, into a public garden or "park." Bunhill-fields possesses a large area of ground, capable of being converted into a place of recreation for resident citizens, of park-like dimensions, and we hear it will receive the name of "Bunhill-fields Park." It is to be hoped that the tombs of Bunyan, De Foe, and the other worthies there will be duly cared for.

PORTABLE HEN HOUSES.—M. Giot has invented a "fowl-omnibus." One of these perambulating hen-houses is to be seen at the Paris Exhibition. M. Giot puts nest-boxes and perches into a broken-down bus, fills it with fowls, and wheels it out into the fields and plough lands. The *Houdans* and *Orléans* feed themselves entirely, follow the plough or harrow, clear the land thoroughly of worm and fly, pick up all the stray grain after harvest, manure the soil, lay innumerable eggs, rear hardy broods, and make capital poultry for the table, all without cost or trouble, beyond the necessity of trundling them now and then to a new spot.

PREPARATION OF WHITELASH.—Whitewash is one of the most valuable articles in the world when properly applied. It not only prevents the decay of wood, but conduces greatly to the healthiness of all buildings, whether of wood or stone. Out-buildings and fences, when not painted, should be supplied once or twice every year with a good coat of whitewash, which should be prepared in the following way:—Take a clean water-tight barrel, or other suitable cask, and put into it half a bushel of lime. Slake it by pouring water over it, boiling hot, and in sufficient quantity to cover it 5 in. deep, and stir it briskly till thoroughly slaked. When the slaking has been thoroughly effected, dissolve it in water, and add two pounds of sulphate of zinc and one of common salt; these will cause the wash to harden and prevent its cracking, which gives an unseemly appearance to the work. If desirable, a beautiful cream colour may be communicated to the above wash, by adding three pounds of yellow ochre; or a good pearl or lead colour, by the addition of lamp, vine, or ivory black. For fawn colour, add four pounds of amber—Turkish or American, the latter is the cheapest—one pound of Indian red, and one pound of common lamp black. For common stone colour, add four pounds of raw umber, and two pounds of lamp black. This wash may be applied with a common whitewash brush, and will be found much superior both in appearance and durability, to the common whitewash.—*Albany Country Gentleman.*

GOLD FOR THE MORMONS.—A communication from the Salt Lake, dated the 10th of July, speaks of great excitement, owing to rich discoveries of gold near the South Pass, some 250 miles from the city. The mines are said to exceed any others ever found on the American continent for value and extent.

THE PUBLIC PARK AT HALIFAX.—Sir F. Crossley, bart., who in 1857 presented to his fellow-townsmen a People's Park, which cost 30,000l., has commemorated the tenth anniversary of the opening by presenting to the town of Halifax a sum of 6,300l., the interest to provide salaries to park-keepers and other expenses.

OPENING OF THE NEW RAILWAY BETWEEN LONDON AND EDGWARE.—A want which has long been felt, viz., the establishment of direct communication by railway between the metropolis and the extreme northern districts, is supplied by the opening of the new London and Edgware line by the Great Northern Railway Company.

RESTORATION OF THE CRYSTAL PALACE.—We are told that a contract has been made with the Hamilton Windsor Ironworks Company of Liverpool, for the erection of 145 ft. of the north end of the Crystal Palace, destroyed by fire, bringing the restored part up to the spot at which the north transept formerly stood. The work is to be completed by November.

VALUE OF PROPERTY IN LIVERPOOL.—In the Sheriff's Court, St. George's Hall, before Mr. J. J. Aston, assessor, and a jury, an arbitration case between the Corporation and certain owners of property in Church-street has been heard. Mr. Lloyd stated the nature of the claim. He said the premises were required by the Corporation for the purposes of improvements in Church-street. It was obvious that they did not want the whole of it, but they desired to recoup the ratepayers the outlay they were about to make by purchasing the whole block, and then reselling a portion of it. A number of witnesses were examined on both sides. The area of the premises was 378½ yards, with a frontage to Church-street of 49 ft. 2½ in. Mr. Wordley estimated the value of the land at 50 guineas per yard, or 22,125l. for land and buildings. Mr. T. J. Kilpin 22,321l.; Mr. Hornblower, 22,011l.; and Mr. Cunningham, 21,825l. For the Corporation, Mr. Culehaw, on being examined, stated it as his opinion that the value of the ground was 16,005l., which was an average of 42l. 4s. a yard; by one calculation out of three he made it 12,038l. Mr. W. Scott valued the land at 15,832l.; Mr. P. Ellis, 14,367l.; and Mr. James Holme, 15,120l. The jury found for the claimants, 18,500l. compensation.

EXCAVATIONS IN SANDAY, ORKNEY.—Mr. Farrar has discovered an ancient building apparently of the "brough" order, at the Brough of Quoyness, in the island of Sanday. The mound is 63 ft. in diameter and 12½ ft. in height. The building has been 32 ft. in diameter, and there is a space of 12 ft. between an inner and an outer wall, thus leaving a sort of area or court encircling the whole building. Outside this outer wall is another, regularly built, leaving a space of 3½ ft., which is filled with loose stones. Mr. Farrar thinks the object was to strengthen the original wall. On the south-east side of the mound there is a passage 12 ft. long by 3 ft. high and 21 in. wide, covered with large stones set on edge. This passage communicates with a large oblong chamber in the centre of the mound. This chamber is 11 ft. 10 in. long, 4 ft. 5 in. wide, and 12 ft. 6 in. deep. Within the wall on the north-west side are two kists of a semicircular shape, 19 in. wide at the entrance, and 6 ft. high inside, and 5 ft. respectively. They contained no bones. On the right of the entrance passage there is a kist 20 in. wide and 6 ft. high, and on the left another probably of the same dimensions but not yet cleared out. Both of these kists contained skulls and a few other human bones. There were also other human remains found in course of the excavations. Mr. Farrar says, "it would be difficult to determine positively whether the mound was, in its original state, a burial-place. It may have been a brough, and the space between the inner and outer walls—which I suppose to have been an open area—may have been a mass of rude walling constructed with the view of supporting the building in which the graves are found. Further excavations can alone settle this point."

LAYING ON FRESH AIR.—A Mr. Thomas has a scheme by which he proposes to revivify London by means of fresh-country air, conveyed in pipes, cooled by passing through tunnels and ice houses! Nature would do this for us, if we would but let her.

TIN-LINED LEAD WATER-PIPES.—Experiments have been made at New York with these pipes, and the pipes, as well as the experiments, are thus described in the *Journal of the Franklin Institute*:—"A solid cylinder of tin, weighing, say, 15 pounds, is bored of a certain diameter. It is then placed in a larger cylinder, having poured around it melted lead. A powerful hydraulic press forces it through a gauge, just as in wire drawing, a steel rod forming, as it were, the core. The line of contact of the lead and tin is clearly defined, and the pipe is a very perfect one. The following are the results of some of the experiments:—An ordinary leaden pipe, 1 in. interior diameter, and weighing 4 pounds 11 ounces per foot, burst at pressure of 1,000 pounds on gauge. A tin-coated pipe, of like capacity, but weighing only 2 pounds 6 ounces per foot, required 1,150 pounds to burst it. A ¾-in. lead pipe, weighing 3 and 8-10ths of a pound per foot, required a pressure of 1,200 pounds before bursting. A tin-coated pipe of the same calibre brought the dynamometer up to 1,275 before bursting. This last weighed only 1 and 12-100ths pounds per foot. About the same ratio was kept up with other sizes experimented upon, showing a great saving in weight, with a commensurate gain in strength."

TENDERS

For farm buildings at Heath and Reach, Leighton Buzzard, for Mr. John Bushell. Mr. F. Gottle, architect:—

Miles	£580 0 0
Dunmott & Adams	540 0 0
Parker	527 0 0
Dunmott	525 0 0
Adams & Gibbons	490 0 0

For the erection of national schools and master's residence, at St. Harmon's, Radnorshire. Mr. E. H. Lingner, architect:—

Evans	£299 11 0
Woolley	385 13 0
Edwards	394 0 0

For Small Heath Congregational Chapel near Birmingham. Mr. W. F. Poulton, architect:—

Barasley	£2,639 0 0
Hardwick	2,686 0 0
Briggs	2,630 0 0
Webb	2,618 0 0
Partridge	2,500 0 0
Smith	2,498 0 0
Mathews	2,445 0 0
Bennett	2,398 0 0
Horsley	2,316 0 0
Jones (accepted)	2,249 0 0

Tenders for main drainage works, Southampton, consisting of covered reservoir, main outlet, &c. Contract No. 2. Mr. James Lemon, engineer. Quantities supplied by Mr. Howell and Messrs. Iake & Rawwell:—

Sibsey	£10,083 0 0
Nowell	9,330 0 0
Mackenzie & Abell	8,866 0 0
Furniss	8,750 0 0
Wainwright	8,629 0 0
Sanders	8,270 0 0
Ball & Sons	6,968 0 0

For new warehouse in Park-street, Southwark. Messrs. Newman & Billing, architects. Quantities supplied by Mr. Edsall:—

Axford & Whillier	£6,085 0 0
Simms & Marten	5,985 0 0
Downs	5,890 0 0
Asby & Horner	5,831 0 0
Little	5,698 0 0
Perry	5,695 0 0
Thompson	5,640 0 0
Greenwood	5,598 0 0
Rider	5,580 0 0
Coleman	5,340 0 0
Wells	5,300 0 0
Brass	5,247 0 0
Browne & Robinson (accepted)	5,132 0 0

For alterations to the Queen's Arms, Notting-hill, for Mr. Haynes. Mr. W. H. Lamborn, architect:—

Calverne	£38 14 0
Martin	338 0 0
Peters (accepted)	314 10 0
Spore	246 14 0

For warehouse in Coleman-street, Bunhill-row. Mr. H. S. Hammon, architect:—

Turner & Sons	£1,667 0 0
Macey	1,633 0 0
Ennor	1,488 0 0
Browne & Robinson	1,476 0 0
Henshaw	1,462 0 0
Webb & Sons (accepted)	1,430 0 0

For finishing and completing houses at Low Leyton:—

Munday & Hutchinson	£2,760 0 0
Harris	2,576 0 0
Mansfield	2,576 0 0
Fisher	2,456 0 0
Cubitt	2,387 0 0
Warne	1,880 0 0
Cogswell	1,923 0 0

For stabling and alterations to the White Lion, Cornhill, St. Luke's, for Mr. Gardner. Mr. James Schofield, architect:—

Saby	£342 3 0
Perkins	305 0 0
Grover	298 0 0
Lawrence & Bangs	297 0 0
Etton & Chapman	290 0 0

For additions and alterations at No. 12, Wilton-crescent, S.W., for Mr. Henry W. Bull. Messrs. C. Habershaw, Brook, & Webb, architects:—

Manley & Rogers	£253 0 0
Bowman	493 0 0
Herbert	490 0 0

For church and schools at Tottenham. Messrs. B. & Son, architects. Quantities not supplied:—

Schools under	
Adams	£4,180 0 0
Barker	3,968 0 0
Nightingale	3,957 0 0
Mundy & Hutchinson	3,663 0 0
Crabb & Vaughan	3,400 0 0
Mundy & Hutchinson	3,163 0 0
Palmer	2,830 0 0

For house and shop at Twickenham, for Mr. Marshall, architect. Quantities not supplied:—

Jacking	£636 0 0
Mundy & Hutchinson	618 0 0
Whitless	609 0 0
Hazell	545 0 0

For alteration to the Victory Tavern, Albany-street, Regent's Park. Mr. William Mann, architect:—

Bateholder	£333 0 0
Selleck	765 0 0
Blackmore & Way	648 15 0
Chutter	640 0 0
Anley	585 0 0
Lamble	589 0 0

For the erection of houses and shops in the Forest-road, Gloucestershire, for Mr. Hiram Benn. Mr. Edwin J. Reynolds, architect, Cinderford:—

Durke (accepted)	£269 0 0
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Bar fitting, Queen Victoria, Clapham Junction. Mr. William Munn, architect:—

Anley (accepted)	260 0 0
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For erecting timber stage, exclusive of timber in battens, for Mr. C. B. N. Enewin, Hatton-garden. Mr. John architect:—

Crabb & Vaughan (accepted)	£220 0 0
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For the construction of new brick sewers in St. James-street and Thomas-street, Notting-dale, for the Kensington Vestry. Mr. James Broadbridge, surveyor:—

Waggett & Barnett	£2,854 2 3
Wainwright	2,400 0 0
Reeves & Stegless	2,203 0 0
Crockett	2,189 0 0
Alcock & Cooper	2,100 0 0
Goodair	1,881 0 0
Thurst & Co.	1,869 0 0
Wignmore	1,784 0 0
Thackeray	1,750 0 0
Williams, Brothers	1,750 0 0

For the construction of brick and pipe sewers at Heron-hill, Denmark-hill, Woodland-hill, Norwood; Park-road, Norwood; Denmark-road, Coldharbour-lane, and Adeline, Brixton, for the Lambeth Vestry. Mr. H. McIntosh, surveyor:—

Girdler	£15,104 0 0
Munroe	13,354 0 0
Peardon	13,000 0 0
Crockett	12,900 0 0
Blackmore	12,250 0 0
Wainwright	11,950 0 0
Barton	11,800 0 0
Thackeray	10,850 0 0
Hitchcox & Co.	10,850 0 0
Wignmore	10,620 0 0
Morton	10,400 0 0
Mayo	10,376 0 0

For rebuilding the Angel and Crown, Tabernacle-square, Mr. H. J. Hammon, architect. Quantities supplied:—

Patrick	£1,191 0 0
Mann	1,182 0 0
Turner & Son	1,077 0 0
Henshaw	1,072 0 0
Langmead & Way	1,048 0 0
Katon & Chapman	1,030 0 0
Preedy (accepted)	948 0 0

For alterations to the Jelly Coopers, Clerkenwell-cum, for Mr. Fullom. Mr. T. F. Filary, architect. Quantities not supplied:—

Saby	£1,875 0 0
Langmead & Way	1,790 0 0
Bamford	1,600 0 0
Hawkes & Co.	1,075 0 0

For a villa residence on the Norbury Park Estate, Weymouth, for Mr. J. H. Rowley, architect. The quantities supplied by Mr. T. T. Green:—

Piper & Wheeler	£1,369 0 0
Browne & Robinson	1,342 0 0
Ridley	1,303 0 0
Brass	1,235 0 0
Bayes	1,217 0 0
Kilby, Brothers	1,211 0 0
Perry & Co.	1,180 0 0
Webb & Sons	1,741 0 0
Hill & Keddell	1,706 0 0
Tilly	1,680 0 0
Carter & Son	1,674 0 0
Henshaw	1,660 0 0
Crabb & Vaughan (accepted)	1,433 0 0

For a pair of villa residences, Clytha-square, Newport, Monmouthshire, for Messrs. Goss & Saltor. Mr. J. Lawrence, architect:—

Miles	£1,500 0 0
Price	1,456 0 0
Durke (accepted)	1,438 0 0

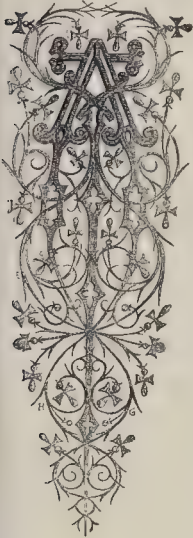
WANTED, a SITUATION (aged 23), as
WHARF CLERK or FOREMAN,—Address, A. Z. Office of
the Builder."

PIGGOTT, BROTHERS,
No. 59, Bishopsgate Without, London, E.

The Builder.

VOL. XXV.—No. 1282.

The Inquiry, in connexion with the Paris Exhibition, into the Condition of the People of different Countries.



LONG with the setting-forth materials from every source, machines and tools of various applications, and products of each kind, including works of fine art, it was an object with the promoters of the Universal Exhibition of 1867 to place in relief institutions that might be found tending to ameliorate the physical and moral welfare of the people in different countries. With that view was constituted the "Tenth Group" of the Exhibition, having relation with all the other

Groups so far as signaling things that might be more especially of the useful sort, and summing-up the economic aspect of the entire agglomeration of works and specimens displayed. The best means of educating men, and of feeding, clothing, housing, and supplying them with work, were to be exemplified, following out the idea attempted to be set forth in 1855. It is the same idea as that upon which Mr. Twining has founded his Economic Museum at Twickenham; and probably it owes much, as did the feature of the Exhibition of 1855, to Mr. Twining's initiation.

The Group was divided into seven Classes, numbered 89 to 95, inclusive, in the general collection. The first of these (89) comprised appliances and methods of the education of children; Class 90, books and other appliances for the education of adults, in the family, the workshop, the commune, or the corporation; Class 91, furniture, clothing, and food, of every kind, distinguished by the useful qualities as well as cheapness; Class 92, specimens of the popular costumes of different countries; class 93, specimens of habitations characterised by cheapness, conjoined with the conditions of health and comfortableness; Class 94, products of every kind of handicraft by superior workmen; and the last class of the seven, tools and processes of work specially appertaining to craftsmen of the kind referred to in the description of Class 94. The Group was intended to occupy a sector of the plan of the building, like each one of the nations, instead of a circular gallery, like each of the nine other Groups.

Eventually, the bureaux of the seven Classes were formed into a central committee. It included the names of M. Conti (as president), who is the secretary and *Chef du Cabinet* of the Emperor, and is president of Class 93; of L. Charles Robert, General Secretary of the

Ministry of Public Instruction, and president of Class 90; of the Baron Séguier, president of Class 95; and twenty-four others, presidents, vice-presidents, or secretaries of Classes. The secretary to the union of bureaux, or to the Group, is M. Guyot de Montpayroux, the secretary of Class 89.

It was soon felt that the objects to be attained rendered necessary an inquiry not bounded by the Exhibition itself. Therefore, in January, 1866, an appeal was addressed to the committees of the Départements of France; and in the following April, this was followed by a circular with questions to be answered. The result has been the collection of more than a hundred papers of particulars concerning the working-classes of France, and their relations with their employers. From foreign countries, by the help of their commissions, eighty different documents were collected. The possession of the materials suggested the preparation of an Analytical Catalogue. Five members of the united bureaux were named as a commission for examination of the documents, and the compilation of the volume. The names were those of MM. Conti, Léon Donnat, Fr. Ducaing, Guyot de Montpayroux, and Charles Robert; and there were also five secretaries of the commission, viz., MM. Chambré, Compaignon de Marchéville, Léon Morillet, Sazerac de Forge, and Sudre. Proposals were soon addressed to them by foreign publishers; and editions of the catalogue are likely to appear in London and Frankfurt. Since the French edition went to press, a great number of new reports have been sent to the Commission: some of these it is proposed to take notice of in a future edition.

A copy of the first French edition of this catalogue is now before us.* The object of the publication is defined to be, in pointing out examples, the giving the desire to imitate them; secondly, the inducing the working classes to seek amelioration of their lot in wise measures, and not cloudy theories; and, lastly, and especially, the inspiring competent men with the ardent desire of sounding those problems of which the solution is of so much importance to modern society. Following the appeal that we have referred to, or on the 7th of June, 1866, was promulgated the decree that has been so much commented on in the English press, establishing "a new order of awards," or "in favour of persons, establishments, or localities that, by an organization or some special institutions, have developed entire harmony between those co-operating in the same labours, and have assured to the workmen, material, moral, and intellectual well-being." A jury to award these distinctions was constituted on the 30th of November.

The manner in which the aims of those who established the Group, and promoted the inquiry, were met in this country, was such that not nine pages of the catalogue are devoted to the United Kingdom. These give just nine designations of trading concerns, or institutions of the co-operative kind, with particulars summarized under the prescribed heads of inquiry. But even those few pages are marked by errors, which it becomes the Commission to explain the origin of, as well as to correct: for, their tendency must be to discredit the volume with English readers,—a volume that, we really believe, contains matter of extraordinary value, and points the way to more. Let us give instances of the blundering to which we have referred; and which, we may say, seems to us unparalleled in any public document. Under the head "Rochdale District: Comité de Lancaster," we get some particulars

of a co-operative store, ("*Société co-opérative de consommation*,") founded, as we read, in "1850," by members of the Rochdale Pioneers. We learn that "subventions" are given, by the Société, to certain institutions, including, besides a certain "*Hospice de la Charité*," an "*Imprimerie royale de Manchester*." Now it is possible there is in Rochdale an almshouse with a name to be freely translated by "*la Charité*;" but what is the Royal Printing-house of Manchester? We know the latter town pretty well, and never heard of any printing-establishment of the importance indicated by "*Imprimerie Royale*." Can it be that the English words were "*Royal Infirmary of Manchester*?" But this would not be the worst of the blunders in the volume. On the page opposite the one last referred to, are particulars of the Rochdale Equitable Pioneers ("*Association des Pionniers de Rochdale*." For "Pioneers," in the English title, we get "*Pionniers*;" but we never knew French printer, or his "reader," who could spell an English name correctly, even with type-copy before him, so will not expect M. Ch. Lahure to be better than others, the printer of the *Moniteur* included. So let us look at what is stated as to the foundation of the Rochdale Society. After the words "*Comité de Lancaster*," this is what immediately follows,—"*Fondée en 1844 par 28 à 30 ouvriers tisserands*;" but, then, next, in a separate line, we have "*Fondée en 1863 par M. Alderman et Sheriff Waterlow*." Whether the now-knighted gentleman's family-name would be, to the French reader, something compounded with "the Sheriff," we need not trouble about; but we pity the inquirer who is left, as to the date of foundation and authorship of the institution, to his speculations from two different statements, or one of them erroneous. After what refers to the Rochdale Society, we get a heading "*Société des Cités Ouvrières*;" which institution, according to the next line, was "*Fondée en 1863, par M. Waterlow, à Halifax*." Perhaps this should have had some relation with the particulars given under a different heading, that of "*James Akroyd et Fils*."

The other designations of establishments or institutions, representing all the efforts for the amelioration of the physical and moral condition of the people of the United Kingdom, are "*Thomas Adams et C^{ie}*," of Nottingham; "*John Hare et C^{ie}*," of Bristol; "*Bliss (William) et Fils*," of Chipping Norton; "*Sailors' Homes, de Cork*;" and "*Sailors' Homes de Dublin*;" whilst in some of the statements appended to these, evidence of bad "reading" for the press is apparent to an English eye.

We happen to know, in the case of one important institution, the "Working Men's Club and Institute Union," that no communication relating to the inquiry ever reached the secretary, and that consequently the particulars which would have been sent were not sent; and this may be taken to represent the facts generally, connected with the representation of the social movement in this country. For such omissions there may have been some excuse. But is it too much to ask of French compilers and printers greater care than they exhibit in dealing with English names? For the *Builder* we can say, we never print a foreign name without careful examination of every letter of it; but French editors and printers habitually give English names any way but the right, and often print the same name spelt in different ways in the same column. Where these particular defects do not occur, there are others, to the eye of the English printer, as in the want of the precise distinction that is usual in English printers' work, between quoted words and others, and in the use of the comma to mark decimals, instead of the point generally adopted in England. We proceed, however, to the examination of what forms the bulk of the "Catalogue," or what relates to France; for, the whole of the foreign

* "Exposition Universelle de 1867. L'Enquête du Dixième Groupe: Catalogue Analytique des Documents, Mémoires et Rapports exposés hors Classe dans le dixième Groupe, et relatifs aux Institutions Publiques et Privées créées par l'Etat, les Départements, les Communes, et les Familiales pour Améliorer la Conduite Physique et Morale de la Population. Paris: E. Dentu, Libraire-Éditeur de la Commission Impériale, Palais-Royal, 17 et 19, Galerie d'Orléans. 1867." 8vo., pp. 283.

inquiry occupies only seventy-five pages, as appendix.

To complete the particulars, as far as possible, for France, certain institutions under the control of the Government were included; though no comparison of their results and those of other institutions was offered. The inquiry thus embraced institutions of every kind, in France, established with the aim of ameliorating the condition of the class devoted to manual labour, and a certain number of foreign institutions. These were classed, at least in France, into,—1. Institutions connected with popular education, providence, and charity, due to the intervention of the public authority, and of associations not industrial; and, 2. Institutions created by the initiative of heads of establishments and the workmen. The particulars under the two heads are introduced by a "*Notice Préliminaire*," in two sections.

With the institutions in the first section are included those attached to the observance of religion. The religious, or sectarian, question has been so much a difficulty in the way of education in England, that it may be well to quote the opening sentence. This runs:—

"The Government provides in the widest measure for the wants of the recognised forms of worship. Catholics, Protestants, Israelites, find in the resources of the budget, means of receiving, according to their conscience, the religious aid necessary to them. The service of the different forms of worship represents an annual expense of 15 millions incurred by the State."

That is to say, an amount equal to 1,920,000*l*. This, of course, is a mere contribution to the large funds accruing from private sources. In the small *communes*, often short of means, the Government has created more than 2,000 parishes in fifteen years.

Next to the support of public worship are placed education, and the parish roads. The desire to augment, at the same time, the value of the products, and that of the man who cultivates the soil, had been expressed throughout the reports of the inquiry, of somewhat antecedent date, into the agricultural condition of France. The improvement of the roads has within the last fortnight been the subject of important measures initiated by the Emperor.

What relates to education, or instruction, in the "*Notice*," includes the assertion that it guarantees the exercise of rights and political liberties. In the present position of this country it may be not amiss to quote the words, often referred to, of the Emperor, and quoted in the pages before us, that "In the country of universal suffrage, every citizen ought to know how to read and write." It is due to the Emperor to state that he has repeatedly expressed similar views as to the importance and urgency of education; albeit something is left to be done in France ere education will be rendered obligatory and made entirely free of cost; which is the position that has been contended for by some of the chief publicists. What is, relatively, in an advanced state in France, as compared with primary education in that country, or with the ordinary middle-class education in this country, is the secondary and collegiate education, as well as the technical education; of which last so much has been said of late, and not a word too much. This superior education is obtainable by people of almost every social position, or at very moderate cost; and the result is the existence of middle-class educational attainments possessed by people of a lower class socially than the English middle-class, that is to say by many handicraftsmen, and a corresponding dissemination of the higher university-education over a larger proportion than with us of the class below the aristocracy.

The great business of education is not limited to the work of the ministerial department that is specially charged with public instruction and public worship. The Ministry of War provides regimental schools, and even makes instruction therein obligatory. The Ministry of Marine gives primary and professional instruction, in schools of eight different kinds, to those destined for the navy, to the junior officers, and others, as well as to engine-men and stokers. The Ministry of Agriculture, Commerce, and Public Works supports wholly, or in part, three schools of agriculture, forty-eight school-farms, three schools of "*Arts et Métiers*," and other technical schools,—besides that there are some about being formed,—in addition to what may be the result of the labours of the mixed commission appointed, in connexion with the Ministry of Public Instruction, specially with a view to agriculture. Then, as connected with industrial matters, the compiler of the "*Notice*" thinks

fit to mention the *Conservatoire des Arts et Métiers* and the *École Centrale des Arts et Manufactures*; but he really might have gone further, and included many institutions, such as the schools for miners, and a school for horology, besides the *École des Ponts et Chaussées*, and the *École Polytechnique*.

The work of general popular education is divided, as will have been understood, into two branches, or what are here called "*Enseignement primaire*" and "*Enseignement secondaire spécial*." A law bearing upon the former, has been passed this year; and one relating to the latter is dated 21st June, 1865. The secondary instruction of the special character, in the words of the statement before us, will form the sub-officers of industry, and will powerfully serve also the interests of agriculture. In this instruction, living languages are to be substituted for Latin and Greek (for, the same error has been made in France as here; where the classics, and not always well taught, have been almost exclusively considered); and the applications of the sciences are to be set forth. As regards primary instruction, there was a law, of 1833, which is called one of the best vestiges of the Government that made it. But it forgot girls' schools; and financial conditions were left, involving restrictions in its application.

Considerable progress has been made under the Empire. In 1862, the rate of remuneration of teachers was increased. Lately, evening classes for the instruction of adults have been highly successful. Near upon 10,000 primary schools have been opened since 1847; whilst the result of the new law will be the opening of 11,000 more such schools; of which number 8,000 will be for girls. Of educational libraries, intended for the same persons as those forming the classes of adults, there are now about 8,000. These seem to date from 1862. They lend, every year, 500,000 volumes. Perhaps it is in the number of the libraries, rather than in that of the volumes lent, that the greatest contrast with England should be taken note of. Agricultural and horticultural instruction in the country districts, and instruction in drawing in the towns, and everywhere the extension of singing and musical classes; the complete dissemination of knowledge of the laws of health; and the development of gymnastic exercises: such are the points to which the attention of the Government is now particularly directed. To instruct the peasant, and to make him contented with the village, is stated to be the double object that the Government pursues. To the school to which payment is ordinarily required, free admission is given to those who are on the lists of the *bureau de bienfaisance*; whilst, moreover, should the family be able to support the cost of education only by painful privations, the *commune*, if needy, is to draw from the national exchequer. Including 3,572 infants' schools with those of the boys and girls, there are now 73,271 schools, giving instruction to 4,850,000 scholars, of whom nearly two millions have been admitted gratuitously. The attendance is 3,500,000 scholars more than in 1829, and 1,300,000 more than in 1847. The ordinary service of public instruction in France, including subventions for construction of schools, cost in 1865, 58 millions of francs (2,320,000*l*.); of which, however, we may suppose that the larger portion either was returned directly, or in some other manner did not come into the accounts; since the total charge to the State is put down at only 6,800,000 francs. The new law will, however, increase this latter sum by seven or eight millions.

Besides the State, many private societies and religious associations are engaged in the work of education, including what is "technical." The pages immediately before us mention only some few of them. Thus there are the "*Institut des frères des écoles chrétiennes*" and like institutions, and others, similar, in which women are the gratuitous ministrants: there is a society for primary instruction amongst the Protestants; and there are other societies devoted to education of adults, as well as children, in different localities. To teach reading is insufficient: it is necessary to cast abroad books. This is perceived in France, and is the object pursued in Paris by the "*Société Franklin*," the "*Société pour l'amélioration et l'encouragement des publications populaires*," and the "*Société des livres utiles*" recently founded; to which last the Emperor has advanced a sum equal to 1,600*l*., and which commences by drawing from English literature,—characterized in the "*Notice*" as rich in popular moral and instructive works at low

price. Similar institutions to these of Paris exist in several of the Départements. Technical education, or apprenticeship given in school, is fostered, so far as it emanates spontaneously from associations, private individuals, or *communes*, by the *École Lamartinière* of Lyons, by different institutions at Mulhouse, by the establishment of Saint-Nicolas of the *Frères des Écoles chrétiennes*, and by the *Asile Fénelon*, and also, for women, by the institution of the *Notre-Dame-des-Arts*, and the schools in the Rue de Turenne and the Rue Rochecouart at Paris. There is a school for apprentices at Nancy; one is about being opened at Tours; and the Jews have a School of "*Arts et Métiers*" at Strasbourg.

Having recapitulated works of the State, and of private associations, in connexion with objects religious and educational, and of which the statutes or regulations are placed in the Tenth Group, the "*Notice*" here adds something as to the efforts in the two directions named, made by the heads of industrial concerns,—these last however being more especially the subject of the second section. At Crensat, Blanz, Wesserling, Munster, Mulhouse, and many other places, profits of industry are employed largely, and in a spirit of tolerance, in the construction of churches and other places of worship, and at great expense. And, from north to south, from east to west, according to our authority, it is by the school that the master, or "*patron*," endeavours to attach to his manufactory phalanxes of intelligent and well-behaved workmen. Evening-classes are founded, as at Guebwiller, Mulhouse, and the *ateliers* of the Orleans company, or work-rooms (*ouvriers*) as by the company of Saint-Gobain at Chauny. Generally, the expense is defrayed by the heads of the establishments; but sometimes, as at the coal-mines of Decazeville, the mutual-aid fund of the workmen provides for the support of the schools; thus putting, as is well observed, "the malady of ignorance with the number of miseries that it feels bound to relieve." At one place, La Grand'Combe, the workmen's fund has lent to the company 100,000 francs (4,000*l*.) for the construction of schools. In some schools payment is made: in others, the instruction is gratuitous. Some manufacturers leave the workman free to not send his children to school; but many others, especially in the eastern part of France, have considered themselves as fulfilling a duty, and at the same time making a clever calculation, in declaring the attendance at school obligatory for those who would ultimately replace their fathers. To the primary education, and that connected with the manufacture, a great number of the heads of establishments have joined singing and music. Or as the volume before us says:—

"... they have comprehended that man has need of the enjoyments of art, and that the sentiment of the beautiful for the workman who has finished his task the noblest relaxation: they have also founded, nearly everywhere, libraries to combat the influence of the public-house (*cabaret*), and to group in the evening-time the whole of a family around a good book. It is to be desired that in forming co-operative societies, workmen attach to them of their own accord useful institutions of this kind. Examples already numerous prove that they themselves feel the need of these institutions: it is often on their demand, and at their expense, that the friendly-society, the school, the library, and the music-class have been established."

As regards the provident and charitable institutions, the principal contributor to the Tenth Group is the Emperor. He exhibits specimens of habitations, in the Class 93; but the catalogue sets forth other matters due to his initiative, and that of the Empress. According to the "*Notice*," the Imperial Government has been pursuing for fifteen years the work of reclamation of classes and protection of the feeble. The principle maintained is that when the action of individual citizens is not sufficiently energetic, it is for the Government to intervene, in setting example, and, if need be, by direct assistance.

Therefore the Imperial Government has not limited itself to the development and encouragement of institutions existing, such as savings' banks, relief-offices, hospitals and alms-houses, orphanages, nursing-establishments, and the establishments for the insane, the blind, and the deaf and dumb. It has propagated, with particular care, the mutual-aid societies, which by the law or decree of 1852 were to be established in all the *communes*: thus there are now 6,000 of these societies, counting near a million members, and possessing forty millions of francs. By a decree of 1855 were created the refuges of Vincennes and Vésinet, for convalescents (workmen and workwomen) of Paris. In 1864, there

was the law on coalitions, said to have "conserved the principle of the liberty of labour." A year ago was set on foot a system of annuities for workmen invalided, or permanently incapacitated. At the same time the subjects of public health, and decent, comfortable, and economic lodging, were being pursued. In 1849, had been erected the first *Cité Ouvrière* of Paris. In 1850, a law was enacted relating to insalubrious dwellings. Two years later, ten millions of francs (400,000l.) were placed to the account of amelioration of workmen's dwellings in the great manufacturing-towns. Subventions were accorded to companies having the same object, in particular 300,000 francs to the "*Société des Cités Ouvrières*" of Mulhouse. A model-house containing eighty-five furnished lodgings for unmarried workmen was built in 1866, near the *Asile de Vincennes*, on ground given by the Emperor; and his Majesty has quite recently erected a large structure, near the *Champ de Mars*, for workmen's families. Baths and public wash-houses, a loan-society for assisting the purchase of tools, a society for the saving of life at sea, great agricultural works like those of the Landes and in Sologne, and reduction of hours of work for children, are amongst the other measures of various kinds undertaken or commenced.

Example has been fertile of imitation on all sides. The heads of manufacturing establishments have recourse especially to friendly-societies, deposit-banks, gratuitous advances, and annuities, to ensure themselves devoted fellow-labourers. Whilst public institutions have been founded, the Emperor has not ceased to stimulate the emulation of these heads of establishments, and to encourage the initiative of citizens. His words, in 1863, to the exhibitors returned from London, testify to his feeling that the Government should be relieved from being "the sole promoter of the vital forces of a nation."

The movement resulting from the initiative has already exercised an important influence upon the condition of the working-classes in France. This is shown in the following chapter, relating to institutions created by masters and workmen, and in the particulars which occupy the chief portion of the catalogue.

SOUTHAMPTON versus SALISBURY.

No more satisfactory evidence of a growing interest in sanitary matters, and of a fuller appreciation of the importance of the public health, need be wished for than the controversies which are now, from time to time, appearing in the columns of our leading newspapers, as to the rival claims of various towns to be enjoying the lowest death-rates. Although it is to be regretted that into such controversies are too often introduced certain amount of personality, and a needless waste to throw discredit upon rival claimants, accompanied at times by inaccuracies and somewhat random assertions, it must be remembered that this over-zeal is in a good cause. Besides drawing public attention to the effect of sanitary activity in certain towns, it is to be hoped that others will, from time to time, enter the lists, and strive long and earnestly to obtain that enviable, and we are thankful to find, now much coveted position of "the healthiest town."

Not the least important of the controversies to which we have above alluded, is that between Mr. A. B. Middleton, of the Close, Salisbury, and Dr. MacCormack, the medical officer of health for Southampton. It has resulted in a correspondence which has found its way into local papers; into the *Lancet*; and last, but not least, into the columns of the *Times* itself. It is well known our interest in the health of towns is cosmopolitan, but it so happens that we have devoted considerable attention to the sanitary state of Southampton. In the *Builder* for May 26, 1866, too, a column or two were devoted to the condition of that town, incident upon the recent appointment of Dr. MacCormack, and upon its unsatisfactory sanitary condition, as evidenced by an outbreak of cholera in the autumn of 1865, and by a severe epidemic of scarlatina which prevailed throughout the winter of 1865-6. We take the present opportunity, therefore, of reviewing the result of Dr. MacCormack's labours as shown in the rate of mortality which has prevailed since his appointment to the present time, and intend also to say a word or two about Salisbury. If we cannot satisfy the rival claimants for the palm of health, we may at least succeed in convincing our readers that

the moot point is rather a nice one, and that both towns fully deserve to be at the present time held up as models of sanitary progress, and to receive the congratulations of all other town populations.

The borough of Southampton, which in 1851 contained an enumerated population of 35,305, had increased to 46,960 by the census of 1861: assuming that the same rate of increase has prevailed since 1861, the population at the middle of this year is estimated at 56,170. During the ten years 1851-60 the average annual death-rate in the borough was 24.4 per 1,000. During the first three years of the present decennial the town was remarkably healthy, the rate being in 1861, 19.7; in 1862, 20.0; and in 1863, 19.8; but in 1864 and 1865 it rose successively to 23.6 and 24.9. In the autumn of 1865 there was a slight visitation of cholera, and about that time Mr. Francis Cooper, who had been for many years medical officer of health for the town, died; and it is believed that his death was hastened by anxiety and hard work in connexion with the epidemic. Dr. MacCormack, his successor, was not appointed till March, 1866. In the first quarter of that year, when the epidemic of scarlatina had scarcely subsided, the mortality was at the annual rate of 27.9 per 1,000; in the June quarter it fell to 21.2. In the third quarter, however, there was another visitation of cholera far more severe than in 1865, and the death-rate became 27.7 per 1,000; during the last three months of the year the town was again healthy, and the rate fell to 18.3. The average annual rate for the year 1866, in spite of the cholera, did not, therefore, exceed 23.8 per 1,000. Since the beginning of the present year the improvement in the health of Southampton has advanced with rapid strides. In the March quarter the death-rate was only 17.2, and in the three months ending 30th June had fallen so low as 15.0. In the nine months ending 30th June the rate, therefore, averaged only 16.8, and if the returns for the remaining weeks of the current quarter continue as satisfactory as they have been since the beginning of July, Southampton will have enjoyed a year of unexampled health. Before passing on to consider Salisbury's case, a word or two upon the causes of death in Southampton last year. All the previous rates have been calculated for the borough proper, but as the Portsmouth tything, containing in 1861 a population of 3,546 persons, although within the borough is not situated within the registration district of Southampton, the figures relating to the causes of death will refer to the district only. Of the 1,178 deaths there registered in 1866, 335, or 28.4 per cent., were referred to diseases of the zymotic order—small-pox. Cholera, which in 1865 had only caused 21 deaths, was fatal in 106 cases in 1866; 18 were also the result of dysentery, and 41 of diarrhoea; the latter number showed a considerable decrease upon the two previous years, when the figures were 64 and 79. The fatal cases of scarlatina fell from 172 in 1865 to 46 last year; those of typhus from 52 to 27; measles and whooping-cough in 1866 caused respectively 39 and 35 deaths; and not a single death from small-pox occurred. Though the efforts of the medical officer were futile to prevent the mortality from cholera, we feel satisfied as a result of Dr. MacCormack's labours with the reduced death-rate of the past nine months, alluded to above, and with the fact that the mortality from typhus in 1866 was only just above half what it was in 1865. If the present satisfactory condition of health continue in Southampton, its inhabitants may fairly expect to have seen the last of cholera as an epidemic, and can at any rate assure themselves that a low death-rate and an immunity from ordinary zymotic diseases afford the only reliable guarantee against such visitations. It may be as well to allude to the birth-rate in Southampton, as corroborative of the assumed increase of population since the census of 1861. The births registered in the district have, with very slight fluctuations, risen from 1,572 in 1861 to 1,690 in 1866, averaging 1,613 in those six years against 1,470 in the ten years 1851-60. The birth-rate to 1,000 persons living during the year 1866 was 34.4, or 2.5 below the average rate in the thirteen other large towns of the United Kingdom furnishing weekly returns.

The municipal borough of Salisbury, according to the census of 1861, contained a population of 12,278 persons. As is the case in Southampton, however, the registration district of Salisbury does not include the entire borough, but only the parishes of St. Edmund and St. Thomas, and the municipal portion of St. Martin's; these con-

tained at the census 9,039 persons. The remainder of the borough, namely, the liberty of the Close, 603 persons, part of Fisherton Anger parish, 2,334, and part of Milford parish, 808 persons, form part of the registration district of Alderbury, and the births and deaths there recorded are included in the returns from that district. As Salisbury is not one of the towns furnishing weekly returns to the Registrar-General, the figures for the whole borough are not available, as in Southampton; and in the following remarks we must entirely confine our facts and calculations to the district of Salisbury. Between 1841 and 1861, the population of the district declined from 9,490 to 8,930, but had increased again by the census of 1861 to 9,031; it was still, however, between 400 and 500 below the population of 1841. Bearing this in mind, it has been assumed, in calculating the following rates, that the population of Salisbury has been stationary since 1861, and this estimate is strengthened by the fact that the births registered in the six years 1861-6 have only averaged 283, against 287 in the ten years 1851-60. Moreover, the birth-rate per 1,000 in 1866 was only 29.5, a low rate even for rural districts, and a sufficient argument against the probability of any under-estimate of population. During the ten years 1841-50, the average annual death-rate in Salisbury was 28 per 1,000, and this fell to 24 per 1,000 during the next decennial 1851-60. In the five years 1861-5, the rate was respectively 18.0, 26.6, 17.6, 22.5, and 23.1, and last year it fell again to 19.6; therefore, in the six years ending 1866, it has averaged only 21.2 per 1,000, a still further considerable reduction upon the improved rate prevailing in the previous ten years. In the year 1866, of 177 deaths in Salisbury only 16, or 9 per cent., were referred to all diseases of the zymotic class, and but 60 or 34 per cent. occurred among children under five years of age. In Southampton, 28 per cent. of the deaths were from zymotic causes, and 38 per cent. of infants under five years. The first two quarters of this year were unusually healthy throughout the country, and Salisbury enjoyed its full share of benefit therefrom, as the annual death-rate per 1,000 in the first quarter was only 21.1, and in the three months ending 30th June fell to 14.6, making the average rate in the nine months ending that date 18.5. All these rates, let it be remembered, are calculated on the enumerated population of Salisbury district in 1861, which is assumed to have remained stationary.

Publicity having been given to the present satisfactory condition of the health of both Southampton and Salisbury, we should be inclined to rest satisfied; but the question has been raised, and warmly disputed, too, as to which is the healthiest, and as we have thoroughly investigated the subject, we may be entitled to express an opinion thereon. There is such an infinity of matters to be taken into consideration in comparing the death-rates of towns opposed to each other in character so widely as the two in question, that it will be better, in the first place, to compare the actual death-rates, to 1,000 persons living, in a series of years, without any qualification whatever. In the decennial 1851-60 the mortality averaged 24 in the districts both of Southampton and Salisbury. In the six years 1861-6, the rate has been 22.4 in Southampton (including two cholera epidemics), and 21.2 in Salisbury. In the first two quarters of this year the rate in the borough of Southampton (we prefer to use the municipal boundaries of towns when practicable), the rate has been 17.2 and 15.0, against 21.1 and 14.6 in Salisbury. Taking the nine months ending the 30th of June last, the advantage appears still stronger on the side of Southampton with 16.8, against 18.5 in Salisbury. Although, therefore, Salisbury has rather the best of it in the actual rate for last quarter, which, we believe, first gave rise to the controversy, by taking the whole nine months Southampton would appear to have been the healthiest. Without for one moment wishing to detract from the merit due to Salisbury, which has reduced its mortality from 28 per 1,000 in the ten years 1841-50, to 19.6 last year, and 17.9 in the first half of this year, we cannot but come to the conclusion that the present low death-rate in Southampton is still more remarkable. Seaport towns invariably labour under many disadvantages, sanitarily speaking; they contain a considerable population of the seafaring and fishing type, to whom cleanliness of person and home is unusual, and difficult to enforce, and among whom a greater amount of poverty and distress at times prevails than in

any other class. Such towns, moreover, are more directly liable to infection from cholera or other epidemics from in-coming vessels; and a not inconsiderable number of persons arriving off long voyages only live to land, whose deaths appear against the towns in which they die. There are also one or two considerations which bear specially upon Southampton and Salisbury. The density of the two districts does not so materially differ, being twenty-nine persons to an acre in the district of Southampton, and twenty to an acre in Salisbury; but the advantages of a town with a stationary or slightly-decreasing population, like Salisbury, are very great compared with a town in which a rapid rate of increase prevails, as in Southampton, where those vital questions of providing proper house accommodation and preventing over-crowding come prominently before the health officers. The apparently inevitable mortality which prevails among infants during the first few months of their existence renders it, moreover, necessary to make some allowance for the difference between the birth-rates, 34.4 per 1,000 in Southampton, and 29.5 in Salisbury.

In conclusion, we would venture to offer a few suggestions which may prove useful to those anxious to test the rate of mortality prevailing in their towns or parishes. Having ascertained the number of deaths for any given period, the only difficulty likely to arise is in finding the correct population to apply to these deaths. In large towns, where the rate of increase of population is subject to considerable fluctuation from a rise or fall in the prosperity of any staple trade, or any special commercial convulsion, the necessity for a quinquennial instead of a decennial census is often felt, in order satisfactorily to estimate the population towards the end of the interval of ten years; but in ordinary town or country districts it has been found sufficiently correct, where a given rate of increase has prevailed between one census and another, to assume that the same rate will continue during the next ten years. To raise the population of any place to the middle of the present year, it would therefore now be necessary to add to the enumerated population in 1861 six and a quarter times the annual rate of increase between 1861 and 1861: so much for the population. Rates for comparison should be given in as uniform a manner as possible; experience has proved that annual rates are most instructive, and that it is most convenient to calculate them to 1,000 persons living. It would be, moreover, useful, and often prevent misunderstandings, if in all public statements as to rates of mortality, the population (estimated or otherwise), upon which they have been based were given. It is more than probable that a very large portion of the difference between the rates for Southampton and Salisbury, as calculated by their rival advocates, might be explained by the use of differently estimated populations. Not very long ago the mayor of a considerable town in the East of England made a most startling announcement in the *Times* as to the mortality in his town. On investigation it was discovered that he had taken the deaths for one quarter, and, applying them to the population, had published the rate in the quarter as an annual rate. Except that the method of handling such figures is now becoming so much better understood, we should have warned those making such attempts for the first time that, if the deaths obtained are for any portion of a year, either the deaths must be raised up to a year, or the years of life exposed to risk must be reduced to agree with the period over which the deaths extend.

Leamington has already entered its claim, which is apparently well founded, to rank with Southampton and Salisbury; and we hope other towns will lose no time in at any rate ascertaining their death-rate, and we shall always feel great satisfaction in acknowledging the attainment in any towns of the success achieved by Southampton and Salisbury in the prosecution of their sanitary improvement.

SINKING OF CLAY CROSS TUNNEL.—The arch of this well-known tunnel has sunk, and is now being repaired and strengthened, and the traffic is now carried on by one track. It is feared that unless great skill be brought to bear in repairing the arch the whole of the traffic through the tunnel will have to be stopped. The giving way of the arch is attributed to the extensive getting of coal and ironstone in the immediate neighbourhood of the tunnel.

DEVELOPMENT v. CRITICISM.

It is amongst the anomalies of art in its historical manifestation that the theory of its scope and practice should so frequently be most satisfactorily understood and expounded in periods when the production of works of art in the highest sense is little better than extinct. Criticism would almost appear never to flourish so luxuriantly as when it succeeds to the ground that an age rather of instinct than intelligence once occupied with a luxuriance of beauty that reached its acme only to forfeit the faculty of reproduction. The exchange seems hardly acceptable; the law of progress that our hopes cling to appears to be reversed. The botanical sequence that we are told of, in which pines have regularly supplanted ferns, and beech succeeded to pines, until the nobler oak forests again pushed out the beech, or took up the districts that their exhausted forces seemed to leave desolate, but really had enriched by their decaying trunks: this is a development that warms and interests, but creative power—the poetry of art—seems ill forfeited, for even the highest critical acuteness. If the song of the nightingale is to be even jeopardised, not to say lost for ever, we would rather dispense with the best demonstration of the anatomy of its larynx. And it is not alone that just criticism is so often dissociated in period with creative power as almost to seem to exclude it naturally, but it appears as provokingly, not to say perplexingly, compatible with any amount of miscreation. The production of bad works of art is often most rife at a period when the best are for the first time, or after long neglect, attaining, if not their highest appreciation, certainly their most intelligent. The age of the great Greek tragedians had gone by when Aristotle expounded the theory of their art, as absolutely as free self-government was obsolete in the Grecian societies and cities when he laid the foundation of the philosophy of politics and made a collection of their constitutions. Whatever may be the date of the work of Vitruvius, the architecture that he at least did his hearty best to expound had already had its highest triumphs, and was doomed to fall before whatever innovating system might prove most vigorous.

Shall we say, then, that critical acumen and theory exert a noxious influence upon creative genius, and positively check it and choke it? Is the artist wise who declines to combine intellectual study with imaginative enthusiasm? Are we prepared to give up as fallacious all the intimations in the greatest achievements of poetry and poetic art, of studied and revised adaptations, of conscious arrangement and purpose? The statements of these questions involve their answers, and go far to solve whatever there may be of enigmatical in the case. A critic is scarcely a critic, and cannot be a fine one who is not somewhat,—nay, no little,—of an artist; and an artist conversely has of necessity no moderate proportion of the spirit of the critic; and yet are the two,—such distinction is there due to the predominance of one or other spirit,—as wide asunder as the poles, as contrasted in their functions as are the polar operations. Nothing but a development that amounts to transformation will make these species convertible. There is one certain mode of critical acumen wherein lies the force of the critic; and logic is its ally, and definition in command of most unambiguous expression should be its handmaiden. On the other hand, for the most purely intellectual processes of the artist there is no need whatever that they should be endowed with words,—nay, none that they should reduce themselves to propositions awaiting recognition. Numerous and manifold will be the successions of his ideas that, could they be arrested, would truly admit of statement in form, and figure, and syllogism; but they are not to be followed, and are not to be retained. The conclusions they lead to are constantly caught sight of afar off, and cancelled at once, or confirmed by a sense of harmony that it is for Imagination, a fellow labourer, to minister. Imagination seizes what pertains to it of right, wherever it is found, and dispenses by loftier privilege with tracing back how it came within her reach.

The critical acumen, therefore, which helps us to understand and even enhances our enjoyment of works of art is quite a different power, or a power in very different form,—allotropic, the chemists would say,—from that which assists most effectively in their production. To return to our illustration: the very best demonstration of an organism may teach us some conditions of

its health or disorders, of its action and co-operation, but will in no way enable us to make a comparable imitation of it. Criticism proper only begins to exist after the completion of the masterpieces it treats of, as the herbage must at least have been ready for the animals that can only exist by browsing it, as the air and its qualities are pre-supposed by the plumage and apparatus of flight. But if the masterpiece is antecedent to criticism, the latter in tendering assistance cannot at any rate claim to be indispensable. Study,—tenacity in thinking will do much,—many things, but a work of art may be of highest quality and yet will it owe its best perfections to something besides having been, as it is called, thoroughly thought out, to something antecedent and superior to any such operation whatsoever may be its persistency and its nature.

It is no doubt true that there are great differences between even high artists in the faculty of distinctly recognizing and stating, though it be but to themselves, the principles on which they proceed; some work under a cloud of the seeming unconsciousness that gave Plato occasion to speak of poets,—in some peevishness,—as inspired idiots; and Shakespeare himself to bracket them with “lunatics and lovers,” men, like the elements,—

“That know not what nor why, yet do effect
Rare issues by their operance.”

But effective reasoning no less than the aptitude—the reasoning power—is as absolutely there as it is in the deaf and dumb, to whom only the extravagant nominalist school of John S. Mill, if school in this matter he has, would deny it for an instant. These are the curiosities of the human mind. We have a common-place parallel in the calculating boys of whom one has been able to render an account of his processes, while others, neither more nor less prompt in their astonishing solutions, are only cognizant of an interval of concentrated pondering and its result. It is thus actually given sometimes to the critic proper to trace more justly than can the artist himself, the course of his associations, and the value that in reality decided his adoption of one epithet rather than another, of a subsidiary incident, of a principle of grouping, whether of figures in a picture, or windows in a façade.

Can we wonder, then, that some great artists have given strange reasons for what they have done well, and more wisely than they are distinctly aware of, and in the face of their own utterance; and while it is speaking trumpet-tongued to the intelligent, will weaken its force if anything could, by diverging into the far-fetched or trivially irrelevant explanation?

It is probably architecture that among all the arts demands the most nearly balanced alliance of the Reason and the Imagination, bound, as these endowments are, to co-operate, however diversely proportional, in all. There is no escape in the *ars regina*, as a late professor of architecture loved to call it, from the responsibility of diligently collecting and collating evidence most detailed, and then co-ordinating the conditions and options and opportunities of the problem in hand, to be treated after all with freedom and mastery demanding the broadest intellectual grasp. And yet, when the result shall be brought out, if it does not appeal to the sympathies with a liveliness that justifies every thing, yet that tasks all the resources of scientific aesthetics to follow, and will baffle them to entirely explain, the work for all its vigour of ratiocination is inapt and feeble, and despite whatever other wealth it may be lavish of, it is nought.

A form in which many artists,—and all more or less,—embody the results of their definite reflections, their critical theory, is in maxims. There are few who have not a predilection for some favourite maxims,—and wherefore not? Some are positive and positively valuable as eternal principles, and the negative are as often as not convenient warnings laid down upon the chart, of hidden rocks that have been grazed in times gone by, or vortices that have sucked down too adventurous sailors before their sight.

In the best form, however, and most harmless cases, they are but brief expositions of characteristics of predilection, the turning-points of an individual style. The artist has yet to be born, and there is no need to be anxious for him, whose work can rise absolutely above his individuality, who shall be able truly to boast that he never repeats in one work a characteristic treatment that can betray the authorship, that bespeaks his own idiosyncrasy and not exclu-

sively that of the occasion that he is dealing with. But maxims have their abuse; and just as style may degenerate into mannerism, a set of so-called principles may receive such ill-considered development into a code as to degrade them into dead rules,—receipts for the evolution of the Becoming and the Beautiful. There is scarcely any maxim in art that can be so framed, retaining any show of usefulness, that it will bear to be stated absolutely. Absolutely, yes, if taken in tacit connexion with all that its enunciator is ever bearing in mind, but otherwise it will only degenerate into that pernicious misgrowth of criticism crossed with pedantry—a law of art.

Architecture is, perhaps, scarcely infested so unluckily with this spurious and intrusive legislation as the sister art of painting, and, still more pestilently, sculpture. The dogmatism begins with the critics; and if it only infected the constitutions of weaker artists the mischief would be slight. But it spreads to the public,—it is epidemic with patrons, and when the world has once begun to condemn beauty,—the gates of Ghiberti,—the campanile of Giotto,—the choristers of Della Robbia,—the Medicean monuments of Michelangelo, as confounding the laws of the distinct arts,—it is on the brink of admiring ugliness on the ground of conscientious adherence to rules at once uncompromising and all-sufficient. Admiration by book is not so disastrous as design by book, but is too likely to tempt to it, and may become strong enough to enforce it even in important cases.

Beauty, like truth, is justified in all her children; and art, at its highest states, exhibits the problems that criticism has to solve, and declines as politely as it may—declines if it is on a level with the dignity of its calling—to accept as necessities the presumptive laws which owe their currency and sanction to herself, and are subject to her magical reversal at any moment. All great advances in the arts have been made by innovation, of which development is but a milder name; and every such change has been signalized by a wreck of criticisms and a ruin of laws that critics had deduced and inculcated,—fulminated, rather, as eternal. Here, then, we touch on the cause why an age of very excellent appreciative criticism is often an age of but bastard style and poor invention. The eyes of the world are still fixed on perfections already achieved; its ears are full of their glorification, and the exposition of their peculiarities, even more than of their principles. Who can be surprised that imitators are eager to take the open road, and that even bolder spirits are tempted or forced to qualify their originality with concessions to a taste that, if it never can be obsolete, is, as regards its natural growth, exhausted, not to say effete. Criticism fully competent to expound the past pretence,—with pertness, to be deprecated,—to legislate for the present and all time. It is too apt to set a fashion under pretence of defining taste, and clings to it with a favoritism that allows no change but an enhancement of extravagance, and, rather than admit a fault in it, will—

"Exalt each trifle, every vice adore."

If art is to escape the catastrophe that ever awaits the elevation of even the truly admirable into a blind worship, it will be due to the resoluteness of artistic genius, that fully accomplished, indeed, with the resources of the past, shall above all be alive to the best promptings of the most daring present, and so be prescient of the future.

THE CARVINGS OF GRINLING GIBBONS.

In the year 1721 died Grinling Gibbons, a wonderful handicraftsman in wood, who was born of Dutch parents in Spur-alley, in the Strand. Comparatively little is known of his personal history, and the same may be said of his work, notwithstanding that it embellishes a very large number of the most celebrated public edifices and private mansions of England. In many instances, the beautiful and fragile carvings of Gibbons have suffered from the attack of larvae, or have been tampered with by the inartistic hands of Philistines, who, by plastering and painting what they could neither understand nor appreciate, have done much to ruin it for ever. Another circumstance, which may to some extent account for the ignorance that exists regarding the work of Gibbons, except among the few, is that though London possesses several

charming specimens of the master, some of the most marvellous things he ever did are scattered widely apart throughout the country—in the private mansions of the wealthy, and so are comparatively lost treasures. It is only when skilful and experienced experts in wood-carving are to be found to search out these treasures that we learn anything satisfactory (sometimes, alas! how unsatisfactory also) concerning them, and are made aware how much the arts of sculpture and carving really owe to such men as Grinling Gibbons. It is only after the investigations of Mr. W. G. Rogers and others that we learn, for instance, that the peculiar description of light interlacing scroll-work of which Gibbons was so perfect a master, and of which the most exquisite examples are to be met with in nearly all of his important works, has never been successfully attempted since his time. It originated with him and died with him. Mr. Rogers's paper under the title of "Remarks upon Grinling Gibbons," and read at a recent meeting of the Royal Institute of British Architects, is highly important and interesting. To this gentleman we are indebted for the restoration of the valuable carvings by Gibbons at Belton House, the seat of Earl Brownlow. In 1855 these carvings were described as being in such a condition as to render it absolutely necessary that something should be done to prevent their complete destruction. They were placed in the hands of Mr. Rogers, and their restoration seems to have been an experiment. Happily it turned out completely successful, for, on recent examination, not a single live worm was found in the carvings, where formerly hundreds, if not thousands, had congregated. It may be as well to give the method adopted on this occasion, as we find it stated in the Report of the Commission appointed by the Committee of Council for Education to inquire into the causes of decay in wood carvings, with a view to preserving the valuable decorative examples in the South Kensington Museum. It appears, then, that the first step taken was to have the various pieces photographed, as a means of recording the position of each detail of the ornamentation, &c.

"The whole of the work was in a serious state of decay, portions being completely honey-combed by the worm. In order to destroy or prevent any future development of the insect within the wood, Mr. Rogers caused the whole to be saturated with a strong solution of corrosive sublimate (chloride of mercury) in water. The colour of the wood, however, suffered so seriously by the action of the mercury that it was found necessary to adopt some means of restoring the original tint. This was effected by ammonia in the first instance, and subsequently by a slight treatment with muriatic acid. After this the interior of the wood was injected with vegetable gum and gelatine, in order to fill up the worm-holes and strengthen the fabric of the carvings. A varnish of resin, dissolved in spirits of wine, was afterwards spread on the surface, and then the dismembered pieces were put together in conformity with the photographs taken as records, prior to the work of restoration having been commenced."

Mr. Rogers is now investigating the Gibbons work so profusely used in the Wrennian churches of the metropolis, and also in the great halls of the various guilds, and the private houses of wealthy citizens of the seventeenth century. He hopes to extend his inquiries to Windsor Castle, Hampton Court, and St. James's Palace, and other places where there is too much reason to fear the carved treasures are rapidly falling into worm-dust. In the meantime we have a report of a number of examples of carving by Gibbons at different places already examined. Of the peculiar foliated scroll-work previously mentioned, the reredos in the church of St. Nicholas, Abchurch-lane, is one of the richest in the City, and deserves to be better known.

"Large masses of festoons and pendants of fruits and flowers cover the whole width of the wall up to the cornice; this has been painted over in the same way as the carved work at St. James's, Piccadilly (another marvellous specimen). The horizontal bands on the organ in St. Paul's Cathedral are the perfection of this character of foliated scroll-work. I remember," continues Mr. Rogers in a note, "seeing in the Church of St. Michael, Crooked-lane (since taken down to enlarge the approaches to London Bridge), two curious pieces of carved drapery by Gibbons, representing curtains hanging on a rod by rings placed on the back of the high pews as a screen; there were other smaller objects of interest in the church, and have often regretted that such choice little bits have not been preserved in the City Library at Guildhall, as they are sure to be lost when they fall into private hands."

At Cassiobury, the seat of the Countess of Essex, Mr. Rogers found room after room covered with the finest of Gibbons's work—dead game, wild flowers, scrolls, live birds in the softest plumage, masses of fruit entwined with delicate tendrils—all as pure as when the carver left them. This was more than thirty years ago. On making a second visit to Cassiobury two years since, he found "that all this charming

work had been covered over, and loaded with a thick brown paint and heavy varnish; all the delicate feathering of the birds and veining of the leafage were effaced, smothered up, and had vanished; and what repairs had been made were wrought in plaster or a composition." Gibbons's name is frequently associated with works which he never could have seen, and which would have disgraced it: Mr. Rogers alludes to some of the great companies' halls in the City mis-described in this way. At Chatsworth, Mr. Rogers says, "his name may not appear in the records, but this was his school, and there he educated his workmen who partook of his inspiration." We know of no evidence that Gibbons did much at Chatsworth. Mr. Newdegate, M.P., has in his possession, at Arbury, the original accounts of Gibbons for the carvings done at Harefield Church. Among other places mentioned is Kirtlington Park, eight miles from Oxford. This mansion is particularly rich in carvings:—

"The Great Hall is striking and lofty, and has in it an alcove and niches, with classical figures. Over the marble chimney is a panel, 5 ft. or 6 ft. square, in the best style of the master, and worth a long pilgrimage to see. It is nearly in its virgin state, and quite capable of being recovered and brought back from its present dark state to the rich golden tone of the carvings in the cedar chapel at Chatsworth. On the grand staircase, in rather a dark corner, high up, is a second Gibbons panel, the subject of which is a basket of flowers and fruit, with side pendants, covering a space of about 5 ft. by 4 ft. The two panels are the largest and finest I have yet seen."

At Oxford and Cambridge may also be seen much of the work by Gibbons. The exquisite ceiling and fittings of the chapel of Trinity College, at the former University, are particularly worthy of mention. Unfortunately, however, a great portion of the carving there, "wrought in costly, richly, sweet-scented cedar, is now covered over with a dirty undrying oil." The discussion which followed the reading of the paper, brought out one or two points of importance in connexion with this interesting subject. In answer to a question as to the best means of restoring old carvings which have been painted over, to something like their original condition, Mr. Rogers observed that the process was a difficult one.

"It was not possible to scour and wash the paint off in the ordinary way. In order to remove the paint it must be eaten off, and for that purpose he made a trough large enough to hold the carving, and to admit of its being covered over with sand, which would be saturated with an alkaline solution of a strength varying according to the circumstances of the carving to be treated. By allowing it to remain in that state for a few days, the whole of the paint would be eaten off. That was the only method of treatment he was aware of, without the risk of breaking. With reference to the restoration of carvings which had not been painted, but had become blackened, in such cases scouring must be resorted to; but it required to be done by the careful hand of an experienced man. They knew that scouring either with strong or weak alkali or ammonia would raise the grain of the wood; nor could they sand-paper it over, to get the raised grain of the wood off; but a number of little tools were required, the ends of which were dipped into a little glue, to which powdered glass would stick itself, and thus make a sand-paper at the end of the stick. In that way the hump which were formed upon the wood by moisture could be removed from the delicate parts of the carving; but this likewise required to be done by an experienced hand. That was the method he had adopted at Chatsworth and elsewhere."

It was further elicited that carvings in lime-wood appeared to be the most susceptible to the ravages of insects, and of all woods cedar was the least susceptible. We are glad to hear that though some portions have been broken by violence, the Lord Mayor's stall, and the stalls of the bishops in St. Paul's, are in a remarkable state of preservation. It appears, indeed, that all the carving in the venerable cathedral has escaped the ravages of the worm, and is in excellent condition. Mr. Rogers considers that painting is fatal to the preservation of carvings.

THE NEIGHBOURHOOD OF THE ROYAL HORTICULTURAL GARDENS.

The fine open space reserved for these gardens is now completed in all its external boundaries by ranges of the most costly mansions in the metropolis, nearly half a mile long and a quarter of a mile in width. The end next the park, facing the Albert Memorial, is laid out for the hall of arts and sciences, already planned; and the south portion is reserved for the erection of national museums. The whole extent of this great quadrangle of fashion is larger than either St. James's or the Green Park; and from its position close to Hyde Park and Kensington Gardens, promises to become the most attractive locality for aristocratic residence.

On the east side, Mr. Freahe began mansions in Princes-terrace and along the entire length

of Exhibition-road, which for the most part are backed by open squares, and front the Horticultural Gardens; on the west, Albert-road is also complete; both presenting grand thoroughfares, terminating in the Park on the north, and which is proposed to extend, on one side to connect with the fine quarter of Osalow-square, and on the Albert-road side to be extended so as to reach the river at Chelsea, through continuous squares, flanked by mansions of importance.

Queen's Gate-gardens, Harrington and Stanhope squares (already laid out and partly built), and other large squares projected on Mr. Freahe's new south-western creations, will connect Albert-road with Chelsea; and the southern side of the quadrilateral along Cromwell-road being finished with palatial residences, no quarter of London can compete with South Kensington in size of houses, width of noble thoroughfares, and convenience, with healthfulness of position. The internal arrangements and structural aptitudes of the new houses show great improvement upon the old system of internal construction. In most cases there are ten or twelve bed-rooms, with baths, lavatories, conservatories, and all modern accessories; lofty rooms, richly ornamented; together with stables and coach-houses. Mr. Aldin began the terraces along the Albert-road, and Mr. Marler is now finishing its southern continuation, which in the rear of the houses has the advantage of several open squares, and the vicinages of the new Metropolitan Railway Terminus within a quarter of a mile, the distance to the river at Chelsea being scarcely a mile, and to Hyde Park-corner about the same.

So far as the plan and arrangement of this new quarter are concerned, there is nothing to be said, as the whole is laid out and in progress; but now is the moment to provide for the fittings, not to say decent, reform of the grand southern route by Knightsbridge; the barracks, that unsightly and incommensurable lair, constricting the road, defiling the Park, and destroying an incomparable site for noble mansions, is the blot and the blain which infect and depreciate this essential and communicating link between Piccadilly and Royal Kensington. The whole length of this grand boulevard ought to be Parkside, from Apsley House to Kensington Palace gates.

Whilst renovations on a colossal scale are in progress, such as will enormously improve London, the Holborn improvements, the river embankment, besides other extensive matters in the hands of the Board of Works,—it is pitiable that the principal boulevard of this city, conducting from Regent Circus to the ancient Palace, should at the present day be left unopened, and in its pristine state of deformity and constriction.

EARLY MAPS OF LONDON.

The following attempt at a catalogue or list of Maps of London known to be preserved, and of a date anterior to the year 1800, has been compiled by me from maps (some unique) preserved in the libraries or portfolios of the British Museum, the library of the Society of Antiquaries, the library (at Guildhall) of the Lord Mayor and Corporation of the City of London, and the rich collection of London illustrations made with skill, assiduity, and at any cost by the late Mr. Crace, the late well-known and skilled decorator of more than one large room demanding taste.

Radolph Agas (about 1560). "Civitas Londinensis," a map or bird's-eye view, 6 ft. 4 in. by 2 ft. 4 in.

There is a copy of this map in the Guildhall library, a recent purchase at the cost of £51.; a second in the library at Lambeth; and a third in the Pepysian library at Cambridge. All these, I believe, differ. Agas's map was re-engraved by Vertue in 1737.

The Guildhall copy has the arms of King James in the corner (an after insertion), and the arms of Queen Elizabeth upon the six large columns of the river.

John Norden's map of London, very curious in his "Middlesex," 1649, very curious; the re-engraved copies not so good.

Norden's map, executed for John Speed, are of little authority or consequence.

C. Vischer's long prospect of London (1616), of great merit and rarity (his her was never printed) in England. Walpole Ance, by Dallaway, v. 152, published at Antwerp or Amsterdam. There is a copy in the Pepysian library at Cambridge. A lithographic facsimile has recently been made.

Wenceslaus Hollar. View of London from Greenwich Park (in 2 plates), 1637.

Prospect of London from Westminster to beyond St. Katharine's at the Tower, 7 ft. 6 in. by 14 ft. "Sold at

* See an account of Agas (new to biography) in the *Gentleman's Magazine*, which under the editorial care of John Bruce, F.S.A. It was furnished by the writer of this attempt.

Amsterdam by Corn. Danckers 1647." Latin verses at the side by Edward Benlowes. [Sold at the Towmley sale for 18l. 16s.] Lithographed the same size by Robert Martin, 1832.

The Prospect of London and Westminster, taken from Lambeth, by W. Hollar, 8 ft. by 1 ft. (no date). London and its Vicinity, "being a ready guide for all strangers to find any place therein." This is a plan on two large sheets, and sold in the Towmley sale for 13s. 6s. Date 1675.

A New Map of the Cities of London, Westminster, showing the streets, lanes, alleys, courts, and other remarks, as they are now truly and carefully delineated. Sold by Robert Green at ye Rose and Crown in Bugbidge London, by Robert Morden at ye Atlas in Cornhill, London, W. Hollar, fecit, 1680.

On one imperial sheet of paper, price 12d. [*Land. Gaz.*, No. 1030]. The upper part of this map contains a "Prospect of London as it was flourishing before the Destruction by Fire" [size 23 in. by 17].

"A General Map of the whole City of London, with Westminster and all the suburbs, by which may be computed the proportion of that which is burnt with the other parts standing."—W. Hollar, fecit, 1680.

A map or ground-plan of the City of London and the Suburbs thereof, that is to say, all which is within the jurisdiction of the Lord Mayor, or proper call of London, by which is exactly demonstrated the present condition thereof since the last and accident of fire. The blank space signifying the burnt part, and where the houses are expressed those places yet standing. Sold by John Overton, at the Whitehorse in Little Britain, next door to Little St. Bartholomew-gate, 1686.

"The Newest and Exactest Map of the most famous Cities London and Westminster, with their Suburbs; and the manner of the streets; with the names of the chiefest of them, written at length, and numbers set in the rest instead of names, the which names are at length in the Table, with numbers how far they stand from London, so that it is a ready help or guide to direct countrymen and strangers to find the nearest way from one place to another. By T. Porter. Printed and Sold by Robert Walton, at the Globe and Compass, on the north side of St. Paul's."

T. Porter. No date, but before the Restoration, and curious, as marking the site of Piccadilly Hall. A copy in the library of the Society of Antiquaries. The late Mr. Crace, of Wigmore-street, had a copy in his noble collection of London maps and plans. No other copies known.

William Batheorn (1689). This described by Walpole (Ance, by Dallaway, v. 143). "A plan of London and Westminster, in six sheets and two half-sheets. Published and surveyed by Newton, 1688. Very rare."

Ogilby & Morgan (May, 1689). *London Gazette* (of that period). Engraved on twenty plates. Ogilby's daughter married a Mr. Morgan, whose son by Ogilby's daughter succeeded the post-geographer in his situation as his Majesty's cosmographer (Aubrey's "Lives"). Those who have been employed in making a general map of London, set forth in the year 1682, told me that in that year they had found about 54,000 houses to be in London.—*Sir W. Petty*, p. 23.

London, Westminster, and Southwark, by Ro. Morden, Phil. Let. Chr. Brown, "I. Harris, Delin. at Sculp., 1706," in the corner. This is a capital map. A copy in the British Museum, among King George III's maps. A Book of the Prospects of the Remarkable Places in and about the City of London, by Rob. Morden, at the Atlas, in Cornhill, and Phil. Let. at the Atlas and Hercules, in Chesham.

The maps in Strype's edition of "Slow's London" (two vols. fol. 1720) are of great value.

View of London, from the top of Buckingham House, by Kip, 6 ft. 8 in. by 3 ft. A copy in the Guildhall library. Several Prospects of the most noted Public Buildings in and about the City of London (twenty-four in number, oblong-shape). London: Printed and sold by J. Johnston and Bowles, map seller, over against Stocks Market, 1724.

A new and exact plan of the Cities of London and Westminster, the Borough of Southwark, and the several new Buildings, Churches, &c., to the present year, 1735. Laid down by inspection; the like not extant. Printed and sold by Thomas Jefferys, geographer to his Royal Highness the Prince of Wales, in Red Lyon-street, near St. John's Gate, a large map, with references, well done. A copy in the Guildhall library.

1738. Published by Geo. Foster, 30th August, 1738. A copy in the British Museum, among the king's maps.

1748. John Rocque's. In several sheets, and good.

1763. By John Pine and John Pinney. Minute and accurate. King's maps (the engraver, John Pine died in 1768).

1769. R. Horwood's, "showing every house."

"The maps of Bowles, in St. Paul's-churchyard, London (published about 1770), are of little or no authority. Clarendon House, Piccadilly, and Cavendish-square are marked as standing at the same time.

London maps of the nineteenth century are common enough—so common, indeed, that instructive though they be, an account of them would unnecessarily crowd your columns.

PETER CUNNINGHAM.

ENGLISH EXHIBITORS AT THE PARIS EXHIBITION.

THE fact that in many cases English exhibitors in the Champ de Mars have not been well treated is made every day more certain. Thus, in the case of Mr. Denton, jun., who had sent illustrations of farm buildings showing the accepted details of our foremost agriculturists, and illustrations of rural laborers' cottages, twelve sets, it appears clear, from a correspondence recently printed, that his Exhibit was not even looked at by a jury. It seems to have been transferred from one class to another, and so to have received no notice whatever. We did not see when in Paris what Mr. Denton submitted, and are unable to say that

it deserved any reward; but we do most certainly assert that it ought to have had full consideration as an illustration of what has been done in England in recent years, in the way of the housing of Farm Stock as well as of Farm Laborers. To the award of a gold medal to the Emperor of the French, for what his majesty has done in the latter direction (though the plan of the houses he has put up in Paris is not a good one by any means, and the buildings were erected by an English contractor), we have not the slightest objection to make. The good desire thus expressed on the part of a ruler deserved the fullest recognition. England, however, should have justice.

BELLS AND WOOD-WORK.

EXETER ARCHITECTURAL SOCIETY.

At the annual meeting of the Exeter Diocesan Architectural Society reference was made, in the report read, to a paper by the Rev. Mr. Ellacombe on the Bells of Devon:—

"Our church towers wherein these church bells are hung are widely scattered; they are in very many cases not easy of access. When the tower is reached, the bell-chamber must be visited; the bells have to be measured, the inscriptions and mottoes have to be copied, and this, and much more than this, has been done by our good and energetic committee. The society reaps the benefit of his labours, and has withal a good example in him of what earnest work in a church case really is. There are points of especial interest in that paper, and your committee cannot further direct your attention to the evidence which our therein given. Of the absence of that care, which our church towers and bells demand from us, your committee feel that in too many cases the towers and the bell-chambers have been passed by, or have not been cared for as they ought. And a united experience can in many cases convince us that the ascent of a church-tower is a work of no little difficulty, and, in some cases, of even some danger. Another point ought also to be referred to. Mr. Ellacombe has given us his paper a great deal of information about our cathedral bells,—the finest peal, it is generally admitted, in the kingdom; but much more information is wanted before their history is complete, and your committee must express their opinion that much more information on that history might be obtained through a careful search of the cathedral archives."

The Chairman (Mr. Ellacombe) said he was sorry that there were no archdeacons present, for he should have liked to inform them of the disgraceful state in which some of the church towers in the diocese were. On that account he did not enter much into detail, but made a few conventional remarks. He divided the state in which they were kept into three classes, good, bad, and dirty.

Mr. Ford inquired whether Mr. Ellacombe meant by bad that there was danger to the structures, because if that were so he would certainly recommend that a communication be sent to the various rural deans. They would be failing in their duty if they did not found upon the report some practical course of action.

The Chairman said he found some of the towers shamefully treated by the bellhangers, who chopped away at the stones of the fabric, so as to get in extra bells easily.

Mr. Ashworth read a paper on "The Ancient Woodwork of Devon." He commenced with an allusion to the mistaken notions of church builders of the beginning of this and the preceding century in designing Gothic woodwork, whether in roofs, screens, or seats, and comments on their fondness for plaster imitations of old oak in ceilings, and proneness to plaster over what could not be imitated. Of early woodwork in screens we have the gates of the choir aisle in the cathedral, and the curious bishop's throne; the latter's pyramidal form is composed of a series of open canopies finishing with a light crocketed open spire, and is eloquent of the best period of Decorated work, though set down in historical records as dating 1470. After referring to trussed rafters roofs the early introduction of curved braces, i.e., timber arches, was noticed in the roofs of Hacombe Chapel, Tawstock Church, and in secular buildings, as in the Exeter Guildhall, and a roof at Bowhill, in St. Thomas parish. Of hammer-beam roofs of the Perpendicular period, there are in Devon very few examples: the rich one over the hall at Wear Gifford; another over a hall in the cathedral yard, now Mr. Down's office; a beautiful example in the hall at Bradfield, near Cullompton. Amongst a number of drawings with which the paper was illustrated, the ordinary cradle roof of many Perpendicular churches was exhibited, culminating as it were in the *ne plus ultra* of florid decoration at Cullompton Church, and the no less splendid example of a different construction over the chapter-house of our cathedral, dating about 1480. Somewhat akin to this latter was shown the tie-beam roof

of Wear Gifford Church, and a simpler tie-beam roof over the south aisle of St. Peter's Church, Tiverton. Of church seats no very old examples are preserved except the stall seats in the choir of the cathedral, which are genuine Early English, although surrounded by debased work of the worst character. Poppy-head terminations to bench ends are rarely found. There are a few at Atherington and at Iisington, and peculiar finials at Buckland Monachorum. Many churches, however, preserve their old square-topped carved bench ends, near Exeter. They are preserved at Christow, Rewe, Plymtree, Talaton, and Ashton churches, also at High Bickington, Westleigh, Lapford, Marwood, and many other churches in North Devon. Devonshire, in comparison with many other counties, is rich in oak screens, mostly of the fifteenth century. A series of traceried compartments between moulded and standard, which ramify into a groined canopy supporting a roof-loft, rich with ribs, bosses, and vignette enrichments, frequently extend the whole width of the church. In many instances the groining has been torn off. Amongst the roof-screens comparatively perfect may be instanced those at Cullompton, Bradninch, Plymtree, Dartmouth, Honiton, Bideford, Kenton, Stokeinteignhead, Kentsbeare, Burescombe, Talaton, Payshembury, Lapford, Chulmleigh, Chawleigh, and several others. These retain much of their old colouring. In domestic work it was lamented that Dartmouth, with the curiously carved windows of its old houses, was gradually becoming modern, and that the wainscoted interiors have long since been stripped of their beauties.

CHÂTEAU-GAILLARD.

CHÂTEAU-GAILLARD, the "Saucy Castle" of Cœur-de-Lion, the work of one year of his brief reign, and the enduring monument of his skill as a military engineer, is in its position and details one of the most remarkable, and in its history one of the most interesting, of the castles of Normandy. Although a ruin, enough remains to enable the antiquary to recover all its leading particulars. These particulars, both in plan and elevation, are so peculiar that experience derived from other buildings throws but an uncertain light upon their age; but of this guide, usually so important, they are independent, from the somewhat uncommon fact that the fortress is wholly of one date, and that date is on record. Moreover, within a few years of its construction, whilst its defences were new and perfect, with a numerous garrison and a castellan, one of the best soldiers of the Anglo-Norman baronage, it was besieged by the whole disposable force of the most powerful monarch of his day; and the particulars of the siege have been recorded by a contemporary historian with a minuteness which leaves little for the imagination to supply, and which, by the help of the place and works, but little changed, enables us to obtain a very clear comprehension of the manner in which great fortresses were attacked and defended at the commencement of the thirteenth century.

Château-Gaillard crowns the almost precipitous head of a bold and narrow promontory of chalk, isolated on either hand by a deep valley, stands out from the broad table-land of Le Vexin, at a height of 300 ft. above the deep and rapid Seine, which washes and has for ages threatened to undermine its base.

The course of the Seine through Normandy, from below the conflux of the Epte to the sea, is one rapid succession of bold and graceful curves, the concavities of which, bluff and precipitous, are attacked by the advancing stream, in strong contrast to the opposite banks, which, deposited and encircled by it, are low and fertile, and studded with ancient villages, churches, and manor-houses, rising through a mantle of rich smiling verdure.

At the bottom of one of the highest and grandest of these reaches, in the centre of a vast amphitheatre, stands the sandy bosom of Cœur-de-Lion. Right and left are the bold bluffs of the chalk range, masked with turf, green as that of Sussex or Kent, varied by the occasional protrusion of a cliff of chalk, and relieved by a band of vegetation covering up the foot of the steep, and intervening between the high ground and the river. In front, beyond the innumerable islands of the Seine, is the tongue of rich low land known as the peninsula of Bernières, a village, which, with Toeni and Venables—names familiar in Anglo-Norman history, is seen in the

foreground. The valley on the right, or east, and immediately below the castle, is that of the Gambon, upon which are the towns of Great and Little Andelys; the former the birthplace—or within a mile of the birthplace—of Nicholas Poussin and Brunel; the latter half-a-mile lower down, upon the junction of the stream with the Seine, and under the immediate command of the castle, and contemporary with its foundation.

Château-Gaillard is composed of two principal parts, the castle proper and the outwork: the one covering the whole head of the promontory, the other occupying the only level ground, being the root of the ridge, from which the fortress could be attacked on equal terms.

The castle proper is composed of a keep; an inner ward, of the *enceinte* of which the keep forms a part, and which has its own ditch; and an outer ward, within which the inner ward is placed, the two uniting, or nearly so, at the north end. This division of the fortress is therefore concentric. The outwork, in advance of the ditch of the outer ward, has a ditch of its own, and presents its salient or strongest part towards the south.

The keep is a tower of which one half, in plan, is round, and the other projects into the ward as a right angle, or spur,—a form of tower well known in French castles. It is 48 ft. in diameter, or 55 ft. taken at the spar. The walls are 11 ft. thick, at the spur 18 ft., and the circular interior is 26 ft. At this time it is composed of a basement and a first floor; nor does there appear to have been a second below the ramparts. In the basement is one window towards the west, or exterior, and a rough aperture towards the east, or the inner ward. There are marks as though this had been a door of 4 ft. 6 in. opening; but if so, it was doubtless not original. This keep is not likely to have had an entrance on the ground floor.

The first floor has two windows towards the west, and a door to the north. The windows being on the cliff side, and inaccessible, are moderately large. They are of two lights, flat headed, beneath an equilateral arch. Their internal recesses are slightly pointed. The doorway, also flat-headed, occupies the space of a window-light. In the other space is a loop, commanding the approach. Both are beneath a round-headed arch, the tympanum being closed.

There are neither mural chambers nor a staircase within the keep. The floors were of wood. There is no fire-place, nor visible guardrobe, and no well. The spur is solid.

The exterior is very peculiar. The lower two-thirds batters considerably all round, so as to add strength to the base, and cause a missile dropped from above to be projected outwards upon an assailant. About half-way up this slope there commences from corbels a series of buttresses, which expand laterally as they rise, but have vertical faces. They are, in fact, machicolations, but commencing low down; and, like ordinary machicolations, are connected by a series of arches, carrying the parapet, behind which was a passage for projectiles, as, for example, at Avignon. These exaggerated machicolations give a considerable increase of space to the top of the keep, but they are confined to its inner two-thirds, the outer side being sufficiently secure without them. As the upper part of the keep has been removed, the arches are gone, and only the buttresses remain. One of these defences overhung the entrance.

From a curious representation of the castle in stone in the church of Great Andelys, there is evidence that the keep was surmounted by a second and smaller tower within the rampart wall, and this again by another within that, rising like the tubes of a telescope.

A narrow flight of steps, commencing at the ward level, and carried up the outside of the keep, ascended, with two turns, to the entrance. Part of this narrow and dangerous staircase remains. There are also traces of a lean-to building on the east side of the keep, probably an addition.

The material of the keep is flint rubble, grouted in a copious bath of mortar, and faced inside and out with ashlar. The stones are about 1 ft. 6 in. long by 6 in. high, and are a hard and durable variety of chalk, with occasional flints. The material is probably local. The workmanship, though plain and without ornament, is good. The joints are moderately open, enough to admit an ordinary lead-pencil.

The inner ward is something of the shape of the human ear, the keep standing in the west or hollow side, and the lobe being to the north or north-east. This ward measures about 200 ft.

north and south by 100 ft. east and west. Its *enceinte* wall is one of the curiosities of the castle. It is in girth about 500 ft. On this the keep, a round tower, and an intermediate building, occupy about one-third on the north-west quarter, and the remaining two-thirds includes some plain wall, a gateway, and seventeen segmental buttresses of 9 ft. in the chord, placed upon the curtain 3 ft. apart. The wall, about 8 ft. thick, is plain within. By means of this arrangement great strength was given to the wall, and a series of flanking defences provided on the only face on which the ground admitted of any attack being directed. This part of the wall was probably about 30 ft. high, and stood upon a vertical scarp of about 20 ft. more. The battlements are gone, so that it does not appear how the wall was crested. A wall similarly buttressed, and of rather earlier date, existed at the Castle of Cherbourg, and there is something a little like it at Caerphilly.

The keep has already been described. It stands in the line of this *enceinte*, on the west side, which it protects. Annexed to the keep, on the north side, and also a part of the *enceinte*, is a rectangular building, probably the lodging of the castellan. It is about 30 ft. wide, and 40 ft. long, having a basement excavated in the chalk rock. It is of two floors, with fireplaces and segmental arches, and has an appendage on the north, perhaps for offices. It has windows in the curtain looking over the cliff towards the river. Stairs from hence descend to the postern, and the keep stair lies between this building and the keep.

At the northern point outside of, but engaged in, the wall, is the foundation of a round tower, now included in a square bastion, belonging rather to the outer ward than to this.

The postern is common to this and the outer ward, or rather at this point the two run into one, and the postern pierces the common wall. It is a narrow door having a flat top supported by two brackets, and above a round-head arch with closed tympanum. It opens in a re-entering angle of the wall, covered by the bastion, and upon the scarp, so that it must have been reached by a shifting bridge or ladder, the arrangements for working which seem indicated by some recesses for bars just within the portal. There is no portcullis; the defence was a barred door. The sill of this postern is about 1 ft. below the base of the keep. It is reached by steps cut in the chalk rock, but little worn.

The great gateway of this ward opens in the curtain to the east, and had a gate-house almost entirely within the wall. This gate is considerably below the level of the ward. A steep descent leads to it, and the portal vault has three hanging ribs or arches, with a portcullis inside them, with a square groove. The inner half of the portal is gone; probably there was a second vault and portcullis, and an open space between. The face of the porter's lodge is gone, but the lodge is seen to have had a plain segmental vault. Outside the gate is a curious square groove as for a portcullis, but it is stopped, and does not descend below the springing level of the gate arch.

This gate opens upon the ditch. The base of the scarp-pier of the bridge remains. The counterscarp has tumbled in. There was probably a central pier in the ditch. The new bridge was not original. The approach to this gate left by Cœur-de-Lion was a causeway, formed by leaving the rock uncut. It was over this causeway that the inner ward was taken.

Just within this gate was a well 270 ft. deep, now blocked up.

Outside the *enceinte* is the ditch, about 20 ft. deep and 30 ft. wide at the gate, and along the south front, with vertical sides, but running out to nothing on the steep ground as its ends pass northwards.

This ditch is, in fact, in the *outer ward*, which envelops the inner ward. This ward is oblong, about 325 ft. north and south, and 200 ft. east and west. Its northern half is of an irregular oval form, following the rock, and terminating in two large rectangular conjoined bastions upon the precipitous north end. The southern half is nearly rectangular; having a straight south face 125 ft. long, flanked by two drum towers. From these pass off the lateral curtains, forming the east and west front, and now ending in two other drum towers, of which that to the east, nearly opposite the inner-ward gateway, is gone. The curtain from this tower northwards is also gone. On the opposite or west side it is a mere parapet, cresting the precipice and following its

PLAN OF CHÂTEAU GAILLARD.



A. Inner Ward and Keep.
d. Postern.

B. Middle Ward.
e. Cellars.

D. Chapel.
C. Outer Ward or Ravelin.

outlines. From the manner in which the inner ward is placed in this ward it occupies nearly all its northern end, but leaves to the south a platform, outside the ditch, of about 140 ft. by 100 ft. Here is a rectangular foundation, about 40 ft. broad by 60 ft. long, and divided lengthways by a wall. Its length is north and south, but here is said to have been the chapel, probably built across one end. It was the work of King John, placed upon a substructure of cellars, and in close contiguity to the castle garderobe in the west wall. "Juxta fornicus, quod quidem religioni contrarium videbatur," say the chronicler. The end walls and the east side are faced with ashlar, but there is nothing like a chapel. Here, however, it appears to have been, and its roof was visible above the wall. These foundations are interesting, since it was here, through a window in the contiguous wall, that the ward was entered and surprised during the great siege.

No regular gateway remains in this ward. There is an opening in the south curtain which led to the great outwork, but which could scarcely have been the regular entrance. Neither could this have been on the west or north fronts. Probably, therefore, it was to the north-east, where the wall is now wanting. It is said not to have been opposite the inner gateway. At best the approach must have been little suited to wheel carriages. There was a well in the east quarter of this ward.

Mention has to be made of some curious chambers cut in the chalk of the escarpment of the ditch, from which at this time they are entered. There are three or four of these, about 80 ft. in length and 7 ft. high. They are carved with a sort of rough regularity, with pilasters left against the wall, and bands representing segmental arches. One large octagonal pier has a cap and base, and the latter has the water-bearing hollow of the Early English style, and is evidently original. It is probable, from what is said of these places in the account of the surprise of this ward, that they had a door towards the ditch, but they seem to have been also entered by a round hole, 4 ft. across, in the roof, as was the case with the dungeons at Concy.

The outer ward has its proper ditch, cut with vertical sides across the ridge in front of the south wall, between it and the rear of the outwork. This ditch is about 30 ft. wide and

20 ft. deep, but runs out to nothing when it reaches the steep ground.

The outwork, ravelin, or outer ward, is an antemural work, intended to cover the only side upon which the castle was open to an attack from level, or rather rising, ground, and to occupy what would otherwise have been a very dangerous platform.

It is in figure an isosceles triangle, having a base of 125 ft., and sides of 175 ft. Each of the three angles is capped by a round tower of 35 ft. diameter, having walls 11 ft. thick, and which seem to have been at least 40 ft. high. Besides these, in the side walls, 60 ft. in rear of the front tower, are two subordinate towers, also round, of 25 ft. diameter; and again, a few feet from these, the curtain is slightly bent, so as to present an obtuse salient to the field. The work, therefore, though in general plan a triangle, has really five angles and as many towers. The front tower has a well-stair at its junction with its western curtain. The curtain is much broken down, but must have been at least 30 ft. high, and, near the front, about 12 ft. thick, and elsewhere 8 ft.

The rear or gorge wall is not exactly a curtain to the flanking towers. It is placed a little outside of them, on the edge of the ditch; and between it and the east tower was the gateway, the special and independent entrance of the outwork. The north side is gone, but the other side shews the springing of the portal arches and a square portcullis groove. In this gorge wall, not far from the gate, is a large arch, corresponding to that already mentioned in the outwork wall. This was, no doubt, a way of communication between the castle and the earth-worth. This ditch was crossed by a wall at the east end, which connected the two works and protected the bridge. The west end is filled with rain. There are now no traces of building in the outwork.

The towers of the outwork are of great strength, and have been faced with ashlar. The front tower especially is strong, and does not appear ever to have been mined or breached. Also the rock beneath it is undisturbed. Possibly the breach spoken of at the siege was in the adjacent curtain on the east.

In the rear of this work is the ditch already described, and along its front and flanks is another ditch, proper to the outwork, and the most formidable of all the defences. It is above

30 ft. wide, and at the advanced point, where the ground rises, above 40 ft. deep. The scarp and counterscarp are vertical.

Besides these regular works are others of a less regular, but very formidable character, on the west side. This face of the rock towards the Seine, steep naturally, has been scarped and defended by art. Half way down the slope is a round tower, connected, it is said, with the work above, by a gallery cut in the chalk. From the tower a wall descended to the river, so that the approaches on this side and the road between the hill and the river were effectually commanded. This wall seems to have terminated on the river bank, in a pier of which traces remain, and which supported one end of a strong dam or weir of piles, which extended across the river, and was part of the original work of Coeur-de-Lion. Several other works were stepped into the rocky slope, and especially covered the west side.

The weir crossed above the island, called formerly D'Andelys, upon which was the octagonal fort, erected also by Richard, and of which traces remain. The bridges from this island, either way, to the banks, were of timber, and have left no trace behind.

Finally are to be mentioned the fortifications of the lesser Andelys, now destroyed, and the lake, fed by the waters of the Gambon, and which washed the walls of Great Andelys, and completely enveloped the lower town. These additional defences are now destroyed, and the lake is drained and filled up, but indications remain sufficient to verify the detailed description of Guillaume le Breton, and to justify M. Deville in his description, and M. le Duc, in his restorations, advanced under the excellent articles "Château" and "Donjon" in his Dictionary.*

DESIGNS FOR THE PROPOSED LAW COURTS.

WE publish in our present number a bird's-eye view of Mr. Street's design, to which, in conjunction with the plan submitted by Mr. Barry, the Judges of Designs have pointed particular attention. A key plan of Mr. Street's proposed building, and some descriptive particulars, will be found in a previous number.†

* To be continued. † See p. 108 and p. 113, &c.



DESIGN FOR THE PROPOSED LAW COURTS.—BY MR. G. E. STREET, A.R.A.

NEW ACT ON EQUITABLE COUNCILS.

The Act to establish equitable councils of conciliation to adjust differences between masters and workmen has just been printed. After reciting the 5th George IV., c. 96, and the other Acts to amend the same, it declares that in order to better facilitate the settlement of disputes between masters and workmen it is expedient, without repealing the several Acts, that masters and workmen should be enabled, when licensed by her Majesty, to form equitable councils of conciliation or arbitration, and that the powers of the Acts for enforcing awards should be extended to such equitable councils of conciliation. The mode of procedure is for a number of masters and workmen in a locality to call a meeting, and agree to form a council of conciliation and arbitration, and to petition her Majesty or the Secretary of State to grant a licence, which may be done after notice in the newspapers. A council is not to consist of less than two or more than ten masters and workmen and a chairman, and the petitioners for a licence are to proceed to the appointment of a council from among themselves within thirty days after such grant of licence, and the council is to remain in office until the appointment of a new council in its stead. The council is to have power to determine questions submitted to it, and to enforce its awards, as mentioned in the first-recited Act, by an application to a magistrate, by distress, sale, or imprisonment. No council under the Act is to establish a rate of wages or price of labour or workmanship at which the workman shall in future be paid. A committee of conciliation is to be appointed by a council. "No council, solicitors, or attorneys to be allowed to attend on any hearing before the council or committee of conciliation unless consented to by both parties." Household and part-occupiers may demand to be registered and to have a vote on the council, and may be elected thereto. A registry is to be kept, and the masters and workmen are to elect the council. The forms to be used in carrying out the Act, and to enforce the awards of the council on the questions "submitted to them by both parties," appear in the act.

THE DUKE OF NORTHUMBERLAND.

This venerable nobleman, whose remains will this week be interred with much solemnity and ceremony in Westminster Abbey, has enjoyed his great possessions for so short a time, that it is not surprising that we have not a large number of architectural works to chronicle as marks of his day. Nevertheless we must record that building works have not been altogether at a standstill since the death of one of the greatest builders of his race, Duke Algernon. At the village of Leebury, which lies on the road between his ancestral seat, Alnwick, and the sea, there are now building various sets of cottages, which great consideration has been given, not only to external lightness and interior comfort, but to general sanitary requisites. On entering the village from the west, the first of the series presents itself. This is a very striking cottage, nearly completed, having a central gable and two one-storied wings. In the apex of the gable is another story, affording to the two cottages just that much extra accommodation that in so many cases makes all the difference between decency and the reverse. In these houselets the window difficulty is very successfully managed, for without having recourse to the diamond-paned lattice, a very picturesque effect is gained. The secret of this appears to consist entirely in the proportions of the window openings, and the mullions that divide each of them into four compartments. These windows are amply large enough to make each room cheerily light, without having that bare factory-like appearance that large openings in small cottages naturally produce. The sanitary arrangements are upon an equally satisfactory basis. In the Northumbrian cottages the labour of the women entrusted with the charge of feeding the ga has alone been taken into consideration, and the stoves are placed as close to the back door as they can be erected, and more frequently than built against the back wall as lean-tos. But these instances the pigstyes, as well as the necessary conveniences for the inmates, have been placed some 30 ft. in the rear, leaving a small garden space between them and the cottages. All. Seeing how faithfully models are copied in the country for years, we may look upon this

as a progressive innovation. In the same village there are sets of single and double cottages now finishing that will, doubtless, give a tone to all future cottage building in the locality, whether on the dual estate or otherwise. Some farm-houses, too, have been rebuilt. But his grace's hospitality will be most associated with the adifice his predecessor embellished for the entertainment of thousands of his neighbours on the attainment of his grandson's majority. As Earl of Beverley his grace was a prominent figure in the "war time" at the commencement of the century. The remains of the late duke lay in state in the sumptuous apartments in Alnwick Castle on Monday and Tuesday. The gorgeous ceilings, the lustrous whiteness of the sculptured chimney-pieces, the glitter of the carved and gilded furniture, the superb paintings, of the chambers first slowly traversed with hushed tread, formed, as it were, a vestibule of dual splendour that fitly conducted the stream of visitors into the darkened room, hung with black cloth, in which the remains lay. The Percy volunteers formed an imposing and suitable guard of honour.

INDUSTRIAL ART IN FRANCE AND ENGLAND: PARIS EXHIBITION.

Schools of Art, in the sense of schools for teaching art, are but scantily represented in the Paris Universal Exhibition. This is hardly to be wondered at, nor perhaps regretted. The exhibition of the best works of the best School of Art is interesting to and understood by few except those engaged in art teaching or art learning. To the public the display of drawings from the antique, studies from the life, models in clay or plaster, and compositions for colour, are mystifying, if not repulsive. Placed, as they must be in a "Great Exhibition," in close proximity to gorgeous paintings and sculpture, and even more gorgeous specimens of manufacture in precious materials, they become reduced to complete insignificance.

There are, however, some collections of works exhibited by Art Schools, the most remarkable of which is that from the "Künste Schule" of Nuremberg. It comprises a number of full-sized studies from the antique, studies from the life, and a range of studies of heads from living models—these last especially full of character and individuality, transparent in tone, masterly in execution. A fair collection of models and a few designs for manufactures complete the display.

The École Impériale de Dessin exhibits a selection of students' works, and a screen is creditably filled by a collection of drawings, paintings, and models from the Lambeth School of Art. The Municipal Schools of Design of Paris are illustrated by rather meagre displays on the walls, and by folios filled with the ordinary school studies.

The Science and Art Department attempts no exhibition of the works of the English Schools of Art, confining itself to the exemplification of the means of diffusing a knowledge of art provided through its agency.

Incidental to this object, a series of drawings and models illustrating the course of instruction adopted by the Department, from the earliest outline exercise to the section of "Applied Design," is exhibited; but from the way they are framed and hung they are difficult to examine.

The examples of the reproduction of works of art, executed at the cost or through the inspiration of the Department, are beyond praise. They range from such important works as the Pulpit of the Baptistery at Pisa, of which a complete cast is exhibited, and the Bronze Gates of the Duomo at Pisa, reproduced in electro-deposit, down to minute carvings imitated in stoneware, and include coloured photographs of choice examples of applied art from every source.

An estimate of the state of instruction in industrial art in the different states contributing to the Exhibition must be chiefly based upon the results of such teaching as shown in manufactured goods. But this is surrounded with difficulties. In many articles the value or beauty of the material conceals poverty of art-work, while the vast area that industrial art embraces ranges from works in precious materials which are virtually works of high art in the strictest sense, to the plainest woven or printed fabric decorated with a few stripes of colour. The relative position of England and other

countries in regard to the application of art to manufactures remains very much as in 1862. Indeed, some few of the actual specimens of art-manufacture exhibited in the Cromwell-road may this year be recognized in the Champ de Mars.

No small portion of the success of the English "exhibits" has been ascribed to the employment of French artists by some of the leading manufacturers in this country in the preparation of high-class specimens of manufacture. So far from this being blameable, the English manufacturers who employ French talent are largely promoting the progress and improvement of applied art, and it is no proof of the failure of the system of art-education adopted by our Government that the demand for industrial art of the highest order is in part supplied from abroad. Our insular position and the comparative neglect of art-education in any shape until a comparatively recent period, render it surprising that we hold as high a position in respect to industrial art as we do.

In France, schools of art have long existed, both in the capital and in the provinces. The foundation of some of them date back as far as the close of the seventeenth century. Most of these institutions have originated and thriven quite apart from Government aid, and their success is due, perhaps, in a great measure to this independence, the necessities of the more important local manufactures having developed and sustained them. The course of instruction in these schools has been based upon no uniform system, the aim of the authorities being to adapt the teaching as closely as possible to the requirements of the locality.

The greater distances from the capital and the difficulties of communication have doubtless had their influence in further isolating from each other the French provincial art-schools, and it is just possible the more prominent success of one or two of our more remote schools of art, as those of Sheffield and Cork, is due in part to their distance from the capital.

What in France was done independently and at different times, in England was attempted to be done at once. At first wholly supported by Government, and managed in accordance with rules approved by it, and taught by teachers more or less trained to the views of the central authorities, it is not surprising that for a long time the success of our schools of art was very imperfect, and that even now their influence on industrial art is sometimes called in question.

A large portion of the work of Schools of Art must always consist in the production of draughtsmen and copyists, for whose services there is comparatively a large demand; and it is hardly generally understood how few original designers are required to satisfy the wants of manufacturing industry. Only a few important firms require more than one chief artist, although he may require a strong staff of assistant draughtsmen or modellers under his control. Many manufacturers prefer to purchase designs from various artists. With some it is an object to establish an individuality of style, which can only be done by retaining exclusively the services of an artist of high standing, while others seek variety.

There is probably no want of industrial artists to supply the wants of the manufacturers of the country, the great problem to be solved being the raising of the standard of their artistic attainments. It is of no use educating a number of designers if it is impossible to find employment for them; and the aim of the State should be rather to increase the opportunities of study and improvement in the rare cases of genius which crop up from time to time in our Schools of Art, than to train a comparatively large number to a low level of mediocrity.

The training of certificated art-teachers at South Kensington having in a great measure ceased, in consequence of the falling off in the demand for them, greater attention is now paid to the training of industrial artists.

At present the more successful pupils of country Schools of Art are invited to compete for "national scholarships" (Queen's scholarships" would be a better term). These at most may be held for two years, and their maximum money value is 100l. per annum. There can be no doubt that a young man of talent can learn a great many things in the schools and museums at South Kensington; but the proposed training of these scholars does not go nearly far enough, and the scholarships are too easily obtainable. They should be open to all comers, and the period of study should be extended, say, to five

years. A certain small number of travelling scholarships should be established for competition among those who seek to become designers of the highest class. A year or two spent in study abroad, and notably in Paris as the great centre of industrial arts, arrangements being made with the French Government that the scholars should attend the State schools, would wonderfully enlarge the knowledge and ripen the talent of a promising young man.

It is not that the Museum at South Kensington is deficient in examples or reproductions of examples of applied art in many, if not in all, styles; but in Paris one lives and moves in a medium so impregnated with artistic elements of all kinds that a new state of existence is entered upon. The easy access to museums and palaces, to say nothing of the variety of details of architectural ornament of all periods and styles, some bad, but mostly good, the endless streets of shops containing goods displaying art-workmanship in endless variety, all tend to keep alive the impulses of genius. It may be objected that this course of training, if successful, would produce a race of industrial artists as essentially French as Frenchmen themselves. It might, and if it did, we should still be gainers; but in the analogous cases of English artists and architects, who have studied abroad, it does not appear that they have lost to any disastrous extent the nationality of their art.

If, however, the State should undertake to educate industrial artists to the extent here proposed, it would be necessary to devise some means of securing their matured services to the country. We have no State manufactories to absorb them, and private manufacturers could not be compelled to employ them.

The experiment, however, is surely worth trying; and a beginning made on a limited scale, and persevered in in spite of possible first failures, is not beyond the means of our authorities.

DAVID W. RAINBACH.

NOTES FROM IRELAND.

Much activity is still apparent in the "Green Isle" on public and other works, despite the supposed depressing influence of reputed Fenianism. In every province there is a little doing, and from indications it needs no prophecy to say there will be much more. In the west of Ireland, where much desolation existed for the last few months, the Government has lately set some works in operation at Spiladal and Clifden in the Irish highlands. These will help in some manner to give employment to the poor in that very poor district.

Preparations are now making to take up and finish the navigation works of Lough Mask and the River Robe in the County Mayo. The town of Balinrobe would be much benefited if this were done. It is nearly a quarter of a century since these navigation works were first projected. They were subsequently carried on, but came to a standstill a dozen years since. Of course, if the Government don't think it advisable to apportion an adequate grant to carry out these works in the west of Ireland, they will remain in nearly precisely the same state as they are. Between fifty and sixty thousand pounds were expended upon them previous to their discontinuance. In the southern counties, Harbour Board and Town Council are busily engaged in projecting improvements and devising plans for raising the all-potent legal tender. The Royal dockworks, at Haulboline, alluded to a couple of months since in the *Builder*, are progressing favourably. A good deal of dressed stone is ready for the boundary walls and causeway between Spike Island and Haulboline. The limestone quarry discovered at Haulboline has turned out a valuable affair, and leads to immense saving, considering that stones had on former occasions to be carted several miles. Free and convict labour, as we on a former occasion remarked, is extensively engaged on the dockworks. Of the hands employed, there are nearly 300 convicts and somewhat under one hundred free labourers. We believe we are correct in saying that among these hands are included some of the Fenian prisoners lately convicted. Messrs. Dowson & Co., London, are the contractors for supplying 1,500 tons of pine timber for the Baulboline dock works.

In Waterford the city magnates are busy agitating for a postal subsidy from Government for the Milford route. It is argued that the

route between Waterford and Milford Haven would be little inferior and less expensive than the Holyhead one. It is calculated that passengers leaving Waterford at six in the evening would reach London early in the morning. It may not be generally remembered that the Government some years ago established a daily service between these two ports, and spent a large sum of money in the construction of a dock at Dunmore for that object. Many years ago the same thing was done at Howth, north of Dublin; but the embarkation of the Fourth George at Old Dunleary robbed Howth of the honour. Dunleary was dubbed Kingstown in consequence, and became the packet station *à la* Holyhead. If the mails can be sent quicker by this route from Ireland to London, by running the trains in conjunction, Waterford and Milford may get a chance.

A water scheme is also afloat. The motion for carrying it was passed at a town council meeting. The cost is put down at the moderate sum of 8,000*l.*, but it is not at all unlikely it will swell a little more. There is one commendable feature about it which will recommend it to the citizens and the poor. No man is to be asked to contribute the smallest amount towards carrying it out: so we are told; but we are a little suspicious when municipal bodies assert that they will carry public works to completion "on their own resources." The people require water, and a plentiful supply; and if they do not pay for this, perhaps the supply they are in the habit of having will by some change or other become gradually small and beautifully less. In a sanitary sense, however, we want to see a plentiful supply of water. Basins, reservoirs, tanks, wells, pumps, and fountains cannot be too many.

In Waterford, the spinning factory of Messrs. Denny gives employment to about 300 hands; and the firm are at present adding to their machinery. The establishment is a boon to the poor of Waterford. A flax factory was lately established at Cork, which has also proved very successful. Mr. Maguire, the Irish member, exerted and interested himself greatly in setting this in operation.

In Wexford, harbour improvement works are in operation; but the commissioners are anxious to obtain additional aid from the Admiralty to carry them out. From the reply of the Admiralty it seems the Harbour Commissioners will have to raise the wherewithal to continue operations. Having identified themselves with the Dogger Bank works they are, according to a provisional order of 1864, empowered to raise funds. They must do this, for the sums at present at the disposal of the Admiralty Commissioners will be soon run out. The bar at Wexford is at present in a bad condition.

In New Ross, in the same county, the new bridge will be forthwith commenced. The Wexford Grand Jury Bill has passed the Lords, so all obstacles to further delay will be removed. The construction of main sewers in this town was considered a useless expenditure by one wise man in the council, but the chairman of the meeting, like a sensible man, thought otherwise; so the motion was put and carried.

In the north of Ireland, and particularly in commercial and manufacturing Belfast, there is seldom a lull. At Woodburn very large waterworks are in course of construction for supplying the town of Belfast with an increased supply of water. The south Woodburn reservoirs will embrace 85 English acres, and will have an average depth of 25 ft. when filled. About May next, or early in the summer, will complete the southern portion of these. Some engineering difficulties having been experienced, the reservoir on the upper side will be somewhat longer delayed.

In Belfast, as well as in Waterford, a mail service is warmly discussed. The Postmaster-General inclines to the route *via* Dublin; but the Belfast folk are reluctant to give up the bright idea of a short sea passage.

In the town of Cavan, the people are crying out for the establishment of a pork market, and other improvements and removals. A public grievance exists in the town called "The Dummy's Wall." This is an obstruction caused by the existence of some walls. These walls are built across the river Erne; so when the water rises, the lands of the poor people are completely flooded. The Government has been called on to interfere, and a report is about being drawn up. The retention of the walls is certainly an injury to the surrounding lands; but on their removal, the owners of the mills will have to be

heavily compensated. A local paper in the town asserts that hundreds of acres are flooded by the obstruction.

The foundation of a new Roman Catholic church has been laid at Headford, in Galway.

At the inspection of the scene of the great railway accident at Brayhead, Dublin, it was found that a portion of a new rail was fitted in at the curve, about half an inch narrower than the old plate: this of course caused an obstruction to the flange of the wheel, which resulted in lifting it off the rail. The incline was on the land side, or the engine, carriages, and all would have been at once precipitated into the sea. Accidents are somewhat rare on Irish lines. We hope there may be a rigid inquiry into this occurrence, as a great many persons are seriously injured and disabled.

At the *conversazione* held in Dublin, to which all the members of the British Medical Association were invited, among the rare and curious MSS. examined by the company were a collection of MSS. of the twelfth century, a portion of the Four Gospels in the vernacular, the Book of Ballymote, the Book of Leacan, the Transcript of the Book of Ballymote, the Transcript of the Wars of 1641, the original MSS. of the Annals of the Four Masters, and the Book of Conquests. Numerous autographs were also viewed, among which were Archbishop Maher, William III., James II., Robert Boyle, Swift, Tyrconnell, Bishop Percy Berkeley, Brinsley Sheridan, and the manuscript Journal of Dumont de Bontaparte, so often referred to by the late historian Macaulay, relating to the war of 1689-90. Many other scarce and curious tracts on astronomy and medicine, in Irish, were also examined, which evidenced, on the part of the native writers, considerable acquaintance with Greek, Hebrew, Latin, and Arabic, copious quotations in these languages having been made by them.

The notice of the Postmaster-General, announcing that he will be ready to receive tenders for her Majesty's mails from some ports in the United Kingdom for New York, has set the citizens of Limerick thinking. Limerick, in consequence, puts in her superior claims as the site of a transatlantic station. The former Galway enterprise proved such an unlucky affair, we fear Limerick will not be successful in obtaining the coveted prize.

In conclusion we may add that the crops throughout the country promise well; and, as this question bears upon the social and sanitary aspect of a people, it will not be out of place to mention it here. Capital is wanted in Ireland; but money, without enterprise or experience on the part of projectors and speculators, will be of little use, as late events have clearly shown.

ENGLISH SAFES v. AMERICAN SAFES.

The contest in the Paris Exhibition, of which we have before spoken, has now taken place. The purpose was to test the impregnability of the fire-proof and burglar-proof safes of Mr. Chatwood, of London, and Mr. Herring, of New York. The contest arose out of the challenge of Mr. Herring. Each side staked a sum of 600*l.* The Germans who were employed to operate on Mr. Chatwood's safe brought a great number and variety of tools: the Lancashire men who operated on Mr. Herring's safe had comparatively few. It was proposed that each side should be allowed only the same weight of tools. A piece of wood with a seal upon it was put by Mr. Chatwood into his safe, and the task for the Germans was to get it out. The Germans first of all tried the lock, but failed to do anything with it. They tried to drill through the door, but against the intersected steel their powerful instrument was useless. They tried to wedge open the door, but there again they completely failed. They spent an hour upon the door, but could not make any impression upon it. Failing in the front attack, they next approached the safe on its flank. After three hours and fifty-five minutes of very hard work they laid hands upon the sealed block of wood, and exhibited it in triumph, to the great delight of the Americans. Had Mr. Chatwood put the block of wood into one of the drawers which opens outwards against the door which had resisted all efforts, it would have cost more time to get it out. In that case the Chatwood safe would not have been the first penetrated. In the mean time the Lancashire men were working on Mr. Herring's safe. The

Herring safe is about double the size of the other, being built on the principle of safe within safe. The outer door was burst open in twenty-nine minutes. The burglar-proof safe, which is a strong box with an iron door fixed on the bottom of the larger safe, is from its position difficult to get at. The Lancashire men were deficient in tools, and as their work proceeded they had to get a sledge hammer to put themselves on something like an equality with their German rivals. What they wanted most of all, however, was wedges. They worked on helplessly with such tools as they had, much depending on the sledge hammer. The result is that it took twenty minutes more time to break into Mr. Herring's safe than it took to break into Mr. Chatwood's. The committee have not yet given their decision, but there are no two opinions, among the English at least, as to the superiority of the Chatwood safe, as the Herring safe was taken in front and entered by the door, whereas the Chatwood safe presented an impregnable front, and was entered on the flank, which is usually inaccessible to burglars.

THEATRE ROYAL, NEWCASTLE.

This theatre has been re-opened, after entire renovation of the interior, under the direction of Mr. Phipps, architect. The Greek style has been adopted. The principal ceiling is of a light turquoise, enriched with ornamental borders. Bold honeysuckle and other ornaments are painted on the box facings, in colours turquoise, blue, red, and gold, being enriched further with stencilled borders, mouldings of gilt, crimson resters for the arms, and vandyked valances of rich amber damask. All parts below the level of the dress circle are coloured with a full Indian red. The lighting of the interior of the theatre has undergone an alteration. The chief improvement is the removal of the chandeliers from the boxes, and the substitution of a very handsome and brilliant chandelier, with sunlight combined, which is pendant from the centre of the ceiling. This is from the manufactory of Messrs. Jones & Co., Covent-garden. With the exception of the lighting, the whole of the new work has been done by Messrs. Green & King, of London.

The painting-room has a frame 42 ft. by 32 ft., which travels up and down at the painter's pleasure. There are also two painting bridges 26 ft. long, which move up and down, and carry the artist to the height of 30 ft., if required. The depth of the stage from the foot-lights to the back is 58 ft.; the width from wall to wall 62 ft., which does not include the large scene dock, which is 40 ft. by 30 ft. The height from stage to gridiron is 60 ft.; the depth from the stage to the magazine floor is 10 ft.; from the magazine floor to the cellar is 16 ft., which makes 26 ft. from the stage to the cellar. Over the scene dock is the carpenter's shop, and under it is the working property-shed. At the back of the scene dock is a large furniture-room for the storage of furniture. Mr. Day, of the Prince of Wales Theatre, Liverpool, erected the stage.

ROMAN CATHOLIC CATHEDRAL, SLIGO.

PREPARATIONS are being made for commencing the erection of a large and important structure in the town of Sligo, as the cathedral of the ancient Roman Catholic see of Elphin.

The site is a commanding one, and when erected the cathedral will be the prominent feature of the town. The building is by special desire to be of Lombard or Norman character, and will consist of nave, aisles, transepts, semi-circular apse, with an aisle passing round it and apsidal chapel beyond, and two chapels of the same form in the transepts. A massive and lofty tower and spire will rise at the western end of the nave, and lateral porches and sacristy buildings, with hall for meetings, sacristan's residence, and connecting cloister, complete the arrangements.

The dimensions are as follow:—Total external length, 219 ft. 6 in.; ditto internal, 211 ft.; total external width across transepts, 121 ft. 6 in.; ditto internal, 115 ft. 6 in.; width of nave and aisles, 66 ft.; height of nave under vault, 61 ft.; height of tower and spire, 176 ft.

The materials are to be, externally, the local blue limestone, and internally, the yellow sandstone of the country, with a partial use of the

limestone in columns and shafts, and polished Irish marbles about the apse and choir. The contracts have been let to Mr. Killgallon, of Sligo, for the mass of the work, and Mr. Clarence, of Ballysodare, for the cut stone work. The designs and working drawings have been provided by Mr. George Goldie, of London. The whole cost of the work will be about 20,000l.

MANCHESTER.

WE are glad to hear that the Sanitary Sub-committee have unanimously resolved to report in favour of the appointment of an Officer of Health for this city. His duties will necessarily be multifarious and important. The astonishing part of the business is that Manchester is still without an officer of that kind. It is to be hoped that the Council will at once adopt the recommendation and carry it out. The Committee suggest for the office, at a salary of 500l. per annum, Mr. John Leigh, a surgeon locally known for the interest he has manifested in sanitary inquiries and his chemical knowledge. As to this part of the report, however, we say nothing beyond the remark that the best obtainable man for the position should be looked for. The Sanitary Sub-committee appears to include some energetic and far-seeing members.

As to the Town Hall competition, the selection sub-committee met on Tuesday last, and after further careful consideration, with professional assistance, agreed upon a list of the competitors who are to be invited to a second competition under the terms of the advertisement, each receiving the sum of 300l., except the author of the one design eventually selected for execution, who will receive the usual professional remuneration. This list has been reported to the General Purposes Committee, and will go up to the Council next week for their decision. 137 sets of designs were sent in by 123 competitors.

THE DRAINAGE OF CANTERBURY.

SIR.—The unfairness of the Canterbury Local Board in the matter of their recent competition for the supply of stoneware-pipes demands the fullest publicity.

The advertisement published in the *Builder* of the 13th and 25th of July informed stoneware-pipe makers that tenders would be received by the Local Board up to the 30th of July. Well, Sir, myself and others tendered according to the conditions of contract and specifications proposed by the engineer.

At a meeting of the Local Board it was decided that none of these tenders should be received, and that an advertisement for further tenders should be issued. This appeared in the *Builder* of the 10th inst., informing us that tenders would be received up to the 25th inst. On the 13th the Board held a special meeting, and decided that one of the tenders first sent in should be accepted. Now, Sir, is this a fair and honourable way of treating us?—to put us to the trouble and expense of preparing fresh tenders, and then to accept one of the first tenders in the face of their advertisement for further ones.

A PIPE MAKER.

HOW TO USE TOWN SEWAGE.

SIR.—To comply with the Act of the Thames Conservators, it will be necessary to dispose of the sewage of Kingston and the adjacent places in some other way than running it into the River Thames. In March last I began to consider how it should be disposed of; and, to obviate the objections to the exhalations from surface irrigation, it occurred to me that the sewage might be run underground, in pipes with open joints, or preferably in half-round pipes, or tiles with serrated edges, covered with a flat tile; and that through the serrations the liquid sewage would flow to the roots of the crops right and left, the distance apart of these lines of pipes being varied according to the retentiveness or otherwise of the ground.

At that time I was not prepared to make any report on the disposal of the Kingston sewage, not having completed my investigation of the district; but about that same time the people of Leytonstone, in Essex, wanted to know how to dispose of their sewage, and the following is an extract from my report, dated April 24, 1867, to the committee appointed to carry out the provisions of the Sewage Utilization Act, 1865, and the Sanitary Act, 1866:—

"As to the disposal of the sewage, the success of surface irrigation of land is very considerable where suitable land can be obtained. It is possible that a sufficient breadth of land might be obtained, but it does not lie in that convenient form which renders surface irrigation a success in some places. Looking at the nature of the ground at command, I recommend a more simple and effectual plan. I recommend that the sewage be led to

the land coloured red on the accompanying plan, and there buried at a depth of, say, 18 in. below the surface by pipes, which I will call reverse drain-pipes, laid all over the land.

The depth of 18 in. of earth over them will prevent any exhalation from the sewage, and the sewage will become naturally desodorized and rendered innocuous before it is carried off by water-courses and drained away to sea by the natural streams.

The liquid sewage will be applied to the roots of the crops—and this is the gist of my plan—so that the roots of the crops take up the liquid sewage for their growth, and the insoluble matter remains in the ground.

This plan avoids all those expensive artificial means of dealing with the sewage, it utilizes it by the growing crops absorbing it; it avoids exposure of the sewage to the sun and the atmosphere; but allows the essence of the sewage to be drawn out of the ground by the sun acting on the vegetation, the growth of which will be greatly promoted and increased."

I was glad to see in the newspapers that the same or a similar plan has been proposed for Malvern, and I think it is a plan worth serious consideration for all places.

CHARLES SLAGE, Assoc. Inst. C. E.

MASTER BUILDERS AND THEIR WORKMEN.

AT the Marylebone Police-court, on Tuesday, Mr. Coyle, master builder, of Great Marylebone-street, appeared to answer a summons under the following circumstances. It appears that he engaged complainant, a carpenter, to do a certain job for him, but in two hours, being dissatisfied with the work, he there and then discharged him. He also offered him a shilling for his two hours' work, but complainant declined, avowing he must have 1s. 4d.,—being at the rate of 8d. per hour. Defendant refused, and complainant stayed in the shop for eight hours, and now sought to obtain his wages for all that time, inasmuch as he was "not" discharged until he was paid. Mr. Mansfield said, it was ridiculous to suppose that a man who chose to stay forthright on the premises of his master after being told to go about his business could demand payment for all those hours. The complainant said, that when a master told his workman to pack up his tools and go away, he must pay him for the work already done at the recognized rate of wages. Unless the man were paid there was no discharge. Mr. Mansfield would not allow the pay for the waiting hours, but ordered defendant to settle the matter by paying the 1s. 4d. The defendant then produced a workman, who said that complainant's work was so badly done that it had to be re-made. Mr. Mansfield thereupon altered his decision and dismissed the summons, with the remark, that if a workman failed to do his work the master was not liable to pay him anything.

BATHING.

I QUITE agree with "Natator," that at all our watering-places "enclosed bathing-places" or *feries* should be provided for the public. "There is no bathing, in the proper sense of the term," at any of our most frequented coast towns. I have just passed a fortnight at Brighton, and the bathing there is anything but satisfactory. The vast multitude who visit that beautiful town with the view of having a few dips into the sea find themselves restricted to the cold, comfortless bathing-machines after eight o'clock in the morning, let the tide be high or low. At low water a swimmer must wade a long way out before he can get his pleasant plunge, whereas if he could be allowed to bathe when the tide suited, at any hour of the day, he could enjoy his swim and the luxury he had taken the trouble to travel for; and, without interfering with the comfort of others, invigorate himself without the risk of that sudden chill which wading in shallow water creates. This applies also to the ladies. The bathing is worse than useless in low tides. Their machines are kept so much out of the water, that the ladies scarcely get a dip of the pure water, but are kept shivering ankle-deep in the dirty air. There is a vast expanse of beach at Brighton, and sufficiently distant from the promenade to prevent any indecency: surely a portion might be set aside for the public generally—whether for those who *can* or those who *cannot* afford to patronise the icy, miserable machines. A BATHER.

THE PARIS INTERNATIONAL EXHIBITION.

SIR.—It is a rare thing to hear the Paris Exhibition spoken of with praise—a very rare thing to hear it referred to with enthusiasm. I believe the general feeling in England to be, that it may be well enough, if one is led by circumstances to Paris, to turn in for a few hours at the Champ de Mars, but that the Exhibition is not worth taking any trouble to see; that Paris is ruinously expensive just now, and that little is to be gained by going there.

These, at any rate, were my own notions a week ago; but having been to Paris I have learned how grievously mistaken I was, and I am anxious to be allowed to urge upon all those of your readers who have the means and the opportunity to go, that if they allow the very few weeks during which the Exhibition still remains open to pass without visiting it, they will miss a valuable opportunity of study, and a great treat. The Exhibition is full of objects which cannot fail to interest those who form the main body of our readers.

The antiquary will find the illustrations of the "history of labour" and the wonderful fragments in the Egyptian Temple a most complete, most instructive, and most comprehensive archaeological collection. From the dawn of handicraft to our own day the arts of Western Europe (and partly of the East) are exhibited in precious collections of the pre-historic and almost all the historic periods.

* No reader of the *Builder* ought to have this impression.—Ed.

The lover of modern works of art will delight in the French galleries, rich in paintings by Gérôme, Meissonier, Rosa Bonheur, Xron, and many others. The Bavarian gallery, where Kaulbach and Piloti exhibit some of their grandest works; the Dutch gallery, where a whole host of skilled painters maintain the traditions of their school, while the works of Alaux Tadmans seem to win for it distinction in a new field; and, not least, the Belgian gallery, where the noble Pre-Raphaelite works of Leyshaup side by side with the charming trifles of Stevens, and the graceful and finished studies of Willems. Nor is the sculpture entirely absent, though it is scarce.

The student of modern art-work, and the artisan, will find the greatest imaginable perfection of workmanship, the most striking variety of design in the furniture and textile fabrics, the pottery and goldsmiths' work, the jewelry, and the dresses of European nations. In the unprecedentedly complete and rich exhibition of Indian, Chinese, Japanese, Turkish, Persian, and Egyptian art, he will find examples of faultless design and colouring crowded together in profusion.

This list could be extended indefinitely, for what may be called the practical portions of the Exhibition, displaying machinery, materials, structures, and contrivances, are as rich as those relating to arts and antiquities. All the things are easily approached, and well seen. The arrangement adopted is most satisfactory, and the only drawback is the fatigue caused by the want of a proper amount of fresh air in many parts of the building, by the discomfort of concrete floors, and by the fewness of seats. But the park and the central garden, and the excellent and abundant arrangements for refreshments, are a great counterbalance to this evil, and are all readily accessible from any point.

Lastly, I did not find prices much raised. I paid, in an excellent hotel, about half-a-crown a night more for my room than at ordinary times; but other charges remained just about the same that I have found them in Paris during the last year or two.

THE BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE first annual meeting of this meritorious Association was held, *pro forma*, on the 26th inst., Mr. William Henshaw presiding. It was adjourned to the 23rd of September, when it is to be hoped that all who are interested in its success will endeavour to attend. The Institute has now completed the first year of its existence. The purpose is to maintain and educate the orphan children of builders' clerks, and to relieve distressed clerks and their widows. Although founded just at the crisis of the recent monetary depression, its first year's operations have exceeded in success the anticipations of its friends. The balance-sheet shows donations and subscriptions amounting to the sum of 638*l.* 13*s.* 4*d.*, against which the necessary disbursements have been 161*l.* 1*s.* 11*d.* The meeting, though small, was enthusiastic.

CHURCH-BUILDING NEWS.

Wombwell.—The foundation-stone of a new cemetery has been laid at Wombwell for the township. The site chosen consists of six acres of land, which have been purchased for 1,200*l.* It is only proposed to lay down one-half of the land at present. The cemetery is situated at the Barnsley end of the village, and is removed from the houses. The architect is Mr. Thomas Dobb, of Rotherham. The contractors for the various kinds of work are as follows:—Mason's work, Mr. W. Scharfield; joiner's work, Mr. D. Hamerton; slater, Mr. John Jarvis. Some of the other work is not let. The total cost of the building, land, laying out the grounds, &c., is 1,785*l.*, or with the land, 2,906*l.*

Plaistow.—The new church of Holy Trinity, Plaistow, has been consecrated. The edifice is in the ornamental English style, has been built from designs by Mr. Charles Barry, of the firm of Banks & Barry, and the builder is Mr. Ebnor, of Hackney. The interior is plain, and the whole of the sittings, which consist of plain open benches with accommodation for 1,029, are free.

Wetherby.—The foundation-stone of a new church has been laid at Hunsingore. The old structure had become somewhat dilapidated, and to a certain extent unfit for use. Mr. Charles Kirk, of Sleaford, Lincolnshire, architect, was consulted on the matter, and the edifice is to be erected at the cost of the patron, Mr. Dent. The church will consist of a nave, aisle, and chancel, with apsidal termination, vestry, porch, and a tower and spire at the west end of the south aisle. The structure will be in the Geometrical Decorated style of architecture. The floor is to be paved with Minton tiles. It is in contemplation to put a peal of bells in the tower.

Twickenham.—The cemetery lately consecrated is eight acres in extent. The walls have been formed of different curves. The chapels are of a modified character of English Gothic. The buildings are constructed of Kentish rag with

Bath stone groins. The stone carving, both externally and internally, was executed by Mr. Dore, of Brentford. The stained glass in the east windows of the chapels, with the other glazing, was by the Savoy Glass Company. The whole of the works have been executed by Mr. Nye, of Ealing, at a cost of 3,000*l.*, from designs, and under the superintendence of the architect, Mr. Charles Jones, of the same place.

Ryle.—The Church Building Committee, we hear, says the *Hampshire Independent*, "have abandoned the idea of raising a church suitable to the standing of the town, and have dropped Mr. Gilbert Scott's plan, that was estimated to cost 15,000*l.*, and have advertised for a plan that, with fittings and enclosure, must not exceed 8,000*l.* The sale of the adowson of Newchurch has realised 3,750*l.*, and 3,000*l.* have been subscribed. With such a sum to start with, the church building committee only show their incapacity for the work, and their want of resource."

Aylesbury.—The first and second contracts for the restoration of St. Mary's Church, including the repairs of all the lower portions of the edifice, are now nearly completed. The churchwardens and the committee have received, or had promises sufficient, amounting to about 700*l.*, to warrant them in going on with the restoration of the tower and spire, and a contract is being entered into. The tower, like the other parts, will be faced with stone, the spire and clock tower will be leaded, and the battlements of the main and clock tower will assume a more architectural character, according to the plans of Mr. Scott. Some few hundreds of pounds will be required to complete the clearatories.

Hyde, Cheshire.—The foundation-stone of a new church, to be called St. Thomas's Church, has been laid by Lord de Tabley, the head of the Masonic fraternity in the Cheshire district, attended by a large number of the brethren of the province. The church will consist of nave, 71 ft. 3 in. long, and 42 ft. 9 in. wide, with chancel, organ chamber, and vestry; but this is only part of the scheme, which includes north and south transepts, and an extension of nave, one bay westward, with porches under the western gallery. The present western elevation will, therefore, be of a simpler character than the completed design. The roof will be of timber, stained and varnished. The pews will have low and broad seats, and sloped backs. There will be a bell gable of a simple character at the west end. The materials are the local rubble stone, with brick dressing at the angles of the building, and jambs of doors and windows, and in bands with ashlar, where required. The passages will be paved with Broseley tiles, in geometrical patterns. The church will accommodate in all 472 persons. The contract has been taken at 2,128*l.*, by Messrs. Robinson & Son, of Hyde. The architect is Mr. J. Medland Taylor, of Manchester.

Dorchester.—For the rebuilding of Holy Trinity Church so large a number of plans have been sent in that it was deemed advisable to remove them to the Town-hall, where the public were invited to inspect them. The estimated cost is about 6,000*l.*; but towards this amount scarcely 2,000*l.* have yet been promised, and this including a sum of 400*l.*, offered on condition that the work should have been commenced before the present time. A piece of ground is also offered conditionally upon the requisite funds being raised within two years.

Wombourne.—The church here has recently been restored and enlarged, and is now consecrated, by the Bishop of Rochester. The architect engaged in the work was Mr. G. E. Street, and his plans have been carried out by Messrs. G. & P. Higham, of this town, builders. The church now contains 560 sittings. The total cost of the restoration and improvements is estimated at 3,500*l.*, the greater part of which has already been raised by voluntary contributions. The reason for the ceremony of consecration was, that the present new chancel has been built partly on new ground.

Shaftesbury.—The new Church of St. James has been consecrated. The total cost has been 3,500*l.*, of which the Marquis of Westminster has given 2,000*l.*, and the site, and the Rev. H. Boucher 500*l.* The materials of the old church, so far as they were serviceable, have been used in the construction of the new one. The designs for the building were furnished by Mr. T. H. Wyatt, of London, the builder being Mr. Miles, of Shaftesbury. Though the general character of the church is Early English, that style has not been rigidly adhered to throughout the edifice. It has been built of greenstone, with

Bath stone dressings. There are two entrances, one under the tower at the west end, and the other by a porch on the north side. The front of the porch is a moulded arch, with carved capitals on a cluster of Purbeck marble shafts, with moulded bases. The tower at the west end is 65 ft. high, with four pinnacles, surmounted with iron crosses and copper vases. There is a battlemented parapet, with carved gurgoyles.

The entrance underneath the tower is by an arch, supported on Purbeck marble columns. In the interior of the aisles, the parapets of the old church have been retained. The church itself consists of a nave, north and south aisles, and chancel. The nave is separated from the aisles on either side by four arches, on clustered piers, with carved capitals. The roof throughout is open timbered. The fittings of the chancel are of oak, obtained from the old church, but all carved. The chancel is paved with Maw's encaustic tiles. The organ has been supplied from the manufactory of Messrs. Bevington & Sons, London, and is fixed at the east end of the north aisle. It is what the builders call the chancel organ, which they have made a speciality of their own, and which has obtained for them a silver medal at the Paris Exhibition. The nave is lighted by six clearstory quatrefoil windows; the south aisle with two two-light, and one three-light windows; the north aisle by three two-light, the north transept by a large three-light tracery window, and the south transept by two three-light tracery windows, decorated. At the west end of the north aisle there are two small memorial windows, one a two-light window with figures of Faith and Hope; the other also a two-light, with figures of St. Stephen and the Prophet Samuel. At the east side of the south transept there is a memorial window of stained glass. It is a three-light decorated window, bearing figures of St. Peter, St. James, and St. John the Evangelist. This was the chancel window of the old church. The chancel is lighted by a large five-light traceried window at the east end; in the north side there is a two-light window; and on the south side two two-lights, of coloured diaper glass, and three small windows, being the gift of the architect and builder. It is hoped that before long the eastern window will be filled with stained glass. In the tower at the west end there is a four-light traceried window. The three stained glass windows were all supplied by Messrs. Lavers & Barrard, of London. The seats throughout the church are open, and of stained deal. There will be accommodation for 440, the old church having only accommodation for 230. The building is heated with apparatus supplied by Messrs. Haden & Son, Trowbridge; and it will be lighted by eight decorated coronas, there being two polished brass brackets in the chancel, supplied by Messrs. Willis & Jones, of Frome. The old clock has been refixed in the tower. The churchyard has been extended.

PROVINCIAL NEWS.

Bacup.—The new Market-hall at this place has been opened with some ceremony. The internal dimensions of the Market-hall are 137 ft. by 71 ft. The erection is of stone. The central area is fitted with a uniform arrangement of stallages. There are three principal aisles or passages, and around the interior are twenty-three enclosed shops. In addition to this, there are under the basement of the building eight other shops which are used for the sale of fish, &c. The roof of the building is of iron and glass, in three bays, supported by twenty cast-iron columns, with ornamental girders. The height of the central roof from the floor of the Market-hall is 32 ft. The interior has been coloured, and there is ornamental stained glass in the roof. In connexion with the market, but having separate access, is a board-room, office for surveyor, and waiting-room, with lavatories, &c., &c. The total cost will be a little over 6,000*l.* The building has been erected by the Local Board from the designs and under the superintendence of Mr. Joseph Brierley, of Blackburn.

Doncaster.—The Grand Race Stand is being improved. Messrs. T. & C. Anelay, the contractors, are at work on it. The entrance to the Stand has been enlarged; the vestibule will be much wider; recesses are formed, and counters fixed in them for the sale of tickets. There are now two doorways, each of which is as wide as the old one, and if found desirable they

may be used separately for ingress and egress. The new building is in uniformity with the rear of the stand. A portico, approached by a flight of steps, will be erected and carried out with balustrades, &c., in detail, as the colonnade in front of the stand. The work is under the supervision of Mr. Anelay, the borough surveyor.

STAINED GLASS.

Llangollen Church.—The large eastern window of this church has been filled with stained glass by Messrs. Dono & Davies, of this town. The window has been erected at the cost of Lieut.-Colonel Tottenham, of Plas Berwyn, as a memorial to his mother. The window illustrates the Law and the Gospel. In the centre of the lower tier (representing the Law) is the figure of Moses, holding in his left hand the tables of the Law, and with his right pointing to them with a rod. In the four compartments on either side are the figures of the four major prophets, Isaiah, Jeremiah, Ezekiel, and Daniel. In the upper tier are the figures of our Saviour and the four Evangelists, our Saviour occupying the centre compartment, being raised above the side figures. In the tracery above them are their emblems; the angel, the lion, the bull, and the eagle, surrounded with ornament, in which are introduced the rose, jess, shamrock, and thistle. Above these, on the right side, is the figure of St. David, the patron saint of Wales, and near him are the arms of the see. On the left is the figure of St. Patrick, and above him the arms of the donor, who is of an Irish family. Over our Saviour are two angels holding scrolls. The two upper tops finish with a canopy formed by the lily.

Books Received.

"Railway Finance," by Joseph Mitchell, F.R.S.E. and C.E. Stanford, London. This pamphlet contains suggestions for the resuscitation and improvement of the railway companies who are at present in financial difficulties. It is in the form of a letter to Mr. Disraeli, as Chancellor of the Exchequer. The author says: "My idea is, that this is a most suitable opportunity for the interference of the Government in railway affairs, for an experiment to ascertain the value of a semi-governmental management of railways, and for an interposition of a limited Government guarantee, which would restore public confidence, and enable the companies to right themselves."

The Government has to advance nothing, but simply to interpose its guarantee. When it has restored the company's finances, it may hand over the line and works to the shareholders, and recede from its charge."

This last remark, which is made in connexion with one special case illustrative of the author's idea, cannot fail to excite a rather sad smile on the countenances of many guarantors who read it. How often have they been told in confident language that they will have to advance nothing? Nevertheless, something should at once be done to put the great highways of the country on a right footing for the public convenience.

"Local Government in Battersea." The substance of an address, by J. C. Buckmaster, churchwarden, at a meeting of ratepayers (Chapman, Battersea). The object of the author of this address is to promote the discussion of parochial questions with a view to a more just and efficient system of local government. Few vestrymen, he remarks, know anything about parish business, or care to know: nay, in Battersea it is considered "scarcely respectable to attend vestry meetings"; and sixteen out of thirty-eight have never attended a single meeting. Mr. Buckmaster's observations well deserve attention.

Miscellanea.

THE LATE M. PACCARD, ARCHITECT.—The death is announced of M. Paccard, architect of the Palaces of Fontainebleau and Rambouillet, at Aix-les-Bains, in his 54th year.

HEARING IN THE HOUSE OF LORDS.—Professor Tyndall, Dr. Percy, and Mr. Barry, the committee appointed to report on the best means for improving the acoustic qualities of the House of Lords, have recommended that they shall be permitted to postpone full consideration of the subject until the beginning of next session.

COMPETITION, HARROGATE.—The premium offered by the West-end Park Company for a plan for laying out their estate, has been awarded to Mr. H. Hirst, architect, Bristol.

FREE SUNDAY AT THE CRYSTAL PALACE.—About 10,000 of the artisans of London, with their wives and families, assembled at the Crystal Palace, on the 25th August, it being the free Sunday granted by the directors every year to the officers of the trade societies and other organisations of workmen. The tickets are necessarily limited in number, and are distributed through the agency of the National Sunday League. Short addresses were delivered by several gentlemen from the platform on the great orchestra. In the evening a selection of sacred music was performed on the great organ.

SCHOOLS AT THE CREUSOT IRONWORKS.—Monsieur Schneider, the President of the Corps Législatif, and the head of the great ironworks at Creusot, has presented to the British Government a complete set of the illustrations of the system of primary instruction carried on in the schools attached to his works. In these schools upwards of 4,000 children are educated, and the system appears to be far more comprehensive and complete than that in any similar school in England. It is at these works that a large number of the locomotives for the Great Eastern Railway are manufactured and imported into England.

A TOWN UNDER SEQUESTRATION.—The governing body of the Royal Leamington Spa, Warwickshire, are placed in a position of great difficulty in consequence of Mr. Thomas Heath, of Warwick, one of the plaintiffs in the recent protracted litigation in Chancery against the Leamington Local Board, having taken steps to enforce the sequestration issued by the court for the infraction of an injunction restraining the Board from discharging the filtered town sewage into the river Leam, so as to pollute that stream. The penalty which the sequestration is to exact is 5,000*l.* The local Board are left without funds to meet the current expenses of the town.

NORFOLK AND NORWICH ARCHAEOLOGICAL SOCIETY.—The annual meeting of this society was held at Great Yarmouth. There was a numerous attendance. The proceedings commenced with a paper by Mr. C. J. Palmer on the Star Hotel, in which they were assembled. The members next inspected the Town Hall, after which they proceeded to the parish church of St. Nicholas, a paper on which was read by Mr. A. W. Morant. The party, after quitting St. Nicholas, proceeded on their excursion tour, visiting in their route the churches of Caister, Hemaby, Winterton, West Somerton, Martham, Rollesby, at most of which short papers were read. In the evening, after their return, the party dined at the Star Hotel, the Mayor presiding.

MANCHESTER INSTITUTION OF ENGINEERS.—The first annual meeting of this institution has been held in the Town-hall, King-street. There was a large attendance. Mr. Alderman Bennett presided. Mr. E. Dando, the secretary, read the committee's report, which stated that since the institution was formed, in March, 1867, its progress had been in every respect most satisfactory. There were now sixty-four members, eight associates, and one graduate. The primary objects of the institution were an interchange of ideas, and the growth of mechanical and scientific knowledge, and the committee hoped to be favoured with many communications for the enlightenment of the members. The report was adopted, and the council for the current year appointed.

THE BELLS OF ST. ANDREW'S, PLYMOUTH.—The bells of St. Andrew's Church, Plymouth, have undergone inspection by Mr. Hooper, of Exeter, who has been requested to send in his estimate of the cost of putting the peal in complete order. The steeple and bells were pronounced to be in a very satisfactory condition, and the frames perfectly steady and free from vibration when the large bells were in full swing—a fact attributable no doubt to the enormous strength of the walls of the steeple, which allows of what would otherwise be considered a dangerous course, wedging the frames to the walls. Some of the large bells, however, require considerable strengthening of the stocks to which they are suspended, and also of the ironwork. Surprise has often been expressed by ringers that this peal, which was always intended to be ten (the places being left for two bells) should have remained so long incomplete.

EASNEY PARK, NEAR WARE, HERTS.—The foundation stone for this mansion for Mr. J. F. Buxton, has been laid. Mr. A. Waterhouse is the architect; Mr. W. Beass the builder; and Mr. G. Burton, clerk of works.

ODESSA HARBOUR.—We understand that the prize of 1,200*l.* has been awarded (over twenty other competitors) by the Emperor of Russia to Sir Charles A. Hartley, C.E., and engineer in chief to the European Commission of the Danube, for his plans for improvements of the harbour of Odessa.

A SPIRE SHATTERED BY LIGHTNING.—The spire of Eldersfield church, near Tewkesbury, has been struck by lightning. The lightning struck the spire about 16 ft. from the top, displacing large portions of masonry both above and below the part struck. Passing down, it struck out holes through the stone in several places, cracking the spire more or less all the way down; it then appears to have expended its remaining force on the covered top of the belfry staircase, a portion of which it shattered. The stones driven out were scattered about the churchyard. Fortunately the bells were uninjured. The spire had been partly rebuilt and thoroughly repaired in the autumn of 1862. A considerable portion of it will require rebuilding.

A DISPUTED CONTRACT.—At the Stockton County Court, the case of Wright v. Moore has been decided. The plaintiff was a contractor living at South Stockton, and the defendant resided near Stokesley. The action was brought to recover 14*l.* 9*s.* 6*d.* for drainage work. Complaints were made to the Stockton Local Board of Health of a nuisance existing on defendant's property, and he was requested to abate the nuisance. The defendant saw Mr. Spicer, the surveyor to the Board, and gave him authority to do what work was required to remove the nuisance. On one occasion Mr. Spicer introduced plaintiff to Moore as a suitable person to repair the drains complained of. The defendant gave him orders to do the work, and afterwards disputed the bill, saying that the Local Board were liable. A verdict was given for the plaintiff to the full amount.

MONUMENTAL.—A favourable site for the national monument to Lord Clyde has been fixed upon, and the monument itself is in a fair way to completion, more than half of it being already erected. The site is in Carlton-gardens, opposite the monument recently erected to Sir John Franklin, the Arctic navigator. The German press contains a proposal by Karl Blind to erect a monument in honour of Robert Blum, the member of the German Parliament who was executed at Vienna in 1848, according to a court-martial decree; as well as one in honour of Trutzschler, also a member of the German Parliament, who was shot at Mannheim in 1849, together with a large number of the champions of democracy, at the order of the then Prince, and now King of Prussia.—An equestrian statue of Napoleon I. has just been inaugurated at Montreuil (Seine-et-Marne) with great ceremony. The figure stands upon the level space between the two bridges at the confluence of the Yonne and the Seine, in front of the plateau of Surville.

THREATENED ENCLOSURE OF WANDSWORTH COMMON.—A great meeting of the inhabitants of the parishes of Wandsworth and Battersea has been held at Clapham Junction. Between 4,000 and 5,000 were present. The destruction of a fence surrounding a portion of the common enclosed by the Brighton Railway Company seems to have been threatened, but Earl Spencer got from Sir Richard Mayne a body of mounted police to check any damage, and the railway company had a suspicious number of "navvies" in knots among the crowd. The proceedings commenced with an address from Mr. J. C. Buckmaster, M.A., churchwarden of Battersea, and it was resolved unanimously:—"That this meeting regards with extreme sorrow and regret the enclosures which have taken place on Wandsworth Common, and urges the committee appointed for its preservation to take every step to restore the privileges which the public have enjoyed from time immemorial." Mr. Buckmaster said that two or three private gentlemen would destroy the fence, in order to try the rights of the case; and, in a closing speech, he produced roars of laughter by the repetition of the lines,—

"The crime is great in man or woman
Who steals a goose from off the Common;
But who shall plead the man's excuse,
Who steals the Common from the goose?"

"TO ARTISTS."—We would draw attention to the premium for designs offered by the Council of the Art-Union of London. The advertisement of this in our last said, the drawings must illustrate some "political" or historical work. This should have been *poetical* or historical work.

CHOLERA.—The epidemic which lately visited us is spreading through the Continent, and, besides its more prominent field in Italy, at present, has appeared at Marseilles, Rotterdam, and elsewhere. Severe as it has been about Rome, the filthy state of which has been an object of remark in the newspapers, cholera is by no means so virulent now, at least in this country, as it once was. Our sanitary improvements have evidently stripped it of half its terrors.

VEGETABLE HAIR.—California papers state that there is now dug out of the mountains of the Sierra Nevada range a better material for beds than has been hitherto available in the markets of the world. It is the soap root, which grows in unlimited quantities in that region. It is a bulbous root, enveloped in a very tough and supple fibre, resembling somewhat the husk of coconut in colour and appearance, but nearly as tough as whalebone. The natural colour is brown, but it is often coloured black, and an expert, it is said, would find it hard to tell it from curled hair.

PROGRESS OF THE TRUE PACIFICATORS.—Another "terrible engine of war" has been invented by Herr Von Dreyse. It is a shell needle-rifle; that is to say, a needle gun which throws diminutive shells, which burst in the human body and tear the flesh to pieces. If anything be likely to put an utter end to war, it must be a diabolical invention such as this. Could they not add poison to the shells to strike additional terror into those whom kings lead like unresisting sheep to the slaughter? Our only hope is that both sides in the next threatened war will be supplied with such pacificators.

THE LATE MR. MACINTOSH, MARBLER.—A correspondent mentions the death of Mr. James Macintosh, of the firm of Macintosh & Nicol, imitators of woods and marbles, and whose productions in the Royal palaces, the principal public buildings of London, the provinces, Scotland, and Ireland are well known. He left Scotland some twenty-six years ago as a journeyman painter, and worked his own way to a good position. His last works were for the Queen, under Mr. Homan's directions at H.R.H. the Prince Consort's Mausoleum, and the Duchess of Kent's Mausoleum, at Windsor; and at the Euston Hotel coffee-room, Euston-square, for Messrs. Holland & Hannen.

TWO CHURCHES UNDER ONE ROOF.—Instances of two churches in one churchyard have been mentioned in your columns, but the following example of two churches under one roof must be unique. Two distinct churches are under one roof at Pakefield, near Lowestoft—All Saints' and St. Margaret's—forming a double aisle of similar architecture and dimensions, divided by seven pointed arches on octagonal pillars. It was evidently erected for two distinct congregations, and each had its own altar with raised steps. There is a square tower at the west end, the lower compartment of a richly-painted rood screen, and the silver chalice is dated 1337. This instance is mentioned in Mr. Nall's *Hand-book to Great Yarmouth and Lowestoft*, from which book a great deal of valuable matter may be derived.—*Notes and Queries.*

BLACKFRIARS BRIDGE.—While removing one of the Surrey piers, preparatory to the construction of the new Blackfriars Bridge, two foundation-stones of black slate were discovered by the workmen. One of them is evidently a stone that was laid with all pomp and ceremonial, while the other and smaller one found near it was as evidently stowed away on the same day, but prior to the ceremonial, by some master workman, who took this advantage of his opportunity to hand down his name to posterity. The clear cut inscription on the first says:—"On the 23rd day of June, 1761, in the first year of the reign of King George III., the first stone of this the first pier was laid by Sir Robert Ladbroke, knt., and president of the Honourable Committee for carrying this bridge into execution. Robert Mylne, architect; Joseph Dixon, mason." The second stone says:—"On the 23rd day of June, 1761, in the first year of the reign of King George III., the first stone of this pier was laid by Joseph Dixon, master mason to this bridge."

CRICKET AND JOINERS.—Messrs. Simms & Marten have established a cricket club for the joiners belonging to their works at Chelsea. The two elevens meet at Battersea every Saturday from three till five; and the principals, as well as the foremen, attend and take part as often as circumstances will permit. They also have a club at Hastings.

FALL OF A NEW BRIDGE.—The bridge in course of construction at Crieff has been destroyed. Mr. Pitkeathley, the inspector, went to examine a damaged arch, when the fabric suddenly gave way, and he and four others were precipitated into the water below. A mason had his legs and arms broken, and the inspector got his jawbone fractured, and was otherwise cut about the head.

BIRMINGHAM SOCIETY OF ARTISTS.—The "private view" of this year's exhibition took place on Saturday last. Amongst the pictures exhibited there are the productions of Sir Joseph Noel Paton, R.S.A.; Visct. Cole, R. Thornburn, J. E. Millais, R.A.; T. Faed, R.A.; R. V. Martineau, James Danby, W. H. Fisk, G. E. Hicks, F. Dillon, J. Sant, A.R.A.; E. Nicholl, A.R.A.; the late J. Philip, R.A.; the late C. R. Leslie, R.A.; Eyre Crowe, George Sant, James Archer, R.S.A.; &c. The local artists come out creditably.

OUR NARROW RAILWAY BRIDGES: PERIL OF HER MAJESTY. Every bow and then one hears of a railway-guard being killed in attempting, from want of a proper gangway, or access through the carriages, to crawl over their tops as a watchman or actual guard over the train; and in one week lately two such cases occurred. From a slight excess of size in a carriage, the Queen has been in peril of her life from a similar cause, on her way to Kelsø. Some doubt was suggested whether the new state carriage was not too wide for some of the bridges on the Waverley route. The gauge of the royal train was taken and applied to the bridges, and the result was that it was found that the new carriage would not pass through! At Carlisle the whole train had to be re-arranged, and a smaller saloon carriage of the London and North-Western Company put in place of the state carriage.

THE NEW MILLWALL DOCKS.—These docks have now nearly approached completion. The total area of the land purchased by the Millwall Dock Company is 204 acres; 42 acres will be the area of the water in the docks, so that 152 acres will be available for wharfs and warehouses. The portions of the work already constructed have a water area of something more than 33 acres, and present about 2,500 yards of wharf frontage. The graving-dock, which is also included in the work completed, is 413 ft. long, and has an entrance 65 ft. in width. The Millwall Docks are situated to the south of the West India system, and will, when completed, be of a T form in plan, the supporting line of the latter stretching towards the West-India Docks, the cross arms running at right-angles with the perpendicular, and being of nearly equal length. The lock-gates are each 43 ft. wide by 31 ft. high.

NEW UNDERGROUND TELEGRAPHIC SYSTEM.—A number of gentlemen connected with telegraphy have been at the residence of Mr. D. Nicoll, Oaklands Hall, Kilburn, for the purpose of witnessing a series of experiments with a new species of underground electric telegraph. The principle consists of its being made in sections of any length, and at any angle, and laid down in shallow or deep trenches at option, just as a line of railway may be laid, but without chairs, bolts, rivets, &c. The system is described as being of exceedingly simple construction, consisting of a zinc or other metallic semi-tube, or species of gutter, in which any number of electric wires can be laid. In manufacturing the conductors the wires receive first a coating of insulatory substance, then a coating of fibre, and each wire is then embedded in the semi-tube, and embedded in more of the insulating compound. This insulating material does not decompose. It consists mainly of *épure* Trinidad bitumen, and with 16-gauge copper wires in coils through the system can be laid and completed, it is said, for 20 per cent. less than the present cost of overhead wires, either on poles or house-tops. It has been calculated that twenty miles of sections, containing fifty or more wires, may be laid in a day by thirty labourers. The cost of each wire will, it is said, ordinarily average not more than 51. per mile.

ORGANS IN THE UNITED STATES.—A large new organ has just been completed in the Boston Music Hall, and has been opened before a numerous and enthusiastic assembly of listeners. In other cities it is said that new organs of considerable size have lately been built, and the choral societies after our English fashion at here and there springing up.

THE COPPER TRADE.—The firmness evinced by holders, say Messrs. Vivian, Younger, & Boscawen (August 23), especially of Chili produce, Liverpool, has resulted in a further improvement in prices of that description, bringing the figure for spot bars, good brands, up to 70l., while 14s. 6d. have been refused for a cargo of regulus to arrive. The actual business done has been only moderate. At the present moment there are no sellers of bars to arrive at 71l. English copper has participated in the improvement, and a fair business has been done in tough at 78l. and 79l.

SOUTH WALES INSTITUTE OF CIVIL ENGINEERS. The annual general meeting of the members of this flourishing institute has been held in the theatre of the Royal Institution, Swansea, under the presidency of Mr. George Martin, of Dowlais. Upon the table were specimens of fuel dipped in petroleum—bricks of compressed Aberdare steam coal, made at Aberaman, submerged in water 48 hours; of the Tredegar coal exposed to the sun wind, and rain for six weeks, made by Barker's machine, also sections of Davies's steam strikers. After some official business had been got through, a previous discussion on a paper by Mr. G. C. Pearce on Mechanical Ventilation was continued, and papers on the Structure of Iron, by Mr. Vivian; on the Duration of the South Wales Coal-field, by Mr. Bedington; on the Port of Newport and its Coal-field, by Mr. A. Bassett; and on the Cornish Engine, by Mr. Loam, were read and discussed. Other papers were read, and several postponed. The members and friends of the Institution afterwards dined together at the Cameron Hotel.

TENDERS

For erecting a pier and landing-stage at Battersea, for Messrs. Lee & Jevell. Mr. C. M. P. architect.—

Simms & Marten	2,680 0 0
Hedge	546 10 0
Raby	490 0 0

For a house at Tunbridge Wells, for Mr. John Guy. Mr. Fredk. Johnstone, architect:—

Axford	26,170 0 0
Willcombe & Oakley	6,100 0 0
Pennett & Son	9,074 0 0
Simms & Marten	5,876 0 0

For alterations and repairs to No. 3, Portland-place. Mr. W. A. Baker, architect. Quantities supplied by Messrs. Richardson & Waghorn:—

Burdett	21,938 0 0
Wheeler (accepted)	1,777 0 0

For the erection of four houses in Longfield-street, Merton-road, Wandsworth, for Mr. T. Oliver. Mr. D. Carlyle, architect:—

Hearn	2,689 10 0
Strong, H.	697 0 0
Rendall & Son	685 0 0
Peck	574 0 0
Strong, W.	580 0 0

For additions and alterations at Nos. 12 and 13, St. John's-street, Clerkenwell, for Mr. W. B. Bridges. Mr. W. P. Griffin, architect:—

Devereux	2,785 0 0
Martin	660 0 0
Bishop	613 10 0
Bamford	600 0 0

For building four shops on North London Railway Company's land, Dalston-lane. Mr. E. H. Horne, architect:—

Bishop	22,879 0 0
Axford	2,854 0 0
Baton & Chapman	2,882 0 0
Freedy & Son	2,875 0 0
Crabb & Vaughan	2,588 0 0
Turner (accepted)	2,447 0 0

For the erection of an hotel in the Castle-market, Derby, exclusive of foundations, cellaring, and stabling. Mr. George Thompson, Borough Surveyor, architect:—

Lockett & Forrest	21,890 0 0
Thompson	1,744 0 0
Gadaby	1,564 0 0
Fryer (accepted)	1,539 0 0

For the construction of pipe-sewers and other works in connexion therewith in the parish of Putney, for the Wandsworth Board of Works. Mr. Jas. Niblett, surveyor:—

Blackmore	21,650 0 0
Brew & Co.	1,129 0 0
Trinley	1,387 4 0
Aviss & Son	1,355 0 0
Wainwright	1,340 0 0
Goodyear	1,200 0 0
Robinson	1,241 0 0
Strickson	1,175 0 0
Wignmore	959 10 0
Thackeray	950 0 0

The Builder.

VOL. XXV.—No. 1283.

"Wanted, a Manager."



CONSOLS, we are informed by the oldest, and, we may add, deservedly the most influential of those daily journalists who tell us of the state of the money market, "are again at the point from which during the last eight weeks they have several times suffered a relapse." "The relapse usual of late after every slight advance in the English funds has been witnessed to-day." "The English funds continue to decline." "Railway stocks showed a tendency to relapse." "British railways were again disposed to weakness." Such is the ordinary tenour of the "City intelligence" during the present harvest season.

"This season," says a well-known agricultural authority and experimentalist, "will be a very profitable one." "The Corn-market," says our earlier quoted informant, "was very dull this morning, at the decline of between 2s. and 3s." "Prices," we hear from Dorsetshire, "have a decided downward tendency." "Old wheat," at Gainsborough, sold at 2s. per quarter "less money." At Salisbury, with "an improved attendance of farmers, millers, and dealers," new wheat fetched from 2s. to 3s. per quarter less than last week. The same character of market prevails at the eight principal local centres of the corn trade, from Newcastle to Dorchester, from Lynn to Monmouthshire, that is to be remarked on the Corn-exchange in Mark-lane. It will be borne in mind that a decline in the price of wheat is evidence of an increase in the supply, or, in other words, of a progress in the harvest more abundant than the promise of the previous week gave reason to expect.

If we turn to another part of the same journal we read that—"The Board of Trade returns for the past month indicate the continuance of a steady export business, the declared value of our shipments having been 15,562,430l., or 4 per cent. in excess of those of the corresponding month of last year, and 10 per cent. above those of July, 1865.

The existence, in parallel columns of the same journal, of reports such as we have above cited, is a proof of that remarkable and unprecedented condition of our commercial and financial industry which, more than eighteen months ago, we warned our readers to expect. For it must be borne in mind that dulness in the money market and dulness in the market for produce may, under the same name, describe a very different state of things. The English funds remaining with little fluctuation at the high price of 94 or 95, indicates an abundance of disposable money, and the returns of the Bank of England, as well as those of the Bank of France show an accumulation of bullion almost altogether without precedent in the vaults of those two gigantic establishments. The certain indication of the improved character of the harvest which is given by a general decline in prices, assures us against the probability of a diminution in that stock of bullion for the purchase of foreign grain, as well as of that increase in comfort and activity of our industrial classes

which is affected by the price of the loaf. With these symptoms of that description of prosperity which is expressed by the significant phrase of plenty of ready money, we have to couple the absolute testimony of statistical returns as to the increasing activity of our commerce. A rise in the value of the exports of the month of 4 per cent. over that of the corresponding month in 1866, which in its turn was 6 per cent. above that of the similar period in 1865, would seem to be in itself no very imperfect criterion of the well-doing of the country during the present year.

And yet the tone in which the writers of the money articles speak is one of almost hopeless despondency. Nor can any one fail to be aware, to some extent, of the cause. Private suffering is known to be very considerable; and all those professional and industrial classes which the rapid development of our great public works during the last third of a century has swelled into so important a portion of the nation, are suffering, more or less acutely and persistently, from want of occupation.

The novelty, then, of the present position is this: production, properly so called, and trade, in as much as it is not speculative, but a true function of production, are not only unchecked, but steadily increasing in a ratio far above that of the increase of the population. But, on the other hand, speculation, as it once existed, has disappeared, and the want of confidence engendered by the heavy losses and reckless extravagance of the last period of inflation has put a stop to that higher species of production which looks beyond the returns of the single year, and increases the national wealth by the constant application of labour to the development of the resources of the future. There is, therefore, good as well as evil to be found in the causes of the present embarrassment. Unfortunately, the two are not to be dissociated; and it would be hoping in the face of all experience of human nature to suppose that we shall witness a wise application of our ready money to increase the actual productive power of the nation, without a revival at the same time of that spirit of gambling which has made so many victims to the decennial panics of the present century.

We may regard the same important question in another light, but with a similar result. If we leave out of consideration those whose real-estate property exempts them from the call to labour, in any manner, for their support, and those who are but too happy to find employment for their daily toil, and even thus to secure little more than daily bread, we must be aware that the sources of the income of most of the active classes are of a two-fold nature. First, there is the legitimate direct income, to which the attention of the recipient is naturally, regularly, and beneficially directed. Such are the fees which the physician earns from his patients, and the barrister from his clients; such are the profits of the farmer, the manufacturer, the carrier, the wholesale or retail trader. But then most of these persons have more or less income, for which they do not actually work. They have laid by so much of the earnings of former years, as they have not consumed in the support of their families, and from the investment of their earnings they derive a supplementary income. Some of these persons are content with such an investment of their surplus funds as need cost them no thought after it is once carefully made. Funds, exchequer bills, such plain loans on mortgage, best of all a few acres of land, are purchases on which the fortunate man, who is a *bona fide* investor, may safely go to sleep. To such a man the "City article" has no interest—the financial panic no terror. The last month's excess over the customary banker's balance, bought Consols at 94—that of next month may buy them 1 per cent. higher or lower—it makes no appreciable difference. To sell to-day be-

cause one can make a five-pound note on the displacement of five hundred pounds, would be to trifle with time and attention far more usefully and more lucratively employed. The thought of a man in this position, if he be a wise man, is, to know best what to buy with safety, and so to lay up his spare money, that its dividends will thereafter come in without giving him any trouble or anxiety. And if he likes to make a fancy purchase, to take shares in the railway over which he daily travels, or in any undertaking, of the ultimate solvency and stability of which he has good reason to be persuaded, such investment takes the same position as the rest; he makes it for better or for worse, in hope, no doubt, of the better, but safe from any possible chance of taking a glass of wine less in the week if it turn out to be the worse.

Now, investors of this sensible character are the natural enemies of the large body of well-dressed sharks who live on the cupidity and on the fears of their neighbours. For our friends, not being unduly tempted by the former passion, are not readily to be preyed upon by the latter. And it is the possession by persons such as these, in considerable proportion, of Consols, of Bank Stock, or of any other of the more approved species of marketable security, that prevents those fluctuations on which a large number of unprincipled men exist from assuming the formidable proportions to which the speculators proper are always endeavouring to drive them. Speculation, then, would be a less profitable pursuit than it sometimes appears to be if it were not for the large number of industrial men, who neglect their legitimate sources of income when dazzled by the prospects of speculative investment. Men of this kind have also their business, but their hearts are not wholly there. It is not the spare money that they invest in a safe and remunerative fund, but all the money they can spare, which is a very different thing. And this they lay out, not as an investment, properly so called, but in something that they will buy to-day in the hope of selling better to-morrow. Now, it is clear that these men, half given to trade or professional exertion, half given to speculation, are likely to go to the wall in either case. The anxiety caused by the perusal of the "City article" distracts attention from the counter, the ledger, and the letter-book on the one hand, while on the other, hurried visits to the broker, or stolen half-hours of furtive calculation or picking up information, leave them no less at the mercy of the keener speculators who make a business of speculation.

It is this class of people who have (with the exception above given of the civil engineer and the rank and file of his subordinates) been the greatest sufferers from the financial crisis. At the same time it cannot be denied that it is to the same individuals that the crisis has been mainly due. Anxious to become rich, not by the pursuits to which they had been bred, but by a shorter cut to wealth, they have formed the ready prey of the speculator proper,—we were going to say the gambler; but it is a character worse than the mere gambler, it is the professional black-leg, who keeps himself cool and apparently respectable, and who can afford to keep cool because he knows how the dice are clogged. It may be said, that without the existence of the men who go in for a rise no public enterprise would be launched. It may be replied, that in their absence many public enterprises would not have been launched, and that it is just these undertakings that have come to grief. It is, of course, impossible to discriminate with any absolute certitude between the real and the speculative investor. Extraordinary circumstances may for a time convert the former into the latter. Still less can it be possible to arrive at their proportionate numbers. But we can hardly err if we set down the 200,000,000l. which

other writers besides ourselves have estimated to have been wantonly and mischievously squandered in our railway system to the credit of these half investors. That is one little result of their leaving their natural callings in order to get rich in a hurry. We have seen instances of the result in the leaders: who can tell the amount of misery caused and suffered by the rank and file?

As the main corpus on which the commencement of ill-judged and unremunerative enterprises has been based is composed of the ever-shifting and varying class of semi-speculators, it is not unnatural that the method of management usually adopted is precisely that which reason as well as experience would induce us to expect to turn even a good affair into a misfortune. A Board of Directors is chosen, or, in the first instance at least, usually chooses itself. A board, the well-known action of which form of association is to bring into prominence the worst features of each individual member, and to cast his better qualities into the shade, is usually a compound, inconsistent, and irresponsible artificial personage that undertakes the management of a large business, with the principles and details of which he is necessarily unacquainted, and deals with a large capital of which it owns an almost infinitesimal share. The real interest of the proprietors, and the "policy" of the directors, are thus materially dissociated, and very frequently opposed. It will be remembered that the men most anxious for the dignity or for the remuneration of directors are for the most part those who desire thus to fill up their time because it is not better employed. The anatomy of one board might throw light on the structure of scores. Here you have the respectable country gentleman, engaged for his name and for the weight that it may add to his less known colleagues,—anxious to keep name and weight, but seeing little further over the green cloth spread before him than it is convenient for the secretary to allow. Then comes the active shrewd director on, or some how or other closely connected with, the Stock Exchange.

His influence goes to decide measures that may be expected to affect the price of shares, to tide matters over a crisis, or even to bring on that shock which "must come" before affairs can mend. Then follow two or three gentlemen whose names are down on many lists, and who are continually consulting their watches and their pocket-books in order to be in time to earn the next guinea at some other board. You may sometimes add to these the obstinate and stupid director, who may in other respects be a most estimable man, but who is accustomed to make a great hole in the available working time of the board by insisting on an explanation of what is patent to every one else, though sometimes he is not without value. Among these, or besides these, as secretary, director, manager, or what not, may be found the real wire-puller, the man who, unseen and irresponsible, moves the whole; and who, if he were the known and responsible manager, avowedly and equitably paid for his services, and responsible, at least in character, for the conduct of the undertaking, would give it the best chance of success. With a machinery such as this how can we be surprised to be told one day of a company which, "having taken legal advice," has "suspended the proceedings" to which they led their shareholders to look for solvency; another, of one which, having paid a dividend of 54 per cent. upon eight millions of capital in 1854, has since that time spent another eight millions without producing a shilling of additional profit in the shape of returns; in short, from day to day, of the scandalous results of the most imbecile or most wanton mismanagement.

A famous French financier is said to have gained the first capital of which he made such active use by the simple expedient of annexing to the list of deaths which were chronicled in a local newspaper with which he was connected the name of the medical attendant on the defunct. So intolerable, after a time, did the attention thus excited to the results of the practice of his prey become, that a large price was made up to buy off the inconvenient chronicler. A Shareholders' Manual, giving in a legible print the names of directors of failing and faltering companies, pointing out the date of their services, and giving adequate indications of the state of capital account, of dividend distributed, and of dividend earned, from year to year, might be of service to the next crop of eager purchasers of "something really reliable."

A better and more business-like plan has been

adopted by another large company, which, while involved in the struggles and the expenditure of the time, has kept to some extent out of the slough which has engulfed its most active rival. The chairman having intimated that the affairs of the company were now in such a state that he could leave them without peril, and that he must attend to his own interests, the shareholders very wisely secured the services of a man who seems to know what he is about, and to carry out what he purposes, by voting him an annual salary of 2,500*l.* A step of this kind is true economy. We do not speak of the individual, but of the principle. To select an able man—to give him ample power, to attach to him full and public responsibility, and to assure him an income which will enable him to devote his whole undivided energy to his work—such is the only rational mode of attempting to administer the greater number of our large social enterprises. No essentially rotten scheme can thus be made good, but many a good one might thus have a chance of fair development—many a moderate capital might be thus saved from extinction. When proprietors of property which they do not know how to manage will burst the bonds of clique, and look out in earnest for the best man for a manager, the worst of social enterprise will have passed. The true cry for the mass of helpless shareholders,—the one point to be kept, in the first instance, before every half-yearly meeting,—is: "WANTED, A MANAGER."

ROME, WITH SOME OBJECTIONS.

AND what of architecture at Rome? It seems a shame to have spent not a few weeks in the city that was the metropolis of the old world, when the world had indeed but one metropolis, and to have nothing to say of structures, ancient or modern,—nothing that if not new may not at least be as interesting to the absent as reminiscences from absent and unchanged friends are wont to be.

But certainly Rome is not a city that, whether in its ancient or more modern monuments, warms the architect to the purest enthusiasm. Doubtless it contains much that the architectural student may gladly take note of; but, as he re-peruses his notes, he will be apt to find that warnings of what is to be avoided outnumber the hints and the suggestions of beauty to be achieved. The sculptor and the painter have much better reward for lingering. In the Sistine chapel of Michelangelo and the Stanze of Raffaele, all the thoughts and imagery, the philosophy, poetry, and pictorial art of the Middle Ages ripened, and were harvested and garnered. Raffaele set forth the growth and progress of intellectual accomplishment in the "School of Athens," as Michelangelo depicted the expressive epochs of the great development of Hebrew religion; and, as his antithesis of the pagan sibyls and the Hebrew prophets declares, the anticipation that the two most progressive sections of the human race were at last to react upon each other. The so-called "Dispute of the Sacrament" of Raffaele is in fact an exhibition of the great project of the scholastics to reconcile reason and religion, philosophy and faith, Plato and the gospels. They may not have been so successful, their processes not quite so unquestionable as they are represented as supposing, but of the importance and dignity of the problem we are assured by the disputations that go on around us to this day.

It is not easy, again, to overestimate the importance of the Roman collections of sculpture for the sculptor. The Elgin collection of the British Museum is no doubt to sculpture what the Sistine Chapel and the Stanze are to painting. London must remain the most interesting centre of this art until the Oriental, the Eastern, question shall be so solved that we shall be justified no less than we are bound to return the greatest works of the greatest sculptor to their appropriate and rightful seat. Still Rome is its collections must be the basis of study for those who seek for the highest enjoyment of its varied capabilities and styles, or would hope to renit, if it may be, some of the broken up and dispersed connexions of its development in history.

What pleasures has Rome to offer to the architectural sense that can be placed in worthy comparison? It has on one side St. Peter's, its paragon, and the Vatican; on the other, in as distinct a group, the Colosseum, the baths and palaces of

the Cesars, and even some republican, not to regal, reminiscences about the sacred way, forum, and the approach to the capital. The hill of the capital and the Tarpeian rock, interposed between these more secluded groves and the modern city, which covers in its crowded parts the anciently free space of Campus Martius, and covers the sites or clings around the remains of its scattered monuments from the column of Trajan to that of Antonino from the almost perfect Pantheon to the open air theatre that now occupies the concave of the ruined mausoleum of Augustus. Arranged chronologically, there are scanty regal or republican remains, abundant Caesarian of various merit—some few refined, and more that are chiefly remarkable for mass,—temples, and baths and palaces; then follow, but probably rather intermixed than in sequence, some structures that seem original in the debasement of classic art as it died out, and others composed of adapted fragments of earlier buildings; afterwards come on a more vigorous period when plunder materials were still adapted, but with a certain freshness in style of arrangement and a certain independence. Again, and this is scarcely change, if old materials are admitted they are without influence on plan, which leans on mix Byzantine and Lombard inspiration; proper Gothic is then sparingly interposed before the access of the full Renaissance, which is ripe and rampant everywhere, and when not in entire or first possession is constantly found casing the works of predecessors without, or lining the within. In such an abundant series there cannot but be much to study and interest; but still we come back to the point, that of works that have that degree of perfection that entitles them to rank as finished works of art, lamentable indeed is the dearth at Rome.

A city may be taken as an architectural work in itself, and let us dismiss that first. The accidental who comes to Rome after seeing not a few of the northern Italian cities is apt to be surprised at finding it so modern. The visible city might seem to have sprung up entire within the 150 years nearest to A.D. 1500. To one who may have been accustomed to think that the Reformation ruined the power of Rome it will be strange indeed to note how much of what constitutes its splendour as well as its mass dates, at least, after the birth of Luther. He may profit by the surprise if he turn back again to some neglected pages of history, which will fully account for how this happened,—by the vigorous reaction, and, indeed, qualified reformation within Catholicism, and by the large share that fell to the lot of the powers that remained Catholic in the flood of wealth that seeped in from the new world.

The productiveness of general industry was also at this time increased immensely; but at Rome these advantages were for the church and the nobles; in a less degree—in scarcely any degree at all—for a municipality; hence what we see,—sumptuous, elaborate, and immense, if not very frequently imposing structures, Churches, and colleges, and palaces, are flatted, for the most part, it seems, at random among surroundings of squalor unutterable. Here and there we trace an attempt to consult the architectural effect of an open space or public approach, but it is usually unfortunate and incomplete; at the best it is not exempt from the general rule, that whatever is in itself ornate is embraced by the atmosphere and all the incidents of the vilest slums. Dignity escapes from the contact, to a certain extent, though it cannot from the penalties of transit. When we penetrate to the interior of a palace or college we find that flights of stairs lift the noble apartments above the worst contaminations, while sometimes inner courts, glorious with well tended fruits and foliage, comfort eyes that have acquired a habitude of unconsciousness in traversing the vile approaches. Refinement turns its back upon the public ways, and climbs contentedly above the lower world; and housed amidst the happiness of art and decoration and secluded outlook, can afford to forget the conditions of a city that envelops it. Visitors still more exuberantly rush from the few well-founded hotels to galleries—to the Vatican, the gardens on the Pincian, the unrivalled landscape of the Campagna, and naturally are averse to allow a sojourn too short for all the delights at hand, to be poisoned by either sensations or reflections that are shocking or simply disagreeable. But there are some who have, more or less, self-command, whichever it may be; and such a one traverses the city from Via della Purificazione

to Ghetto, from Capitol to extremity of Corso, and does not find twenty consecutive yards that may not remind him of Seneca's allusion to *locus adulescentia*. Pio Nono is in the seat of the pupil of Seneca and the odies, and the fear of them have departed. If anything would revive that strangely regretful superstition (met with elsewhere besides in Suetonius), that Nero after all was not really dead, but would return from beyond the Euphrates and rule again, it might be a fond hope that he would bring back his odies, the antique district surveyors, and the wholemen awe they inspired, along with him. The Roman fever as incipient is no doubt constantly chargeable on the surrounding Campagna and its miasma; but let physicians say how frequently its fatal result is due to the influences within the walls.

In a general view of the city, the cupola of St. Peter's is of course a most conspicuous feature, but from the nearer views it does not dominate the whole with the effect of St. Paul's,—a consequence of its position without, instead of in the midst of, and at the highest point of the city. For what value it has in this respect it must be caught sight of eminent above the horizon, when Rome is approached from the direction of Tivoli, or the Flaminian way. In some other directions its effect is marred by the mimicry of five or six other cupolas of not insignificant size in themselves, and nearer to the spectator. To mistake any one of these for St. Peter's may seem absurd enough; yet the mistake is at least often so near happening that the question is suggested,—the great cupola being sometimes out of sight, and its magnitude in many cases receiving no emphasis from the mean adjuncts at its base. It is possible that a painter by persevering search may find a point of view from which the projecting architecture of Rome may fall into happy combination,—but the effect does not occur spontaneously, and it will go hard but that pictorial license must be shamefully indulged. It is in this respect that the aspect of the city of Florence is so effective; not alone from Bellasguardo, but from numerous other points, and from some, more happily, the towers and steeples and municipal palaces and Duomo rise above the houses and group most beautifully; their forms have sufficient variety for contrast, yet within a range sufficiently restricted to conserve the characteristic; in collation they are neither huddled nor dispersed, and by relative magnitude subordination enhances unity. The city of London of Wren has claims to be put in comparison,—Paris scarcely. But we are in Italy now, and shall do well to keep these otherwise were tempting to expound now it is that in the case of the twin spires of clovenry, "each gives each a double charm," while in a not remote cathedral tower the spires of the cathedral lose dignity by a spire of a later church, that after all only achieves for itself an expression of impertinence.

Modern Rome inherited from ancient times a large number of Egyptian obelisks, large and small, sculptured and plain, and has not been wanting in care for them; all are re-erected, repaired, and the inserted pieces in some cases, as in that of Psammethichus in the Campus Martius, have been spared the disgrace of clumsy and fictitious hieroglyphics to replace the obliterated. At Rome, however, as little as elsewhere, has the problem been solved of inventing a pedestal that shall improve upon the Egyptian mode of setting up these monuments upon a sheer flat; a problem possibly that it was not necessary to entertain for an obelisk any more than for a Doric column. Roman examples in confirmation of others, authorize us to speak of another treatment without any qualification as an abuse; this is the erection of a lofty obelisk directly in front of an important façade that interferes with it from important points of view. Three streets converge to the Porta del Popolo, and in the midst of the Piazza del Popolo is erected an obelisk that bisects the void of the archway, however we approach it from within. The Porta del Popolo is worth little architecturally; a reason good for either hiding it or pulling it down, but not for putting it in half; not for presenting an obstacle to the very line of our prospect of egress. Still more vexatiously out of place and in the way is the obelisk in front of the church of Trinita di Monto. The church is seen high and conspicuous by the many who come by direct line to the bridge of St. Angelo, past the Borghese Palace and along the much-frequented Via Condotti to the important Piazza d'Espagne; it is mass constantly in sight; the symmetry of the

front is most emphatically expressed in the central division, even the space immediately in front of it is so confined that when it is reached it would at best scarcely afford a favourable point of view; and if it did the southern exposure would make it but rarely tenable; the value of the façade upon a noble site from its own excellent point of view is thus disgraced and ruined. The damage is more conspicuous as its central composition is responded to below by a double ascent of ample stone steps which carry the symmetrical distribution from the very piazza to the crowning structure only to collapse in renegeation and bathos. The elaborate double flight that pauses intermediately and then branches upward again to right and left, seems almost as much sacrificed by this countenance at the conclusion as the church itself; it can ill afford reduction in importance as an object, for its uses are very secondary. Well do its barlike lines merit from students who look at them and shudder in passage to and again between esel and Café Greco, the title of the "Gridiron." From the exposure to mid-day sun already spoken of, the vaporous heat rising from the steps as from a kiln makes their lines wavy and indistinct till it would be difficult to count them; and even hurried passers-gers to the Via Felice creep round by back steps, undignified but thoughtfully contrived, on either side.

The obelisk in front of St. Peter's is, of course, our last example, but, perhaps, it is the least reprehensible of all; by the time it comes into sight the cupola has already sunk into eclipse behind the meanly-designed façade, and the attempt of this to realize an effective central feature is far too miserable a failure for us to feel very hurt that it did not command more respect. Irony apart, however, the division of the ascent is still unfortunate, and the obelisk, from its magnitude, the symmetry of the beautiful fountains on either side, and the responsive curves of the porticoes, narrowly escapes usurping all the honours of the approach.

If we may be borne with in another reference to Florence, attention may be drawn to the care and skill with which the pair of obelisks—pyramidal cones, we may rather call them—are so disposed in the piazza before the Church of Sta. Maria Novella as to declare a definite principle of collocation, and yet not to interfere with façades from any important points of view.

The obelisk at Luxor flanked the entrance to a temple. One of the pair removed to Paris is now erected in a central position, where it must cut in two either the Palace of the Tuilleries or the Triumphal Arch, and seems thus to jostle the spectator out of the one standing-place from which he could contemplate either, undamaged and at will. In this case, however—we have it on the best authority—architectural considerations were overruled by other influences: very pertinacious opposition indeed was unable to move Louis Philippe from his resolution that the site of the execution of Louis XVI. should be occupied by a monument that might have the greatest possible chance of being a fixture for all time. On the same authority the atmosphere of Paris, less conservative than the valley of the Nile, has already sensibly affected the sharp edges of the stone and its sculptures. Our own eyes, however, have their motives, and it is both fair and graceful to advert to them. The Monument interferes, indeed, with nothing; but it seems a pity that the few feet were not allowed for in the new street that would have brought it full in view from the very Mansion-house. The lofty pedestal of Chantrey's Duke does no good to the Royal Exchange as approached from Cheapside; and, though it is hard to cavil at the honours of Nelson as we come up Parliament-street, and are aware of the associations of the Admiralty, it is hard, too, that the column should so seriously complicate the problem of dealing with a site that remains fine and noble in the eyes even of those who have seen more of the sites of Europe than had Sir Robert Peel.

From Trafalgar-square, by the associative link of fountains, we pass easily back again to Rome. Fountains abound in Rome, and almost the only ugly one is that which interferes with the débouchure of the Via Condotti almost as destructively as the obelisk that is in a line with it above. It might seem as if the wealth of waters that ennoble Tivoli,—the præpæce Anio of Horace,—had made any ignoble management of water here impossible. Even this waterfall of Tivoli—these waterfalls, as we now see them, are, to a great extent, works of art and

results of management; but Nature has all her rights reserved, and the scene from the peristyle of the temple of the Sibyl or from olive-groves around is worthy of that temple, the only architectural work within reach of the Capitol that is really worthy of name along with the master-works of Greece. Within the city, the fountain of the Trevi is, of course, supreme; and in what a situation!—it abuts upon a palace, and has much that is less sweet than Seven Dials for its immediate surrounding; and even this is forgotten as we go out of our way,—shorter it may be, but not otherwise redolent,—to pass by it. Let not him drink of it, it is said, who would not be possessed thereafter with longing to revisit Rome. The excellence of the water is not disconnected with its beauty. There is a difference in quality of briskness and sparkle between fount and streams and tarns as ever appreciative eye of Jew could detect between the metaphorical water of diamond and diamond. Water pumped and re-pumped never shall reach this glory. But to describe all the beauty of the fountains of the Trevi would require an article by itself, and the point of view of architecture would still be liable to be lost in a rhapsody upon the variety of effect obtainable by the crystalline liquid spread as it descends into a glassy sheet, dropping in more silent but more copious mass, straggling in wild meanders, and escaping in spray, from under tufts of dwarf vegetation and self-sown ladyfern, tossed into jets that add intermittent sinking to the steady murmur, and all at last uniting in the ample basin rippled with the opening wavelets, and dotted, must it be said, with floating lemon-skins, and refuse more ungainly,—welcome, nevertheless, as a cooling bath to "Eric, good dog," in intermission of his evening exercise, too apt to degenerate into a cat-hunt. By light of day or light of noon, in shadow or in shine, this fountain is beautiful, probably the most beautiful ever devised, and after this admission we must reconcile ourselves as we may to the imitation rocks it flows over, the mythological sculpture that does not quite effect the aim that was boldly tried for, and the mouldings of the architecture of the Palazzo Polo, that blend into the rough unshapen masses, leaving some uncertainty as to whether it is in gradual development from the rude, or not rather about to sink back into undistinguished tufa, from which the chisel only temporarily could deliver it.

Not purity of water alone, but dryness and tranquillity of air, are essential to the beauty of a fountain. The fountain that breaks into spray to reinforce a fog, give effect to a chill, or simply drench a pavement, has claims to a kind of attention to which the beautiful is indifferent. Beauty is not much interfered with in this way at Rome, and there has been little check therefore to the varied forms in which water is sported with. The water is ever copious, and so far as we have observed, unintermittent; and however it is managed for the sake of beauty, the chief reliance is always placed on the beauty that is to be elicited from the water as water,—not as thrown into representations of cages and basket-work. Then even the variety of sound that water produces as it falls variously seems to have given motives of treatment, and one fountain is passed from time to time, where the water seems delivered in an upper basin in successive basketful and comes over regulated but splashing.

Climate must ever limit the application of fountains in England as enhancements of architectural combinations; but climate being duly allowed for, they may often be important as well as beautiful. Fountains by the street side for thirsty wayfarers may seem more within the province of the sculptor; yet there is no escape from the observation that too many protest by visible signs against a failure not alone in proportion and architectonic detail, but in those adjustments with reference to physical incidents as well as taste that the architect alone has always under his consideration.

BRIDPORT SCHOOL OF ART.—The annual meeting of this school has been held. A large number of persons attended. The Mayor distributed the prizes. Mr. J. P. Montague was in the chair, and expressed himself strongly in favour of the teacher, Mr. Dewar Campbell, and the success of his efforts. Two hundred and forty-five works, executed by the students, had been sent to Kensington for the annual examination.

OLD ST. PANCRAS.

THINGS have wonderfully changed since the author of "Speculum Britannie" wrote, in 1593, that "Pancras Church standeth all alone, as utterly forsaken, old and wetherbeaten, which for the antiquity thereof, it is thought not to yield to Paul's in London. About this church have been manie buildings now decayed, leaving poore Pancras without companie or comfort; yet it is now and then visited with Kentish Towne and Highgate, which are members thereof; but they seldome come there, for that they have chappels of ease within themselves; but when there is a corpse to be interred, they are forced to leave the same in this forsaken church or churchyard, where (no doubt) it resteth as secure against the day of resurrection as if it laie in stately Paul's." Honest John Norden as little foresaw the wreck which the Great Fire made of "stately Paul's," as he did the havoc which the Midland Railway Company have committed in "poore Pancras." The former event is a matter of history, and we propose in the present article to say a few words on the latter, and to mention some points of interest connected with the locality. Public attention was drawn to the subject in this journal about eighteen months ago, and most of our readers are aware that the line of the Midland Railway passes directly across the churchyard.

The first thing which strikes a visitor on entering the churchyard is the number of grave-stones bearing crosses, the occurrence of such inscriptions as, "*Pie Jesu Domine, dona ei requiem*," and representations of the Crucifixion. One of these is rather elaborate, and is carved in low relief,—a very unhappy imitation of rude Medieval work. Their appearance shows plainly that they were erected at a period when Anglicanism was not sufficiently advanced to admit of such things in a Church of England burial-ground. They belong, in fact, to Roman Catholics, with whom St. Pancras was at one time a very favourite place of interment. It has been asserted that this preference was owing to the fact that Roman Catholics were burnt there in Queen Elizabeth's reign. It has also been explained by saying that mass is said daily in a church dedicated to the same saint in the south of France, for the repose of the souls of the faithful buried at St. Pancras in London.

Both of these statements appear, however, to be without foundation, and Mr. Markland, in a note to Croker's edition of Boswell's "Life of Johnson" (1860, p. 840) says,—"*I learn from unquestionable authority that it rests upon no foundation, and that mere prejudice exists among Roman Catholics in favour of this church, as is the case with respect to other places of burial in various parts of the kingdom.*" It is also said that this was the last church in England after the Reformation whose bell tolled for mass, and in which the rites of the Roman church were celebrated. Several of these interments may be accounted for by the fact that a large number of French refugees, who were driven from France at the Revolution, settled close by in Clarendon-square. They would naturally find a last resting-place in their parish churchyard. Amongst them were several bishops, but the inscriptions on many of their grave-stones are entirely obliterated (thanks to a London atmosphere and the exhalations from some gas-works in the neighbourhood), whilst the bodies of others have been removed. The most conspicuous of the monuments was that erected to the memory of Jean François de la Marche, Bishop of St. Pol de Leon. Forced to fly from France, he devoted himself whilst in this country to helping and consoling his suffering fellow-countrymen. He died in Queen-street, Bloomsbury, in 1806. His epitaph is said to have been written by the Marquis of Buckingham. A mean, neglected gravestone, situated a few feet from the eastern wall, tells us that Arthur Richard De Lox, Archbishop of Narbonne, is buried underneath. He died in 1806. One of the most touching epitaphs in the churchyard is that of a poor French nobleman, who, whilst grateful for the shelter which England afforded him, cannot forget "*Ma Normandie*." It runs as follows:—"*Ici, loin de sa patrie, repose L. F. B. Camus, Seigneur de Pontcarre, de noble et très ancienne famille de magistrature, premier Président du Parlement de Normandie, Conseiller du Roi en tous ses conseils. Décédé le 6 Janvier, 1810, âgé de 64 ans. Fidèle à son Dieu, à son Roi, à ses serments, il fut persécuté, dépourvu d'une grande fortune. Proscrit, il vint avec une partie de sa famille sur cette terre*

hospitalière et généreuse. Longues années après sa veuve et ses enfans ont rendu cet hommage à sa mémoire vénérée." The Comte d'Hervilly and several other French marshals are buried here, as is also the Chevalier de Sainte Croix, Minister Plenipotentiary of Louis XVI. at the court of Sweden. At the fall of his royal master he fled to this country, where he became involved in much pecuniary distress, and died in 1803. We may also mention Tiberius Cavallo, a well-known Neapolitan writer on natural philosophy; the Chevalier d'Eon, the unfortunate nobleman whose sex was a matter of so much dispute during the last century; Jeremy Collier; Timothy Cunningham, author of the "Law Dictionary;" James Leoni, architect; General Pascal de Paoli, Corsican patriot; Stephen Paxton and William Webbe, both well-known musical composers of the last century; Samuel Francis Ravenet and William Woollett, engravers; John Walker, the lexicographer; William Godwin, author of "Caleb Williams" and "Political Justice," and his wife, Mary Woolstonecraft, who wrote the "Rights of Woman." Although the monument remained, the bodies of these individuals were removed many years ago to Bournemouth. Amongst the eminent Roman Catholics we must not omit Father O'Leary, of the Order of St. Francis, who died in 1802. He was much esteemed for his amiability, but he held heretical opinions with regard to the temporal power of the Pope. The monument was erected by Earl Moira, and repaired by public subscription so recently as 1851.

The appearance of the churchyard is materially altered since its invasion by the Midland Railway Company. It is as nearly as possible five acres in extent, and in its original condition Old St. Pancras Churchyard was a very dismal place indeed. There were no paths, and the grass was apparently never cut, but had been for some years allowed to grow and die down again. The outline of most of the graves was entirely obliterated, and scarcely any two grave-stones were parallel. The burial ground of St. Giles, which joins Old St. Pancras Churchyard, is of about the same size, but the desolation is relieved by the presence of a few trees. We may remark, that the building formerly used as the Cemetery Chapel, in the vaults of which a large number of bodies are interred, is now a school-house.

The churchyard consisted originally of about 1½ acre, and the population in the immediate neighbourhood was exceedingly small, the chapel-of-ease at Kentish Town being really of more importance than the mother-church. In the latter part of the last century the population increased very rapidly, and several new streets and squares were built in the neighbourhood of the New Road. The churchyard was soon overcrowded, and the vestry-books of the period contain continual complaints to this effect. In the year 1792 an Act was obtained to enlarge the ground, stop up a foot-road which ran across the churchyard, and build a house for the sexton. So anxious were the Parsonages to economise their space that the sexton's house was built on the old ground instead of on the new. This fact was brought to light when the house was demolished, a short time back, by the Midland Railway Company, bones and fragments of coffins having been discovered amongst the foundations. It was originally intended that the railway should pass over the churchyard by a viaduct which would just clear the tombstones, and the only powers conferred on the company (so far as St. Pancras churchyard is concerned) by their original Act of July 22, 1863, are those necessary to take the sexton's house, and a portion of the churchyard, for constructing the piers, the dimensions of which are strictly limited. The representatives of persons buried in those parts of the ground required for the piers were allowed to remove the remains of their friends, the cost being borne by the company. The original plan, though very objectionable, was not nearly so bad as the one which was afterwards carried out. By a subsequent Act, which received the Royal Assent on the 25th of July, 1864, the company were empowered to make a tunnel, to join the Metropolitan at King's Cross, in addition to the viaduct above mentioned, which carries the line leading to the proposed terminus in the New-road. No part of the tunnel was to be within 12 ft. of the surface, and the company were not to acquire an absolute interest in any part of the churchyard, but were empowered to purchase and take an easement under it, to such an extent as might be necessary for the construction of the railway.

Now it is obvious to any one possessing even slight knowledge of London graveyards, that limit of 12 ft. from the surface is of very little use in preserving the remains intact.

The sickening nature of the excavations which were rendered necessary by the rebuilding and enlargement of the old church in 1840, was described in these columns by Mr. Gough, the architect engaged in the work. Mr. Chadwick quotes the evidence of the chairman of the House of Commons Select Committee on Sewers, showing that the exhalations arising from the decomposition of the bodies were most offensive in the excavations of a sewer situated at a distance of 30 ft. from the churchyard. These statements refer to a period of twenty-five years ago; and seeing that the ground has now been closed for some time, the work of removing the bodies during the recent encroachment by the Midland Railway Company, has not been attended with much inconvenience. At all events the task of tunnelling through a densely packed mass of old coffins was not pleasant to contemplate; so the company drove their proverbial coach-and-six through their Act, and opened a trench right across the churchyard. In the course of their operations the removed between 10,000 and 15,000 bodies, which were re-interred in an adjoining piece of ground which had been purchased and consecrated for the express purpose. The removal appears to have been effected with great care, and with as much reverence as the case would admit of. Attempts have even been made to place the tombstones in their proper relative positions in the new ground, but the crowded state of the churchyard must have rendered this almost impossible. There is little doubt but that the plan adopted by the company was the best, although at first sight it looks like a gross violation of the pledge. The proceedings of the railway company have been the cause of much pain to the inhabitants of the parish, most of whom were, however, too poor to do anything but complain. On the occasion of one of our visits, the subject was being discussed very warmly by two or three groups of people whose friends were buried in the ground. The news reached even to Corsica, where much indignation was felt at the proposed removal of the bodies of Paoli and his countrymen. These graves have, however, not been interfered with.

Respect for the dead, and for their last resting-place, is happily not uncommon, and it is important that no violence should be done to such a sentiment. Those portions of the earth which have been set apart and used for sepulture should not be lightly disturbed. It is quite unnecessary to consider whether the ground has been "consecrated;" it is in one sense holy to the remains of those who were dear to us. The law, it is true, recognises no such claim as this, but, on the other hand, it has conferred certain important privileges on consecrated ground. Bonhill-fields has never been consecrated, but has most properly been allowed to remain undisturbed. With "poore Pancras," however, the case is different. The choice of the company lay between a churchyard and some gas-works, and it was easy to predict which would be taken. The bodies, we have said, were removed to a new piece of ground consecrated a short time previously. Now, supposing the company finds, in few years, that this new graveyard would be a desirable site for a goods-shed, is there any reason to believe that it would not be built due course? Judging from the facility with which the company obtained permission to make a huge gash in the old ground, we should be decidedly gay. The solemn dedication of ground to sacred purposes becomes, in fact, a mere form when it can be consecrated almost as a matter of course by simply applying to Parliament. Such a state of things is not desirable, and, if all the protection afforded, the ceremony of consecration might as well be performed in a dumshaw.

The Midland Company made an attempt, we believe, to buy the entire ground, including the church; but this was happily frustrated,—for the present, at all events. It will, however, probably happen, sooner or later. The churchyard of Old St. Pancras is somewhat peculiarly situated. In the Act 56 Geo. III., cap. 39, the rights and privileges of Old St. Pancras as a mother church were transferred to the new edifice in the New-road; but, whilst the old building ceased to be the parish church, the burying-ground remained

* A Supplementary Report . . . on Intermment in Towns: London, 1843.

the parish churchyard, and, as such, is vested in the Vicar of St. Pancras. Unremitting efforts have been made by the Rev. Mr. Arrowsmith, perpetual curate of Old St. Pancras, to preserve a ground attached to his church; but the curate decided that he had no *locus standi*.

Whilst defending burial-grounds we must avoid falling into a very common misapprehension, and which it may not be improper to mention by way of conclusion. It is generally held that a person once deposited in a churchyard has a sort of legal right to that ground for ever afterwards. The law of the subject was clearly laid down in a judgment given by Lord Stowell, the case of *Gilbert v. The Churchwardens of St. Andrew's, Holborn*, on the use of iron coffins. "It has been argued," says his lordship, "that the ground once given to the body appropriated to it for ever. It is literally in certain unalienably. It is not only the *domus eterna*, but the *domus eterna* of that tenant, no is never to be disturbed, be his condition what it may. The introduction of another body into that lodgement at any time, however distant, is an unwarrantable intrusion. These positions be true, it certainly follows that the question of comparative duration takes into utter insignificance. In support of them, it seems to be assumed that the grant himself is imperishable; for, surely there can be no inextinguishable title, no perpetuity of possession, belonging to a subject which itself is perishable. But the fact is that "man" and "for ever" are terms quite incompatible in any state of his existence, dead or living, in this world. The time must come when *ipse pariter ruina*, when the posthumous remains must mingle with and compose a part of that soil in which they have been deposited. . . . The *domus eterna* is a mere flourish of rhetoric; the process of nature will steadily resolve them into an intimate mixture with their kindred dust; and their dust will go to furnish a place of repose for other occupants in succession. The common cemetery is *res unus est*, the property of one generation now departed, but is likewise the common property of the living, and of generations yet unborn." The judgment goes on to say that any contrivance which prolongs the time of dissolution beyond the period at which the common understanding and usage have fixed it, is an act of injustice, unless compensated in some way or other. Such contrivances, moreover, are sure to bodies a much longer possession, and comparatively small portion of the dead will outlive the living and their posterity. This, however, is not sufficient to justify such desecration as that recently committed by the Great Eastern Railway Company, and we have not a word to say in favour of the way in which companies "acquire" a church and churchyard, or at least a little compunction as they would buy a public-house and tea-gardens.

A NEW SKETCH-BOOK.

THERE has been recently quickly and privately published a new sketch-book, or book of architectural sketches of Mediaeval antiquities, intended for private circulation. It is of some singularity regards the contributors, who are all supposed to have been bred in the same school, or modern *garçonne*, to have wrought in the same office under the same direction; as well as to possess merit both as to execution and taste in the choice of subjects. It is called the "Springfield Sketch-book," a title that serves the purpose of a designation and a statement of the source. The list of members, as the contributors are called, includes several well-known names, whose owners, however, are understood to have been, at some time or other, either in or out-door, *collaborateurs* of Mr. G. G. Scott, an architect, who is the president of the staff. Mr. Barlison is the vice-president; and Mr. Arthur Thompson is the treasurer. The leading contributors we shall name in our brief notice of the contents. The first volume, of more than twenty plates, is now completed, and the first of the second volume are issued. We must advise that none of the sketches are mere pictures. Most of the subjects are measured and drawn to scale, and in every instance where it is possible ample details are figured. Nor are they confined to one class of objects, nor even to the workmanship of one nation, for there are two or three examples of foreign art. The book is on a scale known as large folio.

Among the earliest plates we notice a bold drawing of the Cathedral Church, Oxford. Standing in the verges of the garden, the limner, Mr. Tinsley, has chosen the point of intersection beneath the central tower as the leading idea in his sketch. Above the two lines of building, departing at right angles from one another, rises the grave pyramidically-capped tower, with the ancient high-pitched roof-marks of the great arms of the cruciform buildings still showing, and with small Norman openings in the stage beneath the belfry, telling of an older structure than that with which it is now finished. The venerable, crumbling character of the masonry of this early portion of the tower is indicated by a fine soft treatment, in contrast to the general hard, bold, effective strokes with which the rest of this picture is made. We are next specially impressed with a detail drawing of two finials from the stalls of the Church of St. Lawrence, Ludlow. Many who saw the suggestive sketch for tracery of a great window made by Mr. Millais some years ago, in which the leading lines were formed with the bold edges of angels' wings, will agree with King Solomon as they gaze on these finials. In the first of them the Mediaeval artist obtained his pinnacle by grouping together and drawing to a point the wings of the angels with which the top of the finial is composed; and thus, with the exception that he compressed the wings instead of extending them, anticipated the poetical design of our eminent modern painter by some four or five hundred years. Two sets of seats, the first alternately tall and short, in the nave of the Church of SS. Peter and Paul, Warminster, and the second in the nave of the Church of St. Bartholomew, Chosen, or Churchdown, Gloucestershire, are also given on this sheet, which bears the signature of Mr. Medland.

As we turn over the leaves we are next startled at the forlorn east end of St. Andrew's Cathedral, Scotland, standing spectrally on the page, with its window openings only so many sorrowful eyes looking down upon the beautiful wilderness of ruin around. This frayed piece of Transitional workmanship has been sketched with feeling by Mr. E. Hughes. In contrast to this Mr. Hubert J. Austen gives the south-west angle tower of Helmsley Castle, Yorkshire, used as a residence by one of the Dukes of Buckingham, a sturdy piece of domestic architecture of tolerably settled times, four stories high, based upon a foundation in which an arrow-slit indicates that resistance and defence were requisite when it was built. This is an agreeable sketch, leafy, sunny, and careful. Close upon this we notice a plate divided into four compartments, each containing a very spirited drawing of an iron standard from the Strozzi Palazzo, Florence. Three of these standards (*Lumiera maravigliosa*) are in the form of winged dragons, the third having the head of a woman. All have wings attached to them. They are known as the work of Nicolo Grasso, called "Caparra," who flourished in Florence about the middle of the thirteenth century. Our cleverest metal workers will be grateful to Mr. C. J. Fergusson for the particulars of these choice specimens of the work of one of their able predecessors. Though tempted by reason of the embarrassment of riches to allow page after page to flutter over, we must tell how neatly and quietly Mr. S. Clarke has shown a portion of the former palace of the Archbishops of Canterbury, at Maidstone, and a ripe old half-timbered mansion at East Masefield, near Lindfield, Sussex. As an instance of the variety of the contents of the sketch-book, we mention two drawings of a chancel, by Mr. J. T. Michelwhite. One shows the chancel; the other gives exact details of the crucifix, with figures of the Virgin and St. John embroidered on the back orphrey, full size, with the colours indicated in marginal notes. Another striking variety is the old bridge at Heybridge, illustrated by Mr. Kelly. Our old bridges are so much more picturesque than our new ones, that they deserve examination and consideration. Their low, pointed arches, their quaint abutments, often containing a seat for wayfarers, and always affording them a retreat from the perils of the narrow way, and the ancient gateway towers with which some of them are defended, are as characteristic in their way as any other department of Mediaeval buildings. A sketch-book of old English bridges would occupy a niche among artists as desirable as that accorded to the water-pot by men of letters. Mr. Kelly gives plan, section, elevation, besides sections of parapet, cutwater, and arches, as well as a placid perspective. Different, again, from this, and

awaking a very dissimilar train of ideas, are three sketches—the somewhat bald execution of the north view suggests the substitution of the word scratches—of the unmistakably Norman-French church of Varengeville-sur-Mer. This is evidently a very interesting edifice, whose details would have been worth giving, and it is a matter of regret that Mr. Austen dismissed it in such a peremptory fashion. As the loose leaves of this well-stored sketch-book continue to pass before us, we catch sight of a fragment of Welsh architecture that stays our hand. It is part of Chirk Castle, in North Wales. A round tower stands boldly forward, as though it were a promontory in masonry, and in the angle whence it commences its bold sweep is a curious doorway rendered in most eccentric perspective.

The barn of a Benedictine priory, at Harmondsworth, Middlesex, a cell of the alien abbey of St. Katherine, at Rouen, makes a good drawing of ancient timber work. There is not a particle of ornamentation, but the multiplicity of the timbers, and their regular arrangement give an appearance of considerable richness to the priors' barn. Many of our modern corn-exchanges would look miserably bare by the side of it. When we come across such specimens of honest workmanship as this, we can but allow that the "good old times" earned their reputation. It would be as well, perhaps, if the architectural draughtsmen combining together for the perfection of the sketch-book, had agreed not to encumber it with subjects that were already published in works of acknowledged reputation. Mr. Delamotte's drawing of the draw-well in the inner bailey of Alnwick Castle is a case in point. The subject is interesting in itself, doubtless, and it is the only draw-well in the book, but it has been recently given in the "Feudal and Military Antiquities of Northumberland and the Scottish Border," by the late Rev. C. H. Hartshorne, as well as in the sumptuous volume printed for the private circulation of the late Algernon, 4th Duke of Northumberland. Moreover, this drawing must have been made more than ten years ago, for a modern doorway shown by the side of the well has long since been removed. The west end of Holyrood chapel, too, is somewhat familiar to all who would inspect the work for the sake of information, though it is charmingly drawn by Mr. Hughes. We might say the same of Mr. Baker's faithful and delicate delineations of portions of St. Alban's Abbey church.

Mr. G. G. Scott, jun., has given some details of stalls in a masterly manner. The Chichester stalls, with their admixture of foliage and geometrical figures, are particularly fine, and Mr. Scott has made them appear so. Mr. Henry Walker has been to Bolton, and when there wisely abstained from the well-known general views in favour of details, which are not so accessible to travellers whose journeys are performed in the library. He usefully gives sections of jamb and arch mouldings, of the bases and sills of lower and upper arcades, of the caps and strings of both arcades, and sketches of other details, such as the hinge on the north-west door to a scale of 2 in. to 1 ft. In like manner Mr. Ralph Nevill has been to Lichfield, and brought away careful portraits of parts of its great and glorious fan. Very clear and plain-speaking, too, is a drawing of the triforium in the north-east bay of the south transept of Westminster Abbey church, by Mr. W. Jolley. From these, carefully drawn with rule and ruling pen, with compass and bow, it is amusing to turn to two sketches of foreign subjects apparently depicted without aid from either. The author does not affix his name to these two studies; nor has he occasion to do so: there is an individuality about them that is unmistakable. Close to the eye, a series of rough lines; removed from it, an aerial perspective: there can be no doubt as to the authorship of these rigid though transparent incognito sketches. Here we have Hameln, Germany, soaring in the sun before us, a cruciform building, surmounted by an octagonal tower, with a minaret-like terminal; and a wonderful Norman pile at Conques. The foreign air is not more apparent than the hazy, baking heat and the venerable age of the fabrics. As a contrast to these we turn to the repose and cold of some sculpture. Mr. J. O. Scott gives two draped figures from the north portal of Chartres, whose drapery, arranged in minute and many folds, shows the favour in which intricacy in this department was once held; just as the figures given by Mr. W. G. Niven, from the tomb of Aymer de Valence, in Westminster Abbey, show the ease with which it could be

dispensed. Many of the plates we have not mentioned are of equal interest. We have aimed at showing a sample of the contents of the new sketch-book, rather than selecting for praise the best execution or the choicest subjects. We mention the work to suggest that it should be thrown open to the public. If the drawings were designs, we could understand the reticence of the authors; but as they are all representations of early works of art, we think the good cause of preservation, which we presume every architect has at heart, would be best promoted by their widest dissemination.

WILLIAM EDMONSTOUNE AYTOUN.*

It is long since we have risen from the perusal of a book with such feelings of sadness as we have done after reading this graceful and unassuming memoir of Professor Aytoun. Mr. Theodore Martin, we suspect, must have written it under the pressure of very deep emotion. Indeed, we do not know how he found the courage to undertake the task. Orestes might have got through the *dolgo* of his friend Pylades; Damon might have pronounced the funeral oration over the corpse of Pythias with the composure of ancient Greeks and Pagan philosophers. The case is somewhat different when a Christian author of the nineteenth century is required to write the biography of his dearest and most valued friend. This performance, we suspect, even in ordinary circumstances, is one which taxes to the very uttermost the principles of sacrifice upon which our common Christianity reposes. But when those friends are both poets,—and poets who have published books with their joint names on the title-pages, the cruelty of the situation almost amounts to an intellectual crucifixion. "To the sisters of my friend," writes the biographer, in his brief but touching dedication, "this memorial of his life is inscribed in affectionate remembrance." "*Amicum perdere*," he might have added, in the words of Publius Syrus, "to lose such a friend is the greatest of losses. It is irreparable."

We think it may be for this reason, perhaps, that Mr. Martin has not attempted anything more than a brief sketch of Aytoun's life. There is no attempt at biological analysis, no estimate of the society in which Aytoun's lot was cast, hardly any of his correspondence, and, finally, no attempt to assign his place in modern literature. As a consequence, his treatment of the subject almost conveys the impression that he has struck too low a tone in estimating the probable interest of his readers. We can also detect, as we fancy, the uneasy feelings of a distinguished author torn between the necessities of the publicist and the sacred duties of private friendship,—undesirous of obtruding his own opinions, and above all things, averse from displaying his personal emotions. Now, here Mr. Martin has, in our opinion, committed an error—a most excusable error indeed—of judgment. Whatever may be the impression in London literary circles, Aytoun's countrymen are proud of him. There may perhaps be greater Scotsmen in the present generation, although we do not know them; but certainly there is now no greater Scottish poet. Whatever Aytoun's other qualities may have been, this he possessed in an eminent degree—the power of exciting the sympathies and kindling the enthusiasm of all classes of his countrymen. He was, we suspect, "the last of the clan," the solitary representative of a class of illustrious Scotsmen who have either been expatriated or become extinct.

William Edmonstoun Aytoun was descended from an old Fifeshire family, the same that is now represented by Mr. Roger Sinclair Aytoun, of Inchdairnie. He was not the first poet of his race. This ancient house had the honour of possessing among its sons the celebrated scholar and poet, Sir Robert Aytoun, who has long been laid in Westminster Abbey; and who was the friend in his day of Ben Jonson and Hobbes of Malmesbury. His father was Mr. Roger Aytoun, a writer to the signet, a genial, kindly, and honourable man; and a sound Whig of the good old Gibson-Craig and Jeffrey and Cockburn clique. His mother was a Perthshire

lady, a daughter of Keir of Kinmouth, a woman of great accomplishments, and endowed with high literary taste. She was, of course, a staunch Jacobite; and from her there can be no doubt Aytoun, her only son, imbibed his poetical passion and his strong historical bias towards the dynasty of the Stuarts. He was born at Abercrombie place, Edinburgh, on the 21st June, 1813; the rest of his family consisted of two sisters, who both survive him. His boyhood was spent in Edinburgh and its neighbourhood, where his father possessed a small woodland estate. He was educated at the Edinburgh Academy, under the care of the late Archdeacon Williams, and at the University, under Pillans, Dunbar, Wilson, Hamilton, Ritchie, Jamieson, and Hope, the professors respectively of Latin and Greek, moral philosophy, logic and metaphysics, natural history and chemistry. He was not a distinguished student, we are told; but he was by no means indolent or negligent of his studies; and, moreover, he was throughout his whole career an ardent devourer of books. It was at college that his biographer first saw Aytoun, though he did not really become acquainted with him for some years afterwards. The occasion of their meeting was rather remarkable, and its result was thoroughly characteristic of Aytoun; indeed, it was no less an incident than a meeting of students where the future professor of literature, in a single unprepared and *impromptu* speech, put to rout and general disorder the best laid schemes of Thomson Gordon, the future Sheriff of Edinburgh, and James Moncrieff, the future Lord-Advocate of Scotland.

About this time he became a clerk in his father's office. In this capacity he was much engaged, it appears, in the Lanarkshire election, which immediately preceded the passing of the Reform Bill. The experience of the electioneering policy of that time, doubtless, supplied him with material for the vivid and life-like descriptions of election scenes that occur in several of his works. In the year 1833 we find him in the office of a parliamentary agent in London; but he remained there only one session: indeed, he began to discover a bitter and insurmountable aversion to the purely formal and technical part of his profession; and we may as well state here that Aytoun's love of green fields and Highland streams and mountains was far too strong to coincide with the necessities of his legal studies.

At length he went to Aschaffenburg for the purpose of studying German, where he remained for a year, in the course of which he made a translation in blank verse of Goethe's "*Faust*," which, however, was never published. Like every intelligent Scotman who goes abroad, the Sunday usages of the people of France and Germany seem to have struck Aytoun very much, and he had the courage and good sense in writing to his mother to state frankly how the contrast affected him. Dating from Aschaffenburg, on the 1st of April, 1834, he says:—"The people here are certainly more religious and attend far better to public worship than the generality of people in North Britain—a circumstance which I must attribute to their very different way of passing the Sunday." He was certainly correct in this view. Our London gin-palaces are worse places than Continental tea-gardens; and there is no greater piece of legal or ecclesiastical fiction, we will not say imposture, under the sun than the forced observance of the Jewish Sabbath as it exists in Scotland. How an intelligent and high-spirited nation so quietly submit to the tyranny, is one of the numerous paradoxes which puzzle every observer of Scottish civilization.

During his residence in Germany, he made great progress in his studies, and gained the friendship and good opinion of his respected tutor, Professor Joseph E. Merkel, a distinguished scholar, and a man of great and varied attainments. Under his guidance he acquired a mastery of that language which set open to him the treasure-house of German poetry, philosophy, and literature; and from which he gathered materials that were of infinite value to him in his future career.

On his return to Edinburgh, in 1835, he passed as a Writer to the Signet; and he was a few years afterwards called to the bar. Before this time he had begun contributing to *Blackwood's Magazine*. His first papers consisted of translations from the German poet Uhland, in 1836; but he soon spread his wings in the larger sphere of politics and literature; and what was rarer in Scotland at that time, he wrote several able essays upon art. He continued hencefor-

ward to be a constant contributor to *Blackwood* down to the close of his valuable life.

It was about the year 1841 that Mr. Theod. Martin began to form that literary partnership with Aytoun, which only death has dissolved, and which had for its immediate results, and other things, the production of the celebrated *Ben Gaultier Ballads*,—after James and Hor. Smith's "rejected addresses,"—the most popular and inimitable burlesques of their day. "*Lays of the Cavaliers*" also began to appear about this time. "The Burial March of Dundee the first of those stirring ballads, appeared April, 1843. This year he sustained his first great loss in the death of his father, and Jacobite ballads were accordingly written under the pressure of deep personal emotion. He was now thrown entirely upon his own resources, but at length, in the year 1845, he was elected by acclamation to fill the chair of Rhetoric and Belles Lettres, in the University of Edinburgh, a position to which he had early aspired and had long looked forward to as the summit of his literary ambition. His genius and advocacy of conservative politics procured him the sheriffdom of Orkney in 1852; of which office he used to say pleasantly respecting his own administrative and judicial powers, that was "Czar of all the Orkneys." Two or three years afterwards he made his celebrated cavalry charge into the ranks of the spasmodic poets the publication of "*Firmilian, the Student Badajos*," and in 1855 he produced his last and greatest work, "*Bothwell*," a poem, which, although unsatisfactory in its original plan, nevertheless contains passages of great power and picturesque beauty. We have now arrived at that period where the poet's star has reached its zenith; and the rest is the story of its decline. In the year 1859 his wife—a daughter, his guide, philosopher, and friend, John Wilson—died, after a painful and lingering illness, and from this blow he never recovered. His health began to fail. Twice he tried the waters of Homburg, and each time with beneficial results; and in 1863 he felt comparatively restored to health, so much so as to venture upon a second marriage; and the following year he seemed almost to have taken a renewed lease of his life. But the fact is, his constitution had been overtaxed, and had at length given way. All intellectual work becomes painful and even distressing. He had hired a shooting-box for the season a place called Blackhills, near Elgin; and he died on the 4th of August, 1866, in the 52 year of his age. His body was brought to Edinburgh and buried in the Dean cemetery, a plot of ground which he had long ago selected, and in which reposed the ashes of Emily Wilson, his first wife.

It would, of course, be out of place in the columns to enter on a lengthened critical estimate of the genius of Professor Aytoun. But we think it possible in a few words to indicate the leading features of his character as a poet, teacher, and a public writer,—within the limits of which mental classification his claims to respect and admiration of posterity will, we believe, ultimately rest.

As a political writer he is beyond our province. He has been accused by his adversaries of misstating or overstating his facts. We are not aware that the same thing has ever been said with regard to his enunciation of principle. From his earliest years he seems to have acquired a thorough knowledge of sound and true doctrines on the subject of political economy; and on this head we shall extract a passage from his biographer, which will serve to support our thesis, and at the same time illustrate Mr. Martin's admirable style. The subject is Aytoun's celebrated account of the "*Glenmutchkin Railway*:"—

"About this time, what has since been known as the 'railway mania,' had begun to set in. The great lines of communication, so far as completed and in operation, were yielding very high dividends, and it had become apparent that their extension throughout the country was indispensable to its prosperity. The success with which several legitimate enterprises had been launched was followed by the projection of schemes solely for the purposes of speculation on the Stock Exchange. Money changed hands more rapidly than in the saloons of Baden and Ems. Of this general game, however, Mr. Aytoun was a close observer. Many of his immediate circle of friends had gone deeply into it. He saw its pernicious influence upon the habits of 'manly fellows,' who, as he used afterwards to say, were 'out in the 40's,' and he was too well versed in economical science not to foresee very clearly the disastrous results to which the universal scramble after sudden wealth could not fail to lead. At first, and before he became aware of the extent to which the mania had spread, of the rascally devices by which bubble schemes were forced upon the public, he dealt with the subject in purely jocular spirit, as in his sketch, '*My First Spec-*'"

* "Memoirs of William Edmonstoun Aytoun, D.C.L., Author of 'Lays of the Scottish Cavaliers,' &c., &c. By Theodore Martin. With an Appendix." 8vo. William Blackwood & Sons, Edinburgh and London, 1867.

the Bigglewades,* most of the actors in which were real personages under a very faint disguise. But as the fever of speculation grew worse and worse, and the projects of those who traded upon it more rascally, Aytoun determined to let in some light upon the rottenness of the system, and help to arrest the folly which he saw carrying thousands to inevitable ruin. With this view he wrote, "How we got out of the Glenmutchkin Railway, and how we got out of it." Never was truth more pitifully told, nor a good purpose better served, under the disguise of humour. People laughed at the tale, but it made them think. Knaveish projectors saw their infamous system laid bare; and their miserable dupes stood aghast at the folly which had made them the easy prey of the M'Gorkindales and the Dunshunners. The *Times* reprinted the paper at full length, delighted to have the warnings so emphatically backed which it had for a long time been preaching in vain. "Glenmutchkin" became a byword for every outrageous project; and ridicule slew what had been proof against the assaults of the strongest argument. The demon, it is true, was only laid for a period; and when he rose again, he spread his snares under another guise. Unhappily there has arisen no second Aytoun to show up, with the same force of sarcasm, the gigantic rascalities of railway "financing," and to fix for immortal infamy the lineaments of the men who have carried on under that name a system of falsehood and fraud which has desolated the home, and blighted the lives of thousands in these later days.

It is upon such social topics above all others that we must regret the loss of Aytoun; at the same time we must say on our own account, and Mr. Martin will be certain to do us the justice to admit, that we have stood in the vanguard (and almost alone) in reproaching the deplorable iniquity of our modern railway "financing." And all we can say is that the recorder of the whole subject passes from the domain of the journalist to that of the criminal jurist the better.

As a lecturer Professor Aytoun had no compeer in the Edinburgh University,—at all events, after the death of Wilson. He possessed a manner which we can only describe as at once kindly and dignified; a voice which, although somewhat plaintive in its tone, as often became his subject, was singularly mellifluous and well modulated; and an accent correct and refined without being over-refined. His lectures were perfect models of literary disquisition; beautifully composed and carefully studied and thought out. He has been charged with not rising to the philosophy of his subject, and the charge is to some extent true. But *cut bono*? We do not see for whose benefit it would have been to teach the raw and undisciplined lads who came up from Ross-shire or the Isle of Skye every year to study heology and metaphysics anything more than rudimentary rhetoric and *belles lettres*. Guizot or Villemain, not to speak of that positive philosopher Monsieur Cousin, would have failed, in our opinion, had they lectured on the philosophy of history and literature in the Edinburgh University instead of the Sorbonne. On this subject, Colonel Hamley points out* with some astonishment the practice which, as he supposed, Aytoun tolerated of the students expressing their approbation of his teaching by the ordinary British method of stamping their feet. "I once accompanied him to his lecture-room, and sat beside him, while in front of us gathered an audience most respectfully attentive; but who, somewhat to my surprise, evinced their approval of certain brilliant passages of the discourse by a loud and general clattering of their feet." Col. Hamley obviously did not suppose nor would our readers believe, that Aytoun's students also exercised this "privilege" in expressing disapprobation of the discourse; and sometimes, indeed, without any adequate motive! "Lecturing," adds the colonel, "was a pleasure to him, and he did it well. But another portion of his duties must have been less congenial: I used to see his tables loaded for weeks together with the books in which the members of his class wrote their essays, and which he was at great pains to correct." We really do not know how to add another word to this inestimable proof of Aytoun's earnestness and assiduity as a teacher. And, to tell the truth, when we got to understand this department of his academical duties we did not think it necessary to seek for any other cause of his premature and untimely death. To correct the literary essays of three or four hundred Scotch students every year. *Parbleu!* Even Julius Cesar Scaliger would have sunk under it.

Aytoun's knowledge of art, we may state, was great; and his taste, like that of all true lovers of external nature, was healthy and truthful. Writing from Homburg to Mr. J. Blackwood, in 1862,† respecting Noel Paton's designs for the illustration of "The Lays of the Cavaliers,"

he makes the following sensible remarks about ghosts and skeletons:—

"... Ghosts are not skeletons; nor are they ever so portrayed. If, in the tragedy of 'Macbeth,' a skeleton were to walk on instead of the image of the murdered Banquo, the whole interest would disappear. A skeleton, in the view of Albert Durer, the old masters, and the old poets, typifies 'Death'—not the apparition of a man who has been slain. A skeleton was, indeed, technically called 'a Death,' as in the account of the hideous figure that appeared in the dance at Holyrood on the occasion of the nuptials of our last King Alexander. And such were the veiled figures that were supposed to fit through towns infected by the plague. The idea of skeleton ghosts was, I think, first started by Burger and Mac Lewis, and is a poor conception, since it is hardly possible to distinguish one skeleton from another, and nobody ever saw his own. I hope Noel Paton will seriously consider this, for even in allegorical design there should be an observance of propriety, and I am quite sure that this drawing of his (masterly in execution, as is everything from his pencil) would be objected to as in doubtful taste. I do not like to presume so far as to offer a suggestion, but it seems to me that if the head were left, and instead of the skeleton, two veiled female figures were introduced, with averted faces, and hands clasped as in prayer, the sentiment would be more effectively expressed."

But we must hurry on. We have only room for a few more lines in which we must venture to speak of Aytoun as a poet; and here we are certain that he suffers for the moment at the hands of his critics, if not of his biographer, from a misapprehension.

In the first place, we must always remember that Aytoun was not merely a Scottish poet, but a Jacobite. The sentiment of attachment to the Stuart race which, as we have mentioned, he had imbibed from his mother, amounted to a passion, if not to a positive frenzy; and there can be no doubt whatever but his intense love for the memory of the ill-fated Mary Queen of Scots did lead him to select a hero in that unmitigated scoundrel Bothwell, into whose arms she was obviously driven by the very terror for her life. With all this original error of conception, superadded to an excessively faulty construction, there are lines in Bothwell of such tenderness and beauty, so full of melancholy music and sad retrospection, that they leave a lingering cadence on the ear like the fabled song of the Dying Swan. Nevertheless, we are bluntly told by one of his posthumous critics "that whether working in prose or in verse, Aytoun's forte lay in farce." The same thing might have been said—substituting the word burlesque for farce, which must have been meant, we suspect—of Goethe or of Shakespeare, or of Walter Scott. But who would estimate the sum of Shakespeare's intellectual power from a study of the clowns at Ophelia's grave; or of Scott from the picture of Caleb Balderston, in the "Bride of Lammermoor"? Because Aytoun wrote clever burlesques like the "Massacre of the Macphersons," does it follow that he was disqualified or incapable of writing in a strain of truthful and elevated poetry? We think not. The fact is, in our opinion, that Aytoun was so much of a true minstrel or troubadour that he had acquired the command of a variety of instruments. He could touch the chords of the harp; he could sound a *reville* on the trumpet; he had even acquired the art of playing on the bagpipe. A pipe whose forte lay in farce would scarcely attempt to strike anything of a higher tone in a Mason's Lodge; yet here is the sort of lines he produced on one occasion,—a copy of which we read with admiration at the time, although they have not, as far as we know, been published. We have not space for more than a few stanzas:—

"THE RAISING OF THE BEAUSEANT,"

As recited by PROFESSOR AYTOUN, at a Festival of the Knights Templars of the Metropolitan Priory of Scotland, 1862.

Fling out the Temple banner as of old!
Age hath not stain'd the whiteness of its fold,
Nor marr'd the ruddy cross, Salvation's sign.
Once more we lift the sacred standard up—

Companions, fill the cups—
We pledge the Beauseant in this sparkling wine!

Oh! what a valiant host have fought and bled
Beneath that banner to the wind outspread,
Since first it moved against the infidel!
Who knows not how it waved on Saladin's towers,
When Acre, Ramla, Nazareth, were ours,
And at Tiberias fell?

Fell with the knights who bore it to the field,
When foultest treason broke the Christian shield,
And bad the Turkish crescent-sign advance!—
Fell but to rise again with triple pride.

When, bounding o'er the tide,
The armies came of England and of France!

And who is he, the leader of that band,
Who first sets foot upon the Holy Land?
None, on unhallowed champion that thou art!
Shout, brethren, shout! Adieu your banners ding—
'Tis he, the Christian's hope, the island king—
Richard, the Lion-heart!

DEATH OF PROFESSOR FARADAY.

THE public have learnt with very general regret that Professor Faraday is dead.

Michael Faraday was born in 1791, in the parish of Newington, Surrey, and was entirely a self-made man. After being instructed in the mere rudiments of knowledge he was apprenticed to a bookseller and bookbinder, and continued to work at his trade till 1812. During this early period of his life, however, he showed the bent of his genius; for in the intervals of his employment, he not only read with avidity such works on science as fell in his way, but applied himself to the construction of electric and other machines. Having been present at some of the last lectures delivered by Sir H. Davy, Faraday wrote to him asking encouragement, and inclosing notes of the lectures. Sir H. Davy answered the request of the young aspirant promptly and kindly; and in 1813 he was admitted into the Royal Institution as chemical assistant to Professor Brand. Faraday soon became the favourite pupil and friend of his patron, whom he accompanied in the autumn of the same year on a visit to France, Italy, Switzerland, &c., returning to his place in the Royal Institution in 1815. In 1820, Faraday discovered the chlorides of carbon, and, in the year following, the mutual rotation of a magnetic pole and an electric current; in 1823, the condensation of gases; in 1831 and following years, the development of the induction of electric currents and the evolution of electricity from magnetism. The establishment of the principle of definite electrolytic action, the discovery of diamagnetism, and the influence of magnetism upon light, obtained for him in 1846 the Rumford medal and that of the Royal Society. In 1847 he announced the magnetic character of oxygen and the magnetic relations of flame and gases.

In 1835 Mr. Faraday received a pension of 300*l.* a year from Lord Melbourne's Government. In the following year he was appointed scientific adviser on lights to the Trinity House, and was subsequently nominated to a similar post under the Board of Trade. He was chemical lecturer from 1829 to 1842 to the cadets of the Royal Military Academy at Woolwich. In 1825 he was elected a fellow of the Royal Society; and in 1832 the honorary degree of Doctor of Civil Laws was conferred on him by the University of Oxford. He was a knight of the Prussian order of merit, of the Italian order of St. Maurice and Lazarus, and one of the eight foreign associates of the Imperial Academy of Sciences of Paris. In 1855 he was nominated an officer of the Legion of Honour, and in 1863 he was made an associate of the Paris Academy of Medicine.

Although the late professor chiefly confined himself to experimental researches, there are theoretical views thrown out with regard to static induction, atmospheric electricity, the lines of force, both representative and physical, which are well worthy of consideration. His papers on the conservation of force, and on the division of gold and other metals, are amongst his latest productions. It is in connexion with electricity, and its relations with almost all physical, chemical, and physiological phenomena that his fame will principally depend. He was the best lecturer that was ever listened to.

FROM PARIS.

At Notre-Dame a portion of the constructions in planks, forming the moulding *atteliers*, has disappeared, and on the spot, south of the cathedral, a new sacristy is being erected, the style of which will harmonize with the church. The door-hangings of the lateral porches of the Virgin and of St. Anne on the western façade of the cathedral are very curious examples of the iron-work of the twelfth and thirteenth centuries. According to an old tradition, this iron-work was the handiwork of no less a personage than the demon himself, who associated himself and made a pact with a workman of the name of Biscornet, charged with this work, which was above his means to complete. All the resources of the devil failed to finish the iron-work of the central door through which the Eucharist is carried on days of solemnity. The task of completion remained for a modern artist, and a fine piece of ornamental iron-work is being put in place, executed by M. Boulanger, under the direction of M. Viollet-le-Duc. In the interior of the church the works of restoration undertaken

* In an able sketch which Mr. Martin has printed, p. 175, *et seq.*
† Quoted at p. 220.

more than twenty years ago, have been continued almost without intermission, and the last finishing touch is being given to the restoration of the screen, of stone, adorned with figures, enclosing exteriorly the choir of the church. This long series of sculptures, executed in a great portion by Maître Jean Ravy, who was mason of Notre-Dame during twenty-six years, was completed in 1351 by Jean de Bouteiller, as appears by an ancient inscription placed at the end of the screen due to the chisel of these sculptors.

The new Gothic porch of the church of St. Laurent, now quite terminated, has been stripped of its scaffolding, and now appears in all its architectural splendour. The new façade has two open-work gables 30 mètres high, and the whole is surmounted by a wooden spire, covered with lead, the edges of which are gilt, so that it bears some resemblance to that of the Sainte-Chapelle. It is decorated with the figures of the twelve apostles, as large as life, which protect the glass pertaining to the florid Gothic style; six great counterforts, terminated by pinnacles, relieve the pressure of the arches of the vaulted roof. The summit of spire is 147 ft. 7 in. above the ground.

The new reading-room of the Imperial Library is now completely finished; it is occupied by sixteen rows of tables. At the extremity, in a large and magnificent hemicycle, ornamented with caryatides, is the bureau of the guardians, attendants, &c. At the end of this is a large semicircular-headed doorway, with two doors, leading to the library, properly so called, which is of iron open-work, and five stories high. An ingenious contrivance is provided for ascending and descending with the books. The whole is heated by hypocausts. Nothing now remains to be done but the placing and classifying of the books, and for this purpose three hundred sub-officers and soldiers are employed to aid the employés of the library.

A New Invention.—The "Parisian" stereoscope is constructed by M. Marinier, so as to show stereoscopic views and those of 16 centimètres magnified by a glass placed on a third aperture. This stereoscope can contain an indefinite number of slides, and the mechanism which effects the changes is of the simplest description. Each card, after having been introduced into one of the upper slide, according to its size, rests upon a small balance, which becomes moveable by pressing downwards a button placed on the right side of the instrument. The views fall flat at the bottom of the box, where they remain one over the other, until, in withdrawing them by a door situated underneath the three eye-holes, the slides are seen one after the other, and a great number can thus successively be brought under notice. There are two models of this stereoscope, one for the stereoscopic vision only, with two glasses; the other with a third glass over the two others. To view the stereoscopic slides, all that is necessary is to introduce them into the slit nearest the eye.

MANCHESTER TOWN HALL COMPETITION.

The committee reported to the Council, on Wednesday morning last, that, after frequent deliberations among themselves, they had called in Mr. George Godwin, architect, to assist them with his professional opinion of the several designs, and the result was that this gentleman's choice agreed in the main with that which the committee had themselves arrived at. They, therefore, recommended that the authors of the designs bearing the following mottoes and devices be invited to send in designs for the second competition, each receiving, as arranged, 300*l.*, with the exception of the author of the design selected for execution:—St. Michael; "Ring out the old, ring in the new;" A circle within a ring; "Time tryeth Truth;" "Polyanthus;" "Municipal;" Three Hebrew characters; and "Au bon Droit."

The Council unanimously adopted the report of the Committee.

After the resolution had been passed, the Mayor opened the letters containing the names of the successful competitors, and announced them to the Council, as follows:—

Mr. Cutbert Bidrick, Buckingham-street, Strand, London.

Mr. William Lee, Cornhill, London.

Mr. Edward Salomons, King-street, Manchester.

Mr. John O. Scott, Spring-gardens, London.

Messrs. Speakman & Charlesworth, Princess-street, Manchester.

Mr. Alfred Waterhouse, New Cavendish-street, Portland-place, London.

Mr. Thomas Worthington, John Dalton-street, Manchester; and

Mr. T. H. Wyatt, Great Russell-street, Bloomsbury-square, London.

We have given the names alphabetically and not in the order of the mottoes.

WORKHOUSE FOR ST. MARTIN'S-IN-THE-FIELDS COMPETITION.

It will be remembered that six architects were invited by the Board of Guardians to submit designs for a workhouse about to be erected at Wimbledon, for 400 old men and women, each competitor receiving 50 guineas.* A general idea of the plan desired was given to them by the clerk to the guardians, consisting of an annular building, with dormitories, wards, and other apartments radiating from it all round. As was mentioned in our notice of the designs that were sent in, Mr. Frederick Marrable was the only one of the competitors who had really carried out this idea.

It seems that the guardians were not sufficiently satisfied with any one of the designs submitted to adopt it; and, moreover, had become aware that by confining the building to one end of the plot of land belonging to them, they would be able to let a valuable frontage for building on, and so materially lessen the cost to the parish. They accordingly, after allowing the competing architects to examine each other's designs, invited them to send in revised plans.

Regarding alone the great object of a competition, which is, to obtain the best possible building for the purpose in view, this proceeding, speaking in the abstract, is a good one. But when to this is added, as of course it should be, the question of perfect fairness to the competitors, it is, at least, open to discussion. In the present case, however, so far as we know, the course pursued has the concurrence of the competitors. Mr. Marrable adheres to the suggested plan, but has materially improved his version of it by clearing away attached buildings; and this he might do with advantage to a still greater extent, so as to get windows on both sides of his radiating wards. The expediency of giving a circular, or even polygonal form, to a building, in the construction of which economic principles should govern, may be doubtful; but this, as we understand it, was the outline prescribed, and a competitor should certainly not be damaged by adherence to conditions. Two of the competitors, Mr. H. M. Burton and Mr. E. R. Cotton, have coalesced, and, in addition to revised versions of their original plans, have sent in jointly an entirely fresh design, wherein the main building is a parallelogram, having an internal open area, 90 ft. by 60 ft., with three pavilions projecting at right angles from each of the longer sides. From the entrance in the central building, corridors communicate on the right to the side of the building devoted to women, and on the left to that for the men. At each of the four angles of the parallelogram is placed a staircase, with stone stairs; the staircases being carried up as towers, and holding water-cisterns. It is not unlikely that the decision will rest between these gentlemen and Mr. Marrable. We again, however, advise the Board to take professional assistance in making the selection, and to look carefully to the "Conditions" under which the designs were prepared.

NEW OFFICES, POPLAR DISTRICT. COMPETITION.

At the last meeting of the Board the letters accompanying the selected designs were opened, and it was found that "Circinus" was from Mr. W. A. Hills, architect and surveyor, Bow; "Octagon," Mr. A. Harston, East India-road, Poplar; "Cives," Mr. C. A. Wilson, Bow.

According to the report in the *Tower Hamlets Express*,—Mr. Blott said he was quite surprised to hear that "Circinus" did not belong to Mr. Fletcher, who had been spoken of as the successful candidate in that room. He believed the Board had done quite right in selecting the plan

they had done, and he was satisfied they would find Mr. Hills's building well adapted for their purpose.

Mr. Rugg: Whom did you vote for? Mr. Fletcher or Mr. Hills?

Mr. Blott: Mr. Fletcher!

A correspondent writes,—"Rumour was very little wrong; Mr. Hills, late assistant-surveyor, is now in partnership with Mr. Fletcher, the recently resigned surveyor. In your number for June 1 (p. 397) is a letter signed "B," wherein the actual result is pointed to as probable. The writer asks the Poplar Board how the competition is to be decided, and says,—

"I hear that the present assistant surveyor, assisted by the past assistant surveyor, is likely to be a competitor; and now, probably enough, we shall find the future assistant surveyor has a finger in the pie. If the members have determined to uphold it, risks their association of past, present, and future assistant surveyors, why ask for other designs?"

Putting out of sight these questionable complications, we feel forced to reiterate our assertion made after examining the drawings (p. 602, ante) that the design by "Circinus" is abominably ugly, and to urge the Board to pause before they perpetrate it,—we might say *perpetrate* it,—in brick and stone. If the Board will not take advice, the ratepayers, before it is too late, should look to it.

WORKSOP NEW CHURCH COMPETITION.

Forty-three designs were sent in for this church. That by Messrs. Clarke & Son, of Nottingham, was chosen, and they have received instructions to carry out the works.

SOUTH HAYLING: COMPETITION.

In reply to offer of three premiums (100*l.*, 50*l.*, and 25*l.*), for laying out 200 acres of land at South Hayling, thirty-three designs have been sent in. Mr. F. Fuller, by whom the premiums are offered, has adopted the expedient of making the competitors the judges; each competitor having three votes. They are to meet (this) Saturday, at Hayling, for the purpose. We shall be anxious to hear the result. It is another "leap in the dark."

BRONZES.

CLASSIFIED lists of photographs taken for the Department of Science and Art, and which are purchasable, are being published in a cheap form, under different headings.* Each subject is prefaced with some introductory observations. Thus, under the head of Bronzes:—

The art of casting in bronze is of great antiquity; it is stated to have been practised by the Eastern nations long prior to its introduction into Europe. The Chinese historians say that Yu, who was associated on the throne with Chun, 2,200 years before the Christian era, caused nine brass vases to be cast, upon each of which he had engraved the map and description of the nine provinces of the empire. That the art was much practised by the ancient Greeks and Romans, and that they attained to the greatest perfection in it, is well proved by the celebrated monuments of their work which remain. The finest collection of ancient bronzes is at Naples: among the specimens there are some showing the very curious manner in which the ringlets of hair, worked separately, were fastened on; many of them are the size of life. Bronze casting in Greece seems to have reached its perfection about the time of Alexander the Great (330 B.C.). The accounts given of the works executed about that time almost exceed belief. After Lysippus, the favourite sculptor of Alexander, who executed, according to Pliny, above 600 works,—the art began to decline in that country. The taste of the ancients was still preserved in Italy in the fourth and fifth centuries, and many important works in bronze casting are recorded as having been achieved by them at that early period. In France, Germany, and England objects cast in bronze have also been discovered in the tombs of the fifth, sixth, and seventh centuries. During the three following centuries this art seems to have declined and been little practised in the

* See p. 367, ante.

* Arundel Society, Bond-street.

Western countries, for we read of no great works being produced by it until the beginning of the eleventh century, when it was revived in Germany under St. Bernard, Bishop of Hildesheim, who had the gates of his church cast in bronze, and who erected in the year 1022 on the space in front of it a bronze column about 15 ft. high, ornamented with bas-reliefs ascending spirally from the base, depicting the life of Christ, in twenty-eight groups.

In France the revival of this art was of a still later period, the earliest evidence of it being the gates of the church of St. Denis, which were cast in bronze under the direction of the Abbot Suger in 1140, and were enriched with bas-reliefs illustrating Christ's Passion and Resurrection.

Italy furnishes no important evidences of the revival of bronze casting prior to the end of the twelfth century, when Bonano produced the bronze gates of the cathedral of Pisa, and soon after those of St. Martin of Lucca; the large gates of the cathedral of Monreale were also executed by him, and bear his name inscribed on them.

Many of the objects used in religious services in Germany, France, and Italy, were made in bronze during the twelfth century, such as candlesticks, candelabra, baptismal fonts, and some of the vessels for the altar. Important specimens of the work of this period are still to be seen in the different churches.

The Medieval and Renaissance periods also produced for the same purposes numerous specimens of bronze casting; but as these pieces were always more or less enriched with precious materials, they belong more especially to the goldsmith's art.

Italy possessed in the sixteenth century a great number of celebrated artists, who designed and executed with incredible rapidity statues, groups, monuments, and fountains in marble and in bronze. There were many also who reproduced in bronze, miniature bas-reliefs and statues, either from the antique or from the works of contemporary masters. Florence was most renowned for these works. The pupils of John of Bologna reproduced, in bronze, statues of the numerous works of their master. Many of these beautiful statues and fine bas-reliefs are found in the collections of the present day, and are much sought for by amateurs. These artists did not disdain to employ their talents on the improvement and decoration of objects of ordinary domestic use; in the museums and private collections of the present day there are many beautiful specimens of their work, such as candlesticks, fire-dogs, knockers and handles for doors, trinkets, &c., which are justly valued as objects of art.

The photographs named in the catalogue are almost from works of the fifteenth and sixteenth centuries, selected from the collection in the South Kensington Museum, and from specimens lent for exhibition by private collectors.

SINGLE-SPAN CHURCHES.

ONE of our former numbers contains a description of two very remarkable churches at Angers, and we promised our readers that we would continue the subject. We now fulfil our promise by giving an account of the cathedral in that ancient city, to which we append a few observations upon single-span churches, which, it is hoped, will not be without interest.

The Cathedral of Angers is dedicated to St. Martin, and is a building of the latter portion of the twelfth century, with additions of the thirteenth and fourteenth centuries. It has the peculiarity of being one of the very few cathedrals in Europe which are built in one single span, and is without aisles either to the nave, choir, or transept. The nave consists of three bays, each of which on plan forms a square of 52 ft.; the fourth bay of the same dimensions forms the termination of nave and transept; each transept is of one square bay, as is also the choir, which is terminated by a large round apse. At the west end are two fine First Pointed towers, with long belfry windows in each face. These support well-designed fourteenth century spires, which in outline remind one of St. Mary's Church at Oxford. The interior of this cathedral is singularly noble and majestic: the groups of columns supporting the vaulting give an air of grandeur that is rarely to be met with, and the low arches between them convey an idea of vast

strength and solidity, while the finely-proportioned windows above give an elegance and beauty to the whole design which at once relieve it from heaviness or squatness. A kind of triforium or gallery is carried round the church, supported upon boldly-carved corbels. The foliage of the capitals is exceedingly elegant, and most of the windows are filled with very early stained glass. The "Dog-tooth" is very uncommon in France, but we find it here used sparingly and with good effect. Another singularity is observable in the mouldings. The large beads do not run down on to the abaci of the capitals, but are stopped upon small bases about a foot above them. We shall now leave Angers and proceed to make a few remarks upon other churches of the same kind.

Le Mans is justly celebrated for its superb cathedral, certainly one of the finest in France; but it possesses another church, which is, perhaps, even more interesting to the antiquary. This church is known under the singular appellation of "Notre Dame de la Couture," which some have supposed to be a corruption of the words "De Cultura Dei." The dedication is very remarkable, and is not, to the best of our knowledge, to be met with elsewhere.

The church is a building of mixed dates. The earliest portion is the choir, the arches of which are circular and very much stilted; they are supported upon very massive round columns with square caps; the arches are entirely without mouldings. The nave is late twelfth-century work, and bears so strong a resemblance to that of the cathedral at Angers that one is led to believe them to be the work of the same architect; this nave, however, is very much smaller than that of Angers, as the squares of each compartment are only 35 ft. instead of 52 ft. The detail is also less refined; and the way in which the great blank arch cuts into the triforium cornice is clumsy; the windows, although far more elaborate than those at Angers, fail to give the building that effect of elegance which is so noticeable in the latter church. The chancel, or choir, is chiefly Early Romanesque; but the clearestory, which is exceedingly lofty and fine, is later in the style; the triforium gallery or balcony is similar to the nave; large fourteenth-century windows have been inserted into the clearestory; the ambulatory or aisle round the apse, or, as the French call it, the *chevet*, is evidently very Early Romanesque, and the three chapels which open into it are remarkable specimens of the architecture of that date.

The west front is a very striking composition,—two square towers project from the face of the west end of the nave, so that their eastern sides alone are engaged to the church; a narthex or open porch with one bold arch connects the lower portions of the towers, through which is seen a splendid though much mutilated western doorway. This narthex forms a kind of external gallery; the west window of the nave is seen above the narthex, and is a most beautiful example of fourteenth-century tracery. The towers are only carried up one story above the walls of the nave, and are capped with temporary pyramidal roofs; the middle story of each tower has a large open arch in each face, showing a vaulted space: the effect is very striking; there are doorways in each tower, but they do not lead into the church.

Other single-span churches are to be found at Angoulême and Alby. The cathedral of the latter place is probably the largest church under one roof in existence; it is over 300 ft. long, about 60 ft. clear span from wall to wall internally, and 100 ft. to the crown of the vaulting; which is, perhaps, the boldest ever constructed during the Middle Ages, both on account of its vast size and the solidity of its construction. It is built of solid brickwork, 2 ft. thick; the ribs are of stone, and are nearly four times the size of those used in the roofs of ordinary cathedrals. As, however, this church has been most admirably described and illustrated by Mr. King, we shall not enter into any detailed account of it.

The nave of the abbey church of St. Martin des Champs is a singular and early example of a one-span nave; it is said to be by the same architect as La Sainte Chapelle. The detail is good but simple; the span is about 40 ft.; the roof is wagon-formed, and of wood; the choir, which is earlier, has aisles.

In England, the widest single-span church is Trinity Church, at Ely, which originally formed the Lady Chapel of Ely Cathedral. The clear

span is 47 ft., the length 100 ft.; it is vaulted in stone, and is one of the most superb examples of Late Decorated work in the country. The Church of New Monkton, St. Mary's, near York, is a good example of a nave of one span. The style is fine Early English. In Belgium a few examples of single-span churches are to be found; they are not, however of an earlier date than the fourteenth century, and belong, or have belonged, to the Franciscans and Dominicans. The church of the Dominicans at Ghent is a fine example. The buttresses are inside the building, and the spaces between them form a row of chapels on each side of the nave. The roof is of wood. The style is late thirteenth or early fourteenth century. In Germany, single-span churches are more frequently to be met with; they are not, however, generally of an early date, and have, in nearly every instance, belonged, to mendicant orders. The Franciscan church at Dettelbach, near Würzburg, is a good example. This church is vaulted in stone. The span is about 45 ft. The Pilgrimage Church at Volkach, in Bavaria, is in one span, with a flat wooden roof. The effect is very ugly. The same arrangement occurs at the very remarkable church of Dettwang, near Rothenburg, where the nave is exactly square. At the east end of the nave is a rood screen, filling up the entire end of the nave with three arched bays, each vaulted, two of which form chapels, and contain ancient altars, and the centre opens into the chancel, which is vaulted. The church of St. Mary at Rothenburg, and St. Wolfgang, in the same town, are fine specimens of single-span churches; both are finely vaulted, and are fifteenth-century works. The church of St. Paul at Worms is a very early example of a single-span nave. The old roof, however, does not exist. The style is very early Romanesque. The Franciscan church at Boppard, the Carmelite church of Hunselsport, the Dominican church at Zell, near Würzburg, are late examples of single-span churches.

Several churches of this description exist in Spain: but they have been so thoroughly studied and described by Mr. Street, that we cannot do better than refer our readers to his work. In Italy, single-span churches are far from uncommon. The churches of the Eremitani at Padua, St. Fermo Maggiore, and St. Francis at Assisi, are good examples. The latter church is vaulted; the two former have boarded roofs. These churches are works of the latter portion of the thirteenth century.

Several modern attempts to revive this form of church have been made, but few have proved successful: and we believe the reason for the almost universal failure in this form of church is the absence of vaulting. A one-span church seems to demand a vaulted roof, either in wood or stone; without this important feature it looks like a large hall. This is strongly apparent in Mr. Hansom's new R.C. church of St. Walburga at Preston, which looks exactly like a reproduction of Westminster Hall.

The illustrations are from sketches made on the spot by Mr. G. Goldie.

ILLUSTRATIONS.

1. Interior of nave, Angers Cathedral.
2. Interior of nave, Notre Dame de la Couture, at Le Mans.

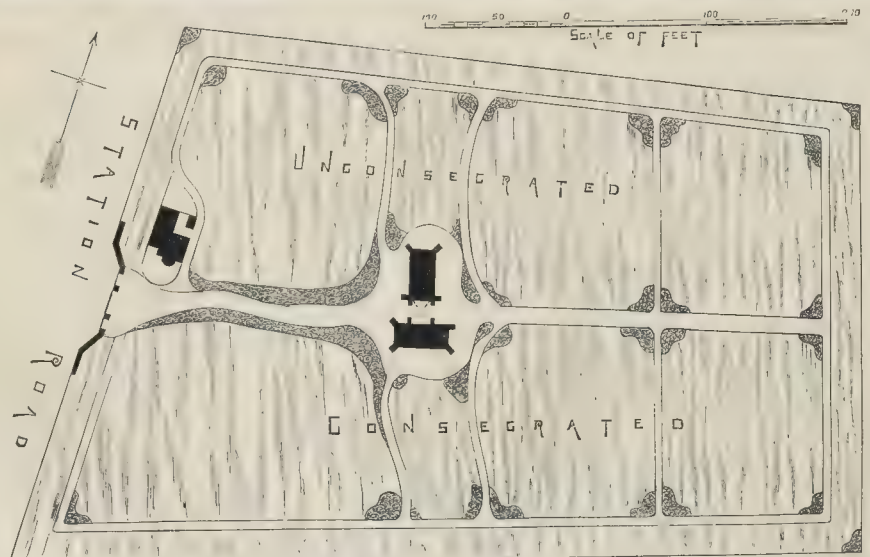
MARCH NEW CEMETERY, IN THE ISLE OF ELY, CAMBRIDGE.

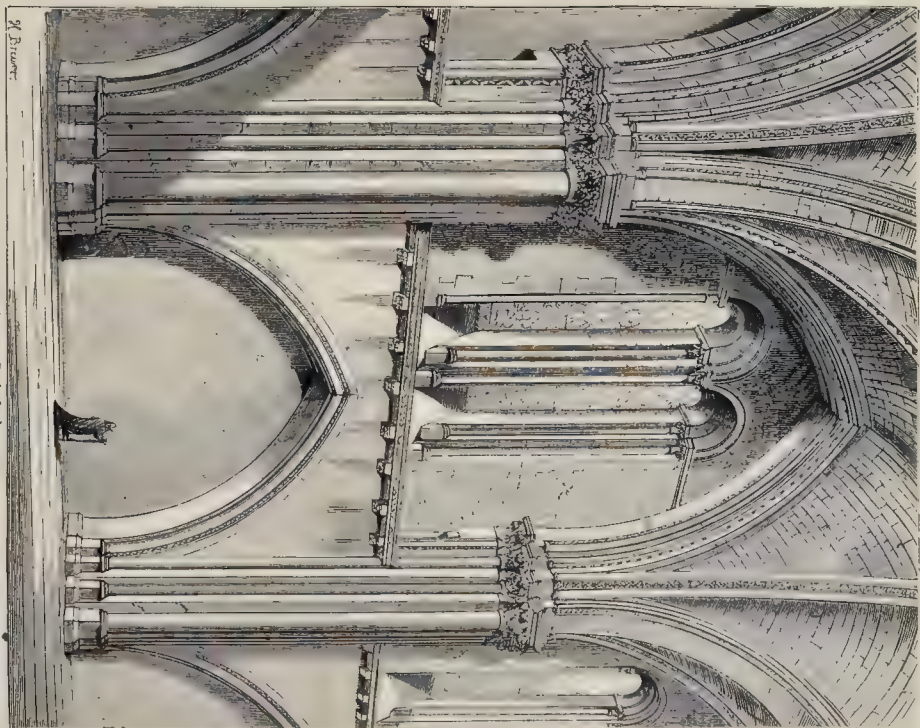
THIS new cemetery is situated on the east side of the Elm-road, about three-quarters of a mile from the town, and occupies an area of about six acres. The two mortuary chapels, fourteenth century in style, are 32 ft. by 15 ft. within the walls of each chapel, and have a small vestry attached to each. The chapels are connected by a tower and spire 97 ft. high.

The walls of all the buildings are of hammer-dressed wall stone, laid in "random" courses, and tuck-pointed in black mortar. The wall stone is from the Warmworth Quarries, in Yorkshire; the tracery and all the other stonework is of polished Ancaster stone.

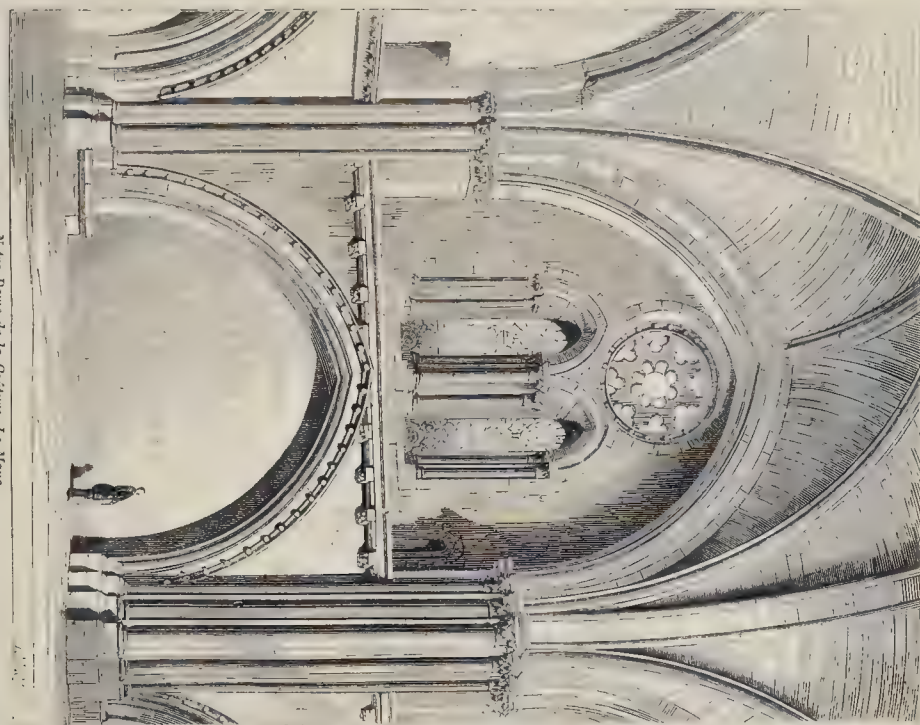
Mr. G. W. Stephenson (late of the Town-hall, Liverpool), engineer to the local Board of Health, is architect to the Burial Board, and laid out and planted the grounds. Messrs. Breadhurst & Dearing, of March, were the contractors for chapels, lodge, &c., at the sum of 1,463l. 2s.

MARCH NEW CEMETERY, ISLE OF ELY, CAMBRIDGE.—MR. G. W. STEPHENSON, ARCHITECT.





Angers Cathedral.



Notre Dame de la Couture, Le Mans.

ANCIENT SINGLE-SPAN CHURCHES.

THE CROTON AQUEDUCT.

It will be well worth a visit to the beautiful villages of Carmansville and Manhattanville to take a peep at the works which are being carried on there under the Croton Board, so as to have the water from their aqueduct conducted to all the places of importance in the north part of the city, and to every district where the population guarantees the requisite expenditure. We get some few particulars from the *New York Herald*. The preparations for erecting the engine-house and boilers will soon be perfected; and the Croton Board is, through their engineer, pushing on the work well.

The engine-house will convey water to the great tower, and through that medium to all the highest points of the north end of the city. Messrs. Brown & Withrall, in erecting this tower, feel confident of giving every satisfaction. From the tower water can be forced to Washington Heights, Fort Washington, and all the other places in the district where it is necessary to send it. The water will be heaved between 300 ft. and 400 ft. from the engine-house to the tower. This will be a work of much importance to the public comfort. There will be two new gate-houses, the one at the east and the other at the west end of the reservoir. They will be erected by Messrs. Roach & Jenkins, the builders of the reservoir. The gate-houses will be plain and substantial.

The inside walls of the reservoir have been commenced, and are being constructed with solid stone and cement. Captain Edick superintends this as well as the general work. The machinist, the mason, the carpenter, the blaster of rocks, the hewer of wood, and the drawer of water, are all working like so many honest men to finish this beautiful improvement to the city of New York. The inside wall of the reservoir, called the slope wall, will be very strong, and those who have seen it state that it is the best of the kind ever built in the State or United States. When the reservoir is finished, the gate-houses built, and the tower in complete working order, then the Croton Board will have done its duty to the north end of the city.

WINDOW GARDENING.

Window gardens assume many forms, but we seldom see plants grown or displayed in windows in a thoroughly satisfactory manner. Usually the display consists of plants in pots, and that is better than nothing, if the plants are good; but the appearance of the pots is not pleasing. The *Gardener's Magazine* has some remarks on the subject of window gardening, from which we may glean a few suggestions.

Those who are familiar with the western parts of London must have noticed of late the increase of an elegant form of window garden, consisting of a glass case projecting beyond the plane of the window-sashes—a sort of vertical bow-window constituting the lower sashes; and in these groups of plants are seen at all seasons of the year. There are some charming examples of these window gardens attached to the windows of mansions in Piccadilly, Cavendish-square, and other districts, where the residents are mostly wealthy persons.

The great difficulty with many persons who see and desire such things as these is to obtain them. If a tradesman be called in and instructed, there is always a risk that a mistake will be made in some part of the affair, and that a high price will be charged for work occasioned to all parties very much trouble, and which will be quite useless when done. Those who have doubted in the manufacture of fern-cases, aquaria, and heating apparatus, employing persons not practised in such things, will quite appreciate the importance of being enabled to purchase window gardens of the kind just described from a maker who understands all the requirements of the case, and who studied the business from a horticultural as well as from an artistic point of view. Given a simple idea of this sort, and a skilful manufacturer will soon vary it to suit many tastes and circumstances. Generally speaking, the planter and giver still together are made available to offer considerable breadth to these cases; what is to say, breadth, at right angles to the wall in which the window is set, without any greater projection beyond the line of the wall than is consistent with safety and convenience. The lower sash perhaps is removed, and a plant-case

takes its place. In many parts of great towns it is necessary to exclude the view of the street, no less for the privacy of the inmates than their protection from absolute offence and annoyance. The ordinary means of accomplishing this is to "frost" the glass with an alkaline salt, or to put on a thin coat of paint, or to employ embossed glass. But a plant-case accomplishes the same, and more agreeably and quite as effectually, and renders the house cheerful within and elegant without. Where the embellishment of the interior is the matter of highest importance, an aquarium can be fitted to the inner side below the level of the sill, and in this case exterior embellishment is possible by forming a bank of ferns on a miniature rockery above the water. A slab of slate is the best foundation, and it should be pierced for drainage where plants are grown. A depth of 4 in. to 6 in. will usually be found sufficient for the small plants that are best adapted for such cases. But in a window of ordinary dimensions a depth of 9 in. for soil could be obtained without difficulty, and an elegant moulding on both sides of the case suffices to hide pots and soil from view.

A few years ago was produced a useful form of open boxes for windows. These were made in every variety of style imaginable, some having rustic work in front, others with architectural fronts to harmonise with stone and stuccoed walls. The glass cases are of course to be preferred, where a portion of the window can be permanently given up to them, as in these a display of beautiful vegetation can be secured without difficulty the whole year round; for in the depth of winter the plants derive a considerable degree of warmth from the room, and it is even possible to heat the cases in the same manner that some plant-cases are heated, by means of a boiler periodically filled with boiling water. Light and air are precious gifts, and no plant-cases should ever interfere with the free admission of two such health-giving agencies to dwelling-rooms; but where the window plant-case can be adopted without interfering with light and ventilation, there can scarcely be a better way of increasing the elegant resources of town life.

THE BRITISH ASSOCIATION AT DUNDEE.

The opening meeting of the British Association for the Advancement of Science was held at Dundee on Wednesday evening last; but too close upon our time of going to press for us to say more than that the Duke of Buccleuch delivered the inaugural address. If first impressions are to be trusted, the local arrangements are inferior to those of previous meetings. When the train from London arrived at mid-day on Wednesday, with its passengers tired, travel-stained, and hungry, after some seventeen hours on the journey by day and night, the local secretaries were not to be found; moreover, the lodging-accommodation in the town is of very inferior character, and exorbitant in price.

DESTRUCTION OF TITIAN'S ST. PETER MARTYR.

By a fire which originated in the chapel of the Madonna del Rosario, of the Church of San Giovanni e Paolo, the irreparable loss of Titian's celebrated picture titled "St. Peter, Martyr," has occurred. This was one of Titian's three grandest works,—the "Assumption," the "St. Peter, Martyr," and the "Bacchus and Ariadne." The Académie de Venice has the first; our National Gallery possesses the last. These two were painted in 1516, and were the work of his youth. Twelve years later, in 1528, in the maturity of his powers, Titian painted the "St. Peter, Martyr." It has existed three hundred and thirty-nine years. There are copies, of course. One is in England, at the house of a private gentleman of Norfolk, according to the *Morning Post*, but considerably reduced in the proportions.

Together with the Titian and the Bellini, Jacopo Tintoretto's "Virgin of the Rosary," which stood over Marco Giustiani's monument, was placed to insure its safety, and has been consumed. The other pictures burnt are of infinitely less importance.

It has always been a matter of wonder that the Venetians could consent to allow the principal glories of their city to remain scattered among the various churches at the mercy of the thousand

misshaps daily and nightly threatening them from the carelessness of those old men and women to whom the places are entrusted. For many years the council of the municipality have been considering the advisability of the measure of removing all the great pictures of the Académie. It seems, moreover, that it had just been decided to carry it into action.

The Prefect of Venice, at all events, according to the local *Gazette*, has requested the President of the Academy of Fine Arts to properly advise upon suitable means for preserving from accident the objects of art which are in the churches, and particularly in those in which clergy who had belonged to the suppressed religious corporations perform the services.

MONUMENTAL.

On Monday last there was great rejoicing in the beautiful village of Dunchurch, a few miles from Rugby, where a statue of the late Lord John Scott was inaugurated by his brother, the Duke of Buccleuch. The statue is the work of Mr. Durham, A.R.A., and was subscribed for by the tenantry of Lord John. The statue, we are not surprised to hear, has obtained the entire approval of his family.

In Eyam Churchyard a subscription monument has been erected to the memory of the late Mr. Wm. Wood, a native of the village, but more extensively known as the author of the "History of the Plague at Eyam," "Tales and Traditions of the Peak," and other literary productions. The design was selected from "Clarke's Sketches and Drawings of Sepulchral Monuments," with a few alterations. The base, 4 ft. square, is composed of two courses, rusticated and pointed. The upper edge of the first tier is chamfered so as to unite with the square above, which is of less dimensions. On this is a hollow and round moulding, supporting a square pillar, polished, to receive inscriptions. Its four sides are enriched with tracery in the Perpendicular Gothic style. The panels formed by the arches are incised and sunk. The corner spaces above the curves are filled in with trefoils and seraph's wings, pointed with the chisel. Over the pillar is a projecting cornice or dripstone, which will protect the inscriptions from the weather. Above are several receding parts, each member moulded in the Early English style. The whole is surmounted by a Grecian tazza vase, resting on an octagonal foot and stem, the swell carved and enriched with foliage in relief. The lip is decorated with laurel leaves, whose points overlap the edge and form a sort of Vandike ornament round the rim. From base to summit the monument measures 14 ft. Mr. John Bright, of Tidewell executed the design.

A monument has been erected at Darlington as a memorial of the late Rev. William Hogarth, D.D., Roman Catholic Bishop of Hexham and Newcastle. The deceased bishop lived at Darlington for the greater part of his life, where he was much respected. The memorial is composed of four steps of polished Park Spring stone, which composes the basement, and from which rises an obelisk of polished granite, the plinth being in colour dark red, the base dark gray, surmounted with a gilt cross. The structure stands about 31 ft. high. It is from the design of Mr. A. Pugin, of London, architect. The work has been executed by Messrs. Priestman, of Darlington.

A monument to those sailors who perished in H.M.'s ship *Bombay*, which took fire, as will be recollected, on the coast of South America, has been erected by Mr. Brodie, of Edinburgh' R.S.A., for a church near the place where the event occurred. Ninety seamen and two officers perished on the occasion. The sculpture represents the ship on fire, and the inscription records that, "By the steady discipline displayed by officers and men, the boats were hoisted out in the midst of the flames, and, by their means only, 524 out of 616 people then on board were saved."

The same artist has in his studio, according to the *Scotsman*, another piece of sculpture connected with a monument to be erected in the Cathedral of Glasgow in memory of the officers and men of the 71st Regiment who fell in the campaign of Eusofzal. The tale is told and the names are graven upon a marble slab.

The *Morny Statue at Deauville*. — The statue of the late Duke de Morny has been inaugurated at Deauville, in presence of an immense crowd both from the surrounding dis-

tricts and from Paris. General Vaubert de Genlis, aide-de-camp to the Emperor, represented his Majesty at the ceremony, and the Prefect of the Calvados, M. Le Provost de Launay, was at their head. M. Boitelle, senator, gave the hand to the two youthful daughters of the Duke de Morny. Baron Haussmann, Prefect of the Seine, took his place upon the platform erected for the invited guests. Immediately upon the statue being uncovered, the Prefect of the Calvados delivered an address, in which he gave a sketch of the late duke's career.

THE STAGE.

Haymarket Theatre.—Mrs. Scott-Siddons has made a successful re-appearance as *Rosalind* in "As You Like It." The weakness with which the first scenes are gone through scarcely justifies the audience in expecting the graceful and effective acting shown later by Mrs. Siddons when in boy's clothes. In the present dearth of female talent on the stage the appearance of so promising a young actress is an event of interest to all concerned in the welfare of the drama. Let us hope that injudicious friends may not by over-praise check those earnest endeavours to improve, which must be made by Mrs. Scott-Siddons if she would take a place as a great actress. We look forward with interest to her promised appearance in "Romeo and Juliet." Mr. Howe was the *Jacques*; *Orlando* was played by Mr. Kendal, a young actor, who, if he improve his elocution and conquer certain tones in his voice, has a good future before him. There can be found no better *Touchstone* and *Audrey* than Mr. Compton and Mrs. Edward Fitzwilliam present; and Mr. Walter Gordon gave more force to the elder brother than is always obtained. Mr. Buckstone is wonderfully funny in the farce that follows the play,—"To Paris and Back for 5L."

The Adelphi.—An exceptionally good performance of the same charming play took place here on Wednesday evening for the benefit of Mr. Anson, the treasurer and something more. Mr. and Mrs. Herman Vezin played admirably *Rosalind* and *Orlando*, Mr. Sterling *Jacques* (much more really the "melancholy Jacques" than Mr. Howe's version), Mr. Widdicombe *Touchstone*, Miss E. Farren *Audrey*, and Mr. Addison *Adam*; Mr. William Harrison singing the songs that make the part of *Amiens*. The piece was applauded from beginning to end by a full house. Let us take the opportunity of mentioning with great admiration the acting of Mrs. Vezin in "Masks and Faces" on a recent occasion at the Princess's Theatre.

The Princess's.—Mr. Vining has opened with "The Streets of London," himself playing *Badger* with his accustomed vigour, and this is to be succeeded in a week by "Arrah na Pogue," Mr. and Mrs. Bonicauc sustaining their original parts. We hear, too, of a novelty in preparation.

THE TRADES MOVEMENT.

St. Paul.—Mr. Gomersall, builder and contractor, has been advertising for joiners, and another advertisement advises joiners to keep away from Sheffield. A dispute has arisen between Mr. Gomersall and his joiners, as to making overtime at the work connected with alterations of the town-hall. In consequence twenty-two joiners have left work. Mr. Gomersall has on hand works connected with the erection of new premises at the corner of Fargate and Church-street. The dressed stones for this erection were lying at his yard, and during the night some persons got into the yard and broke or otherwise defaced a large part of these stones. Mr. Gomersall believes that the damage has been caused by the joiners on strike, and offers 20L reward for the discovery of the offenders.—In consequence of the ruling of Mr. Baron Pigott, and the decision of the jury in the recent action against the File Masters' Association, the men who left Messrs. Turton & Son's employ, by reason of their refusing to discharge a non-unionist, have expressed their willingness to return to their work, and several of them have been reinstated in their former situations. The non-unionist still remains with the Messrs. Turton, but it is to be feared the poor fellow will not have a pleasant time of it with his fellow workmen.—A numerously attended special meeting of stone-masons has been held to consider the notorious "resolu-

tions" passed by the saw-grinders. It was unanimously resolved:—

"That this meeting has heard with the utmost horror and regret the frightful disclosures brought to light by the Commissioners; and hereby expresses its abhorrence of the instigators and perpetrators of the diabolical deeds committed in the name of the union, and believes that such actions will be detrimental to the interest of their own union, and also to the interest of other unions throughout the country; and hopes that all well-regulated unions will stand aloof from the Saw-grinders' Union, which has not only brought disgrace on their own order, but done serious damage to the trade of the town by their unwise action in retaining Broadhead and Crookes as members of the union; and by their attempted justification of the outrages they have done much to separate capital and labour."

On the motion of the Chairman, a vote of thanks was unanimously passed to the local Independent, for the attitude it had taken in the late controversies.

Leeds.—A strike, which at one time threatened to prove a serious impediment to the progress of the extensive works at the new railway-station in Neville-street, now in course of erection, by Messrs. George Thompson & Co., the contractors for the North-Eastern Railway Company, took place recently amongst the operative masons. Several of the foremen, who are non-unionists, were objectionable to the men on account of not being connected with their society, and the latter waited upon one of the members of the firm and demanded that they should either be compelled to join the union or be dismissed from the job, intimating, at the same time, that the whole of the masons would leave the works if this demand were not complied with. He was surprised at the suddenness of the demand, and desired the men to wait until the following morning, in order that he might take it into consideration; but to this the men would not consent, and required their immediate discharge. This he declined to comply with, and within ten or fifteen minutes afterwards the whole of the masons, of whom there were upwards of a hundred, stopped work, notwithstanding that they were receiving 33s. a week wages, where the ordinary wages of the town are only 30s. Subsequently the men offered to resume work if their demands were acceded to, but the Messrs. Thompson steadily refused to do this, and the men who struck still remain out. The directors of the company at once granted an additional twelvemonth for the completion of the contract, and expressed their willingness to extend the time still further if it should be necessary. A large number of the men on strike have been replaced by non-unionists, and the contractors are sanguine that they will ere long be able to secure their full complement of hands.

Harrogate.—The usual half-yearly meeting of the Yorkshire Association of Master Builders has been held here, under the presidency of Mr. Archibald Neill, the president for the past half-year. After the business of the meeting had been commenced, Mr. Fawcett, of Huddersfield, was elected president for the ensuing year; Mr. Beauland, of Bradford, treasurer; and Mr. Longley, of Leeds, secretary. The report of the past half-year, which contained satisfactory accounts of the operations of all the local societies, and which alluded to the sittings of the Royal Commission, was read and adopted, after which there was some conversation on the question of architects making bills of quantities; and the meeting, after fixing upon Wakefield as the place for holding their meeting for the next half-year, separated. A dinner was held at the Dragon Hotel, at which Mr. Fawcett presided.

Darlington.—As showing the opposition which is still manifested by some classes of workmen to the use of machinery in their trade, a story is told of what has happened to Mr. D. McDermid, an upholsterer, of Darlington. This gentleman, it seems, has invented a machine by which he proposes to save one-third of the usual amount of labour in paperhanging, and has taken out a patent for it. He tried to get it introduced in London, but although the masters were favourable to the design, the workmen were hostile, and either purposely spoil the paper or refused to use the apparatus. He had been recommended to the chief of one large paperhanging firm, but he found that in repeated calls the gentleman could not be communicated with, as he was always out. He learnt some time afterwards, although he had repeatedly left cards for the principal, that that gentleman had never been permitted to hear of his invention; and when ultimately he did so he stated he could not adopt it because of the hostility of his men. In another instance he was civilly invited by some operative paperhangers to attend in a

certain quarter and show them the machine. This he did, when all he got for his pains was a heavy blow from the fist of one of the party, and a strong blackguarding. On leaving, one of the fellows followed him, and pretending to be indignant at the usage to which he had been subjected, persuaded him to go to another part of London to see a paperhanger, with whom he was induced to leave one of his machines. This was another ruse, as he afterwards discovered, and the machine he left was totally destroyed. Eventually he left London, not feeling himself safe there. Even in Darlington the union feeling has been manifested against the machine, which, however, is in use by one or two firms.

Manchester.—A Trades-Union Commission is being opened at Manchester in order to inquire "into any acts of intimidation, outrage, or wrong" which are supposed to have originated or been promoted by trade organisations.

TRADE-UNION LAW.

The Leeds plasterers have a rule that,—

"Providing any labourer, bricklayer, mason, or the like, commence any job by lathing, or any other portion being a part of the business of a plasterer, no member of this society will be allowed to work on the said job; any member breaking this rule will be fined 1s. and one month will be allowed to pay the fine, and if neglected will be liable to expulsion from this society."

The same rule, it is said, exists in the whole of the branch rules belonging to this same association.

A witness before the late Commission states some curious instances of trade-union restrictive regulations, which lead one to anticipate something like the Hindu caste stagnation at some future time amongst our own operatives if the present system continue to prevail. This witness says:—

While I was engaged in an arbitration case at Bolton last year, or at the commencement of this year, I was told by a master of the name of Mr. Day, who is quite willing to come here and tell you the same, that during that same week some bricklayers had passed by one of his works and had heard some hammering of brickwork going on inside, and had looked inside, and had found a carpenter, whom he had sent to fix some joists, who was cutting the holes left in the brickwork to put the joists into a little larger, and because he had allowed this carpenter to do that the bricklayers fined the master 2L, and the master paid the fine! Here is a case from Ashton-under-Lyne exactly similar, only I have this in the writing of the gentleman who was concerned.—Mr. George Colbeck, a joiner and builder of Ashton-under-Lyne, in December, 1865, sent a joiner, a bricklayer, and two labourers to take some alterations in an inhabited house, a door was to be removed half the width of itself. The bricklayer built up the part requiring it. The joiner, having to stand idle by while this was doing, proceeded to pull out the brickwork which had to be removed. The bricklayer struck work and left the job. Some weeks afterwards Colbeck commenced a new job. A member of the Bricklayers' Society went to his men and stopped them. Colbeck made inquiry why his works were stopped, and the men withdrawn without notice of any kind. He was informed that the bricklayers' union had fined him 2L, and all jobs at which Colbeck was employed would be stopped until he paid the fine. He remonstrated, but to no purpose. He had infringed their rules by permitting a joiner to pull out bricks, which must be done by a bricklayer, and must pay. The black mail was accordingly paid.

I have a case from a Mr. Murdy, a master plasterer in Nottingham. He says, "Two years ago a respectable man (who had formerly been in business as a bricklayer and plasterer, but who had been reduced in circumstances to obtain his livelihood as a journeyman) came to me for employment. Feeling sorry for the man, and knowing him in better days, I gave him employment. After he had been at work a few days, the trade unionists in my employ informed me that I must discharge this man, as they had passed a resolution 'that as he professed to be a bricklayer, he should not be allowed to do any other work as a plasterer, and he might go some 'here else and work as a bricklayer.' I remonstrated with them, but to no purpose. The poor man tried all he could to retain his employment, but he was told that if he did not go to work as a plasterer, and become one of their body if they would allow him to work for his living; he pleaded to them that he had a wife and a large family dependent upon him for support. He offered to join their union, but they would not do that. He offered to throw himself out of work, or otherwise the whole body of men would strike against him. The result was, I had to come to the understanding that he should leave my employment."

Mr. Marriott, of Coventry, was restoring the parish church of Kenilworth. Part of the old stonework had to be cleaned down and the joints raked out and pointed. That is work which is one part of the country (I live near Coventry myself) the bricklayers are specially qualified for, because they have very great experience, and the masons very seldom have to do any such work as that in our neighbourhood. He accordingly employed two bricklayers to do this work, and immediately he employed them the masons struck. He asked the masons whether any of them who were on the work could do the work as well as the bricklayers were doing it, and with the exception of one setter whom he happened to be employing then, and who was so occupied that his time could not be spared, there was not a man on the ground who could do the work at all, because they had all been brought up as bankers' hands and not as setters, and were not accustomed accordingly to the use of the trowel."

The following extract is no less ridiculous and amusing than those already given, though it relates to a rather different point of the inquiry:—

"Notice.—Any brother in the union professing to carry any more than the common number, which is eight bricks, shall be fined 1s., to be paid within one month, or remain out of benefit until such fine be paid; any member knowing the same shall be fined the same sum unless he give the earliest information to the committee of management." Chairman: "What does 'knowing the same' mean?" It means to say knowing it of any other man. I should tell the committee that this "eight bricks" is a ridiculously small number. At Liverpool the rule is twelve bricks. I believe that the usual rule all over the country is ten bricks. I remember the case of a master who met one of his Irish labourers carrying up eight bricks on to the first floor of a house, and he said to him, "Hallo! what are you doing this for?" The man answered, "Well, sir, you know it is the rule." "No," said the master, "it is only the first floor." "Ah! but sir," replied the man, "I am taking it up a three-story ladder."

THE LAW OF MASTER AND SERVANT.

In the new Act to amend the statute law as between master and servant there are twenty-six sections, carrying out the declaration of the preamble as to the expediency of altering "in some respects the existing enactments relative to the determination of questions arising between employers and employed under contracts of service." After a definition of the expressions used, in which the term "employed" is to include persons under age, there is a limitation and substitution for existing enactments contained in the first schedule annexed. Either side, employer or employed, can make complaint before a magistrate and a summons be obtained, and in the event of non-attendance a warrant to follow, and where there is an intention to abscond security can be required for the appearance. Compensation may be awarded for breach or non-performance, or a fine not exceeding 20l. may be imposed, and security may be required for the fulfilment of the contract. The money ordered may be recovered by distress, and in default of payment, with imprisonment not exceeding three months, without hard labour. There is a provision in this Act for "aggravated misconduct," contained in the following words:—"Where, on the hearing of an information or complaint under this Act, it appears to the justices, magistrate, or sheriff that any injury inflicted on the person or property of the party complaining, or the misconduct, misdemeanor, or ill-treatment complained of has been of an aggravated character, and that such injury, misconduct, misdemeanor, or ill-treatment has not arisen or been committed in the *bona fide* exercise of a legal right existing or *bona fide* and reasonably supposed to exist, and, further, that any pecuniary compensation or other remedy by this Act provided will not meet the circumstances of the case, then the justices, magistrate, or sheriff may by warrant commit the party complained against to the common gaol or house of correction within their or his jurisdiction, there to be (in the discretion of the justices, magistrate, or sheriff) imprisoned with or without hard labour for any term not exceeding three months." The Act, which extends to the United Kingdom, is not to prevent proceedings by civil actions. It is to continue in force one year from the 20th of August and to the end of the then next session of Parliament.

RAILWAY MATTERS.

The traffic receipts of railways in the United Kingdom amounted for the week ending August 17th, on 12,823 miles, to 884,180l., and for the corresponding week of last year, on 12,560 miles, to 788,430l., showing an increase of 263 miles and of 45,750l.

A return moved for by Mr. Bazley has just been issued of the amount of capital, in shares and by loans respectively, proposed to be raised by the railway and other Bills brought before Parliament in the session of 1867, and the aggregate amount of such capitals and loans; together with the gross aggregate amount of similar returns for the years 1865 and 1866. The return shows that during the present year, the proposed capital was, by shares, 24,947,447l.; by loan, 17,691,328l.; total, 42,638,775l. The gross aggregate amount of a similar return for 1865, 126,441,708l., and for 1866, 175,490,546l.

The Duke of Sutherland has used a private railway-carriage of his own invention during his recent journey to Scotland. This is probably

the first instance of a railway-carriage not the property of any railway company having been made use of. It is of the largest size that can be run with safety, and is luxuriously fitted up with three compartments and a roomy platform, covered, but open at the sides, which is suggestive of the comfort of a cigar in travelling.

The Emperor Napoleon's railway state carriages are connected by decorated bridges, and are furnished with chairs, ottomans, sofas, mirrors, pictures, clocks, and chandeliers. There is a study, a bedroom, with two beds, a drawing-room, a kitchen, a wine-cellar, and a conservatory. The Emperor can communicate by telegraph with his suite in the other carriages.

The Mont Cenis Summit Railway.—The line of railway which has been in the course of construction for the last eighteen months over this pass, and which follows in the main the great road of the First Napoleon, has been successfully traversed over its whole length of forty-eight miles by a locomotive engine. Mr. Fell's system consists of the application of a central double-headed rail placed on its side in the middle of the way, and elevated about 14 in. above the ordinary rails. There are four horizontal driving wheels on the engine, under the control of the engine-driver, which can be made by pressure to grasp the central rail so as to utilize the whole power of the engine, and so enable it to work up incredible gradients without slipping. The carriages also have four horizontal wheels underneath, which, with the central rail, form a complete safety-guard. In addition to the ordinary break there are breaks upon the central rail.

ADVERTISING ARCHITECTS.

We have received from two or three quarters the most remarkable handbill of prices ever issued by a gentleman calling himself "architect and surveyor." "I think this will astonish you," writes one correspondent: "What next?" It does astonish us; and in reply to the inquiry we say that nothing can go beyond it, in its way, but an offer of payment to be allowed to act as architect. How the gentleman proposes really to get paid for his time is best known to himself. He sets himself forth as an exhibitor, and his handbill is made to look as if he dated from the House of the Institute in Conduit-street; but this is not the case. One of his items will serve to show his calibre:—

"Plan of, and Report on any Delapidation [sic], the materials of which shall not exceed the value of 1,000l....1l. 10s."

He will design a 2,000l. house for 3l. 10s., and then make all the working and detail drawings, "including all levels, sections, plans of drains, &c.," for a five-pound note in addition. He might fairly stipulate for a "drop o' beer" extra when the job is done to owner's satisfaction.

GAS.

The Liverpool United Gas-Light Company have declared their usual dividend of 10 per cent. per annum for the last half-year. The price of gas at present in Liverpool is 3s. in the borough and 3s. 4d. in the country districts.

The Wolverhampton Town Council are in dispute with the local gas company on the subject of the supply of gas. The company having reduced the price of their gas to a minimum of 2s. 9d., desired the council to renew their contract for three years, paying the minimum price to ordinary consumers; but to this the council object, having always hitherto, as large consumers, had it at 3d. per thousand less, and they demand it at 2s. 6d. The council have also been negotiating for a transfer of the works to themselves; but the company ask for a bonus of 6,040l. on their total capital, making in all 105,000l., and this is considered exorbitant. At a meeting of the council on Monday, Alderman Hawksford said works of sufficient magnitude to supply the town could be erected for 50,000l. A series of resolutions were adopted, authorising the continuance of negotiations, and requesting the company to light the lamps on their own terms till the 1st of October.

The Sunderland Gas Company's directors recommend a dividend of 9 per cent. per annum for the last year on the original capital stock, and 8½ per cent. (the maximum) on recently created stock of the company.

A meeting of the gas consumers of Brierley-

hill, Dudley, was announced by a placard to consider the following questions:—"Shall we burn gas at the extortionate price it now is?" "Why pay 4s. 7d. for gas when it is sold at 2s. 6d. in other towns?" The meeting was attended by about 180 persons. At a former meeting the secretary was requested to write to the directors of the Gas Company to inquire when they intended to reduce the price of gas, and what reduction they intended to make; and to ask, on behalf of the consumers, that the price should be reduced to 3s. 9d. per 1,000 ft., the same as at Stourbridge. The replies of the directors, which were read, were to the effect that they were not prepared at present to fix any date for a reduction in the price of gas nor the rate of such reduction. It was resolved that the Gas Company should be allowed till the 25th of September to consider whether they would reduce the price of gas, and that in the event of their not doing so the consumers present would cut off their entire supply.

The Gloucester Gas Company have declared dividends for the last half-year of 10l. per cent. per annum upon Class A shares, and 7l. 10s. upon Class B shares, leaving 551l. 12s. 7d. to be carried over to the next half-year.

NEWS FROM WALES.

The Welsh Presbyterians have lately enlarged one of their chapels in Carnarvon, at a cost of 2,300l. It has now a front of Penmaenmawr blue stone, all dressings being limestone. The portico in front is a structure of the Tuscan order. The building has a gallery on the three sides, and the whole will seat about 1,000 persons. The minister's platform is constructed of pitch pine, French polished, at a cost of 100l., a gift of a lady belonging to the congregation. The edifice was opened in January last. Contractor, Mr. Evan Jones, Maen Coch. The other chapel, called Moriah, belonging to the same body, is now in course of re-construction, the whole of the interior being re-pewed in Memel pine, varnished; platform, pitch pine, French polished; a very ornamental panelled ceiling, and a new portico of Wrexham stone added in front. Seats are provided for about 1,150; size, 75 ft. by 54; gallery on three sides. Cost 2,400l. Contractor, Mr. Hugh Rowlands, Carnarvon.

The same body are also erecting a new chapel at Brynrodyn, four miles from Carnarvon, with seat-room for 650 persons, the front being Penmaenmawr blue stone, and all dressings in front and sides are of Wrexham stone. There are to be, also, vestries and minister's house connected. Total cost about 2,000l. Contractor, Mr. J. R. Jones, Rhyl.

The Welsh Presbyterians are erecting a new chapel at Abergele. The style is Gothic, of the Early English type; the plan cruciform, with nave, transepts, and short apsidal chancel, vestries behind; wings for gallery staircases, and an entrance porch in front; the whole exterior being built of Penmaenmawr random rubble and Wrexham stone dressings throughout. It will seat about 650 persons. The total cost will be about 3,000l. Contractor, Mr. J. R. Jones.

Mr. J. R. Jones also erected a new chapel for the Welsh Baptists at Rhyl, at a cost of 1,600l.; seat-room for about 350 persons; schoolroom and vestry connected; the exterior part being of Yorkshire shoddes and Wrexham stone dressings. Opened last June.

The Welsh Presbyterians in Dwyran, Anglesea, are about rebuilding their chapel, at a cost of 1,500l.

Messrs. Lewis & Thomas, drapers, Bangor, are building new premises for themselves in High-street, one of the most commodious in the principality, the shop itself being about 80 ft. by 30 ft., and a large dwelling-house attached. The total cost will be about 2,500l. The contractor is Mr. Hugh Rowlands, Carnarvon.

Mr. Roberts, timber merchant, Liverpool, has lately erected a dwelling-house at Bryngwellsall, near Abergele, the style being Domestic Gothic with barge boards, all of pitch pine, varnished. The exterior walls are dressed limestone, the whole interior woodwork being pitch pine. The verandah and all halls and staircases are laid with Minton tiles; all windows glazed with polished plate; all chimney-pieces made to designs furnished by the architect, and grates to match. It is being done day-work, under the superintendence of the architect and Mr. J. Jones as foreman over all. The architect in

this and in the previous cases mentioned above is Mr. Richard Owens, Liverpool.

Farm buildings have recently been erected at Plas Llandoget, Llanrwst, for Mr. H. B. Roberts, from the designs of Messrs. Lloyd Williams & Underwood. The contractor was Mr. George Clark, of Chester; the cost was about 2,200*l*.

The foundation-stone of a new school was laid at Rhayader last month. It will be capable of accommodating 120 children, and when completed will add one more to the large list of new ornamental structures recently erected in this rising little town. The architect is Mr. E. H. Lingen Barker, and the contractor Mr. William Evans, of Rhayader.

The foundation stone of a new town-hall has been laid at Loughor. The question of the erection of a building of this description has been for a long time under discussion, and at length, principally through the exertions of Mr. Benjamin Jones, of Llanelli, and Mr. William Edmunds, of Swansea, the present inaugural movement has been made. The plans have been drawn by Mr. Henry Davies, of Llanelli, and the building is to be erected by Messrs. Gough & Griffiths, contractors. It is 37 ft. long by 27 ft. in breadth. It is to be two stories in height, and the lower floor will be a residence for the local police and a lock-up. Two large rooms are to be over the whole of this, one to serve as a reading and a public library, and the other as a court-house and magistrates' meeting-room. This is also to be used for the general transaction of the town business.

IMPROVEMENTS IN CALCUTTA.

We understand that, after more than three years' discussion, it has been at last decided that the Government Telegraph Department is to have a separate building, instead of having its offices in the same building as the Post-office; and that Mr. Granville has been instructed to prepare plans for the office to be constructed in continuation of the southern wing of the new Post-office in Coila-Ghat-street; this will give greater accommodation to each department than could be given if they were both located in the same building. The *Calcutta Engineer's Journal* says,—"Plans are also in course of preparation for new Government offices at the south-eastern corner of Dalhousie-square, on the site of the premises lately occupied by Messrs. Burkinshaw & Co., and we believe the works are to be undertaken as soon as the plans are complete. The works at the new High Court are progressing rapidly, after having been temporarily suspended: we believe the lower story is to be completed and fit for occupation before the walls are carried up for the second story. The carving of the capitals of the pillars, which are of Caen stone, is really very fine: these pillars (twenty-seven in number) were delivered in Calcutta within one year from the date of the order having been given. The waterworks contract is being rapidly proceeded with, and the drainage works of the southern portion of the town are in a very forward state.

PROVINCIAL NEWS.

Mirfield.—The Mayor of Dewsbury has laid the corner-stone of a town-hall in Mirfield, in the presence of about 3,000 people. There was a demonstration by various friendly societies, volunteers, and principal inhabitants. The building, which will be in the Italian style of architecture, will cost, with the site, about 4,000*l*., and comprise a large hall capable of affording sitting accommodation for 1,000 persons, and suites of offices. The roof of the great hall will be dressed and partially exposed, the principals being carried on projecting corbels. The principal features of the building externally will be the south front, with tower, and the east front. The architects are Messrs. John Kirk & Sons, of Huddersfield and Dewsbury.

Southampton.—The corner-stone of the new relief offices, dispensary, &c., has been laid. The contractor is Mr. J. Bull, and the architect is Mr. Skelton. The structure is to be raised on a piece of ground near the park, facing Houndwell. The building will present to the park a red brick elevation, with stone window-sills and lintels. A waiting-hall, with an open-timbered roof, and large windows in each gable, is entered from the St. George's-road by a porch.

From this hall are approached the relieving officers' rooms, through which the persons to be relieved will pass into a corridor, having on one side a suite of rooms for the medical officer, and on the other a dispensary and a dispenser's residence; and from this corridor a door leads to the footpath on the north side of the building. The plans were approved of by the Poor Law Board without alteration.

SUFFOCATED IN A CESSPOOL.

A SAD accident has happened at the north part of Brighton, proving fatal to one man, and nearly depriving two others of their lives. The man who lost his life was a well-digger, who had contracted to dig a cesspool in the back premises of the Horse and Groom Inn, Islingwood-road. The cesspool was to be joined to another which was full, and which was to be drained into it. The men had finished digging, and deceased had driven a "heading" from one cesspool to another, when the landlord gave them a quart of ale. They had had none previously, and deceased was perfectly sober; but, on going down the new cesspool again to make the heading larger, he began to roll about. He was told to take hold of the rope which was hanging down the hole, but he was unable to do this, and fell into the hole head-foremost. A fellow labourer went down to help the deceased, and he became insensible, as did a baker who went down to save both, but who succeeded in fastening a rope to the leg of one of them, and so saved his life.

A medical student of Guy's Hospital started at the inquest that he was summoned to the place of the accident, and arrived there just as they got the body of the deceased up. Life was quite extinct. He tried artificial respiration, but without effect. The body, upon which there were no marks of violence, was very livid, and smelt very strongly of sulphuretted hydrogen, the inhalation of which had, he believed, caused death. He saw the other two men, who seemed to be suffering from the same cause.

The jury returned a verdict of "Accidental death."

PAPIER-MÂCHÉ IN ROMSEY ABBEY CHURCH.

SIR,—Our noble abbey is in the course of restoration, and much of it is well done; but we have an ingenious vicar, who has employed his leisure time in making bosses for the roof in papier-mâché, which are painted, and put up in the north transept. He says they look as good as carved work.

What would the old builders of the walls say if they could rise and see the papier-mâché decorations? C.

COMPETITION COMMITTEES.

SIR—An advertisement was placed in your journal, offering a premium of 25*l*. for the best design for a proposed new church at Dorchester. In answer to this appeal I prepared a very carefully-studied set of drawings. A friend of mine, who is quite old in the study and practice of church architecture, also sent in an elaborately prepared set of drawings. After waiting about a fortnight the drawings have been returned, and I am informed that none of the designs have been accepted. I should scarcely have thought it possible that there could be found a committee, having 6,000*l*. at their disposal, so mean as to withhold a paltry premium of 25*l*., after having caused a number of architects to throw away at least six weeks' labour, as well as other expenses, such as frames, artistic colouring, &c. Surely the committee, even if they had determined not to carry out any of the designs, must have seen that the least they could do, consistently with honour, would have been to award this paltry premium, as it would scarcely cover the expenses of the successful competitor. A VICTIM.

SOUTHWARK PARK.

SIR,—As I have not met with the following particulars respecting New Southwark Park in the *Builder*, and as the subject is important to many thousands, perhaps you will think these lines of sufficient interest for insertion. At the meeting of the Metropolitan Board of Works on the first day of last March, the Works and General Purposes Committee submitted amended plans and estimates for lodges, and plans for entrance-gates, fencing, and roadways of the Park, and for the drainage of the roadways and houses, and recommended that the same be approved, and that the officers should be directed to prepare specifications and plans with a view to advertisements being issued for tenders for the several works; and with regard to the question of the land drainage of the Park, the committee recommended that the same be deferred. The plans were approved, and the Board resolved that tenders for the several works should be received that day six weeks.

On April 12 the tenders were opened. The work had been divided into three contracts, and this was the result:—

For the drainage of roads, &c., eleven tenders were sent in, the highest being 4,70*l*., and the lowest 2,417*l*. For the formation of carriage-roads, footpaths, &c., twelve tenders were sent in, the highest being 8,253*l*. and the lowest 1,051*l*.

For the principal lodges, entrance-gates, palings, &c., eleven tenders were sent in, the highest being 5,145*l*., and the lowest 3,800*l*.

It was resolved that, subject to the usual inquiries, the lowest tender should in each case be accepted; and that the drainage and formation of the roads should be placed under the charge of the engineer, and the construction of the lodges, gateways, &c., under the charge of the architect.

On May 17th the Board resolved, a further report from the Committee Works and General Purposes having been received, that a tender of 2,812*l*. for the carriage-roads, footpaths, &c., should be accepted, instead of the tender of 1,051*l*. previously accepted provisionally. The matter was finally settled thus:—

Drainage of roads, &c.	£2,417
Formation of roads, &c.	2,812
	£5,229

(These to be under the control of the engineer).

Principal lodges, entrance-gates, &c. 3,950

(These to be under the control of the architect).

£3,170

In conclusion, I would observe that the whole business of the park seems to be still making anything but rapid progress, and I think that another deputation should wait upon the authorities at Spring Gardens (as soon as they return), to again urge despatch in the matter. ANSQUE LABORE NIHIL.

APPARATUS FOR BUILDING CONCRETE HOUSES.

MR. CONYBEARE replies to Mr. Tall, and forwards copies of the works of Rondelet, Nicholson, and Cresy, to prove his statements. We are not disposed, however, to carry the correspondence further. Mr. Conybeare adds:—

"As I am not a builder, Mr. Tall's offer to build a wall twice as fast as I can, goes for nothing. His allegation that he can make a beam of concrete twenty times as strong as one of brickwork is simply irrelevant, as the question was the building of walls (in which the material would only be exposed to compression) and not of beams. I do not at all wish to be understood to disapprove of the use of hydraulic concrete in walling; on the contrary, I am of opinion that if the quality of such concrete can be ensured, it is a very much better and cheaper material than ordinary brick and mortar; but to over-rate the strength of a material now coming largely into use in construction is a course not without its danger. I have (as you must be aware) no interest that can be in any way affected by the validity or otherwise of Mr. Tall's patent, and in pointing out the original of his patented apparatus, was only acting on the principle of '*semper paratus*.'"

THE "UNDERGROUND" IN BAD ODOUR.

It has unfortunately happened that a third death has occurred within a few weeks amongst the Metropolitan railway passengers, and the coroner's jury have rightly resolved to adjourn till a chemical analysis of the atmosphere of the line shall be made, although the medical man who made the *post-mortem* examination declined to say decidedly that the death, which occurred from constriction of the aortic orifice, was even hastened by the atmosphere of the "Underground."

That there is a want of proper ventilation seems evident, and something really must be done to remove the stagnant air regularly from the tunnels; but on occasions when we have personally gone through them we cannot say they felt worse than tunnels always are, so far as regarded sensible odour at least, or even of conscious oppression in breathing. The Metropolitan carries 25,000,000 passengers annually; and it must be remembered that many persons in bad health who would not be likely to journey on country lines, will pass to and fro within the limits of the metropolis. There they are, as it were, at home; and every one knows that more people die at home than anywhere else. The directors express their anxiety to promote inquiry, and they point to the good health of their servants who are permanently engaged on the line, to show that it cannot be injurious to passengers.

SIR,—It appears that the deaths on the Metropolitan Railway have induced the company to employ Drs. Lethbridge, Whitmore, and Bachelder to report upon the sanitary condition of the atmosphere of the railway.

Now, the mere fact of the above-named gentlemen being employed by the railway company to report to the railway company on the unhealthiness, or otherwise, of the company's property, when the pockets of the company are directly concerned, seems to me sufficient to nullify their report. It is well known that lawyers who are paid by their clients generally coincide in opinion with their

clients. Doctors may, or may not, act upon a different policy.

The Railway Department of the Board of Trade should take action in the matter, and appoint one or more competent chemists to analyse the railway atmosphere, and report on its condition. Nothing less will be satisfactory to the public.

During the last three years I have passed by, almost daily, the Gower-street and Portland-road stations, and on some occasions have been nearly suffocated, although possessing a vigorous constitution and healthy lungs, by inhaling the noxious gases issuing from these stations.

I trust, sir, you will use your influence in protecting the lives of her Majesty's subjects.

E. NUGENT, Civil Engineer.

NEW METROPOLITAN TRAFFIC ACT.

THIS Act has been issued in a printed form. There are twenty-nine sections in the Act. As to scavengers, it is enacted, that after the 1st of January next, between the hours of ten in the morning and seven in the evening, in such streets as may be named by the Commissioner of Police, no ashes, &c., are to be removed from a house, and no goods deposited or unloaded, under certain penalties, between the hours mentioned. Within the "general limits" of the Act, the driver of a metropolitan stage carriage shall not stop such carriage for the purpose of taking up or setting down passengers at any part of a street except as near as may be to the left or near side of the roadway. For acting in contravention the fine is not to exceed 40s. Advertisements on carriages, &c., are prohibited, except those approved by the commissioner; but the section is not to apply to the sale of newspapers. The Commissioner of Police may make "special limits" with the approval of the Secretary of State, and regulations may be made after notice as to the route of vehicles, &c., and for disobedience, penalties are to be enforced; and within special limits no driver of a metropolitan carriage is to take up or set down. Certain rules are to be enforced as to the delivery of coals and timber, and as to hackney carriages. There are to be regulations as to shoeblacks and messengers, and as to dogs. Three or more persons assembling for betting in a street are to be deemed an obstruction, and each is liable to a penalty of 5l. No fare for a hackney carriage is to be less than 1s. The Act is to take effect on the 1st of November next.

CHURCH-BUILDING NEWS.

Hoy.—The church here has been re-opened. It was desirable to improve and enlarge the chancel, and open it to the nave. There have been added an apse of semicircular Norman form, an organ-chamber and vestry on either side of the chancel, besides which the nave has been divided from the latter by a triple-pointed arch of the Early English order, springing from two central circular columns with carved capitals, and square cushions, each arch being surmounted by a tooth-work moulding: the terminating corbels form human heads, whilst a similar design forms the key or finial at the point of each arch. The whole is composed of alternate layers of blue and white Bath stone. The organ-chamber and vestry are, like the church itself, plain structures. The apse is lighted by three small lancet windows filled with stained glass by Messrs. Clayton & Bell; they are the gift of Mr. F. E. Trumper, of Hay. The subjects are, centrally, the Crucifixion, and right and left, the Agony in the Garden and the Entombment of our Saviour. Besides the apse windows, Mr. Trumper has given a costly pulpit in commemoration of a departed wife and her mother. This is composed of rock alabaster, octagonal in form, and rests upon a central column of red Mansfield stone, the stairs being also composed of the latter material. Beside the central column supporting the pulpit there are others of serpentine marble forming an arcade; the front panels are each adorned with an oval quatrefoil recess, containing, in high relief, medallions of white marble representing our Saviour and the four Evangelists. The pulpit and the alterations generally were designed by Mr. T. Nicholson, of Hereford, architect; and the brasswork was from Messrs. Hart & Son, of London. The pulpit has been executed by Mr. R. L. Boulton, Cheltenham, and all the other portions of the work have been carried out by Mr. Merrick, of Hereford, at a cost of between 600l. and 700l. All the work has been executed externally with native

stone tooled, and hard stone dressings; and the internal dressings and ashlarings with Bath stone. The roofs are of open construction, boarded, varnished, felted, and covered with green Pembroke slates. That over the apse is carried upon curved braces springing from carved corbels. The plaster ceiling over the old chancel has been removed, and an open timber roof set up in its place. The apse and organ chamber open from the chancel through arches, composed of alternate voussoirs of grey and white stones. The chancel is stilled with open benches, and the floor laid with encaustic tiles. The style of architecture adopted is Early English, treated somewhat after a continental type. The carving was executed by Mr. Walker, and is a combination of natural and conventional foliage.

Pitfield.—The parish church has been re-opened for divine service. The old church had long been in a state requiring restoration, and about fourteen months since the work was commenced, and it has been brought nearly to completion. The capitals and other stone work still require carving, but funds are still wanted. The new church consists of nave with north and south aisles, south porch, and tower at the west end. The nave, south aisle, and porch are wholly new. The tower and north aisle formed part of the old church, and the three windows in the north wall were inserted instead of three others that were debased. The new church is larger than the old one by the whole of the space comprised within the south aisle, porch, and chancel. It is Middle-Pointed or Decorated. The arcades, with clustered shafts, are intended to have carved capitals. The chancel arch is moulded. The deal roof is formed with moulded ribs, wall pieces, &c., and hoarded, the whole being open to the ridge. The seats, of varnished deal, are moulded from the old example. The painted east window, representing the Crucifixion and incidental connected with it, was executed by Messrs. Heaton, Butler, & Bayne, under the superintendence of the Rev. Mr. Sutton, vicar of Theddingworth. The church has been erected from the designs and under the superintendence of Mr. W. Slater, and Mr. H. Carpenter, architects, London; the builders being Messrs. Halliday & Co., of Oakham. The works were superintended by Mr. W. Thompson and Mr. J. T. Halliday.

Hereford Cathedral.—Eight stained-glass windows are to be put up in the Lady Chapel of this cathedral in memory of the late Canon Morgan.

Kirkheaton.—The church of Kirkheaton has been re-opened, after having undergone various restorations and improvements. The restorations consist of the entire re-building of the chancel, except a small portion of the south-east corner, opening a window in the west end, adding a new vestry, removing the old-fashioned pews, and replacing them with rush-seated chairs. Mr. Bodely, of London, was the architect, under whose superintendence the work was done. The chancel has been fitted up with oak seatings, candelabras, and hangings, revived, under Mr. Bodely's superintendence, from very old designs in the Paris Exhibition of the present year.

SCHOOL-BUILDING NEWS.

Gateshead.—The Building Committee of the Albert Memorial Schools met on Saturday at the new Town-hall, Queen's Head Hotel, Gateshead; the mayor (Mr. Miller) in the chair. Mr. A. Swan, architect, has submitted his amended plans for the schools, which have been agreed to; having been considered, the offer of Messrs. N. & R. Reed, 4, 222l., being the lowest, was accepted. The site proposed by the architect was approved, and is to be purchased from Sir Walter James.

Ipswich.—A large convent has been commenced in the environs of Ipswich, planned with the view of affording accommodation as a place of education. The architects are Messrs. Goldie & Child, of London; and Mr. R. S. Smith, of Ipswich, is the contractor. Red Suffolk brick, with a sparing use of white and black bricks and Bath stone dressings, are the materials. The style is a free treatment of Early Domestic Gothic, with large shafted windows opening in sashes, strings, buttresses, and other features, simply to mark the points of the floor-lines, &c. The rooms are all to be spacious, light, and airy,

and the whole design combines simplicity with architectural character.

Totley (Sheffield).—The corner stone of the new building in course of erection for this Orphanage, at Brook Hall, Totley, has been laid. The work has made considerable progress, the structure being in many places several feet above the ground. The building is entirely of blue stone from the Twenty-well-sick quarries, the walling being rock-faced courses, and the dressings tooled. The architectural arrangements are adapted to the purpose of the building, there being a school-room, a dining-room, nursery, kitchens, dormitories, store-rooms, teachers' sitting and bed rooms, &c. The ventilation of all the rooms has been cared for, and the drainage will be good. The building stands on the side of the hill behind Brook Hall, and can be seen from the Sheffield and Baslow road. Messrs. C. J. Innocent & Brown, of Sheffield, are the architects; and the contract, which is for 1,630l., has been taken by Messrs. T. & W. Nelson, of Wadsley Bridge.

Manchester.—The foundation stone of the Manchester Warehousemen and Clerks' Schools, which are being erected near Cheadle Hulme, and near Stockport, by the Manchester Warehousemen and Clerks' Association, has been laid by Earl Granville, with considerable éclat. The building is from the designs of Mr. E. Bate, of Manchester and London, and will be after the geometrical period of the Gothic style. The front elevation will have a total length of 188 ft., and show three gables, one central, and one at the end of each wing. The height will be three stories, and at the side of the central gable, over the principal staircase, will be a tower and spire 120 ft. high. The building will be of brick made on the spot, with dressings of Darley Dale stone, and bands of blue brick. The front, which faces the London and North-Western Railway, will be decorated with stone carving. The tower and spire will be covered with blue Welsh slates, in patterns, and the total cost of the structure will be about 13,000l. The site covers five acres of land.

PATENTS CONNECTED WITH BUILDING.

IMPROVED MEANS OF FORMING JOINTS BETWEEN SASHES, DOORS, DRAWERS, AND OTHER STRUCTURES, AND THE FRAMES IN WHICH THEY MOVE OR ARE FITTED.—J. R. Cadman. Dated 12th November, 1866.—This invention consists in forming joints as follows:—Around the inside of the frame in which a sash-door, drawer, or other structure moves or is fitted, the patentee cuts a dovetailed or other formed groove or recess, and in this groove he fits a tube or cushion of india-rubber, or other suitable yielding and elastic material: then upon or against the tube or cushion he fits a bead of ebony, metal, wood, or other suitable hard material, which projects from the frame like an ordinary bead, but can be forced inward owing to the elasticity of the tube or cushion behind it. The sash-door or other structure fitted in the frame is cut with a groove corresponding to the bead, and the elasticity given to the bead by the tube or cushion behind it forms an air-tight joint, and at the same time prevents the sash or other structure bearing upon or rubbing the wood of the frame, and compensates for any shrinkage in the material of the frame, or of the sash or other structure.

APPARATUS FOR GRINDING CLAY, &c.—H. Goodfellow. Dated 22nd December, 1866.—The object of this invention is to grind clay and strong marls so that a great deal of labour now necessary in the ordinary manner of preparing clay for the pugging-mill may be saved. The object is also so to place the apparatus for grinding the clay, that when in a proper condition the material may fall into the pug-mill beneath, and so by the practical combination of the two the finished material may be prepared at a very great reduction in cost. The apparatus is particularly intended to dispense with the very expensive system of wheeling ground marl into large heaps to be watered, sometimes turned over, afterwards tempered by the moulder, and then wheeled back to be pugged. Upon an upright shaft is hung a conical runner, having cast upon it certain ribs or projections, which are placed in an oblique direction. The said cone-shaped runner works within a strong metal casting of suitable shape and size, which is provided internally with certain other ribs or projections, to correspond with those with which the runner is furnished, except that these may be either placed obliquely

or in a perpendicular direction. The marl is supplied to the grinding apparatus from a platform fixed to the upper part of the cone-shaped casing, and it will be obvious that, as the runner revolves, the clay will be ground and worked downwards to the bottom of the cone. From here it falls into the pug-mill underneath, but which is no part of this invention except as far as regards its combination with the grinding mill and its position in respect of the said grinding apparatus. Part of the metal casing within which the cone-shaped runner revolves is made recessed and set back from the runner. It is also removable at pleasure, and by preference forms that part of the casing over which the marl is supplied to the apparatus for grinding from the platform. The object of this is to allow stones and other hard foreign substances which may be in the marl to remain in the said recessed space while the clay is being ground, until the casing being removed the stones may be taken out. Motion may be given to the apparatus by any convenient means.

Books Received.

The second number of *Tinsley's Magazine* is a good one. The stories by Dr. W. Russell and Mr. Yates increase in interest. The introduction of a monthly chapter on French fashions, attractive as it may be, is to be regretted. The enormous and growing importance attached to female dressing is one of the worst signs of the times. One trembles to think of the generation that is to proceed from such a race of mothers. Nothing but dress is thought of or desired, and in many cases means of any kind are resorted to to obtain it.—*London Society* has a vigorous protest against the eccentricities of fashion in our day. The writer says justly,—

"These freaks of fancy make us ashamed of our countrywomen. They savour too much of the *demi-monde*, and are suggestive of all that is coarse and sensual."

—The current number of *The Quiver* contains some good and interesting writing. The illustrations of this work are scarcely equal to the literary part of it in merit. Some of them, indeed, are very bad. Better give a few good than many poor.—Mr. Jas. Hannay contributes an affectionate recollection of Alexander Smith, the poet, in *Cassell's Magazine*, which well maintains its place among the cheap periodicals.—*Fraser's Magazine* commences with an appreciative notice of General Grey's most touching account of "The Early Years of H.R.H. the Prince Consort." Never was curtain in palace so lifted up before. In what other palace would the sight displayed be so wholly admirable and charming?—"Pastimes with Neptune. By Joseph Longland, C.E. Worthing: Loveday, London: Hamilton, Adams, & Co." The author, who is surveyor to the Worthing Local Board of Health, here gives a design for improving sea-bathing at Worthing. He proposes to make the town peculiar or original by providing it with something that other towns have not got, although they may imitate it; and that something comprises two artificial sea-water, swimming lakes, one for ladies, and the other for gentlemen, with hot, shower, Turkish, and vapour baths; waiting, reading, and refreshment rooms, conservatory promenade, or "spacious crystal ways to the lakes," and public hall. The total expense he estimates at 22,000*l.*, and the total profits at 7,640*l.* per annum; working expenses, 2,000*l.*; net income 5,640*l.* per annum, or a profit of more than 25 per cent. The site proposed is the large space of open ground lying between the sea and the south end of East-street. The scheme would cover 2½ acres of ground.

Miscellaneous.

THE RESTORATION OF RIPON CATHEDRAL.—The committee appointed five years ago to carry out the restoration of this cathedral in accordance with the recommendations of Mr. G. G. Scott, has issued a report, showing the present position of this important undertaking. Mr. Scott estimated that 32,000*l.* would be required to complete the entire restoration necessary. Towards this sum 28,787*l.* have been promised, and the committee earnestly appeal to Churchmen of the diocese to aid them in completing the proposed alterations.

PROFITS OF IRON MASTERS.—The personality of the late Mr. Wm. Crawshaw, the great iron-master, has been sworn under 2,000,000*l.*

TRILIS OF MISSOURI.—Professor Swallow, of the Missouri Geological Survey, gives the following actual measurements of large trees in south-east Missouri:—"The largest is a sycamore in Mississippi county, 65 ft. high, which 2 ft. above the ground measures 43 ft. in circumference. Another sycamore, in Howard county, is 38½ ft. in diameter. A cypress in Cape Girardeau county, at a distance of 1 ft. above the ground, measures 29 ft. in circumference. A cottonwood in Mississippi county measures 30 ft. round at a distance of 6 ft. above the ground.

BUSTING OF A CAISSON AT CHATHAM.—Shortly after two o'clock on Saturday morning in last week, during an unusually high tide, the caisson at the entrance of No. 4 Dock, in which the double-screw steamer *Beacon* is fitting, suddenly gave way, without any previous indications. The water rushed into the dock with the roar of thunder, carrying the *Beacon* to the brow of the dock, and afterwards throwing her on her beam-ends, and causing considerable damage to her. The occurrence taking place in the night there were no workmen in the dockyard, and messengers had to be despatched in various directions for assistance. The *Beacon* was ultimately secured and shored up. Her starboard screw shaft and propeller were found to be broken off, and her port propeller also injured, while the vessel was filled with water.

THE LIGHTING OF HYDE PARK.—The Commissioners of Woods and Forests have effected an improvement in Hyde Park which will be heartily welcomed by the public. Along all the main roads, with the exception of the road from the Marble Arch to Notting Hill, powerful lamps, with solar reflectors, have been placed. It is suggested that lime lights might be erected at two or three stations sufficient to illuminate the larger portion of the entire area, and it is not too much to hope that the improvement may be extended to the several parks under the control of the Commissioners. The work has been executed by Messrs. Comyn, Ching, & Co., but it is understood that the lighting is delayed by the difficulty of arranging the gas supply with the companies. A new mode of lighting, it is said, is to be adopted by an electric apparatus fixed in the base of the pillar.

FREE EDUCATION IN SOUTHWARK.—It is doubtless unknown to the majority of our readers, says the *Guardian*, that close to London Bridge there exists an institution which is now seriously impeded in carrying out the object for which it was originally founded. As publicity would appear to be the only remedy in its existing circumstances, we beg to call the attention of our readers to the matter. The institution to which we allude is the Queen Elizabeth's Free Grammar School of St. Olave's and St. John's parishes, which offers a free education to children of all the inhabitants of those parishes, but from various causes it has been found impossible, we are told, to attract to the school children of a class able to avail themselves of the excellent classical education offered to them, and consequently, although numbers of boys flock to the commercial school, there are, comparatively speaking, no candidates for the numerous exhibitions at the universities and elsewhere which the governors of the school are anxious to give. A great deal of the house property in the two parishes belongs to the school; and, as it would appear indisputable that a house which carries with it a free education for the children of its occupants is worth more than a house which does not, it is hoped that this notice may attract new residents, and thus relieve the corporation from their present embarrassment of having but few boys upon whom to bestow the benefits of a first-class education. The buildings of the school are second to none in the kingdom, the masters are excellent, and boys to educate is the only requirement for the school to become to the inhabitants of Southwark what the City of London School is to those of the City. The school consists at present of an upper classical division, which is completely separated from the rest of the boys, a lower classical school, and an English school, which has now been placed under the Revised Code; and, as we have said above, it is only necessary for parents to reside in these parishes to obtain for their children an excellent education, and the right of competing for scholarships and exhibitions at the universities.

COLOURING OF MARBLES.—Variegated marble, it is announced, may be imitated in all the rich coloured veins for which some species of it are distinguished. For this purpose a solid block of marble to be treated is first warmed in an oven, after which the colours are applied. These consist of an alcoholic solution of alkanet root, to produce a rich lavender; a madder lake, to make a crimson; indigo, to produce a blue; verdigris, green; and gamboge, yellow. They are put on according to the fancy and taste of the artist, so as to form the desired patterns; after which the marble is again warmed, to make it absorb the colours.

A TELEGRAPH CLERK STRUCK BY LIGHTNING.—The *Scotman* relates a singular accident which occurred to the telegraph clerk at the Buchan railway station during a late storm. The young man had discovered that the telegraph wires had somehow got out of order, and, while engaged at the battery, from which the operating handles had been removed, the electric force from the atmosphere ran along the wires, and, entering the body by both hands, it produced such a shock as to throw him prostrate on the ground. The agony was excruciating. Both arms were entirely paralysed, and remained so, the left for two or three hours, and the right for a much longer period.

THE LATE MR. BETTS.—Mr. Betts, contractor was buried in Southampton Cemetery. He was a native of Ashford, in Kent. He was of humble origin, and when he left his native place, fifty years ago, he said he would never return to it until he could enter it in his carriage. Many years afterwards, when he kept his carriage, he visited his native village. He at one time owned large property in Southampton. He purchased Bevois Mount, once the property of the Earl of Peterborough. Relics of Pope and Voltaire, who visited the earl, are still to be seen there. Mr. Betts was a Wesleyan, and a munificent supporter of that sect. He was the father of Mr. Edward Ladd Betts, the partner and son-in-law of Sir Morton Peto. Mr. Betts died at the age of 78.

METAL TRADE.—According to the *Iron Trade Circular* the trade in iron and metals is healthily active, copper is not easy to be got at with advancing prices, and tin has made a stride of 40s. forward. These are specially good signs, the latter more particularly. Pig iron is being largely exported from Scotland and the North; Staffordshire numbers also finding buyers, and continuing to be preferred where a superior and dependable quality of iron is indispensable,—indeed, specified in contracts. Merchant iron is no longer a drug: of manufactured iron generally, we no longer hear a desponding character. The export lists tell the tale of the trade in a manner that the hardest grumblers cannot contradict. If thousands of tons of rails go out somebody must send them, and, what is of more importance, somebody must pay for them. An impulse has been given to the ship-building trade by the Government contracts for steam shipping, and hence, perhaps, we may account for an unexpected call for plates. Some signs of recovered courage are showing themselves. Here and there contractors are getting to work again.

THE DRAINAGE OF ST. LEONARD'S-ON-SEA.—Mr. J. A. Hatchard, of St. Leonard's, has addressed a letter to the *Times*, in which he says: "Hitherto, like most sea-side places, St. Leonard's got rid of its sewage by discharging it into the sea [on which we have often commented], from 'long dirty tubes,' resembling 'vast unclean centipedes.' I am happy to inform you that the St. Leonard's commissioners have now removed all the nine channels of pollution that disfigured the sea-shore under their control. An intercepting sewer has been constructed, which commences at the St. Leonard's Archway, the boundary between Hastings and St. Leonard's proper, or West St. Leonard's, and passes under the beach at the foot of the parade-wall, intercepting and carrying away all the sewage and drainage until it reaches the western extremity of the town. It then passes along and under the Bexhill-road and falls into a reservoir formed in the beach westward of Bopeep railway-station. This reservoir is so constructed as to contain within it all the sewage until the period when the tide turns westward, and by the strong sea current of the ebb tide it is then carried miles away to sea in the direction of Beachey-head never to return. All this is accomplished by gravitation."

FRANKFORT CATHEDRAL.—A committee for the reconstruction of this cathedral has been formed in Frankfort.

FALL OF A NEW CORNICE.—The narrow thoroughfare known as Cow Cross-street, Smithfield, which has been for some time past the route taken by vehicles going east from Holborn to the City, was the scene of an alarming accident on Wednesday morning. At half-past ten o'clock, when the street was crowded with omnibuses, cabs, and pedestrians, the cornice of a new building, and, in course of erection by Messrs. Kipperly & White, suddenly fell, forcing down part of the scaffolding and workmen, and precipitating a large quantity of debris into the road. The passengers on an omnibus which was passing at the time appear to have suffered very severely, and several others are stated to have been badly injured.

A NEW KNIGHT.—Mr. John Brown, of the Atlas Works, Sheffield, has received the honour of knighthood. Sir John Brown commenced business not a great number of years ago in a small way as an iron manufacturer, and by his perseverance has succeeded in making an immense fortune, which he largely devotes to the promotion of benevolent and religious objects. His works have gradually increased in extent until they rank as one of the largest iron factories in the country, and closely rival the stupendous establishment of Krupp's. John Brown's armour plates are known all over the world, and the largest plate ever rolled was rolled at the Atlas Works, in the presence of the Prince of Wales. The works are now the property of a limited company, but the founder of them is largely interested in their prosperity.

A PRUSSIAN RAILWAY CARRIAGE AT THE PARIS EXHIBITION.—In the Prussian department a first and second-class railway carriage, made at Berlin, is exhibited, which has many novelties and conveniences worthy of the attention of our own railway authorities. The carriage accommodates six first-class and sixteen second-class passengers; the first-class compartment has a separate retiring-room, with lavatory, and the seats can be made into comfortable beds. Each second-class compartment has a retiring-room. Instead of heated stoves under the feet, vessels of heated sand are fixed under the seats. The lighting is brought near the passengers for reading. There is a passage for the guard through the carriage, and footboards at both ends of the carriage communicating with the next. The price is between 400l. and 500l. per carriage.

NEW DREDGING MACHINE.—During last week a new dredging vessel or mud-agitator of a peculiar kind has been at work on trial in front of Woolwich yard. The vessel employed is one of the old gun-boats, with engine power and screw. The agitating machinery consists of a barrel with large and numerous spikes made to work across the stern of the vessel. Rapid motion is given to this barrel from a shaft fixed across the deck, taking its motion direct from the screw shaft. By the rapid action of the barrel the mud is brought to the surface in a liquid state, and is carried away to a great distance (many miles) dependent on the strength of the stream and the depth of water. By winches on the deck the barrel is capable of being lowered or raised to suit the depth required, or the vessel with its machinery may be taken from one establishment to another by its own power. This invention was designed for moving mud or sand from all tidal rivers, bars, or basins. Objections have been raised that, in certain localities, the mud so raised may be inconveniently deposited. To this the author has explained that the great bulk, being once removed, either at once or at intervals, it would not again be allowed to accumulate by using this machinery frequently, and the small quantity so removed must be unobjectionable. The usual cost of removing and depositing mud is from 1s. to 1s. 6d. per ton. The probable cost by this new method should not exceed 3d. per ton. Just twenty-six years ago the first trial of the agitating machinery was made in front of Woolwich yard. The question that may now be asked is, whether the Board of Admiralty were justified in not allowing the machinery to be employed during twenty-six years, and thus entailing an expense of many thousands annually for dredging by the ordinary methods, or whether they are justified now in incurring an expense for new machinery, the conditions not having been altered. The machinery has been fitted to the vessel by Messrs. Blythe, Army and Navy Gazette.

CHATHAM DRAINAGE.—The Local Board of Health has resolved to carry out Messrs. Gotto & Beesley's plan for the high level intercepting sewer to drain the south side and east end of the town. The sewer will discharge into the present outlet at the level of high-water mark, and will be executed mostly in tunnel through the chalk.

"RIGHT TO A T."—It is as well to be so. The newspapers have been telling how Baron Triqueti's marble inlay Scriptural pictures, now in the Paris Exhibition (French department), are to be placed on the walls of the Albert Memorial Chapel, Windsor, under the line of the windows. They will form the dado, in fact. The costly decorations of this chapel are being contributed, as our readers know, by the princes and princesses of the Royal family. Of these panels the one contributed by his Royal Highness Prince Leopold has for its subject "David and Saul," that by Princess Louise, "A Scene from the Life of Moses." On the panel given by Prince Arthur, David is shown with his harp; while Princess Beatrice has presented a picture of Nathaniel. Above each panel is a medallion portrait of the contributing prince or princess, sculptured on white marble, and there are appropriate inscriptions attached to each panel. One of these inscriptions is intended to show that the subject refers to the "latter days" of Lot, but it is written the *later* days; and as this, to the English mind, does not convey precisely the same impression, we suggest to the sculptor that the error should be set right before the work is fixed. The panels display much elegance.

BURIED IN A TUNNEL.—John Martin, aged 73, was a labourer in the employ of a Mr. Morley, a builder; and on Saturday last, he and Robert Morley, his employer's son, were engaged in making a tunnel underneath a footpath and garden in front of a new residence recently built at Navarino-road, Dalston. Robert Morley said the old man was told to make an open cutting in order to reach some pipes in connexion with the drainage, but he preferred to make a tunnel. The tunnel was made through sandy soil, 6 ft. below the surface of the earth, and it was 2½ feet high. It was only intended to make it 5 ft. long; but the deceased, while tunnelling, made a mistake and missed the pipe, and carried the tunnel 8 ft. further on. The tunnel was not shored up in any way. The Coroner asked the witness why he was so foolish as to enter an unshored tunnel through sandy soil. The witness said that he trusted to Martin's experience. On Saturday, while they were both in the tunnel, 2½ ft. of the top of it suddenly gave way, and the deceased, who was at the end of it, was instantly buried alive. The witness was near the opening, and he had just time to pull his head out of the way, when the sand fell. The jury returned a verdict of "Accidental death through being buried alive in a tunnel."

RE-OPENING OF THE CATHOLIC APOSTOLIC CHURCH, STRET福德 NEW-ROAD, MANCHESTER.—This building, which has been rebuilt and enlarged, was opened on Sunday last. It occupies the whole of the site on a portion of which stood the former church, and has a frontage of 36 ft. to the Stretford-road, and a depth of 100 ft., the whole of which is appropriated to the church, a cottage in the rear having been adapted for vestries. The materials of the old church have been re-used as far as serviceable. The principal entrance is by a central doorway in the Stretford-road. There is a nave, with side aisles, lower choir, with provision for organ-chamber, and chancel, with upper choir, and sanctuary and chancel aisles. The arches to clearstory of nave are supported on columns of red Mansfield stone, with Bath stone caps and bases. The roof of nave and chancel are continuous, giving length and height to the building, the chancel roof being distinguished from that of the nave by trusses, supported on carved corbels, with columns of red Mansfield stone. There are also similar columns to the couple windows of the clearstory. The west window is of four lights, and the large east window of five lights, the upper portions filled with tracery. The internal fittings are temporary, and the old stalls have been refixed in the chancel. There will be a screen to the arches on either side of the chancel. The building will accommodate 380 persons, and has been erected in the Early Gothic style of architecture, from the designs of Mr. O. Ayliffe, architect, by Messrs. Ellis & Hinchliffe, who were the general contractors.

ROYAL MANCHESTER INSTITUTION.—The Exhibition of Modern Paintings and Works of Art here, will be opened to the public next Monday.

ART IN RUSSIA.—The *Artiste* informs us that the greatest amateurs and most distinguished *dilettanti* of Russia, Sweden, Spain, and Portugal, are:—The Emperor of Russia, the principal amateur of the empire; after him comes the grand-duchess, Marie-Nicolaievna; the hereditary Grand Duke also has a princely collection. The Museum of Fine Arts of St. Petersburg continues also to collect many modern paintings. Among the most distinguished amateurs in private life are:—Prince Wiaworoff, Prince Narishkina, Count Auvaroff, Count J. de Stenbock, Messrs. Trtiakoff, Prianschnikoff, Soldatenkoff, Kloudoff, Swindoff, Bykoff, and Barissowsky. The Grand Duke Nicolaievitch has sent to the Paris Exhibition a very fine painting by Soukhodolsky; also some excellent ones by Sokoloff and Renmers have been lent by the Grand Duchess Marie. In Spain the amateurs are extremely rare, the objects being collected in great galleries and palaces. Portugal is fortunate in having an artist for king; he produces and purchases. Dom Augusto is a princely *dilettante*. His portrait may be seen at the Exhibition, painted by Fonseca for his gallery.

THE LIVERPOOL AND BIRKENHEAD DOCKS.—The report of Mr. Lyster, the dock engineer, on the dock works of Liverpool and Birkenhead, during the year ending the 24th of June last, has been published. The North River Wall has been carried and completed to its northern extremity, a total length of 1,596 ft., and a raised terrace with a retaining wall had been formed at the back of the parapet. The dock lines of railway had been extended to the timber storage yards at Bootle. The Lancashire and Yorkshire and London and North-Western Railway Companies had opened new communications with the north docks. At Waterloo Dock Works, the whole of the internal masonry and excavations are completed. The river entrances are drawing towards completion. The whole of the gates, bridges, and capstans of the several entrances, with the hydraulic machinery for working the same, are drawing towards completion. The east block of the corn warehouses is completed. The west block is very nearly completed. Nothing has been done towards the improvement of the river approaches. The total expenditure of the year on works on the Liverpool side was 291,178l. 8s. 11d. At Birkenhead the construction of the warehouses is now proceeding satisfactorily. Preparations have commenced for laying hydraulic pipes from the northern entrances to the warehouses and other constructions on the north side of the Float, with the view to establishing a common system for working the whole of the machinery in that locality. The total expenditure during the year on the Birkenhead works was 220,907l.

THE DRAINAGE OF CHILD'S HILL, HAMPSHIRE.—A meeting of some of the most influential inhabitants of Child's-hill was lately held at the Parsonage, Mr. Charles Baylis in the chair, to consider the best means to be adopted in order to procure an effectual drainage of the district, which, including Cricklewood, now contains a population of 1,700 persons. It appeared that the illness had materially decreased, partly in consequence of the change of weather, and partly from the efforts of Mr. Freeman, the inspector of nuisances of the Hendon Union. The feeling of the meeting, however, according to the *Hampstead and Highgate Express's* report, appeared to be that no time should be lost in having proper drainage works carried out, however costly they might be; and it was understood that the authorities of the parish of Hendon were ready to do all in their power, but that the real, and at present apparently insurmountable, difficulty was, that there was no outfall, and the Metropolitan Board of Works would not allow their main drainage system to be entered from any outlying districts. On the motion of Dr. Lankester, who resides at Child's-hill, seconded by Mr. Henry Briedenbach, a committee of twenty gentlemen, consisting of the most prominent residents, was formed, to be designated "The Child's-hill Sanitary Committee." Mr. A. T. Cox, of the Hermitage, was elected hon. sec., and it was resolved that the committee should seek an interview with the Board of Guardians of Hendon, to urge upon them the necessity of taking immediate steps for the adoption of sanitary measures for the improvement of the health of the locality.

SOUTH KENSINGTON MUSEUM.—The visitors during the week ending 31st August, amounted to the large number 27,877, 18,951 being free, 1,407 at 6d. each, and to the National Portrait Exhibition by payment, 7,519.

FALL OF A LIGHTHOUSE.—Considerable alarm has been created in consequence of the falling over into the river Liffey of the metal lighthouse at the extreme end of the North Wall, Dublin. Fortunately no loss of life ensued. The accident is attributed to excavations which are being carried on at the quay wall. Arrangements have been made to fit up a temporary light.

A MEDAL FOR PUBLIC SERVICES.—A decree of the King of Italy orders that a medal shall be struck in bronze, silver, and gold, to be conferred on such persons as shall have rendered signal services during the prevalence of cholera or any other grave epidemic. It will have no one side the head of the king, and on the other a crown of oak, with a legend importing that it is a recompense for services in connexion with public health.

LONDON LABOURERS' DWELLING SOCIETY.—The twelfth half-yearly meeting of the members of this society, was held on the 29th ult., Mr. Richard Foster, in the chair. The directors presented their report for the six months ending June 30th, which was received and adopted, and the usual dividend at the rate of 5 per cent. per annum, free of income-tax, was declared. The capital of the society now amounts to 30,500l., the sinking fund (for the redemption of the leasehold property of the society) to 830l., and the reserve fund (for the equalization of dividends, or extraordinary expenses), to 3,962l., of which sum 1,000l. are deposited at interest in order to provide the means of purchasing temporarily at par any shares that a member may from unforeseen circumstances wish to realize.

GRANITE-CUTTING MACHINE.—A correspondent says of this machine,—"It does not effect results, as I thought at one time, by a series of revolving chisels, but by cutting instruments not unlike the large cheese-knife of the cheesemonger. This is made of a surprisingly well-tempered steel. The machine being brought to the block of granite, the quarry-side, or a cliff, a series of these knives cut their way into the solid material with accuracy and despatch. You can divide a huge block in two, or pare off the least piece of surface, in either case the chisels leaving their work so smooth that the face of the stone is at once fit for the polishing-bed or lathe. All kinds of the most obdurate material have been successfully acted on; and one of the machines has been, or is to be, tested as a tunneller and driver of levels.

MADAME DE SÉVIGNÉ'S RESIDENCE.—The railway from Vitry to Fougères was opened a few days ago, and many of the visitors at the inauguration profited by the occasion of examining the ancient chateau of Les Rochers, well known as the residence of Madame de Sévigné. It is one of the most picturesque spots in Brittany; and though the modest retreat—scarcely can we call it a chateau—was surrounded by woods and desert plains, it was the favourite abode of the marchioness. The tower still remains, in which the celebrated "cabinet vert" was placed. It contained the "secrétaire," sitting before which she chatted so gaily with her son-in-law, "sa chère de Grignon." In the saloon there is an excellent full-length portrait of Madame de Sévigné, in court dress, attributed to Mignard.

TERRIBLE POWDER EXPLOSION AT THE CAMP DE CHALONS.—On Friday, the 30th ult., as the troops were preparing for striking the camp on the 1st, a terrific explosion took place, by which eight persons were literally blown to atoms. Among the victims was M. Rivière, captain of the target practice, a young officer of great promise. The circumstances of the case are as follows:—Each division has a depot of blank and ball cartridges. At 1.30 p.m. the soldiers brought the packets of cartridges, which remained over and above after the great manoeuvres, to the artillery depot; but the guard of artillery refused to receive them, as they were open here and there; so they were taken back to the divisional depot, and remade. During this manipulation the explosion occurred. No cause has yet been assigned for this explosion; but I must be recollected that the new cartridges are extremely explosive, and contain the fulminating matter of a percussion-cap. It is probable that one being trodden upon, exploded and set fire to the rest.

TENDERS

For a vicarage and stables at Addington, Surrey. Mr. Ewan Christian, architect:—
 Adamson & Son £2,340 0 0
 Wells 2,163 0 0
 Brass 1,999 0 0
 Jarrair 1,992 0 0
 Sharpling & Co. 1,915 0 0
 Rhodes & Roberts 1,882 0 0

For a new billiard-room, and bedrooms over, at Lays-ton Villa, for Mr. F. G. Hobson. Messrs. Nash & Son, architects:—
 Gunson £597 0 0
 Gibbon 585 0 0
 Preston 498 0 0
 Sagers (accepted) 469 0 0

For new front, staircases, and gallery to Independent Chapel at Wavertree. Messrs. W. & J. Hay, architects:—
 Denton £1,300 0 0
 Tyson 1,320 0 0
 Robinson 1,298 0 0
 Barker & Son 1,256 0 0
 Westmorland 1,098 0 0
 Nicholson & Ayres 1,083 0 0
 O'Kills & Morrison (accepted) 1,087 0 0

For an iron fence, 1,940 ft. long, at the river promenade, Kingston-on-Thames. Mr. Charles Slagg, borough surveyor:—

Matthews £695 0 0
 Bevington 692 0 0
 Deuce 676 0 0
 St. Pancras Iron Company 664 0 0
 Turner & Allen 655 0 0
 Windsor 657 0 0
 Cochrane, Grove, & Co. 652 0 0
 Eddington 598 0 0
 Harris 536 0 0
 Yates, Haywood, & Co. 533 0 0
 Gulliford 530 0 0
 Bell 524 0 0
 Haywood 524 0 0
 Finney 515 0 0
 Butt 515 0 0
 Dixon 489 0 0
 Simpson 495 0 0
 Smyth 485 0 0
 Shaw 463 0 0
 Newton, Chambers, & Co. 464 0 0
 Hill & Smith 447 0 0
 Morgan 445 0 0
 Russell 442 0 0
 Brooks & Shoorbridge 440 0 0
 Norton 438 0 0
 Williams 435 0 0
 Hall 429 0 0
 Waddington 315 0 0
 Ingram 310 0 0

* There were three tenders very much higher than this, but for the credit of the parties tendering they are withheld from publication.

For the erection of two dwelling-houses in Elizabeth-street, Cheetham, Manchester. Mr. Herbert E. Tison, architect:—
 Neil & Sons £1,160 0 0
 Thompson 1,070 0 0
 Foggett 1,063 0 0
 Farrell 1,028 0 0
 Heron (accepted) 1,008 0 0

For chapel, Barking-lane, Ilford, Essex. Mr. A. Manning, architect:—
 Warner £1,295 0 0
 Hearle 1,025 0 0
 Withers 944 0 0
 Hill & Keddell (accepted) 874 0 0

For the building of St. Jude's Church, Wolverhampton. Mr. George Bidlake, architect:—
 Thompson £4,800 0 0
 Lovatt 4,747 4
 Horman 4,340 0 0
 Nelson 4,280 0 0

For alterations and repairs at the Pavilion stabling, Brighton. Quantities supplied:—
 Anson & Newham £243 0 0
 Sims & Martin 694 0 0
 Hall 658 0 0
 Lockyer 652 0 0
 Saunders 623 0 0
 Pett 623 0 0
 Nightingale 442 0 0
 Cheesman 440 0 0

For new bar-fittings at the Dublin Castle, Walmer-road, Notting Hill, for Mr. J. Shaller. Mr. F. F. Holdsworth, architect:—
 Nutt & Co. £236 0 0
 Manley & Rogers 289 0 0
 Kelly, Brothers (accepted) 253 0 0

For alterations and additions to ale stores and offices, Frederick-street, Hampstead-road, Mr. Taylor. Mr. Potter, architect. Quantities not supplied:—
 Hatchman £84 10 0
 Henderson 874 13 0
 Sabey & Sons 580 0 0
 Perkins 753 0 0

For the erection of additional vestry at the Congrega-tional Church, Clapham. Mr. John Tarring, architect:—
 Sykes £250 0 0
 Saunders (accepted) 265 0 0

For works in building reformatory, with master's and superintendent's residences, at New Wandsworth, for Mr. J. Leyland. Mr. H. M. Burton, architect:—
 Nightingale (accepted) £3,100 0 0

For constructing brick sewers and for other works on an estate adjoining Portobello-road, Notting Hill, for the Freehold Securities Company (Limited). Mr. Howle, architect:—

Tusley £1,409 8 4
 Burgess 1,400 0 0
 Crockett 1,350 0 0
 Burton 1,290 0 0
 Whittick 1,161 0 0
 J. & S. Williams 1,140 0 0
 Shrimpton 1,061 0 0
 Ryan & Co. 1,035 0 0
 Faulkner & Cowley 940 0 0
 Goodair 967 0 0
 Moxon & Mutton 859 0 0
 Carter 858 0 0
 J. Porter 878 0 0
 George 830 0 0
 Wignmore 825 0 0
 Hayden 810 0 0
 Brewer & Steegles 775 0 0
 P. Porter 708 0 0

For constructing brick sewers and for other works on an estate near Westbourne Park Station, for the Land and House Investment Society (Limited). Mr. Josiah Howle, architect:—

Burton £1,180 0 0
 Burgess 1,064 10 0
 Shrimpton 1,022 12 10
 Crockett 930 0 0
 Brewer & Steegles 923 0 0
 Carter 918 0 0
 Wignmore 909 10 0
 Faulkner & Cowley 899 0 0
 George 890 0 0
 Hayden 880 0 0
 Ryan & Co. 880 0 0
 Whittick 838 0 0
 Tusley 821 18 2
 Moxon & Mutton 816 0 0
 J. & S. Williams 789 0 0
 P. Porter 748 0 0
 Goodair 738 0 0
 J. Porter 728 0 0

For seed and jute warehouse, East-India Import Docks, for the East and West India Dock Company. Mr. E. J. Leonard, engineer. Quantities supplied by Messrs. Parr & Strong:—
 Hill & Keddell (accepted).

For erecting a pair of houses at Gipsy Hill, for Mr. E. J. Gordon. Mr. Samuel H. Hope, architect:—
 Cressell (accepted) £520 0 0

For the erection of the Earl Spencer Tavern, Battersea, for Mr. H. U. Hewitt. Mr. E. J. Dangerfield, architect:—
 Whittick £1,536 0 0

For extending six shops, Highgate Hill, for Mr. G. Flowers. Mr. L. W. Reed, architect:—

	If with Plate Glass and Mahogany Sashes.	If Deal Painted Sashes and Sweet Glass.
Headley	£26 0 0	£769 10 0
King	785 0 0	—
Freebles, Brothers	695 0 0	697 0 0
Richards	613 0 0	629 0 0
Rome & Ball	620 0 0	600 0 0
Cabitt, Brothers	488 0 0	480 0 0
Brett & Bradbury	534 0 0	440 10 0
Shedfield	467 0 0	369 0 0
Gordon & Co.	465 0 0	368 0 0
Franklin & Lamie	453 6 0	420 0 0

For the erection of a dwelling-house, for Mr. W. C. Parkinson, at Tufnell Park, W. Mr. John Tarring, architect:—
 Saunders (accepted) £2,655 0 0

For iron fencing for new premises, 533, Oxford-street. Mr. John Dale, architect:—
 Daniels £147 5 8
 Sweet, Brothers 140 0 0
 Rotherham Iron Company 136 0 0

* Accepted.

For alterations, for Mr. John Mixer, at 95, Newgate-street. Mr. John Dale, architect:—

Carter & Sons £1,845 0 0
 Macey 1,767 0 0
 Josephs 1,687 0 0
 Axford & Co. 1,635 0 0
 Lyster 1,559 0 0
 Mather & Reid 1,553 0 0
 Walker 1,510 0 0
 Ashton 1,470 0 0
 Parsons 1,383 0 0
 Henshaw 1,374 0 0
 Baxter (accepted) 1,367 0 0

For Church of St. Columba, Haggerstone. Mr. J. Young, architect:—

Perry £9,965 0 0
 Longmire & Burge 8,867 0 0
 Fisher 8,740 0 0
 Higgs 8,473 0 0
 Hill & Keddell 8,376 0 0
 Ashby & Sons 8,149 0 0
 Ennor 8,133 0 0
 Piper & Wheeler 7,990 0 0
 Henshaw 7,894 0 0

For alterations to the Prince of Orange Hotel, Gravesend. Bird & Walters, architects:—

Kelly, Brothers £1,285 0 0
 Newman & Mann 1,284 0 0
 Williams & Sons 1,267 0 0
 Ebbs & Sons 1,195 0 0
 Blake 1,180 0 0
 Henshaw 1,117 0 0

The Builder.

VOL. XXV.—No. 1284.



The Antwerp Congress.

WHEN the foreign members attending the International Archaeological Congress arrived in Antwerp on the 25th ult. they were cordially received in the Hôtel de Ville, took *le vin d'honneur*, and then proceeded to the inaugural meeting in the hall belonging to the Royal Society of Harmony, where several questions were discussed. Without attempting to give an account of the proceedings, which lasted a week, we may usefully jot down a few particulars. America, Belgium, the Brazils, Denmark, England, France, Germany, Holland, Italy, Russia, Spain, Switzerland, Sweden, and Turkey were represented. Amongst those who attended from England were Mr. Pollen, M.A. (of South Kensington Museum), Mr. J. Wykeham Martin, M.P., vice-president of the Society of Antiquaries, Mr. Lewis Pocock, F.S.A., and Mr. J. H. Parker, F.S.A. In the Archaeological Section, on the 26th, M. de Caumont presiding, Mr. Worsaae, inspector-general of Danish monuments, delivered an interesting discourse on the monuments of the age of Stone, the age of Bronze, and the age of Iron, in the North. As these grand phases of the history of humanity have occupied thousands of years (at any rate, the two first), they had established, he said, in Denmark, sub-divisions. In the two divisions of the Stone age the works of the second were superior to those of the first; but of the two divisions of the age of Bronze, the works belonging to the first were better made than those of the second. He was unable to give the date at which these different periods commenced. They never found stone implements in monuments of the Iron age. Mr. Worsaae described some of the recent discoveries in Denmark, especially in the peat bogs, and an animated discussion ensued.

(On the question whether what was known of the Dolmens of Ireland and Scotland (in Scotland, by the way, there are very few) interfered with the conclusions arrived at by the French antiquaries as to those of Brittany and Normandy, the meeting appeared to be unanimously of opinion that they were all of the same epoch, and agreed in all points.

The age of tombs of lead, and the position of the study of Runic inscriptions, were amongst the other subjects discussed.

In the Historical Section, Mr. Wykeham Martin, president, the place of birth of Peter Paul Rubens was the first subject treated of. All that appears clear at present is, that he was not born in Antwerp, as is usually asserted,

Even the name of his mother is doubtful, some asserting that he was an illegitimate child taken charge of by the wife of his father!

An attempt to determine the influence exercised by Greece and Etruria on the development of the arts and sciences in primitive Rome, led to a long discussion; but the illustrations given were too few to have weight.

On the 27th the Archaeological Section returned to Runic inscriptions.—Mr. Zesterman, of Germany, speaking learnedly,—and to the consideration of the Stone period. Afterwards M. Colfs spoke at some length on the question—"Were the forms of Greek Temple-architecture borrowed from constructions in wood?" discussing the opinion of M. Viollet-le-Duc, who thinks they were not. The speaker urged that M. Le-Duc had not gone back far enough in his researches for the origin of the Greek Temple, and gave reasons for taking the affirmative side of the question. He ended with some remarks on the changes and mystifications that have been introduced into the writings of Vitruvius by editors and translators, and said that what Vitruvius wrote of the Greek Temple had been confounded with the Doric of the Romans. To study Vitruvius usefully, it was necessary to consult at the same time drawings and profiles of the ancient Doric temple, and to get rid of the greater part of the illustrations which had been added by others to his works. M. Colfs's address was printed.

In the Historical Section, on the same day, Mr. Wykeham Martin gave some particulars of what had been done in England for the preservation of our archives, which remain unbroken from the time of Edward I., many dating from William the Conqueror. The documents are joined together to form a band of considerable length, which is rolled on a cylinder. There is an inventory of them, giving a summary of each document, and an index points out the names cited in the documents, and the page of the inventory where the summary will be found. M. Advielle said the arrangement in France was better. Inventories were printed and issued by the Government: the collection already comprised 1,500 volumes. The departmental archives were in two classes,—the historical, and those posterior to the Revolution. The first were nearly all classified; the latter only imperfectly.

Particulars were given of the archives of other countries. In the course of the discussion it was stated that the designs of the departmental architects in France charged with the restoration of churches, also the designs made by the Corps des Ponts et Chaussées, were not properly preserved.

The Archaeological Section, on the 28th, occupied itself wholly with architectural subjects. The question how to determine the character of Carolingian Architecture and its influence on the art of building, and the influence of the Normans upon that art after the time of Charlemagne, was discussed at some length, the Baron de Quast, president, and others, describing various early buildings, and seeking to arrive at features peculiar to the earlier periods. Then came the question, "Is the Pointed style to be considered the natural and complete development of the Romanesque?" M. de Caumont and M. le Maître d'Anta pointed to buildings wherein the transition was seen.

Mr. Parker said the transition occurred not in one building, but all. What they wanted was to know precisely the date of each monument. It was in Anjou and in England that the real origin of the Pointed style was to be found. The change in the ornamentation took place before the change in the style. The Pointed style could not be dated earlier than the end of the twelfth century: before that it was Transitional. Each country had its peculiarity; every abbey had its school of workmen, and each was

striving to surpass the others. The first monument in the Pointed style was the Cathedral of Lincoln, built from the year 1192 to 1200. There was no other so ancient.

In the Historical Section the position of the art of glass-painting excited considerable interest. The heading in the programme was,—

"Describe the processes employed in the Middle Ages for the manufacture of painted glass, and point out the ancient *ateliers* most renowned for its fabrication." Mr. O'Kelly contended that the ancient processes were unknown to us. As to schools, we had none. M. Pecher, of Tournay, said, if we failed in obtaining satisfactory results, it was because the manufacture of glass was bad. By the old glass, the rays of the sun were decomposed, and effects were produced that we could not equal. Formerly the glass-painters made the glass themselves; now they were obliged to trust to manufacturers, who supplied glass that was too translucent. Baron de Quast said, in Germany they had had *ateliers* very renowned, especially in Bavaria, from the tenth century. In the Cathedral of Augsburg there were remarkable painted windows, but of which the date was unknown. The constant re-appearance of the same details showed that there were but a few centres from which the artists transported themselves from place to place. M. Dognée observed that, in Belgium, France, and England there were manufactures of stained glass according to the ancient processes: these had never been lost, though in consequence of difference in materials there was a certain difference of colour. In Switzerland they used double glass to obtain the degree of opacity desired. M. Bordeaux said the Paris Exposition showed the condition of mediocrity into which glass-painting had fallen. As a rule, modern glass-paintings were below the level of contemporary art. Some modern windows, not twenty years old, were already deteriorated. The fabrication of painted windows was to-day a mere matter of trade, and price was considered rather than goodness. The Abbé Sauvage replied, that was true; nevertheless there were good and conscientious artists to be found who produced solid and artistic works. The art was not lost any more than was the art of the worker in bronze. Other speakers urged that if the builders of churches would exercise more discretion in their choice of artists, and would pay more, they might obtain better windows. The race of men of talent was not yet lost.

In the course of the sitting on the 29th Mr. Pollen described to the meeting the Universal Catalogue of Works of Art proposed to be produced by the Department of Science and Art. The letters A and B are nearly complete, and the speaker sought the aid of the learned in all countries to supply omissions and rectify errors. The announcement of this work was received with great applause.

A discussion of the right of the Van Eycks to be considered the inventors of painting brought out some interesting particulars of Roger Van der Weyden and the Tournay school of painting. The great influence of the Flemish artists at that period was made evident.

Amongst several interesting subjects discussed on the 31st was this,—What are the principles that should be followed in the restoration of an ancient monument constructed at successive epochs, and in different styles? M. Colfs contended, in a memoir he had prepared, that the course to be pursued was to bring back the building to the primitive conception; or, if that could not be done, to give the preference to the dominant style, and restore the building in accordance with that! For example, he said, if I have to restore a building constructed two-thirds in the Romanesque style, and one-third in the Pointed style, I apply myself to suppress the one-third of Pointed (we are using the speaker's own words), so as to present after

restoration, a pure style! M. Bordeaux energetically combated this destructive view: in thus pretending to produce unity works of the highest interest would be destroyed. Baron de Quast took the same view, and mentioned some very bad cases of injudicious restoration in Belgium; and ultimately, on the motion of M. Genard, the meeting came to a Resolution, that in the restoration of ancient monuments each part of the building should be repaired and conserved in the special style in which it was built, and with the character which was proper to it. Colonel Meyers called upon the members present to pledge themselves to assist in bringing about the reconstruction of the ancient Bourse of Antwerp, important from both an architectural and artistic point of view, and this they did with loud expressions of accord. But we may not give more space to these proceedings. We can only add that many of the delegates and visitors, particularly the English, were great kindness and attention. The Baron Nottbom, the Danish consul, gave the members a splendid banquet at his country residence. The President of the Académie d'Archéologie de Belgique, and the Bourgmestre de la Ville d'Anvers, entertained them; the former in the Grand Hall of Harmony, where the Congress held its sittings; and the latter at his private residence. Concerts, to which they were all invited, were held every evening, and endeavours were made in all quarters to render the visit agreeable as well as instructive.

THE PARADE GROUND AND THE SPADE.

THE readers of that great novelist who has had no successor, will not have forgotten the characteristic scene in which the extremely respectable clerk of a London merchant finds himself, with no less surprise than discomfiture, the inmate of a Scottish prison. Under all the embarrassing novelty of the position the precise habits of the counting-house assert the force of a second nature; and when a small sum in addition is required in order to simplify matters, the drawing of the line beneath the two numbers that are to be cast is as duly and accurately performed as in the sacred columns of the ledger itself. Those of our readers who learned arithmetic from the pages of "Bonycastle," may yet realise the mingled feelings of wonder, suspicion, and disgust with which the ancient systematic teachers of the mysteries of "sums" and of cyphering, first beheld men like *Angustus De Morgan* run up five columns of figures at a time, one for each digit, and give an accurate result before on the old method one would have done more than set down nought and carry one.

The total change in method of thought which is illustrated by such a contrast pervades every branch of social activity. It is probable that no preceding century, taken as a whole, has witnessed so much change in men's minds and in ordinary habits as has taken place within the last thirty or forty years. In the great centres of population the change is, of course, most apparent, but even in the remotest rural districts the same influence is traceable. The red cloaks of the peasant women, which transformed the Welsh farmers' wives into regular troops in the apprehension of the French invaders of Flisguard at the close of the last century, have now altogether disappeared. We look in vain for the habitual dress of the ploughboy of forty years past, the "smock-frock" that had come down to him from Saxon England. Those anti-social cages of steel ribbons, absurdly known by the name of crinolines, have invaded the remotest rural districts under various forms of ingenious discomfort and ugliness, and the village children are becoming far too cosmopolitan to greet a decent stranger by a bob at the forelock.

The *laudator temporis acti* who, while refusing to travel, has found the England of the eighteenth century to be travelling far from his disappointed and lingering vision, has been long wont to console himself for hateful innovations by a glance at those institutions for which he pays the most. "Thank God," was a memorable ejaculation, "we have a House of Lords." "Thank God," it is now more appropriate to remark, "we have the traditions of the service and the regulations of the army." As to the navy we have less consolation. Nor even is the contemplation of the army a subject of unmingled self gratulation. If we look at Hogarth's "March to Finchley," we shall find that the uniform of the British

soldier, though still proudly distinguished by the apoplectic stock, the compulsory use of the distinctive tattoo of the razor, and the white cross-belts that answer the double purpose of contracting the chest and furnishing an admirable bull's-eye for the enemy, has undergone considerable change since "George the Third was King." Especially have we made so great a stride in the introduction of the formidable artillery which has given a just fame to Sir W. Armstrong, that we are likely steadily to refuse to consider any further evidence on so noisy a subject for another official generation. But in the navy the new element has made wild work with the venerable traditions of the past. The floating castles which, twenty-five years since, were regarded as chief among the wonders of human handiwork, are now looked on as so many arks, and instead of relying on our wooden walls we are girding ourselves round with walls of iron.

There has, however, always been one essential difference between our land and our sea services,—a difference inherent in their nature, and to which the popularity of the naval officer may in great part be attributed. Preparation for defence is of the essence of all military order; but the preparation which is requisite in an inland garrison, in the native country of the troops, and in a time of profound peace, is apt to sink into a matter of formalism and routine,—of stocks and pipeclay. On board ship it is otherwise. An enemy may be at any moment alongside,—not an enemy who will run up the ropes with cutlass and marling-spike, but one who may lay the vessel itself on its broadside with a lurch, or pour with irresistible force through the unenclosed port-holes. The winds and waves of our stormy seas have been since the time of the Armada, to say nothing of earlier history, at once the best guardians of our freedom and the best educators of our adventurous youth. A squall may come on at any time, and for two or three days out of every week the energetic activity of the sailor may expect to be tested in a manner calculated not only to keep him alert, but to call for and to develop his bodily strength. Thus, while the professional activity of the soldier can only be exercised by conventional appeals to his duty in time of peace, the professional activity of the sailor is ever on the alert. The grand object to be dominated by the navy is the sea, and hostile vessels come in only as a portion of that great host of difficulties over which we expect the "meteor flag" to triumph. A ready aptitude for whatever may occur thus comes to form a portion of the sailor's character. Jack is at home, proverbially so, under all circumstances. A party of English sailors were amusing themselves in the streets of Naples by experiments in horsemanship, or in whatever may be the proper term to use when the animal mounted was of the humbler rank of an ass. Not relishing the vigorous thumps administered by his rider, the first animal of the cavalcade executed so successful a kick as to send Jack flying clean over his head. The sailor alighted on his hands, and ran briskly forward in that inverted posture as if it had been perfectly natural for him to go along with his heels in the air. This was only a trivial illustration of the manner in which the education of rough weather makes the sailor instantly at home under the most novel circumstances.

With this difference between the nature of the emergencies peculiar to the land and sea services, it naturally occurs that a review by land differs from one by sea in everything but in name. A naval review is always a bit of actual service. The wind will not come to order. The handling of vessels, even under steam, is a real bit of work. The military review, on the other hand, especially the military review of the earlier part of the century, served to bring into strong relief the difference in the meaning of the adjectives "military" and "warlike." The affair was merely a parade on a large scale,—a matter of buttons and well-brushed coats, of promptitude in the manipulation of the fire-arm, and of mechanical exactitude in marching and wheeling. The length of the pig-tail is no longer an item requiring exact admeasurement; but the pig-tail school is not extinct among our older officers. We do not wish to speak with any disrespect of the unrivalled steadiness of the British march, the firm, united, unbroken tread, as unshaken under fire as in the parade, which excites the admiration even of soldiers formed under the most opposite systems of drill. But it is more than questionable how far the slow march is in arrears of the *Annus Domini*. The most brilliant courage, the most perfect sang

froid under fire, prove no protection against the rifle. That part of the military code which most wisely and justly sentences officers to punishment for undue exposure of their lives in presence of the enemy, demands a fuller extension. So long as it took a hundred and fifty shots to produce a wound, coolness and unwavering discipline won the day. It was by these reliable qualities in the British soldier that the greatest captain of the present century won its most decisive battle. He calculated that his troops would keep their ground to the last man, and that the expenditure of life before French cannon and musketry could not reach the last man before the arrival of Blucher or of night-fall. But if both armies had been provided with breech-loading small-arms and with rifled cannon Waterloo could not have been fought as it actually was fought. What changes the Great Duke would have made in his dispositions we have not the advantage of learning from his genius or from that of his colossal opponent; but we may yet derive a lesson from the grave of Wellington. Eminently, while on active service, the duke was a practical man. It was his habit to weigh possibilities, to seize first the leading features of the position, to leave as little as possible to luck, and to make the main chance secure. It was thus that he prepared his famous lines of defence in Portugal, and at a time when actual fighting formed more of the business of war than it does at the present day, gave the first important check to the combinations of Bonaparte, not by the bayonet so much as by the spade.

We cannot doubt that if a soldier such as was Wellington in his prime were now at the head of the British army the importance of the spade in all future warfare would be brought out into strong relief. With the increased precision of aim and rapidity of fire of modern arms a battle becomes more a question of time than was formerly the case. The defence involves endurance more than courage. Let troops be kept on an exposed position for so many minutes, and they will be mown down to a man. In all the great battles of modern times, the seizure of some partially covered position has usually been the object of the most obstinate struggle. This feature of war remains unchanged, unless by the increased rapidity with which the torrents of blood will flow around the post that is selected as the key of the position. But in the occupation of open positions, which dominate the field, but which are now exposed, as was not the case formerly, to the fire of rifled shell and shot, will be found the main difference in the features of modern battles. Points of command essential to the tactical movement of the hour will be tenable only for so many minutes, because in so many minutes every soldier thus exposed will be shot. It is obvious that the resource in this emergency is the spade. The art of self-defence must, as in the Spartan times, be made the first duty of the soldier. To stand to be shot may be magnificent, but it is not warlike. We must learn to stigmatise it as unwarlike. The general who can most rapidly intrench his troops will remain master of the field. We do not speak of the painful and elaborate system of entrenchment which was practised in the American civil war, although it was the spade which enabled General Lee so long to hold his own against forces so immeasurably out-numbering his battalions. But a rapid mode of throwing up a blind against riflemen, a familiarity with the pick and shovel, such as make our "navvies" as adroit as so many moles, is as essential to the safety of the troops, and ought to form as integral a portion of the military education of the infantry as the use of the rifle itself.

The subject has been formally brought under the notice of the House of Commons, and of course with the usual result. The first objection made is, that the soldier is unaccustomed to handle the spade, and that an addition to his drill of a severe form of manual labour will render the service unpopular, and interfere with recruiting. Tell him that it is for his own protection that he is thus called on to instruct himself, and his reply will be,—to decline to enlist.

To this objection there is one complete reply. The soldier must have extra pay for extra labour. This can be effected, not only without addition to the army estimates, but in a manner that would become popular both among officers and men, by affording a rate of pay very far in advance of the military rate, on a self-supporting basis. Our navigators readily earn their 5s. and 6s. a day. The education of a navigator consists

in putting a spade into his hand, and telling him to fill so many barrows of earth a day. At first he does it very badly; he works slowly and clumsily; he does less than half as much as his neighbour, and he is tired to death by sunset. A week or two of practice makes an immense difference; in three months a pick may be put into his hand; in six months he is a skilled earth workman; in twelve he is fit to be a ganger.

Now, if working parties of troops were detailed for the execution of civil or military works, commencing under the guidance of picked civil workmen, who would soon be replaced by non-commissioned officers, very little time would pass before the military exco-operators became as skilled as the civil. If a preliminary outlay seem requisite for clothes and tools, this outlay would be replaced long before the close of the year, and the proper price of the work done would be such as most amply to remunerate all engaged. We speak from large experience of civil works, and we can appeal to the testimony of engineer officers, who know the inefficiency of recruits at any skilled work, and who also know the rapidity with which efficiency is attained under instruction and practice. We do not say to what extent the army might thus, while increasing tenfold its military or rather its warlike efficiency, be rendered a self-supporting institution, but we are confident that the suggestion merited a better reception than the reply from the Horse Guards, that the plan was deserving of attention, but that we have too few men in the army to allow of its adoption. It is this very scarcity of our precious personnel of war that will, sooner or later, (let us hope before some great affluence has demonstrated its necessity,) render the adoption of some such plan an essential part of our military system.

CONCERNING THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, AT DUNDEE.

THE meeting at Dundee has been more successful than at first seemed probable. The proceedings in the sections were, as they always are, interesting; the hospitality connected with the excursions was gratifying to all who took part in them; whilst, notwithstanding many well-known faces were absent from Dundee, the tickets issued and the amount realized at the meeting were beyond the figures at Nottingham. Moreover, the city authorities did so much during the week, as to remove to a considerable extent the impressions that were produced on visitors from London, on their arrival, or by the first twenty-four hours' residence. The Provost himself was indefatigable; and one, or perhaps two of the three local secretaries, soon after our notice of last week was written, came out into the light: to Mr. Henderson at least, we are indebted. More might have been done, it is admitted, as to the arrangements of the opening-day; but we are assured that any omissions were owing to the unsuggestiveness of those who alone know—the general and assistant secretaries of the Association—what is required in details, from having had experience, or at least ought to know. When the Association goes, next year, as is decided, to Norwich, there must be some arrangement by which lodgings may be kept within reasonable limits of price, and by which persons employed by the local secretaries to ascertain available accommodation may not apparently play into the hands of those letting the lodgings, as to the terms, and may eschew altogether the stilted quarters of a town, and do something towards preventing the proprietors of taverns and the purveyors of refreshments from becoming every day more extortionate. The list of lodgings at Dundee was worse than useless: inquiries were directed by it to places that could not be found, and to one place that was a cellar. The lodgings, when found, were from 30s. to 40s. 10s. per week, for two small rooms; and of what we saw, the more expensive were the least desirable. As it was, effects of some of the preliminary arrangements, and the original defects of the places of residence, remained, or were operative to the last. The majority of the gentlemen in Bonnie Dundee have certain deficiencies that would prevent persons from the south of the kingdom from settling in the city, whatever otherwise the inducements. Excepting in hotels and public institutions, and in houses built by the more wealthy people for their own residence, one requisite seems to be always un-

provided in the plan, and non-existent in fact. A certain odour, not that of sanctity, or else a smell of burnt lavender as a substitute provided and preferable, is apt to be met with. On the first morning a general chorus of complaint was sounded in the reception-room in the Exchange buildings; which apartment, by the way, soon became almost unbearable, from the demand upon certain accessories of the building that have been alluded to as wanting elsewhere. The system of residences in flats is very general; and, of course, this has the advantages which our readers are well aware of. The "stair," in such cases, usually ascends direct from near the street entrance-doorway, to which last there is no door. The consequences, in many cases, need not be mentioned; and should there be nothing more objectionable, and the stone steps be scrupulously clean to the eye, there is stench that is disgusting, due to the fact that the population of the tenements is largely feline. We may say that the flea of this part of Scotland is of a bigness and an agility unknown in the southern part of the island; that is to say, if we may bear witness to the zoological fact after sleepless nights, and succeeding days of discomfort like that which was the lot of the carriers in Shakespeare's "Henry IV." As regards the worst defects, alluded to, of the dwellings, the authorities of the city are no doubt anxious to correct them. Sewerage and water-supply have been attended to: the water moreover seems good. The most-recently built of the tenement dwellings, as those erected by the Messrs. Baxter, in Lyon-street, of which we may again speak, are very superior to others. We have no doubt of the anxiety of the city authorities to remedy what is defective; but at present the system of the removal of ordure from the houses is disgusting; albeit as to what comes under the comprehensive designation "dust" in a London-house, we advocate the French system of depositing it in the street, combined with perfect street-cleaning, in lieu of the hoarding it in or close about houses, which is general in London.

Of the city itself much more might be said; but our present business is with the Association. The opening meeting was held in the Kinnaird Hall, a room built as a Corn Exchange, and for public meetings, and said to be 130 ft. by 60 ft. on the ground, and 40 ft. in height, and estimated as affording space, with its end-gallery, for from 2,500 to 3,000 persons. On this occasion there were side-galleries, temporarily erected. The ceiling has sloping sides and a central plafond, and is carried by iron ribs of the semi-circular-arch form: the lighting, by day, is through the sloping sides. By night the arrangement provides for sun-burners; but on the evening in question, gasoliers were substituted, and the room was almost unbearable. Before the proceedings commenced Sir David Brewster fainted, and had to be carried out. The original sun-burners have now taken the place of some of the gasoliers, and with advantage; but on each of the lecture-nights the room has been still hot and uncomfortable.

The chair was taken, in the absence of Mr. Grove, the former president, by Sir Roderick Murchison, who, with questionable taste, said that the choice of president this year had been made on the principle of alternating men of rank with men of science. The address of the Duke of Buccleuch, which followed, was an argumentative exposition of the advantages of science, and of the importance of its being taught in schools and universities; and anywhere else than at the British Association for the Advancement of Science, would have been highly creditable to the person who delivered it. It resembled in no respect the addresses of former years in being a review of the scientific progress of the year. Therefore, it seems to us that the Association this year will have failed of one of its most important functions. The duke said, he had never in his life attempted to pen, before-hand, a speech or address to be delivered, and that in this case he must have had recourse to the pens and to the heads of others, whilst he preferred speaking from his own heart and head. There is much in this that is creditable to the duke; but the man who is not capable of utilizing the labours of others, whilst acknowledging them, and of making his own individuality, as well as acquaintance, to some extent, with every branch of science, clear at the same time, is not fitted for the post of president of the Association.

There is frequent error, in several ways, in the practice of men in such a position as that of the

president of the British Association, men of science or others. Whilst not forgetting that there is no natural demarcation of branches of science, distinguishing them from other branches, they assume that an individual mind is held, by the public, capable of grasping the whole. It would be far better,—indeed it is essential for the annual address at the meeting of the British Association,—that the utmost use should be made of the assistance of the man most competent in his department, and that such assistance should be openly acknowledged. This was the course pursued by the great Humboldt in his *Cosmos*. Lord Brougham, although there is no doubt of the writership of his addresses on subjects which were all taken in by his comprehensive mind, was accustomed for many years to be kept up with the progress of different branches of science by chosen persons regularly attending him with the object. In each of these courses there is recognised that for which we contend. If the proper man be chosen for the presidency, the address will be that of the individual, none the less that all requisite assistance is both used and acknowledged, whilst it will be, what the address this year was not, a report of the state of each science and of the existing relations in the whole.

We should mention that at the meeting of the General Committee, in the morning, a very important report from a committee was read, on Scientific Education in Schools. It is too long for our reference to more than one or two of the many important points in it. It showed that those boys upon whom the ordinary school education produced slight effect could be stimulated by instruction in science, and that science would be found a most valuable element in the education of those who showed aptitude for literature. It referred to the opinion as concurred in by schoolmasters, that much more knowledge and intellectual vigour might be obtained by most boys during the many years they spend at school, than what they do obtain. So far from the valuable results of a classical education being diminished, the report maintained that the exclusively classical education failed deplorably for the majority of minds. The report said: "As a general rule, the small proportion of boys who leave our schools for the Universities consists undeniably of those who have advanced furthest in classical studies, and judging the existing system of education by these boys alone, we have to confess that it frequently ends in astonishing ignorance." As to the notion of excessive strain upon the minds of boys, the report alluded to the same objections as once opposed to the introduction of modern languages and mathematics; and it remarked that change involving play of a new set of faculties often produced a sense of positive relief. A distinction is made in the report between scientific information and scientific training. Both of these should co-exist in a school professing to offer the highest liberal education; whilst at every school there should be comprehensive elementary instruction in science. But the report clearly contemplates much more than the merely elementary instruction. It considers the claims of experimental physics, chemistry, and botany, and says of chemistry that pursuit of this science "affords a corrective of each of the two extremes against which real educators of youth are constantly struggling." For, on the one hand it lends even sluggish or uncultivated minds from simple and interesting observations to general ideas and conclusions, and gives them a taste of intellectual enjoyment and a desire for learning. On the other hand, it checks over-confidence in mere reasoning, and shows the way in which valid extensions of our ideas grow out of a series of more and more rational and accurate observations of external nature." Further on in the report, reference is made to the fact that many boys of thirteen or fourteen are sent to the public schools almost totally ignorant of the elements of arithmetic. With a view to the furtherance of the objects, the following suggestions are made:—

- I. That in all schools natural science be one of the subjects to be taught, and that in every public school at least one natural-science master be appointed for the purpose.
- II. That at least three hours a week be devoted to such scientific instruction.
- III. That natural science should be placed on an equal footing with mathematics and modern languages in effecting promotions, and in winning honours and prizes.
- IV. That some knowledge in arithmetic should be required for admission into all public schools.
- V. That the Universities and Colleges be invited to assist in the introduction of scientific education, by making natural science a subject of examination, either

at matriculation, or at an early period of a University career.

VI. That the importance of appointing lecturers in science, and offering entrance scholarships, exhibitions, and fellowships for the encouragement of scientific attainments be represented to the authorities of the Colleges.

With reference to the last two recommendations, co-operation of the Universities is necessary, although not more than 35 per cent. even of the boys at the great public schools proceed to the University, because the curriculum of a public school is almost exclusively prepared with reference to the Universities. Attached to the report are Appendices, giving particulars of the scientific education within the present sphere of the Universities, including London, and of the College of Preceptors, and also particulars of what is done in the French and German schools, as well as ample information as to the teaching of science at Rugby and Harrow.

On the following day the sections got to work. Some of the papers which were read on subjects directly interesting to our readers we shall print or refer to.

Besides the proceedings in the Sections, there were two lectures to large audiences in the Kinnaird Hall, one of them by Mr. Archibald Geikie, on "The Geology of Scotland with Relation to the Picturesque Features of the Country," and the other by Professor Alexander Herschell, F.R.S., on "Meteors and Meteorites." Each of these lectures was illustrated by large diagrams and views, and the latter one by some very remarkable experiments. On two other evenings there were *soirées* in the Volunteer Drill Hall; which were attended each by upwards of 2,000 persons. The only defects in the arrangements were insufficient width of entrance-and-exit-way, and very inadequate provision for overcoats and umbrellas. This drill-shed is a large structure, of the railway-shed character, as built, but which on this occasion was made to assume a highly-effective appearance. It was erected partly for the purpose to which it was applied during the meetings of the British Association, and partly for that which its name indicates. There seems to be some idea of making the structure eventually, longer than it now is.

On the nights of the *soirées*, the entrance where carriages set down was approached by crossing a forecourt, ornamented with plants and coloured lamps; and across the whole end of the building ran a temporarily-erected porch, glass-roofed, and decorative in appearance. Double flights of steps were in the centre; whilst other flights of steps at the ends of the loggia, were reserved for pedestrians. The walls of this hall were covered with paintings, about six hundred in number, some of them copies of old masters, though not always acknowledged to be such, but many of them works of the highest order of excellence; and many interesting objects were dispersed about the ample area of the hall. After one of the *soirées*, there was a ball in the Kinnaird Hall. There was an agricultural show; there was a flower-show in the Baxter Park; and there were numerous places of interest thrown open for the inspection of visitors. On the Saturday there were excursions to St. Andrew's, to Rossie Priory and Fingask Castle, to Falkland Palace, and to Glamis. Eight or ten others were to be made this Thursday. On each day, each one of the excursions offered such temptations, that scarcely a member of the Association was there who did not regret his or her inability to go to all. A comparison of notes on Saturday night showed that every one had been gratified.

The more formal business of the Association concluded on Wednesday.

COST OF THE NEW VESTRY-HALL, ST. LUKE'S. In accordance with a request of the vestry, the clerk has laid before the Board a detailed account of the money expended in the erection of the new Vestry-hall. It contains the following, with other items:—Cost of site, 1,650*l.*; building, 6,416*l.* 2*s.* 10*d.*; expended at the laying of the foundation stone, 70*l.*; Mr. Stett, for first drawing, 365*l.* 5*s.*; for second ditto, 279*l.* 6*s.* 1*d.*; some additional painting, 10*l.* 15*s.* 9*d.*; carpenters' work, exclusive of the building contract, two items, of 10*l.* 15*s.* 2*d.* and 145*l.* 14*s.* 6*d.*; gas-fittings, Mr. Jeal, 247*l.* 7*s.*; a marble slab, 43*l.* 9*s.* 4*d.*. The total was 10,722*l.* 19*s.* 3*d.*. The clerk said the guardians had to pay half of that amount, namely, 5,361*l.* 9*s.* 8*d.*. That body had already paid 1,650*l.* for the site, and 3,000*l.* cash.

VENTILATION.

THE Drummond School was opened in May, 1864, for the reception and education of orphan daughters of soldiers.* Thirty children, the youngest of seven years, were selected, medically inspected, and admitted within the next few months, and a female staff placed in charge of them.

Not very long after the entire number of children was assembled, slight ailments occurred, which were attributed to change of climate and diet, and other ordinary causes; but this conclusion was in time discovered to be inexact, as these tendencies did not pass away with longer residence, and ordinary health was not in all cases resumed. These illnesses were in themselves, with one or two exceptions, unimportant, except from indicating that something was amiss in the sanitary conditions of the school: they comprised sick headaches, deranged *primæ viæ*, sore throats, sore eyes, glandular enlargements, colds, feverish attacks. One girl was removed with incipient lateral curvature, another died from gastro-biliary fever, which rapidly assumed a very low type; and, lastly, porrigo showed itself. No exception could apparently be taken to the mansion; it was situated in a most healthy position, the rooms were of good size and airy, and in the dormitories the beds were so arranged as to be one yard apart. Ventilators likewise had been introduced into the walls of the school, and other rooms, under the direction of Col. Durnford, of the Royal Engineers; and in fine weather the windows were kept partially open, and everything done to keep the house sweet.

In August, 1866, the governors at my request sanctioned the ventilation of the sleeping apartments in the manner I am about to describe.

Since then, that is during the last year, a most gratifying change has taken place; only two cases have been presented to me for treatment, one of acute dyspepsia after the Christmas holidays; another of scarlet fever, which ran a very mild course after the Easter holidays.

This result, both novel and striking, can be attributed to no other cause than the thorough ventilation of the above-mentioned rooms, which was carried out by a most competent officer, Mr. Daly, of the Royal Engineer Department.

The removal of impure air from a room can be effected by offering to it a ready outlet and dynamically replacing it with pure air; the problem to be solved is how to compass this object without creating a draught, which may be detrimental to health, or which shall interfere with the personal comfort of the inmates. I do not know that there is any novelty in the mode adopted at the Drummond School, but a little care is required to secure all the objects contemplated and in the best way.

Each room was ventilated quite independently of its neighbours. From such room holes or perforations were made, exactly opposite to each other, close up to the ceiling, through walls and partition walls, right through to the open air in front and rear of the building: into these perforations tubes or conduits were inserted which passed from the room completely to the outside of the building. Some of these tubes were, of course, very short, as they had only to clear the thickness of the outside wall; those opposed to them, proceeding from the other side of the room, were long, as they had to extend through the partition walls, from the inside of the room, close to the ceilings of the interposed passages and rooms, until the outside of the building was reached in the exactly opposite direction. These conduits were 15 in. by 4 in. in the clear: the wider and shallower they are the better, so that the section do not much exceed 60 square inches, lest the change of air in the room in windy weather be too rapid. They were made of well-seasoned yellow pine, ploughed and tongued, and the joints put together with white lead, so as to be perfectly air-tight.†

* Mr. Drummond, a merchant of Dublin, who had formerly been in her Majesty's service, bequeathed a sum of 20,000*l.* to establish this school: a further sum of 2,231*l.* was raised by subscription, and expended in purchasing, repairing, and improving two private dwelling-houses (twin houses), situated in a large garden, on an agreeable site overlooking the River Liffey. The interest of Mr. Drummond's magnificent bequest was reserved for the exclusive support and education of the orphan children.

† The recreation-room and dormitories of the Royal Hibernian Military School have been most successfully ventilated in this manner. The conduits are of frame-work, covered with canvas and deeply coated with paint: they have discharged their office well. Some of the conduits which open into the recreation-room pass over twelve yards through rooms and passages. When the frames of the zinc plates at the inlets were first put up (some years

Outside the house the inlets or outlets, as the case may be, of these tubes or conduits were furnished with perforated iron gratings, the perforations being $\frac{1}{4}$ in. diameter and $\frac{1}{2}$ in. apart; the holes were punched, "not drilled," the face of the plate with the "burrs" or projections made by the punching being kept on the outside, whereby wet blown against the front of it is prevented running into the tube through the holes: the gratings were $\frac{1}{8}$ in. thick. On the inner side, opening into the rooms, perforated zinc, with holes $\frac{1}{4}$ in. diameter, are fixed fair with the face of the walls, and draught-boards, which experience has shown should be perfectly horizontal, 2 in. or 3 in. wider than the zinc plate, and project into the room about 10 in., are fixed under the apertures, to guide the air into the room, direct it across the room to the opposite aperture, and prevent its descending immediately on introduction. This draught-board performs an important office and cannot be dispensed with. These ventilating apertures, with their special conduits, should be from 15 ft. to 18 ft. apart, so that two sets will fully ventilate a tolerably large room. It is not necessary, excepting for about 18 in. of the part directly entering or leaving the room, that these long tubes should be perfectly straight; they can without detriment take a little excursion, so as to clear a staircase or inconveniently obtruding partition-wall; but the less friction to the air that is permitted within them the better.

Most people have a vague notion that, heated air expanding and ascending, all that is necessary to provide for ventilation is to favour the escape of impure heated air at the top of the room and to permit the entrance of a cooler stratum of pure air below: no doubt pure dry air would be obedient to this law, but the air in a room may be in conditions in which the interchange may be interrupted, may entirely arrested, unless the difference of temperature be very high,—high to a degree that should never be permitted, so high indeed that it may prove exceedingly prejudicial to health.

My attention was first drawn to this deviation from received principles, many years ago, in the East. I was, late one night, during the prevalence of cholera, called to visit some soldiers of the 95th regiment, in a large, lofty barrack-room: the floor area, however, allotted to the men was so restricted that the soldiers' beds were all but touching. As the corporal moved forward with the lantern, I observed that the flame became small and red; but when he, by my directions, raised the lantern above his head, the flame resumed its ordinary appearance. I moved gently to an undisturbed part of the room, and found on raising myself a foot or two that the air above was tranquil and comparatively pure; but, lowering my head to a level with the men's bodies, I felt it to be oppressive, tainted, and sickening. The presence of this bank of ungenial air enshrouding the men I attributed at the moment to the presence of watery vapour, the *halitus* from their breath and transpiration from their bodies. All who have observed on a damp morning in some manufacturing town the heated air and smoke arrested in its upward movement, and hanging like a cap over the huge factory chimney, will realize the idea that suggested itself to my mind as I regarded it.*

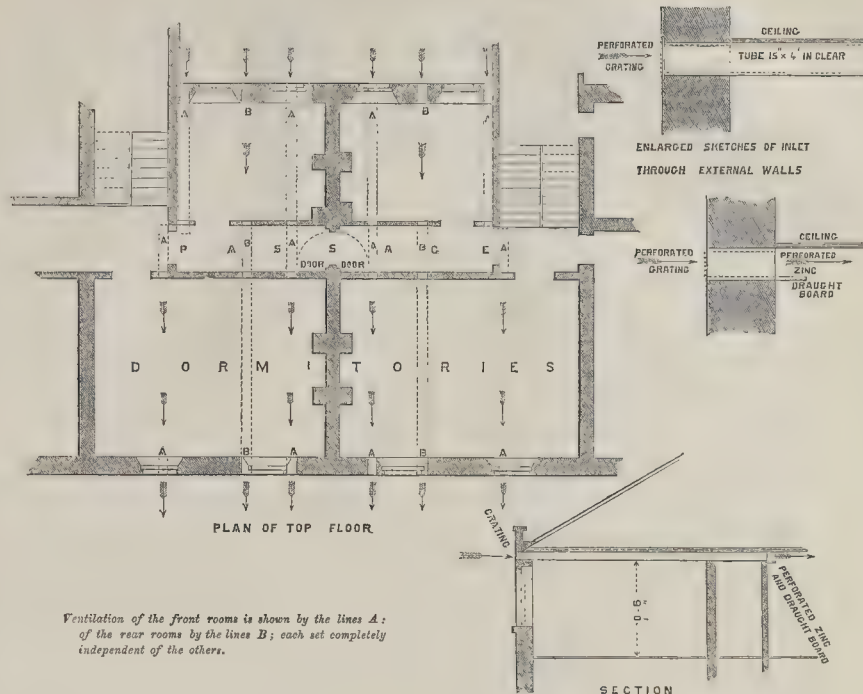
There is something very curious in the tendency of air, in the ordinary conditions in which we find it, to arrange itself in strata. In the atmosphere, free as every particle of air is to obey the forces acting on it, to adapt itself as it listeth, we perceive this stratifying disposition in the flat bottoms of cumuli, in the horizontal sheets of stratus,† and cirro-stratus. In the East, journeying up to the sanitary stations on the hills, we see it in the early mornings as we mount our horses and glance back on our ride of yesterday, in the flat-topped dense fog, which fills the deep valleys rife with malaria, in the

ago) I caused them to be furnished with slides to regulate the quantity of admitted air: these were soon found to be unnecessary, even in the stormy weather of midwinter, and have been withdrawn. In the dormitories, the air of which was formerly much tainted, but now very fair indeed, I have found, after several years' experience, that the minimum space which, consistently with due regard to maintenance of health, can be allotted to each boy is 45 square feet. The average age of these boys is 10 years; a larger appointment would, therefore, be required for full-grown persons.

* I wrote by the next mail to Sir John Webb, describing what I had witnessed, and pointed out the propriety of securing a greater amount of lateral space to men in barracks. By return mail he informed me that my suggestion would be carried out in a new barrack about to be erected for Artillery at Portsmouth.

† "Meteorology." Sir John Herschel. Pp. 98, 200.

VENTILATION OF ROOMS.



Ventilation of the front rooms is shown by the lines A :
of the rear rooms by the lines B ; each set completely
independent of the others.

intervals of the mountain spurs. Mr. Glaisher, in his balloon ascents and descents, is stated to have passed through some 2,000 ft. of air of uniform temperature into other strata indifferently of higher or lower thermal state.* Mr. Clibborn, of the Royal Irish Academy, has favoured me with another singular instance in "a peculiar effect produced in the old library by the mode of heating it under the bookcases with small iron pipes, heated so highly with water that they would char dust and blacken paper sometimes, so that we expected an accident, until I adopted a method of cooling them by means of hundreds of iron saddles made of bits of hoop-iron, a plan which I found wonderfully efficacious in cooling the pipes and heating the air in the room moderately and agreeably, instead of the hot dry air we had previously. Now this air used to accumulate and form a stratum of the height of the long table in the middle of the room, provided the place was still and no one walked about; your head and body would feel cool, but your legs and feet oppressively warm; you would be reading and all quiet, and in a moment the cold air from the great lantern at the top would tumble down, and you would feel a great shock,† as if a blast of cold air struck you from some window or door suddenly opening. At night, on one occasion, when we were at work at the Catalogue, moving very little, having books on the table and eight large candles burning on it, the night being very cold we had the hot-water pipes very warm, when suddenly

the cold air fell from the lantern, and the hot air flew up suddenly into its place with such rapidity that all the candles were blown out." Mr. Clibborn likewise observes, that this stratification is by no means absent from private dwelling-houses; the separating plane of the strata being usually on a level with the upper edge of the fireplace.

We thus can readily comprehend that in still rooms, such as they ever are at night, we have no guarantee in loftiness of ceiling for the purity of the air we are breathing. It is, besides, highly objectionable to admit in any great quantity cold air by ventilators at the baseboard of the room; I have had on many occasions to close them up, as I have found coughs, sore throats, and sore eyes clearly traceable to them. In the mode of ventilation I have been describing these untoward results never occur.

In our variable climate it is exceedingly rare to find the air perfectly still. Wind is always being propelled in one direction or another, and never so completely on to a dwelling-house but that it will sensibly press on either the front or the rear. It will be obvious then, that, no matter how the wind may blow, an unequal pressure will be exerted on one or other face of the house, and that the effort at equilibrium will carry a current through the tubes or conduits from the windy to the lee side, directly across the upper part of the room to be ventilated. The friction of this current on the volume of air in the room very soon sets the mass in gentle motion, revolving on a horizontal axis; part of the introduced air becomes entangled with the revolving mass, and keeps up a supply of pure air to the room; while, in like manner, a portion of the mass disengages itself, and passes out with the current, thus removing a part of the impure air previously circulating in the room.

A little care is required to adapt the average in-flowing current to the size of the room, so that it may not cool the room too palpably. I have adopted a section of 60 square inches in the Drummond School, the ceiling being only

9 ft. from the floor, and with this have had the ventilators open all the last severe winter, and have not found that the temperature was inconveniently lowered, or comfort at all interfered with.

ROBERT TEMPLETON, Dep. Inspector General,
Royal Hibernian Military School.

THE ARCHITECT OF THE HOUSES OF PARLIAMENT.

BEFORE the claim for Mr. Pugin in this respect had reached its present shape, we said, on receiving an anonymous note from one obviously not personally concerned in the discussion, and possessing no special knowledge of the case, that "persons making this claim (a sort of claim always to be looked at with the greatest suspicion, especially when death has removed the chief person concerned) should refer to the statement made in our pages by Mr. Pugin himself on a similar occasion; to which we could add the recollection of an indignant personal denial by Sir Charles Barry and Mr. Pugin both."‡ Mr. E. Pugin considered this a personally offensive allusion,† although, in truth, it was meant to apply generally and not to be offensive to any individual.

Our observation, in its general application, we now reiterate. Claims of this kind go to destroy all confidence between principal and assistants, and to lessen the chances of men who, not having work to do themselves, are glad, at certain stages of their career, to sell assistance to those who have. Admit what seems evident, that Pugin was, for a certain time during the progress of the Houses of Parliament, Barry's chief and very valuable assistant. Go even further and say, simply for argument's sake, that he was the designer of the building: he accepted the position for his own purpose, and undertook to

* Vide on this subject Prof. Tyndal's charming volume on heat and motion.

† Non-commissioned officers have several times mentioned to me this horrid descending blast through the upright ventilating shafts in the barrack-rooms, but I never thoroughly comprehended the drift of their explanations until these observations of Mr. Clibborn reached me. I may mention that these ventilating shafts with louver tops have utterly failed in every instance: we had four of them in the Royal Hibernian Military School dormitories, as many in the recreation-room, which never did any good whatever.

* P. 494, ante.

† P. 635.

do what he did for a certain remuneration, which he received. To claim for him now something much more than he agreed to receive, is a breach of contract and a breach of faith.

But if Pugin himself is to be believed, there is no ground whatever for seeking to claim for him the title of architect of the Westminster Palace, and it may be worth while to restate the circumstances which enable us to say this positively.

In the *Builder* of August 30th, 1845,* we printed the complaints of some English decorators, who considered themselves ill-treated with reference to the Parliament House, in the course of which the writer said:—

"Messrs. Crace have both the honour and the profit accruing from the painted decorations of the House of Lords, which are being executed by foreign and English artists, from designs furnished by Mr. Pugin, and under his direction, to the exclusion of the only two artists who were qualified for employment, according to the decision of the committee."

Immediately after the appearance of this statement, the conductor of this Journal received from Mr. Pugin, and printed, the following letter:—

"Sir,—As it appears by an article in the last number of the *Builder*, as well as in notices contained of late in other periodicals, that a misconception prevails as to the nature of my employment in the works of the New Palace at Westminster, I think it incumbent on me, in justice to Mr. Barry, to state that I am engaged by him, and by him alone, with the approval of the Government, to assist in preparing working-drawings and models, from his designs, of all the wood-carvings and other details of the internal decorations; and to procure models and drawings of the best examples of ancient decorative art of the proper kind, wherever they are to be found, or specimens for the guidance of the workmen in respect of the taste and feeling to be initiated; to engage with artists and the most skilful workmen that can be procured in every branch of decorative art; and to superintend personally the practical execution of the works upon the most economical terms compatible with the nature of it and its most perfect performance. In fulfilling the duties of my office I do not do anything whatever on my own responsibility; Mr. Barry's designs, and submitted to him for his approval or alteration previous to their being carried into effect: in fact, my occupation is simply to assist in carrying out practically Mr. Barry's own designs and views in all respects. Trusting to your fairness in giving insertion to this letter in your next number, I am, sir, &c.

London, Sept. 3rd, 1845. + A. WELBY PUGIN."

Mr. John Crace also wrote a letter, in which he says,—

"I can state distinctly that not one single foreigner is, or has been, engaged upon the decorations of the New House of Lords; that after receiving the sketches from Mr. Barry, I have drawn them out full-size with my own hands, and have entirely directed the execution of them under Mr. Barry's immediate instructions and control."

At the same time Sir Charles, then Mr. Barry, called upon us, and denied emphatically the correctness of the statement that had been made. Amongst other things he said,—we remember distinctly,—that, to avoid the possibility of such ascription, Mr. Pugin made few drawings, excepting from him, Mr. Barry's, own rough sketches, and none that he (Barry) did not to some extent or other work upon. Mr. Pugin had already said the same thing in his letter, and reiterated it *vice versa* on another occasion. We might extract other evidence from our own pages; we might quote the testimony already given by Mr. Wolfe, Mr. Baoka, Mr. Wright, Mr. Ferrey, Mr. Talbot Barry, and others, and examine some of the statements made on the other side; but there is no occasion for it. Mr. Pugin told us himself, distinctly, that he had no right whatever to be considered the architect of the Houses of Parliament, and that his occupation was simply to assist in carrying out Mr. Barry's designs in all respects.

We shall be glad if we hear no more of the claim that has been set up, and we express that hope with equal regard for the fame of Pugin as for the fame of Barry.

THE SEWAGE QUESTION.

ANOTHER Report of the Royal Commissioners, Messrs. Rawlinson, Harrison, and Way, on the rivers Aire and Calder, has been printed. On the general question of the best means of preventing the pollution of rivers, they say in this report,—

"Sewage interception is always practicable. Where it can be applied to the land there is least nuisance and least cost to the ratepayers. Where the solids are extracted by mechanical deposit, there is pecuniary loss on the operation, and running streams receiving the effluent water are still polluted, the pollution being greater as the volume in the stream is relatively small. No arrangements for treating sewage are satisfactory except its direct application to land for agricultural uses."

Our experience of the weakness inherent in unaided and uncontrolled local authorities as at present constituted

* Vol. III., p. 416.

† Vol. III., p. 426.

convince us that a central board appointed by a State department is necessary to the efficient protection of running waters." "In order to prevent the pollution, and legally control the management of rivers, their basins or watersheds must be placed under supervision, irrespective of any arbitrary divisions of county, parish, township, parliamentary, municipal, or local government Act boundaries; or, indeed, of any artificially established division. Running waters flow on from their source to the sea, and if the upland waters are polluted by town sewage and by refuse discharged from manufactories, as in the West Riding of Yorkshire, the length of a river is necessarily polluted, and will require to be corrected or rectified. Towns situated midway or on the lower branches of rivers, as Leeds, Manchester, Salford, and many other places, will establish and carry out local improvements, and would clarify their sewage and other refuse fluid to little practical purpose, if the towns, villages, and manufactories on the same river with themselves and its tributaries are not placed under restrictions against sending down pollutions. This state of things applies equally to villages, and even to single mills and factories as to large towns: it prevents local authorities, as also manufacturers, from taking up the question of separate purification."

"At Croxson, at South Norwood, and at some other towns, it has been forbidden by injunction for the local authorities to pass town sewage into running waters below a defined standard of purity, and the result has been, after the failure of all other systems, a clarification of such sewage by irrigation, which not only proves successful for the purpose desired, namely, to prevent river pollution, but in its operation is a source of profit to the ratepayers. However that be, the question of profit or loss in abating nuisances, and in preventing either the undue pollution of the atmosphere, or the contamination of the sea, by town and house sewage, or by working mines and carrying on trades and manufactures, ought not too closely to be taken into account, as in some cases restrictive measures rigidly enforced, would result in profit, whilst in others there might be a small loss, if that can be fairly called loss which is more than compensated by gain to the community. Towns some well adapted to pay for the means and appliances necessary to render sewage innocuous to running waters, as they can to pay for the sewers and drains which are necessary to their sanitary well-doing. We have expressed in this report that abuse and pollutions of running waters are of wide extent and that entire watersheds, so that it may be inferred that any useful remedy must be capable of being applied as widely as the pollutions extend. Towns some are notoriously more polluted than others, as, for instance, those where we have just visited where the great woollen and worsted trades are established; there the abuses and pollutions of running waters have become almost insupportable, and even trade is seriously injured in consequence. The long catalogue of pollutions and of floodings, as set forth in the appendix to the report, indicates the extent to which such abuses may further grow if left uncontrolled. Every witness we examined admitted the existence of many great evils, and remedial measures are in the evidence over and over again suggested, the reiterated stipulations being, that such measures should be as general as the trades to be affected by them, and that their enforcement should be by Government authority."

On the sewerage of towns, and the application of the sewage to the soil, the Commissioners remark that the sewerage of towns is a complex question, and requires to be specially studied, so as to effect the greatest amount of good at the least risk of polluting water-courses. Natural streams, as small brooks, should not be arched over and formed into sewers, neither should rivers be made the receptacles of sewage. The largest proportion of rain-water may in all cases be turned over the surface into the natural streams: it will not be necessary to form duplicate systems of sewers and drains, but it will require intelligent and careful attention to preserve surface gradients and natural outlets for storm-waters, and where these have been tampered with, to restore and improve them. The sewers and drains of a town should provide for the removal of subsoil-water, the sloop and waste-water from houses, and the contents of waterclosets. These sewers and drains may have storm-overflows in connexion with the natural streams of the district, so arranged as to prevent flooding of houses or bursting of sewers during thunderstorms. All dry-weather sewage and each portion of the surface-water due to moderate falls of rain as finds its way to the sewers will flow down with the sewage to the outlet, and be a manageable volume either to apply by gravity, or to be pumped to land for agricultural uses. The remark may be made that, when the sewers overflow, the streams will be polluted: this is true, but the pollution will be a minimum, the sewage streams of the district will be in flood, and most probably muddy by grit and silt washed in from road-carriages, and by fine particles of soil from the banks and the surfaces of the land. Floods caused by heavy rains over have been turbid, and ever will be turbid."

The only general rules applicable to sewage irrigation in all cases, they remark, are that the works should be simple and cheap. Land to be irrigated does not require costly work in shaping and levelling; neither need there be expensive tanks to receive and store sewage. Heavy clay land, which has been ridge-and-furrow ploughed, may have the surface brought to an uniform slope by lowering the ridges and filling in the furrows, so as to prevent sewage, when applied,

falling into each furrow as into a conduit, leaving the ridges comparatively bare. Such work may cost about 5l. per acre. Small fields may have useless hedges removed, so as to have larger areas at command. Under-draining may or may not be necessary; this must be settled after an examination of the subsoil to be dealt with. If under-draining be adopted, deep drains answer best, and these should be laid so as to extract water and admit air. Where the surface conditions will allow of interception, sewage-water from drains may be turned on to the land three or four times with advantage and with a certainty of extracting more of the salts of sewage. Sewage meadows ought to be laid out on a plan similar to that adopted for water meadows. Carriers should contour the surface, at intervals apart, in proportion to the character of the soil and the slope of the surface. Where main open carriers may be considered a nuisance, as near houses, roads, or foot-walks, they may be covered conduits having cheap outlet-valves at a chain apart; carriers in the fields may be open grips formed with plough or spade, and such as to be broken up if necessary when a change of crop is made. A cheap main carrier can be formed with common agricultural drain tiles, but T-jointed, laid half in and half out of the ground; a single pipe or length of pipes can then be removed by hand at any point to allow of irrigation, and these same pipes can be readily replaced again. Where foul smells are complained of as coming from sewage-irrigated lands the causes are in the state of the sewage and in the mode of using it. If old and putrid sewage is stored in large tanks, or is conveyed in large open ditches which are never cleaned, there will be offensive taint. Fresh sewage does not give off so offensive a taint, and if conveyed at once by covered conduits to land, all nuisance ceases immediately. Cast-iron piping and hose and jet application are costly to provide and expensive to manipulate. If they are adopted, some special reason must have been urged to warrant this form of extra outlay, as for lawns and fields near houses, or, for gardens. The produce from properly irrigated land will be from five to tenfold that of the same land under ordinary cultivation. Sewage evenly and regularly applied to the growth of Italian ryegrass, on any soil, will produce from 30 to 60 tons weight of green grass on each statute acre per annum.

The celebrated Craigentinny meadows near Edinburgh, principally sea sand, have produced from forty to sixty tons per annum to each acre, and at by auction at rents varying from 25l. to 35l. the acre. At South Norwood and at Worthing clay land out of which bricks are made is irrigated with town sewage, and produces from forty to fifty tons of Italian ryegrass to each acre. In neither case is the land underdrained; and Mr. Mariage, of Croxson, prefers to irrigate without draining. The reports would by no means be understood to undervalue the advantage of draining clay lands in general. Sewage irrigation may be carried on throughout the entire year, and grass may be cut at Christmas. In early spring, and weeks before ordinary cultivation will produce green crops fit to cut, from four to five tons per acre may be got from sewage land. At such times the grass sells at 15s. and 20s. per ton on the field. Six or seven crops of grass may be cut during the year.

It has been asserted that sewage-grown grass is unwholesome, and will not make good hay. The grass is, however, not only wholesome, according to the commissioners, but cows fed upon it give richer milk from which first-class butter may be made. The chemist proves by careful analysis that both milk and butter are better than samples produced from the same land in its ordinary state of meadow. Hay made from sewage-grown grass is also sweet and nutritious if properly got, but there is great difficulty in fully drying it during ordinary seasons.

The Leamington Congress papers have been prepared for the press by Mr. Hitchman, an extreme advocate for the earth-closet system which the Congress itself ignored, and which, as we have before said, however useful in country places, would become a horrible nuisance, and, indeed, utterly impracticable as a sanitary system, in towns, and worse than the abominable cesspool system which our towns have just been getting rid of, but which correspondents of the daily press would fain have as return to, because it is still carried on in one special form at Milan. A correspondent of the *Times*, Mr. Burchell, who rightly opposes the Milan scheme, points attention to the experiment at West Worthing. There, he remarks, the solid portion of the sewage,

which constitutes the real sullage, is separated from the water or fluid part before the soluble salts which are contained in the sullage are dissolved, and is then carried away without the slightest annoyance either in its removal from the sewers or in its cartage, and in a manner which renders it conveniently available for fertilizing purposes. We have already given particulars of the system in use here.

The process by which this is accomplished, and which has now been in operation for upwards of twelve months, consists in the use of closed portable filters, which are placed on the sewers in such manner as that the whole of the sewage rises and enters the filters from beneath, the solid portion deposits itself and is retained in a manure-box enclosed in the filter, and the fluid part passes through and is purified by the filtering medium. The filter is lifted daily from the sewer and immediately replaced by another. This operation is performed in the early morning, but it has frequently been done in the daytime; it occupies not more than from five to ten minutes, and, he says, does not occasion the slightest annoyance to the occupiers of the houses or to any casual passer by. The fluid or water which runs from the filter is found to be sufficiently pure to admit of its flowing at once into the sea.

TOWN SURVEYORS.

It has often been debated whether the town surveyors should have a private practice in addition to their remuneration from the local public treasury. What is necessary is, that a town surveyor should be independent of the caprices of the local authorities of towns, and of their cabals of private interests. Seeing this necessity our legislators have made it a law of the "Towns Improvement Clauses Act," that the appointment and removal of the surveyor, as well as the amount of his salary, shall be subject to the approval of the Home Secretary. This, it may easily be conceived, is obnoxious to some sort of members, and to some others who in all other things are reasonable but in those which have a colour of centralized authority.

The wisdom of the provision is profound; but that is not considered when the Bill of the Special Act is being framed, and in too many cases a clause in the Special Act excludes the application of this clause in the General Act. And the surveyors of those towns and cities in the local Acts of which the Act above mentioned is not incorporated at all are under the same disadvantage.

It is easy to cavil at this, and say that where a surveyor understands his duties and his position he will get on very well with the local authority, and he and the Corporation or Board, as it may be, will pull together and do their proper work without interference from any Secretary of State. That state of things happily exists in some places, but long experience proves that they are few in number and the practice exceptional.

The general state of things in this respect is that the surveyor, whatever his salary, for it is so where the salary is 1,000*l.* as well as where it is 100*l.*, finds himself under so many diverse influences that his natural inclination to be courteous induces him to lend an ear to all requirements, and so to become involved in the petty questions of the hour. The salaries paid are never liberal. Where they are large it is to men of good standing in the engineering profession that they are paid, and who would probably have earned by independent practice as much as, or more than, their salaries as surveyors; and of whom is required an amount of work in attending committees and preparing schemes for their approval, and after getting them approved carrying them out with such poor assistance as is afforded by the small salaries to clerks and assistants, that renders the salary, however apparently large, really a poor one, and only worth keeping because the recipient has got into a groove out of which he has not the courage to struggle; and, in fact, he becomes a mere drudge, swayed this way and that by the various committees and their separate interests. This being so with what might be called good salaries, how is it with small ones? The same, with the difference that there is less of it in degree; but not in kind.

To those people who are unacquainted with the practice of municipal government it would seem an easy thing for the surveyor to have his duties defined, and, granting that he complied with them, to take things easily. But that,

often attempted, always results in disaster. The composition of municipal authorities—they must be taken as they are, and not as one would wish them to be—is such that unless the surveyor takes high ground no real improvement of the state of towns can be brought about. And it is emphatically the improvement of towns in respect of the health of the people that makes it so necessary that there should be surveyors at all. If it were the only object of the authorities to beautify the town architecturally they would do better by consulting an architect from time to time as their requirements might arise; if to improve the course of a river, to prevent or alleviate floods, if to build a bridge, if to do any work for the mere convenience of the inhabitants, they would have no difficulty in employing the proper engineer to do it for them. But it is because it is so necessary to employ an engineer continually from day to day to attend to the daily requirements of the inhabitants, that one is appointed as a permanent surveyor. The water supply of a town may be looked upon as a work extraneous to the surveyor's duties; so may, in some cases, the main drainage or sewerage; but neither of these works can be properly initiated and carried out without the intelligent co-operation of the resident surveyor. In the greater number of towns, however, of moderate size, these works are very properly undertaken by the surveyor himself. But it is when the great works of water-supply and sewerage are completed, that the more proper and daily work of the surveyor begins. It is when the houses are to be drained into the sewers, and how the house drainage is to be done, so as to render the outlay on the main sewers profitable, or them of any use whatever, that the efficient town surveyor shows himself; for it is a fact that very large sums of money have been spent, and the ratepayers heavily burdened in laying down sewers in towns that have not been at all proportionately benefited by them, for they have merely carried off more readily the rainfall, and that would have passed away in the greater number of cases by its old channels, or, at the best, might have been carried off by surface drains constructed at much less cost. The chief use of the sewer is to take away the house drainage,—the refuse organic matter,—from the proximity of dwelling-houses. Whether the rainfall also be turned into the sewers, is a question of economy, affected by the question, how is the sewage to be dealt with when carried to the outfall? This is one of the numerous considerations required of the town surveyor, which renders it necessary that he should possess an adequate knowledge of hydraulic engineering.

Seeing now the high qualities required to constitute a town surveyor, it is worth while to consider whether such qualities co-exist in the same individual in general with those lower ones which qualify the man for an easy agreement with the caprices of public bodies; or whether they are not rather such as are incompatible with it, and for that reason disadvantageous to the surveyor, whose tenancy of office depends entirely on the will of the body under whom he acts.

For these reasons it is very desirable that the town surveyor should be independent of that body to a degree sufficient to warrant him in pursuing the course that leads to the real improvement and the permanent prosperity of the town, and in doing something instead of dawdling his time away in the pursuit of the *amis fatuus* pleasing everybody. The surveyor often finds it the pleasantest way, and the way that pleases many of the constituted authorities, to do nothing, or only that which may be regularly ordered in proper form of minute and resolution of the Board or the council. But that is a delusion, and leads to disaster. Many members of almost every municipal body are elected for the sole purpose of preventing anything being done. "How not to do it," is the art they study, and too many are proficient in it. If our towns were in such a state that the people could live in them with any pleasure and ease, and not be called upon by nature continually to fight against the insidious poison that enters their bodies with every inspiration, and gives them unrest and disquietude, then, indeed, the gentleman who might get up in his place at the Board and resist mere wanton outlay of money to gratify the fancy of some of his townsmen, might be admirable and useful in his day; but it is the misfortune of these same gentlemen that they do not distinguish between a true and a false economy.

The true economy of the public money is to spend it freely on those things that enable the people to cheerfully return more into the treasury, and feel that they live in the town, and not merely, as before they paid their rates, exist miserably in it. Our people are not afflicted with the fatal mistake that the poor Italians, they say, labour under, of suspecting the sanitary inspector to be a secret poisoner, and resist his interference to their own destruction. An English labourer knows well enough when he is in a good atmosphere, and when he is not; but his necessities compel him to endure great hardships and suffer cruel wrongs done to him by the very persons who are constituted by the law of the land his governors in the place in which he lives. Let him work in an atmosphere where he can breathe freely, and in one where he can pass his hours of rest in quietude and get up cheerfully in the morning to his work again, and he will not curse the collector of his rates and everybody and thing about him.

If that be true of the labourer it must be so also of the gentleman, for their ills and happiness in this respect are common.

It is an ascertained fact that, where the sanitary inspector has been able, by having had the drainage of the town previously well carried out, to supplement the uses of the drainage by careful and considerate operations and advice, to so instruct the poorer inhabitants of the town in the habits that conduce to their prosperity, they welcome him as their best friend, and he effectually prepares the way for the coming rate-collector. The result of it all is, that the registrar of deaths returns a continued diminution of deaths from preventible diseases every quarter, taking them generally and with consideration of the varying influences of the seasons of the year. It is evidently desirable that the town surveyor should be, to a certain degree, independent of the caprices of the local authority.

MONUMENTAL.

The large monument to Luther at Worms will not be inaugurated for a year. This composition by Reitschel consists of twelve statues, eight medallion portraits, thirty-four coats of arms, and twenty-two bas-reliefs!

The city of Liège, with the concurrence of the Belgic Government, is about to raise a monument to Charlemagne. The *Revue Artistique* says the monument will include an equestrian statue of the monarch, and six statues representing principal persons belonging to the Carolingian family. All the statues will be of bronze.

A monument of the Empress Catherine II., which was to have been placed at Tsarskóe-Sélo, is now ordered to be erected in St. Petersburg. The site chosen is in the centre of the square partly formed by the Alexandra Theatre and the Public Library. The figure, which is rather over life-size, stands on a pedestal containing bas-reliefs. The artist was Mr. Mikéchine, of St. Petersburg.

FONT, ST. THOMAS'S CHURCH, DUDLEY.

The font which we illustrate is at present in the French Exhibition, at the close of which it will be set up in St. Thomas's Church, Dudley. It was commissioned by the Earl of Dudley, and is one of many magnificent gifts which the Earl has made to that town and neighbourhood. The style of the font and cover is late fourteenth century, and is intended to harmonize with that of the church it will enrich. The total height is about 10 ft. The font is executed in Glemstone, and contains sculptured representations of the Baptism of our Lord, "Suffer Little Children, &c.," the Presentation in the Temple, and the Baptism of the Eunuch. At the angles are the four evangelists; and in niches between these are angels, with instruments of praise. The ornamental details, together with those on the oak cover, are rich and carefully executed. The sculptor was Mr. Foreyth. Mr. E. Biore, F.S.A., gave his assistance in the architectural design.

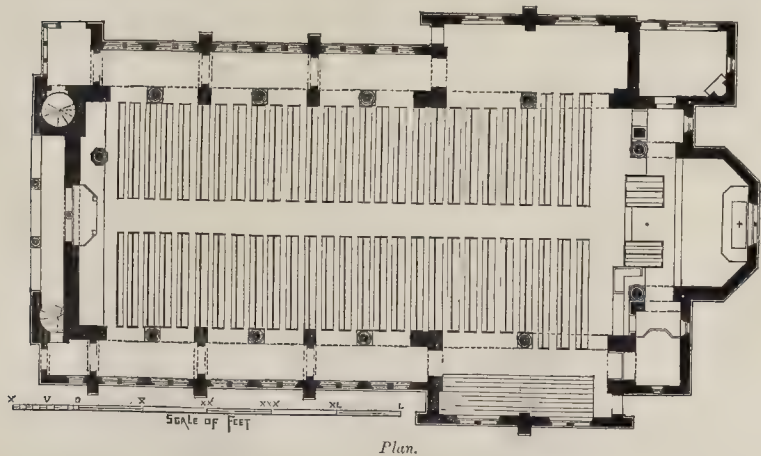
TOWN SURVEYOR FOR HARBOROUGH.—At an adjourned meeting of the Harbortown Improvement Commission, held on the 9th inst., Mr. J. Richardson, C.E., Assistant Surveyor of Leeds, was elected surveyor for that town.



FONT, ST. THOMAS'S CHURCH, DUDLEY.



ST. ANDREW'S, HAVERSTOCK HILL, LONDON—MR. CHAS. F. HAYWARD, ARCHITECT.



ST. ANDREW'S, HAYERSTOCK-HILL,
ST. PANCRAS.

The first designs for the Church of St. Andrew, Haverstock-hill, were matured by the architect as long as ten years ago, but since that time many disappointments have been met with, first in failures to procure an appropriate site, and then to raise sufficient funds to warrant commencing anything beyond a temporary church to be converted into schools, as soon as the permanent building could be erected. Indeed, owing to the poverty of the new district, as the wants increased, so seemed the prospect of supplying them to diminish, till at last some generous but anonymous donor, placed a sum at the disposal of the committee of the Bishop of London's fund sufficient to carry out one work, and St. Andrew's pressing claims were allowed the precedence, on condition of the plans being modified to come within the amount of 4,500*l*. Thus the architect's ideas were controlled by the strictest economy, as the amount of accommodation to be afforded was fixed at the utmost limit such a sum could be properly considered to permit with any hope of making a good substantial building, and one worthy in any degree of the objects to which it was to be dedicated.

The design resulting is a large building, containing nearly all the seats under one roof, the aisles being narrowed to mere passageways, and the transepts being shallow. Provision is added for a future western gallery if ever required. Internal effect has been chiefly aimed at, and the simplicity of roofing has been relied upon for giving dignity to an otherwise low-looking building, the total height being about 48 ft. from floor to ridge. The pulpit, reading-desk, and font are carefully wrought in Plymouth marble, and the *tout ensemble* of the interior is more striking than could be expected. The brickwork is common grey stock, with Malm dressings, and the same is used also for the interior, stone columns alternating with piers of brickwork. The contract was carried out by Messrs. Dove, Mr. Charles F. Hayward being the architect engaged.

WAGES OF BRICKLAYERS' LABOURERS
IN AMERICA, AND IRISH
EMIGRATION.

THERE has recently been a strike among the labourers of the building trade in New York. The wages were enormously high before, in proportion to those ruling on this side of the Atlantic; but the ultimatum of the men last on strike is 21 dollars per week for 60 hours' work,—that is to say, six days' work of ten hours, with one hour and a half meal-time out of the ten hours. Taking the dollar at 4*s*. 4*d*., this rate gives 4*l*. 11*s*. per week, or 236*l*. 12*s*. per annum,—being something like treble the salary of a junior clerk in the English Civil Service, or of an ordinary curate of the Church of England. If the expense of living in New York be in proportion to this scale of wages, the disparity (but in that case not really) high rate of wages would be naturally accounted for; but such is not the case in America. An Irish emigrant with his family knows how to live in New York very nearly as cheaply as in London, and that his present rate of wages leaves him a very large balance over and above his necessary expenses, even allowing for a little extra indulgence in drink. These facts are at once sufficient to explain the remittances continually received in Ireland from friends and relatives in America, to enable them to emigrate to the land of promise, and fully accounts for the exodus which is now taking place, without the necessity of referring it to the "hard terms of grinding landlords," or to the dread of another potato famine. The fact that 12*s*. a week at home, are exchanged for 91*s*. a week in America, at a cost of less than 4*l*. for a fourteen days' passage, sufficiently explains the rapidity and earnestness of the rate of emigration, without further seeking for causes, especially when it is then taken into consideration that the 4*l*. necessary for the voyage is generally furnished by friends already in America to those who cannot raise it alone.

It may be well to inquire whether the labourers obtain this high rate of wages make a lever for their savings to lift them into a higher position, as skilled artisans, or small landowners. A satisfactory answer is, that if in nineteen cases out of twenty they do not succeed in raising themselves, they are often thrifty, and succeed

in hoarding considerable sums of money; but the great bulk, from the present fearfully defective system of education in Ireland, can neither read nor write, and the consequence is, that their extreme ignorance prevents them from bettering their social position: so that even when possessing some hundreds of pounds of honestly-earned and thriftily-saved money, they continue to be hod-men and mortar-makers, without the slightest hope of improving their status in society. It is from this class that immense sums have been obtained by designing men in the mistaken cause of Fenianism; and it is by thrifty habits while in the receipt of this exceptionally high rate of wages, that the Irish labourer in America is continually enabled to command a still higher rate by means of systematic strikes—as he is well able to afford a six weeks' or even a six months' strike, if necessary, without inconvenience to himself—while he well knows the vital importance of labour-power to his employer, in a country where every kind of labour is so scarce, and where, especially, the hardy muscular frame and cheerful disposition of the Irish peasant are fully appreciated.

How it is, with continual strikes, combined with this extremely high rate of wages, that the building business of New York can be carried on, appears a mystery; the more especially as these seeming impediments do not for a moment interfere with the general activity of the business, as important lines of buildings, and immense detached warehouses, hotels, and private houses are springing up every day, in every quarter of the city. The explanation may, perhaps, be found in the present value of house property in the great American cities. I get my information on this point from *The Philadelphia Inquirer* of the 8th ult., in the advertisements for the sale or purchase of houses. These advertisements might be difficult to find in the immense mass of announcements of various forms which fill a leading American journal, but for the simple though ingenious method adopted of placing a small wooden of a house, about 4 in. square, at the head of each advertisement connected with house property, which at once attracts the eye of the seller or purchaser of houses, and saves much hunting among hundreds of other advertisements. At the head of the list figures, "A very desirable large residence in Logan-square," the price of which is announced as 25,000 dollars; this is, upwards of 5,000*l*. Now, if that same large residence be about the size of the houses in Princes-square or Leicester-square, Bayswater, the price obtainable by the builder is more than double the present market price of houses in those English localities, and probably more than what the actual builders sold them for in the first instance; a fact which at once explains how American builders can afford to pay their labourers four guineas a week. But the reader may say, it is possible that the house in Logan-square, Philadelphia, is more like the houses about Lancaster-gate, Hyde Park; yet, that is scarcely an answer, because, except in some parts of Paris, there can be no other site in the world of equal value to the frontage to Hyde Park, and it is the prestige and value of that situation that makes the houses alluded to worth from 5,000*l*. to 6,000*l*. and upwards—a matter which has nothing to do with the builder's legitimate profit, except when he has been a land speculator as well.

But it is not at all probable that the house in Logan-square is at all equal to the Lancaster-gate houses, as we shall see; for instance, a house somewhat more of that character is also advertised as "an elegant oct stone mansion, with 40 ft. front, on Chestnut-street, West Philadelphia," the price of which is stated at 30,000 dollars. It is true that the garden is 240 ft. deep at the back; but, then, West Philadelphia is a suburb, and the site, whether small or large, would not form an important item in the total value, which is equal to nearly 6,000 guineas, and is consequently, in proportion to English prices, most excessively high. That neither of the houses mentioned is, in fact, a very large house, may be inferred from the prices set on smaller residences, the dimensions of which are accurately defined. For instance, "a new dwelling with ten rooms" equivalent to our ordinary ten-roomed house, which sells at our ordinary 1,000*l*., is priced at 9,550 dollars, or nearly 2,000*l*. There is evidently, then, a good margin out of which the American builder can pay very high wages to his labourers; though, certainly, the rates mentioned above appear remarkably high, even considering the present value of building property in the States. H. N. H.

SOUTH HAYLING, HAMPSHIRE.
COMPETITION.

As we suspected would be the case, the plan for making the competitors themselves select the best designs would not work satisfactorily on the 7th instant, and it was agreed to refer the selection to Mr. Longcroft, solicitor, who had been named in the particulars referee in the event of difference. That gentleman accordingly awarded the first premium to Mr. A. Gordon Hennell, Chancery-lane; the second to Mr. Crickmay, Weymouth; and the third to Mr. Milne, Sydenham. Mr. Fuller handed the premiums to them, and afterwards entertained the competitors who were present. When drinking the health of the unsuccessful competitors, Mr. Longcroft expressed a wish to couple with that least honourable mention of two designs of great merit, "We bide our Time" (Mr. J. H. Metcalfe, architect, London, and Mr. Maurice Yonge, landscape gardener, Godalming, Surrey), and "Live and let Live" (Mr. Whitaker, Westminster) to which, of course, the representatives of each responded, and the proceedings then terminated.

It has been for some time past in contemplation to connect Hayling Island with Southsea and Portsmouth by a steam floating-bridge, in substitution of the existing ferry. This long talked-of matter would, however, be unnecessary, if we were all as independent as an Australian gentleman who visited Southsea last week. This gentleman having read a vivid description of the natural beauty of Hayling, was determined to visit the island, which he knew was only separated from Cumberland Fort and the neighbourhood by a narrow channel,—the entrance to Langstone Harbour. Walking to this channel, he found on his arrival that the ferryman was absent, and he therefore took off his clothes, strapped them on his back, and swam across,—a feat which any one acquainted with the force of the tide at this spot will readily appreciate. How much longer will the local authorities remain insensible to the necessity of improving the communication, and realizing the profit which a steam-bridge could not fail to produce?

We believe that Mr. Hennell, who obtained the first premium, will be asked to advise as to the realisation of his plans; and it will be seen by an advertisement in another column that designs are in preparation for the immediate erection of another hotel at Hayling, the contract for which is to be put up to public tender. The capabilities of Hayling as a watering-place were dwelt upon by Mr. Longcroft at the meeting, and if judiciously managed, and with a liberal expenditure of capital, the property may prove a satisfactory and lucrative investment.

TRADES' UNIONS AND ANTI-TRADES'
UNIONS.

THERE are trades' union worthies at Manchester who are quite a match for those of Sheffield. The Trades' Union Commissioners are now at work among the brick-making fraternity, and the confessions of fire raising, hamstringing horses, explosions, shootings, breaking bones, and murdering, not to speak of needling clay, and wholesale destruction of bricks and other property, are as hideous as anything which came out in the revelations of villainy at Sheffield. The method of the Commission is clearly a most effectual one for compelling the murderers and incendiaries to confess their diabolical deeds: the only pity is that this very confession secures them against the punishment they so richly deserve. It is needless going into the details: they all come to just what we have stated. The officers of the commission have been more than once frustrated in their attempts to get at the authorised doings of unions as regards the expenditure of blood-money, or money for breaking human bones, fire-raising, or exploding infernal machines in workmen's dwellings and amongst their wives and children. On the fifth day of their proceedings, however, the chairman at the opening of the court, said he wished to make an announcement publicly. The examiners had got in their possession the box belonging to the Manchester Brickmakers' Union. It could only be opened by several keys, which they were told by the witnesses were in the possession of certain members of the society. He would now give notice that if those who had

got these keys chose to come forward and attend the court by ten o'clock on Wednesday morning, and have the box opened in that way, well and good; but the examiners would certainly get access to the box; and if, after this notice, no key was forthcoming, they would have the box broken open. There was plenty of time for this communication to go forth to the proper quarters, and the examiners were determined to do as he had stated. No one came forward, however, with the keys at the time appointed.

The Leeds master builders have laid a statement of their views before the Trades' Union Commission and the public, in which they first of all express a desire to recognize and adopt the following principles:—

1. 'Free trade in labour.' Every workman has the right to sell, and every employer to purchase his labour on such terms as they mutually agree upon. Labour should form no exception to the law of free trade, which is sufficient to regulate the price of all other commodities. 2. The high or low rate of wages depends not upon the price of provisions, but on the demand and supply of labour. When many labourers are looking out for work wages will fall, and they will rise when many employers are looking out for labourers. 3. That all combinations, whether of workmen to force up or employers to keep down the price of labour, are injurious and should cease, because they interfere with the natural price of the production of labour.

Defining "labour as it should be," they say that if these principles be correct, and were carried out, then it follows that every workman would be at liberty:—

1st. To work without joining any combination or union for such labour, and to demand for his labour at the time enabled him to obtain from an employer. 2nd. To work any number of hours which his desires or necessities led him to undertake. 3rd. To work at any kind of employment within the reach of all his own experience which was at the time in greatest demand, although differing from his own particular branch of trade. 4th. To work piece or contract work, and by so doing increase, in proportion to his skill and industry, his weekly earnings, and share with his employer the profits of his labour. 5th. To embrace any opportunity for improving his individual position, or of obtaining increased remuneration for his services, the result of all this would be—6th. That each workman would find his own level. The skilful and industrious would merit and receive his just reward, while the incompetent and idle would be left in the rear. A greater amount of work would be done the same time, and at less cost, and thus the wealth and prosperity of the country be greatly increased."

Describing "labour as it is," the masters say that the working of trades' unions has brought about results the reverse of the above, for by their rules neither employer nor workman can be free agents. They then sum up the restrictions which are imposed by the unions.

The results of these restrictions, the masters say, in conclusion, are disastrous alike to the artisan, the employer, and the country. The use of machinery is frequently prohibited; or, when large sums have been invested in it, it may at any time be laid idle and unproductive by a sudden strike of the operatives. The employer is thus prevented from calculating with certainty the cost of his productions, is liable for broken contracts, and subject to most serious losses. What is a loss to the artisan and his employer, the Leeds masters add, cannot but be a loss to the country. Apart from the more violent outrages of trades' unionists, from which Leeds seems happily to have been free, the Leeds masters have in this statement furnished the Commission with a compendious statement of the whole case, the beads of which embrace most of the illustrations that have been adduced and the general views that have been expressed by employers and their representatives during this inquiry.

The audacity and revengeful feeling, though not violence, exercised against masters, even at Leeds, by trades' unions, may be judged of by the fact, that a master builder, Mr. Branton, has been denied "for life" the privilege of employing union men. Another, Mr. Barker, had his business suspended for two years, because he employed non-union men.

Sir Daniel Gooch, M.P., one of the Trades' Union Commissioners, who is also one of the members for the borough of Cricklade, presided at the annual dinner of the Forerunners' Court, at New Swindon. The society, which comprises several hundreds, is composed almost entirely of working men connected with the Great Western Company's locomotive works at Swindon. The hon. baronet, who commenced life as a working man—a fact to which he has before alluded,—in responding to the toast of his health, said,—

"A little less than two years ago they had conferred upon him the honour of permitting him to enter the society. As one of the members of the Royal Commission appointed to inquire into the system of trades' unions, he had had to turn his attention very particularly to the effects of these upon society and the working classes. The revelations that had been made before the Commission respecting the outrages committed at Sheffield were not,

as it would appear, confined to Sheffield. Scarcely less serious or mysterious were those relating to the neighbourhood of Manchester. In fact, it seemed to be a part of a system. Men, for instance, had come forward—men holding influential positions in trades' unions, and stated before the Commission that it was monstrous that one man should be paid better than another; that intelligence, skill, industry, should go for nothing; and that the levelling system should prevail which made every man alike, whether deserving or deserving no reward. It was quite sure that no one here would maintain any such doctrine. What was the great charm of England? It was this, that any man, no matter what or who he was, by industry, perseverance, and merit, might rise to the highest station in the land? Could that be done by any levelling system? He hoped the working classes would look upon this matter as of far more importance to this country than even the question of reform, for it had to deal both with them and with the capitalists—the levers of trade."

Twelve months since a contest arose among the miners and ironworkers of Staveley as to whether trades' unionism or the principle of free labour should prevail, and the result has been that the non-unionists have succeeded in conquering their opponents. This new state of things has been brought about in a great measure by the firmness of Mr. Markham, managing director of the Staveley Coal and Iron Company. The workmen, to mark their sense of the benefits, both pecuniary and social, which they have received through the efforts of Mr. Markham, have subscribed together and purchased a testimonial, which has just been presented to him in the presence of a very large and influential gathering of miners and employers of labour. The testimonial consists of a silver claret-jug and waiter, and an inkstand. The cost of the testimonial has been upwards of 53*l.*, the subscriptions being limited to 6*d.*, from working men only. The claret-jug, which was chased, bore the inscription,—

"Presented to Chas. Markham, esq., by 2,566 of the workmen of the Staveley Coal and Iron Company, Limited, in grateful acknowledgment of the real and limited display by him in vindicating the rights of the workmen to freedom of labour, by his action against the oppression of trades' unions, and also in appreciation of his uniform kindness to his workpeople. August, 1867."

Alongside this movement for the presentation of a testimonial to Mr. Markham, there has been another for the establishment of a Mechanics' Institution in the lecture-hall of the Workmen's Dining-hall at Barrow-hill. In furtherance of the latter movement, a tea party was arranged to come off previously to the presentation. A large number partook of tea in a tent near the dining-hall. The party afterwards adjourned to the Staveley Works' School-room, which was soon densely packed with workmen and visitors. The chair was taken by Mr. B. Whitworth, M.P. for Drogheda, one of the directors of the Staveley Company. Among the visitors on the platform were the Duke of Devonshire, Mr. W. Jackson, M.P., Mr. Allport (general manager of the Midland Railway Company), and various other influential gentlemen.

THE NEW HOURS OF LABOUR BILL.

The Act for regulating the hours of labour for children, young persons, and women employed in workshops, and for other purposes relating thereto, enacts that—"Child" shall mean a child under the age of 13 years; "young person" shall mean a person of the age of 13 years and under the age of 18 years; "woman" shall mean a female of the age of 18 years or upwards; "parent" shall mean parent, guardian, or person having the custody of or control over any such child or young person; "employed" shall mean occupied in any handicraft, whether for wages or not, under a master or under a parent as herein defined; "handicraft" shall mean any manual labour exercised by way of trade or for purposes of gain or incidental to the making any article or part of an article, or in or incidental to the altering, repairing, ornamenting, finishing, or otherwise adapting for sale any article; "workshop" shall mean any room or place whatever, whether in the open air or under cover, in which any handicraft is carried on by any child, young person, or woman, and to which or over which the person by whom such child, young person, or woman is employed has the right of access and control; "the court" shall include any justice or justices, sheriff or sheriff substitute, magistrate or magistrates, to whom jurisdiction is given by this Act. This Act shall not apply (1) to any factory, or part of a factory, or other place subject to the jurisdiction of the inspectors of factories, in pursuance of any Act of Parliament already passed, or which shall be passed during the present session of Parliament. (2) To any bakehouse as defined by the Bakehouse Regulation Act, 1863.

No child under the age of 8 years shall be employed in any handicraft. No child shall be employed on any one day in any handicraft for a period of more than 6*h.* hours, and such employment shall take place between the hours of 5*a.m.* in the morning and 8*p.m.* at night. No young person or woman shall be employed in any handicraft during any period of 24 hours for more than 12 hours, with intervening periods for taking meals and rest amounting in the whole to not less than 15 hours, and such employment shall take place only between the hours of 5*a.m.* in the morning and 9*p.m.* at night. No child, young person, or woman shall be employed in any handicraft on Sunday, or after two o'clock on Saturday afternoon, except in any establishment not more than five persons are employed in the same establishment, and where such employment consists in making articles to be sold by retail on the premises, or in

repairing articles of a like nature to those sold by retail on the premises. No child under the age of 11 years shall be employed in grinding, in the metal trades, or in furniture making.

If any child, young person, or woman is employed in contravention of this Act, the following consequences shall ensue:—First, the occupier of the workshop in which such child, young person, or woman is employed shall be liable to a penalty of not more than 3*l.* Second, the parent or the person deriving any direct benefit from the labour of such child, young person, or woman, shall be liable to a penalty of not more than 20*s.*, unless it appears to the court before whom the complaint is heard that the offence has been committed without the consent, connivance, or wilful default of the parent or person so benefited or having such control.

In every workshop where grinding, glazing, or polishing is carried on, or any other process is carried on by which dust is generated and inhaled by the workmen to an injurious extent, it shall be lawful for the local authority or any or of any superintendent of police, to apply to a justice of the peace that there is reasonable cause to believe that any of the provisions of this Act or of the Sanitary Act, 1866, are contravened in any workshop, for the inspector of factories to require a fax or such mechanical means as may from time to time be approved by one of her Majesty's Principal Secretaries of State under the provisions of the Factory Acts, to be provided by the occupier of the workshop within a reasonable time, under a penalty not exceeding 10*l.* nor less than 3*l.*

If, on the complaint of any officer of health, inspector of nuisances, or other officer appointed by a local authority, or of any superintendent of police, it appears to a justice of the peace that there is reasonable cause to believe that any of the provisions of this Act or of the Sanitary Act, 1866, are contravened in any workshop, he may empower the complainant to enter into such workshop at any time within 48 hours from the date of such order and to examine such workshop; and any person who is found by the inspector of factories, or any officer appointed by a local authority, to be in contravention of the provisions of this Act or of the Sanitary Act, 1866, so far as relates to such workshop, any person whom he finds in such workshop. Any person refusing admission to such person so empowered, or obstructing him in the discharge of his duty, shall for each offence incur a penalty not exceeding 2*l.*

Under penalties against employers and parents, every child who is employed in a workshop shall attend school for at least ten hours in every week during the whole of which he is so employed.

And the Act is appended to the Act relating to temporary and permanent exceptions to its enactments, and to its application to England and Wales, Scotland, and Ireland.

NUMEROUS CASUALTIES FROM LIGHTNING.

The reports of deaths and injuries to persons and property during the late thunder-storms throughout the country are unprecedented, at least in our recollection. At Ibury, near Banbury, one man was killed in a rickyard, and another man and a boy seriously injured. At West Bromwich, a man was killed in his cottage. At Orxhey, in Saddleworth, a man was struck and killed while travelling along with an electric machine on his back. Near Knighton, in Salop, a farm labourer was killed while on a ladder, and his son struck, but not injured. At Penegoes near Machynlleth, the lightning passed down chimney and killed another farm labourer: his wife was struck, but not seriously injured. A pig and a duck were killed in the same farm, and furniture shattered. Two children were killed, and five others injured, at Smallburgh, in a school room, while about to go to church: the bell-turret was first struck. At Exeter Ross, a man and horse were killed in a field. Lightning ran through a house at Heath Town, Wolverhampton, doing damage, but not injuring any of the family of a spindle-maker who were in the house at the time. A valuable horse was killed near a place called Whitehall, and another nearly killed. Rails on a branch of the Bolton Railway were torn up for some distance, the stump of a tree smashed, and a horse killed. Near Bonlo in Haute Garonne, a man was killed by ball of fire, and various others stunned. The *Giornale d'Udine* relates that a thunderbolt fell on the church of Anfagnano, in the district of Palmo. Four women were killed on the spot; and seventeen other persons experienced violent shocks, and were more or less injured. At Boxford a farmhouse chimney was struck and the house extensively damaged, a duck killed, and a man hurt. At Wombwell Malcolliery a cottage chimney was struck, and three shivered. The railway station at Wigton was set on fire through the telegraph wires and lead gas pipes conducting the electricity, melting the pipes, and then setting fire to the gas. The flames were got under before much damage was done. At Kirkaldy, in Scotland, the lightning struck the steeple of Messrs. Brown's engine works, and rent it from top to bottom. The roofs of the workshops suffered very much from the falling of the bricks. The church at St. P6-Saint-Simon, France, has been greatly injured by lightning, which struck the clock tower, and, although leaving the bell hanging, rent the foundation: descending into the church, it tore up the flooring, destroyed the windows, and several paintings, flattened a tin vessel on the high altar, and drove in the door of the tabernacle.

thence it went to the side altar and mutilated a figure of the Virgin. The edifice has been so much injured as to be no longer fit for divine worship. At Sanzet (Loz) the wife of the bell-ringer and her son had ascended to the church tower to toll the bells, in accordance with a belief very general among the peasantry there, that by doing so the effects of the lightning might be neutralised. They had scarcely commenced when the building was struck, and the woman killed on the spot. The son escaped uninjured. The timber work of the belfry was set on fire, but the flames were extinguished before any serious damage had been done.

FROM SCOTLAND.

Edinburgh.—The town-council, as improvement commissioners, have met, under the presidency of Lord Provost Chambers, who said he trusted the Act would be carried out gradually, and only piece by piece. His feeling, he said, was that they should proceed, in the first place, only to the carrying out of two streets, leaving others to be judged of afterwards, as circumstances arise. He referred to the street in Market-street to the top of Leith-wynd, and the street widening North College-street. He left to his successors in office to initiate anything more than that. These streets would not dispossess a large number of the poor classes of the inhabitants; and, besides, they would be very useful. There was at present a great demand for sites for houses of the better class, connected with manufactures and trade. Their first duty was to appoint an *interim* clerk, to put the Act into operation; and he would venture to suggest that they should invite Mr. Marwick, city clerk, to take the work. The next thing was to appoint a collector, and he would suggest that the collector of police should be appointed for the duty. A committee should also be appointed, and he would simply name the Lord Provost's committee, to serve under the City Improvements Act. Bailie Handyside seconded the proposals of the Lord Provost; and Mr. Marwick was appointed *interim* clerk.

Glasgow.—Contracts are about to be taken for the removal of the present Hutchesontown Bridge and the construction of a new one. Besides the insecurity caused by undermining from the great alteration on the bed of the river, there were other reasons which rendered it desirable that a more convenient and commodious bridge should be erected. The chief of these were the narrowness of the roadway and the steepness of the bridge and approaches. In the new structure the steep approaches will be done away with. The spacious roadway of the bridge will be practically level, the gradient not being more than 1 in 70. The architectural character of the work will be entirely different from that of the other bridges which span the Clyde at Glasgow, as it will be chiefly constructed of iron. The bridge will measure 410 ft. in length and 60 ft. in breadth, and will comprise three spans, the centre one being 114 ft. and the side ones 108 ft. wide. In order to guard against the dangerous effects of alteration in the river beds, the piers and abutments will be founded on cast-iron cylinders, each 10 ft. diameter, going right through the alluvial bed of the stream to the hard substratum of shale covering the coal measures, a depth of about 86 ft. below low water. These cylinders will be filled with hydraulic concrete, forming columns of artificial stone, to about 15 ft. from low-water mark, after which they will be filled in with solid masonry. Above the low-water level the piers and abutments will be built of white granite, with the exception of the shaft of the central piers, which will be of red polished granite, surmounted by enriched capitals. The abutment piers will be carried up 11 ft. above the roadway, forming massive rectangular towers flanking each side of the entrances to the bridge. These towers and the pedestals of the piers will be surmounted by standards of a rich design, bearing each a cluster of three globular gas-lamps. Circular recesses are left in the outside elevations of the towers for the reception of large medallion busts, in marble or bronze, as shall afterwards be decided; and the elevations of the towers and pedestals next the roadway will be filled in with panels of red polished granite. The towers will be ornamented by a bold cornice, and will harmonize with the massive architecture of the adjacent court-houses. The arches connecting the piers

will be of wrought-iron, of a slightly elliptical form. They will be relieved with ornamental cast-iron work. The ironwork will be painted and decorated in harmony with the general style; and the armorial shields, lamps, standards, and bosses of consoles will be bronzed and relieved with gilding. The bridge is to be completed in two years. The engineers are Messrs. Bell & Miller.

Hamilton.—The Combination Poor-house, erected for the accommodation of the parishes of Avondale, Blantyre, Cambuslang, Dalsferry, Glassford, Hamilton, East Kilbride, and Stonehouse, has just been opened for the reception of inmates. The building, which is in the Elizabethan style of architecture, has been in progress for upwards of two years, and occupies a site granted by the burgh of Hamilton, near the cavalry barracks, in Bothwell-road. The ground on which the poor-house is erected, with its surroundings, is about six acres in extent. There is accommodation for 170 inmates, for all of whom single beds are provided. There are besides three dormitories, giving additional accommodation for thirty-four boys and girls. The shares in the poor-house are divided according to the necessities of the different parishes. The dining-hall and chapel, measuring 40 ft. by 22 ft., forms a division between the two sexes, and is convenient to both. The interior of the house is abundantly supplied with lavatories and bath-rooms, and all the apartments are thoroughly lighted and ventilated. The heating of the building is effected on approved methods. The ceilings are lofty, the height of the one above ground-floor being 11 ft. 3 in.; above upper floor, 11 ft.; and above attic floor, 9 ft.; while the cubic feet of space allowed to each inmate is said to be slightly above the maximum amount allowed by the Board of Supervision. The drainage of the poor-house is also said to be effective. The designs of the building were prepared and carried out by Mr. J. Graham Peat, architect, Hamilton. The estimated cost of the work was 5,500*l.*, or at the rate of 32*l.* 7*s.* for each pauper inmate.

Wick.—The British Fishery Society, who are proprietors of Pultneytown, on the south shore of Wick Bay, are engaged in constructing a new harbour on a large scale, from the designs of Messrs. Stevenson, of Edinburgh, in the Bay of Wick, well known for its extensive fisheries of 1,000 boats, and also for its stormy seas. This work has now been going on for some years, but, owing to the great depth of water in which the breakwater is founded (being about 30 ft. at low water), and the interruption to the work in consequence of the heavy seas raised by easterly winds, the progress is slow, being only about 200 ft. per annum. The contractors are Messrs. A. & K. Macdonald, of Glasgow. This work will extend for a distance of 1,500 ft. into the Bay of Wick. It is proceeding satisfactorily, and, although as yet only about half finished, already shelters a considerable portion of the bay.

RAILWAY MATTERS.

The extension line of the Midland Railway Company has been opened from Bedford to London. The goods terminus of the company at Agar Town, into which the line runs, has been for some time in use, but hitherto it has been worked by a branch from the Great Northern, by means of which system the Midland line is now in communication with the metropolis from Hitchin. At present this extension will be employed only for the goods and merchandise traffic, the passenger and mineral traffic being as before carried on at the stations of the Great Northern at King's Cross. Since the completion of the Midland to Bedford, the Great Northern have received tolls for the traffic put upon their line at Hitchin to the amount of about 60,000*l.* a year. By the arrangement which exists between the two companies the agreement could not be terminated except upon seven years' notice. When the Midland had obtained its parliamentary powers in 1864 the requisite notice was given, and this will expire in 1871, the Great Northern receiving until that date a minimum of 20,000*l.* a year in the shape of tolls, which will continue to be earned by the goods and minerals which will still be put upon the line until the terminal passenger station is completed in the New-road. The works for this station are being pushed vigorously forward, but the building, with the large hotel adjoining, will probably not be completed for twelve months.

A large new station has been opened on the North London Railway, in Lee-street, Kingsland-road. The new Haggerston Station commands that neighbourhood, and also the Downham-road and De Beauvoir Town, which places are situated too far off from the Dalston Junction to profit by the latter. The new station, while proving a great accommodation to a numerous colony of clerks and others resident in the suburb of Kingsland, will be a convenient point for Kingsland passengers requiring to reach the west-end of London.

The North-Eastern Railway Company have just completed the Hutton Viaduct, formed of iron girders and masonry. The trains run upon the girders, instead of between them.

Mr. C. W. Dixon, C.E., of Wakefield, and of Wickham Market, Suffolk, has just patented an elastic compensating wheel for facilitating the rounding of curves and preventing vibration and shaking. It is said this invention will cause a great saving to railway companies in the item of wear and tear.

PENZANCE PUBLIC BUILDINGS.

A LARGE pile of buildings in Penzance, of which we have before spoken, has been inaugurated. The architect is Mr. John Matthews, the town surveyor. The front elevation is in the Italian style of architecture, and is composed of a centre and two wings, each of which projects about 15 ft. The entire length of this elevation is 135 ft.; it is raised 3 ft. above the road, and is 52 ft. in height. The basement is composed of rusticated work, extending along the whole front. The chief floor is approached by a flight of steps, eleven in number, each 21 ft. wide, leading to a granite terrace 68 ft. long by 13 ft. wide. On this terrace are the principal entrances. The central entrance consists of an arched doorway, having on each side two massive three-quartered coupled columns of the Roman Doric order, with moulded entablature in full. These four columns are each out from one piece of granite, and are 14½ ft. high, with moulded caps and bases in solid granite. The whole of the front elevation is executed in massive white granite from Messrs. Freeman's quarries at Lamorna.

The eastern elevation is 122 ft. long, 56 ft. high, and consists of three blocks, a centre, and two wings. In this elevation the dressings are of Lamorna granite, and the filling-in is of granite from Chun Castle quarries. This latter is of brownish tint.

The central portion of the buildings is entirely the property of the Penzance Public Buildings Company (Limited). Inside the principal entrance on the terrace is a handsome vestibule of 18 ft. by 17 ft., laid with caustic tiles in an ornamental design. From this vestibule open on the right and left the reading-rooms of the Penzance Institute and the Gentlemen's News-room. Massive chandeliers hang from the ceilings of each room. The institute room is furnished by Mr. William Bennetts, builder, of Penzance. The fittings in the library are designed by Mr. Matthews, and executed in Archaengel deal by Mr. Bennetts. A light projecting gallery runs round three sides of the room, to afford access to the upper lines of shelving. Five bays are erected in the room, each 8 ft. deep, and 8 ft. wide, which will receive six leather-covered tables for the use of members. Over the chimney-piece at each end of the room are arches with fretwork, to receive the portraits of the late Mr. Joseph Carne, and the late Mr. Foxell. The length of the whole of the shelving in the room is 2,408 ft.

The large hall, the crowning feature of the building, is 80 ft. in length, 40 ft. in width, and 40 ft. in height, from the floor to the crown of the ceiling. It is lighted by fifteen large windows. The ceiling is elliptical in shape, and is divided into seven compartments by moulded perforated arches. From each arch are suspended five star-shaped gas-burners. The organ is placed at the south end of the hall, in a large arch-headed recess. The organ is decorated in gold, on grey, neutral-tinted green, and brown ground. Around the organ is an orchestra and platform calculated to accommodate a chorus of 120 persons. On each side and at the north end of the room is a balcony projecting about 7 ft., supported by iron cantilevers with front balustrades. At the north end and at the back of the balcony is a gallery to hold 135 persons. The body of the room will seat 650 persons, making a total of 1,042 persons who can be comfortably seated. The ground

floor has three wide entrances with folding doors, also entrances to both balcony and gallery by staircases on the right. Just below the entrance to the balcony of the large hall are the Masonic Hall and ante-room, lighted from east and south. Ascending a flight of stairs a room is seen, intended as the museum of the Penzance Natural History and Antiquarian Society, 34 ft. long, 27 ft. wide, and 17 ft. high. The eastern wing is the property of the Penzance Town Council. The council chamber is 28 ft. long, 20 ft. wide, and 18 ft. high.

To the north of the committee-room is the Guildhall, which is 47 ft. long, 31 ft. wide, and 21 ft. high. It has a panelled ceiling, and is lighted by four star-lights of twelve jets each. The entrance to the Guildhall for all officials is the principal entrance, while suitors and the public enter at the northern end. About 400 persons may be seated in the hall. Over the Guildhall are commodious offices for officials of the town council, local board of health, and for other borough purposes.

The western wing is the property of the Royal Geological Society of Cornwall. The principal entrance leads into the fossil museum of the Society, a room of 28 ft. by 27 ft., and 16 ft. high. The geological museum is 50 ft. long, 28 ft. wide, and 21 ft. high.

Hot-water pipes are laid on throughout the centre and east wing of the buildings. Messrs. Weekes & Co., of Chelsea, are the contractors. The water is heated by a tubular boiler fixed in the basement, and the whole of the buildings can be heated at one time, or any portion can be heated separately. The contractors who have erected the building are Messrs. Jacob Over & Son, of Falmouth. The cost of the entire work, including fittings and furnishing, will not be much less than 15,000*l.* Mr. Yeoman has acted as contractors' foreman at Penzance, and Mr. James as clerk of the works on the part of the town.

THE NEW WORKHOUSE FOR ST. MARTIN'S-IN-THE-FIELDS.

On Monday evening, at the meeting of Guardians of St. Martin's, Mr. R. Cobbert in the chair, the minutes of a special meeting of the Board were read, setting forth that the plan of Mr. Cross for the new workhouse was adopted, in preference to a plan of Messrs. Barton & Cotton, by 7 votes to 6. Whereupon Mr. Lamb protested against the correctness of the numbers as recorded in the minutes. A letter was then read from Mr. Scott (a Guardian) also protesting against the decision of the Chairman at the special meeting. Mr. Barton said he withdrew from the said meeting on the same grounds. Mr. Scott contended that the special meeting was convened to consider the plans only, and not to decide upon them; and, therefore, he considered that the ruling of the Chairman was not correct. After some further discussion, the minutes of the special meeting were signed as being correct, and Mr. Barton gave notice of a motion to rescind the resolution of the special meeting, adopting the plan of Mr. Cross; and the whole subject will be discussed at the next meeting of the Board.

COAL BRICKS.

A BRICK-MACHINE, capable of making bricks not only of clay but of coal dust concreted with a patent composition, has been invented by Mr. George Arnott, of Gloucester, who thus describes the machinery, for which he has received protection from the Patent Office:—

"I have a pug-mill erected, with a large screw running down the centre, and to each side of the pug-mill are fastened strong steel plates, which pass through the arms of the screw, so that when either coal or clay is passed into the top, it is ground and thoroughly well mixed before reaching the bottom, when it falls a double row of square iron moulds or frames, which are endless, being hinged together, and which rows of moulds pass over two square tumblers (one at each end of the machine), which tumblers are worked by means of an iron rod from the main shaft and a ratchet-wheel, and at every revolution of the main shaft the rod takes hold of one of the notches in the ratchet-wheel, draws two boxes or moulds out of the pug-mill, passes them under the iron plungers or presses next to the mill, where they are pressed and marked with trade-mark, &c.; and at the same time the next two plungers beyond pass two complete bricks through the bottom of the machine on to an endless band running the cross or contrary way to the plunger or man who takes them off, so that at every revolution of the main shaft either two coal or clay pressed bricks are made. At the low rate of sixty revolutions per minute, one of these machines would make 7,200 per hour. All the labour they require is one man to feed and another to take away."

The Uxbridge Engineering Company, of Newport, Monmouthshire, it seems, have nearly completed one of these machines for the Compressed Coal Company, whose extensive new works are situated at Whitecroft, near Lydney, Gloucestershire, formed for the purpose of using up the heretofore worthless small coal thrown up from the pits in the Forest of Dean. The coal-

bricks, after coming from the mill, are soaked in a rock-oil, and afterwards waterproofed; so that whenever a fire is needed, either for house or other purposes, all that has to be done is to break one of the bricks, place it in the grate or elsewhere, and set light to it. The cost, we are informed, will be very considerably below the price now charged for ordinary coals.

THE SEWAGE OF TOWNS.

SIR,—Permit me to occupy a small space in your valuable columns with a few remarks on this important subject.

First, I beg leave to introduce two new distinctive words, which are more euphonious than the terms now used, and will be convenient in discussions,—*equine*, signifying the liquid portion, and *eleusine*, the solid portion, of the refuse of towns.

Secondly, I submit that, in dealing with the refuse of towns, *equine* should be disposed of separately as valueless, and even deleterious.

Thirdly, I hold that without an admixture of decayed vegetable matter, *eleusine* and sand or clay will not make good earth. For what is earth? Is not the best earth or mould a compound, with a large proportion of decayed vegetable matter? As I write, leaves are falling, and will in due time become incorporated with the soil on which they fall; it seems to me that in considering earth as a disinfectant, this point has been often overlooked.

A. J.

HAND-WRITING ON STONE.

SIR,—Will you allow me to communicate a fact which I think will be of interest to your readers?

On one of our conversational evenings in Canon-row "Architectural Museum," I wanted to get something rather more interesting to visitors than heavy books or prints; and to do so I called on Sir C. Barry, who was always very kind to me, and asked him to lend me for the evening his first sketch in pencil, so I understood, of the Houses of Parliament, which he said he had kept carefully as a memorial of the beginning of a great work. He told me he could not oblige me that evening, but that he would show me (I asked him also for it) a *Boy* (a geometrical drawing, not a sketch) of the South Front which I so much admired, and thought the finest bit of modern Gothic in existence. These drawings must be still in existence, and I cannot help thinking how very interesting, apart from all controversy, they would now be if exhibited as specimens of architectural handwriting by a master himself. Controversy always comes of imperfect information, and absence of facts on one or both sides. If there be any doubt as to the authorship of a letter, the production of it immediately dispels that doubt, and the work and individuality of the writer and author at once, and without any possibility of mistake, declare themselves. On stone it is the same: it is impossible for two men to write alike on stone: that feat can only be accomplished through the medium of a clerk, i.e., a third person.

C. E. A.

NICE WORK AT ST. MARTIN'S, EXETER.

SIR,—A few years ago you very justly exposed to ridicule the unprincipled and dishonest mode of pointing stone walling, which prevails to such an extent in Exeter and the neighbourhood; doing it in the "tuck and point" fashion of brickwork, and not only that, but actually showing sham joints where no joints exist, and converting rough nobbling, so as to look like regular range work!

Happening to be passing through Exeter a few days ago, I could not have believed that such a thorough ignorance of good workmanship and pure taste in this age of progress and correct treatment could exist, had I not myself seen the restoration, as it is called, now going on at the Church of St. Martin (it is close to the Clarence Hotel). A good Perpendicular tower, built of the red conglomerate stone, and some other from the neighbourhood, has been exposed to view by the removal of the old rough-cast. Instead of raking out the joints, and pointing them as the stones happen to be shaped, and replacing defective stones by others of the like sort, and removing any brickwork, with which in the worst days of church repairs the walls may have been cobbled, the whole surface is now being *dandyified* by making good the deficiencies and plastering them over with compo. False joints are marked out; the string-course at the midway set-off is rounded off smooth, every member of the moulding being obliterated; and, to crown the whole, the battlements are absolutely capped with pieces of square coping, and the string-course immediately below the battlements is made of a sort of chimney-piece cornice on a flat deal board or some other wood painted white! It cannot for a moment be supposed that the work has been entrusted to any architect, but that the whole is being done under the direction of amateurs; for the city may be proud of, at least, two profes-

sional gentlemen of note, if not more; and, besides this, there is an architectural association second to none in the kingdom, and in no place is there better work being done than is now in progress at the new museum, the Church of Mary Major, and a new church on St. David's Hill. With such examples before them, and such advantages within their reach, how could the parishioners of St. Martin's allow such abominations which are now being perpetrated and perpetuated on what might have been made a good specimen of a small Devonian tower of the fifteenth century? Close by its side is a glorious specimen of a four or five-light (I forget which) window, occupying the western end of this little church. Do the churchwardens intend to immortalize their names in letters of gold inside the church with the date of this work of retrograde restoration? Perhaps some one else will tell you what is going on inside the walls. I had not the heart to enter, but walked off to my inn in sorrow and disgust.

A VISITOR.

SHAPE OF BELLS FOR PUBLIC CLOCKS.

In a communication published in the *Builder* of the 2nd of March last, I made the following statement:—"Everybody knows that for house-clocks, &c., bells of the hemispherical form are very properly used. Nevertheless, if you want a bell for a tower, or turret, to produce a good volume of sound, and a fine quality of tone that shall be heard at a reasonable distance, it must be made of the long-established shape and proportion of our best church bells. And we know the reason why. Bells of the hemispherical form weighing about 4 cwt. may answer for cemeteries for obvious reasons. But the sound of heavier bells of that form is generally *tubby*, extremely doleful, and offensive."

Now, in the interest of a science to which I have directed some attention, allow me to say here is an example worth recording. A clock and a bell have recently been placed in the tower of the town-hall of Northampton; and this bell, on which the clock strikes the hours, is of the hemispherical shape alluded to, its weight being about 8 cwt. What, then, is the result? Why—though no blame attaches to the respected founders, or clock-makers—for this metallic saucer speaks for itself in confirmation of the above statement. It yields a sound so peculiarly dull and disagreeable to the musical ear, that people may well exclaim, "Stop that dreadful bell!"

THOS. WALKESBY.

DRY ROT.

SIR,—An important beam in the basement-story of my house has got infested with dry rot; can you suggest any remedy? The beam is about 20 ft. long, made of bog-oak, the most incorruptible of timbers. It had been in its present position upwards of fifty years without showing any decay, but about four years ago I had to build a new wall under one end of it, and not waiting to include the beam in new work I put a piece of oak under it. About a year ago this piece of oak was observed to be covered with dry rot, which was spreading along the beam. I took out the oak, and cut off all the decayed part of the beam and washed the beam, first with hot whitewash and afterwards with strong solution of copperas; but the rot is spreading with alarming rapidity. The air of the room is very confined, and the beam could not be taken out without much difficulty.

. Removing the parts affected, and a wash of diluted sulphuric acid, have been found useful in a similar case.

THE ESTIMATION OF AN INCOMPLETE CONTRACT.

SIR,—There must of necessity be a right way, as well as a wrong way, of making an estimate of the value of works done under a broken contract, but I cannot find that any two builders agree upon the *modus operandi*.

In a recent case in this town (Plymouth) certain builders tendered for the erection of a villa residence within a short distance of the town: the highest tender was 3,175*l.*, and the lowest 2,150*l.*,—the latter being accepted.

Owing to the failure of one of the contracting parties, the works were stopped when the walls were built and the roof-timbers in place.

To avoid any litigation, it has been agreed to submit two questions to arbitration: the one to a lawyer as to what damages are due by reason of the breach of contract; the other to a surveyor as to the actual value of the work performed.

Should the works be measured according to the present value of work and material without any reference to the contract? or, should they be measured with reference to the contract and the schedule of prices upon which such contract was founded?

Should the amount due be the value of the work already performed, or should it be the amount stated in the contract less the value of work to be performed? * J. W. B.

* The works should be measured and valued with reference to the contract and the schedule of prices upon which the contract was founded: the amount due is "the amount stated in the contract less the value of work to be performed." The question of damage done by breach of contract is to be separately considered.

NEW TOWN HALL, MANCHESTER.

WE are authorized by the mayor to state that, in deference to an opinion expressed in our columns and elsewhere, the following circular has, by order of the Town-hall Sub-committee, been addressed to the architects who have sent in plans in competition for the new town-hall:—

"Town-hall, Manchester, 9th September, 1867.
SIR,—You will no doubt have observed in the papers that the plans or designs sent in for the new Town-hall, with the following mottoes or devices, have been selected for the second or final competition, viz., 'St. Michael,' 'Ring out the Old, Ring in the New,' 'A circle within a ring,' 'Time tryeth Truth,' 'Polysynthus,' 'Municipal,' 'Three Hebrew characters,' 'An Bon Drom.'
Considerable anxiety having been expressed on the part of the public to see the competing plans, I have, at the request of the new Town-hall Committee of the Council, to ask you to inform me *during the present week* whether you are willing that your plans should, with or without your name being attached thereto, be for fourteen days publicly exhibited.

I need hardly say that it is not proposed to exhibit the designs selected for the second competition, and unless a large proportion of the architects intimate their desire to have the plans exhibited, no public exhibition will take place.
I am, Sir, &c.,
ROBERT NIXON, Mayor."

The designs of the eight architects selected for the final competition will most likely be exhibited after the award is made; but at present such a course is deemed undesirable. There is much diversity even among the successful competitors in the manner of arranging the plan of the building, the shape of the land offering great scope for the ingenuity of architects, and an exhibition of the designs at this time would be a disadvantage, it is urged, to those who have succeeded in arranging the best plans.

The letters already received, in answer to the circular of the mayor, are chiefly in favour of an exhibition.

THE SMOKE NUISANCE.

SIR,—I take the liberty of asking your assistance in calling attention to some clauses of an Act of Parliament which has been passed with a view of suppressing the nuisance arising from the smoke of furnaces; indeed, of attaining the same end *throughout the country generally* as has been already accomplished in London and its immediate vicinity.

The Act is the 29th & 30th Vic., c. 90, and is entitled an "Act to amend the law relating to the Public Health;" it was passed on the 7th of August, 1866, but the clauses relating to the consumption of smoke did not come into operation before the 7th August, 1867: this was, of course, done in order that the owners of furnaces might have time to make such alterations as would abate the nuisance.

In this city and neighbourhood (Rochester), however, I do not think that one alteration has been made; and, from what I can observe, the same is the case everywhere; indeed, I am sure the existence of such an Act is not at all generally known.

If you would kindly look at the Act and publish some observations upon it in the *Builder*, you would be doing a great public good; for in no other way can its provisions become so widely known.
W. H. NICHOLSON.

* LIST OF TENDERS.

Willcocks	£3,175
Ellicott	3,039
Clark	3,000
Adams	2,980
Trevens	2,850
Turner	2,800
Verren	2,610
Lethbridge	2,478
Harvey	2,319
Cady	2,150
Average	£2,754

SCIENTIFIC EDUCATION.

THE Oxford local examination certificates, awarded for the Manchester district, have been distributed in the Free Trade Hall, by Earl Granville, K.G.

The statistics in the report of the committee for conducting the examinations in the Manchester centre include the following among other details:—In the Manchester centre, though the number of candidates was less than in the previous year, the number of those who passed showed a considerable increase. There were examined this year, 212; last year, 223; passed this year, 146; last year, 139; per-centage of success this year, 68; last year, 62. Of these there were seniors examined, 37 this year, 45 last year; passed, 28 this year, 32 last year; per-centage of success, 76 this year, last year, 71. Of juniors 175 were examined this year, 178 last year; 117 passed this year, 107 last year; per-centage of juniors this year, 67, last year, 60. In the seniors, Manchester had passed 8 per cent. above the averages of the country, and in the juniors (in which it was last year below the average of the country) it was this year 2 per cent. above. Manchester sent one-ninth of all the seniors; it had more than one-seventh of the aggregate honours. In the number of senior candidates, Manchester still maintained its position next to London. London sent 81; Manchester, 37; Liverpool, 30; Northampton, 23; Oxford, 19. In junior candidates, Manchester, which took the lead of all the centres last year, was now exceeded by London, but it still sent more than one-sixth of the whole number of juniors. In junior honours Manchester fell below the average of the whole country. In preliminaries, the per-centage of seniors in the country was 51 per cent.; 1, last year, 48. Manchester had passed 76 per cent. against 80 last year. In juniors for the whole country, 77 per cent. against 73; for Manchester 81, against 72. The whole of the failures of the seniors here occurred in the preliminaries, though some of them had gained honours in one or more of the sections. Oxford had wisely, from the first, dealt very strictly with this part of the subject, and had the satisfaction of seeing a gradual rise from less than 40 per cent. in 1866, the first year, to about 80 per cent. in the present year. This year, for the first time, failures in the handwriting were found among all the foot of the junior lists. The total number of these was 78, of which 12 belonged to Manchester. In the Manchester seniors, in English, 34 had passed out of 37; in languages, 30; five of these being in the first division, 12 in the second. In mathematics the number was much less than last year. Among the Manchester juniors, Latin had been successfully taken up by 116 (last year, 103); French, 73 (last year, 71); Greek, 32 (last year, 18); German, 5 (last year, 8); chemistry, 6 (last year, 9). Of 30 seniors, only 8 sent in candidates for chemistry, and the whole number of candidates, senior and junior, was only 114, of whom not one-half had passed. In conclusion, the report alludes with pleasure to the offer of valuable scholarships in connexion with these examinations by Balliol College, Oxford, and Owens College, Manchester.

Miscellaneous.

TAUNTON HIGH CROSS.—Dr. Kinglake purposes erecting, at his own cost, a cross at the northern end of the Parade at Taunton, and Messrs. Shewbrooks, the builders, have commenced the work, by putting up a hexagonal enclosure. The donor has had a design prepared, as nearly as possible, we are told, a *fac simile* of the High Cross beneath which the Duke of Monmouth was proclaimed king in 1685. It will be 32 ft. in height. Lamps will be attached to the cross, which is to stand on three steps, and a drinking-fountain will be placed at the base.

OPENING OF THE BLACKMORE MUSEUM.—A museum, which has been founded in the city of Salisbury by Mr. William Blackmore, of Liverpool and London, has been opened. The building containing the collection, which has been erected at the cost of the founder, who is a native of the town, is of early Mediæval character, and consists of the museum and north entrance-porch, with curator's room on the south side. The building is fitted for gas. The varied collection of objects in the Blackmore Museum mainly comprises specimens belonging to the stone age of different countries, with similar implements in use among existing races of mankind.

WALCOT CEMETERY CHAPELS.—The condition of these chapels being very unsatisfactory, Mr. Clark, of Bristol, architect and surveyor, was requested to report to the Burial Board on the subject, and he informs the Board that he finds the upper stage of the tower and spire in a dilapidated and dangerous state, the first cause of which is the failure of the freestone head of the doorway leading from the staircase turret to the tower, it being of freestone hardly 6 in. thick, and not sufficient to support the superincumbent weight; that the danger has also been accelerated by the imperfect manner in which the masons' work has been erected, and the deficiency of proper bonders to tie the work together. Other defects in the chapels are also pointed out, and remedies proposed. Meantime, however, the architects of the chapels, Messrs. Hickes & Isaac, have spontaneously offered to rebuild the spire at their own cost, and the Vestry have approved of their proposal, and referred the matter to the Burial Board.

THE HOLBORN IMPROVEMENTS.—The demolition of Middle-row, Holborn, has been commenced, and in a short time the block of buildings will be removed, and a long needed metropolitan improvement, talked of for half a century or more, effected at last.

SURVEYOR TO THE WATINGTON HIGHWAY BOARD.—This Board, at their meeting on the 4th inst., appointed Mr. Richard Eades, of Redditch, as their surveyor. Five selected candidates attended the Board, the whole of whom had their travelling expenses paid them.

SINGLE-SPAN CHURCHES.—A correspondent, "J. Y.," writes,—I may add to the information contained in your article on single-span churches that an example occurs at Monferrand, near Clermont Ferrand, in the Puy de Dome. The date (from remembrance) is of the fourteenth century, and the span about 40 ft. Chapels are built as projections from the north and south walls.

HOME FOR FATHERLESS BOYS.—At Stockwell the foundation stones of three dwellings for orphans have been laid by a lady (Mrs. Hillyard), who has contributed 20,000*l.* for the purpose. The homes will consist of terraces of houses, each house capable of accommodating eighteen or twenty boys, and presided over by a nurse; and it is considered that this plan will preserve, as far as possible in a large institution, the idea of a family, and will enable the trustees to proceed with other houses, as their funds will permit. It is also proposed to build a large school-room and dining-hall on the orphanage ground. The houses will cost from 600*l.* to 600*l.* each, and the trustees have accepted a builder's tender for the erection of three at once. A large shed has been built, which will serve for holding meetings on the ground, and can be afterwards used as a covered playground for the boys.

THE ATLANTIC TELEGRAPH COMPANY.—The report presented at a meeting of the shareholders states that 205,317*l.* have been earned by the cables during the past year; that towards the close of the financial year the revenue had had to bear the expense of two accidents to the cable of 1866, both, it is believed, the result of crushing by icebergs. The Anglo-American Company have deducted 21,896*l.* from the revenue in respect of these two events. Notwithstanding these large deductions, there remained to the credit of the revenue account a balance amounting to 23,133*l.* 16*s.* 6*d.*, and out of this the board proposed to declare a dividend for the year ended 27th July ultimo, at the rate of 4 per cent. free of income-tax, upon the first 8 per cent. Preferential Stock. The directors intend to reduce their charges to a certain extent, though not so far as has been urged upon them. Messages will be sent at an average of about 5*l.*, instead of the 10*l.*, to which the original 20*l.* had been reduced. The charges urged are 7*s.* 6*d.* a word, or about 2*l.* 10*s.* per message.

THE INTERNATIONAL WORKMEN'S CONGRESS AT LAUSANNE.—About sixty delegates from England, France, Germany, Italy, &c., appear to have attended the meetings of this Congress; and their proceedings, though not altogether orderly and deliberative, show that the trades-union principles, though not under that name, are rapidly pervading the Continent. Some of the decisions of the Congress are rather startling;—for example, the "equivalence of functions,"—that is to say, that "the eight hours' labour of a carpenter or shoemaker is of equal economical value with the eight hours' labour of an astronomer or poet." They do not seem to have as yet decided, however, that the eight hours' labour of the weak or indolent is of equal economic value with the eight hours' labour of the strong or active; but no doubt they are of opinion, with our own trades' unions, that the eight hours' labour of the stupid and unskilful are of the same economical value with the eight hours' labour of the talented and skilful. No chance here for the man with "seven talents" to double them: he must bury them in the ground alongside of the "one talent" of his less willing or able fellow-workman, or share with him his "seven talents," so that truly his fellow-workman will be the hard task-master. The Congress are inclined to approve of strikes because they tend to raise wages, although they do not approve of wages at all. One of the French delegates stated that "the aims of the International Working Men's Association tended to replace the present unsatisfactory state of things by a system of practical justice."

LEEDS EXHIBITION.—The Executive Committee of the National Exhibition of Works of Art to be held at Leeds in 1868, have received a notification from the Secretary of State for India that a selection of works of Indian art will be made by Dr. Forbes Watson. The many and beautiful objects of Oriental art therein will form a most attractive and important section of the Exhibition.

FRENCH ENTERPRISE IN GREECE.—At Port Mandri a French company are at present diligently smelting down the old scorie, slag, and refuse from the ancient lead mines, and extracting as much as 30 tons of metal a day. The work is said to pay well, and the lead chiefly goes to England. It is calculated that there is a sufficient quantity of scorie between Cape Colonna and Port Mandri to supply the works for fifteen years to come.

THE CLOCK-TOWER AT LONDON BRIDGE.—A correspondent suggests that a good place to which to remove the Wellington clock tower would be to the middle of New Southwark Park. He says,—"During an hour's stroll over the park ground a few days since, I was asked by at least six persons to tell them the time. The great question (there) appeared to be, not the interview at Salzburg, but the captives at Magdala, but—'What's o'clock?'"

AN AMATEUR THEATRE PROPOSED FOR LONDON. A meeting has been held with the view of raising a company to build a theatre for amateurs, on the site of Old Lyons Inn, Strand, apparently part of the property purchased for the ill-fated Strand Hotel. A capital of 20,000*l.* was named. The working expenses were put down at 2,315*l.* per annum. An ordinary theatre in Newcastle-street might or might not pay,—we need not now go into that question,—but to suppose that the amateur actors of London could support it, and pay the shareholders a return for their capital, seems to us a wild idea.

GAS.—The following are dividends declared at the last meetings of various gas companies, viz., 10 per cent. by the Richmond Gas Company; 7½ per cent. by the West Ham Company; 6½ per cent. by the Hartlepool Gas and Water Company; 10 per cent. by the Cardiff Gaslight and Coke Company; 10 per cent. by the Belper Gas and Coke Company; and 8½ per cent. by the Sunderland Gas Company. The Gas Company at Hereford have reduced the price of gas for the public lamps to 3s. per 1,000 cubic feet. The *Hereford Times* urges a reduction to the same figure for private consumers, and advocates the purchase of the works by the corporation.

SUCCESSIVE DEATHS FROM FOUL AIR.—By a singular combination of ignorance and devotedness five persons have lost their lives at Flint. A boy was amusing himself at the chemical works of Muspratt & Co. by winding up and down a bucket used for baling out water from a shaft communicating with a drain. Whilst thus occupied the bucket caught somewhere in the shaft, and the boy got down a ladder to liberate the bucket. Poisonous gas which had collected overcame him, and he fell to the bottom. A carpenter went to rescue him and shared the same fate, as did three others in succession, and a sixth volunteer only escaped by being rapidly drawn to the top. The five were afterwards got out with grapnels, but they were all dead. Experience and warning seem to be of no use to the public in such cases as this.

ORGANS.—The *Musical Standard* says,—"Messrs. Hill are carrying out some important works at the large organ in St. Peter's, Cornhill. The additions consist of a bourdon on the pedals, and the completion of the pedale, which was formerly of one octave only. Nothing has been done to the organ in the way of repairs or additions since 1840. The tuning is being altered to equal temperament. The church will not be reopened until the 22nd instant at the earliest. The organ in the church of St. Mary-le-Bow is to be rebuilt by Mr. Holdich. At St. Botolph's, Aldersgate, Mr. Speechley, of Camden-town, is rebuilding the organ, which is expected to be ready in about three weeks (organ-builders' time). Messrs. Gray & Davison are completing further alterations in the organ at St. Botolph's, Bishopsgate,—the works they effected in the instrument on its removal in 1866 including the extension of the swell to tenor C and the addition of couplers, and other mechanical accessories. At St. Margaret's, Westminster, Messrs. Hill have instructions to complete the organ, we are glad to announce.

MILITARY GYMNASIUM, PORTSMOUTH.—On the 2nd inst. Sir George Buller laid the foundation-stone of a gymnasium, on the left side of the new line of road across the mill-dam. Colonel Hadden explained to Lieutenant-General Sir G. Buller and the company present the object of the new building, namely, the improvement of the soldiers, and providing for them the means of innocent amusement; and as this was the first erection of the kind in Portsmouth, he considered it a fitting and pleasing opportunity of calling attention to it.

DEFACING A MONUMENT.—At the Bromsgrove Sessions lately, a boy, aged thirteen, was charged with damaging the tomb of Sir John Talbot and his two wives in Bromsgrove parish church. Defendant pleaded guilty to the charge. Mr. E. Housman, for the churchwardens, said the tomb injured was an alabaster one, and it was supposed that in an idle moment the boy had scratched away some of the letters. The churchwardens would only ask the bench to express an opinion as to what punishment they would inflict upon future offenders, as it was thought probable they would have to charge others for indecent scribbling on the organ, and other offences. Defendant was discharged on paying expenses. The tomb referred to is the one which was used as evidence in the great Shrewsbury case, and concerning which it was stated by a writer in the *Athenaeum*, about two years ago, that the alabaster letters had been chiselled away, and obliterated by means of paint, in order to destroy evidence.

AMERICAN TUBE WELL.—A number of gentlemen recently assembled upon the cricket-ground of the Manchester Club, Old Trafford, to witness the sinking of a well upon a system just introduced into this country, of which Mr. Norton, of Blackfriars-street, Manchester, is local agent. Water was reached in five minutes from the commencement of the operations, and in twenty-two minutes a depth of 10 ft. had been reached; the pump had been fitted to the top of the well, and a flow of water obtained. The well consists of an iron pipe 1½ in. in diameter, about 12 ft. long, pointed at one end, and perforated with holes about 16 in. up the pipe from the pointed extremity. A moveable iron clamp is fitted round the pipe, and, upon the principle of pile-driving, a 56 lb. hollow weight round it is raised, and allowed to drop upon the clamp: thus the pipe is driven into the ground. Earth, sand, &c., first enter the pipe through the holes, and when these are pumped out, the theory is that pebbles rest against the pipe and form a natural filter. About 5*l.* is the cost for the completion of a well 15 ft. deep. When rock is reached the operation is more costly if it be necessary to bore the rock. One of these wells, to the depth of 15 ft. has been sunk in the Manchester Botanical Gardens. The inventor accompanied the Northern army in the late American war, and procured an unfailing water supply. He has sunk many wells in the States: one at Ithaca, New York, is said to be 120 ft. deep.

RATTENING.—The derivation of this term has excited some discussion. A writer in *Notes and Queries* says,—"In 'Hallamshire,' the district of which Sheffield is the capital, and, indeed, in Yorkshire generally, by the common people, *rat* is pronounced *rat'n*, and hence the secret mischief done by one workman to another in trade disputes was called *rattening*,—that is, doing on a larger scale what the 'varmint' does on a smaller, such as 'blending the scales and springs' of the cutler, cutting the 'wheel-bands' of the grinder or the bellows of the blade forger, and other like injuries. These wrongs were generally perpetrated during the night, and when in the morning the sufferer asked who had done the mischief, the reply was, 'The rats had been!' I believe this is the origin of a phrase with which I have been familiar for more than half a century, and which recent painful circumstances have made sadly familiar wherever an English newspaper is read. Of course, it has happened, in this as in other cases, that an expression used at first in a limited meaning has come to be used as signifying trade outrages of whatever kind. I will not say it would be impossible to split a grinding-stone in the way described by Dr. Vaughan, but I never heard of such a case. I close with a literal illustration of my etymology. An amateur in fancy engineering turning said to me the other day, 'I have been rattened; I had just put a new cat-gut band upon my lathe, and last night the rats carried it off, and, I suppose, have eaten it!'"

A HINT FOR THE AMALGAMATED ENGINEERS.—An official return, just published at Berlin, gives some curious particulars relative to the manufacture of railway locomotives in Germany. It appears, according to the *Pall-mall Gazette*, that in 1864 the number of locomotives on the German railways was 4,768, 574 of which were manufactured abroad, while Germany now not only builds her own locomotives, but sent 1,000 last year to other countries, such as Switzerland, Italy, France, and Russia. The number of engines now used on the railways of Germany is 5,250, 340 of which have to be replaced every year, it being calculated that a locomotive seldom lasts longer than 15 or 16 years. The largest of the German factories is that of Borsig, of Berlin, which has built 2,000 railway-engines since it was first established in 1841. Of the others, the principal are that of Maffei, in Bavaria, that of the Austrian railway companies at Vienna, Eggenstorff's at Hanover, and Henschel's at Cassel.

TENDERS

For a pair of semi-detached residences, in Birkbeck-road, Acton. Mr. G. Billington, architect:—
Eydmann £1,999 0 0
Waters 1,866 0 0
Blick & Son 1,835 0 0
Harding (accepted) 1,735 0 0

For alterations and repairs to No. 48, Wimpole-street, for Mr. W. Hanson. Mr. W. A. Baker, architect. Quantities furnished by Messrs. Richardson & Waghorn:—
Henderson £1,989 0 0
Phillips 1,847 0 0
Scribner & White 1,843 0 0
Keyes & Head 1,757 0 0
Eaton & Chapman (accepted) 1,721 0 0

For alterations and repairs, at Gloucester House, Lark-hall Rise, Clapham. Mr. H. W. Buid, architect:—
King & Son £731 10 0
Mills & Son 725 0 0
Colls & Son 615 0 0
M'Lachlan 589 10 0
Noley 550 0 0

For alterations and additions at 191, Upper Ebury-street, Fulham, for Mr. E. E. Price. Mr. Parker, architect:—
Saunders £635 0 0
Wilson 615 0 0
Thompson 581 0 0
Dear 497 0 0

For farm-houses and home-steads for Earl Suffolk, Charlton, near Malmesbury, Wilts, exclusive of building stone, sand, &c. Mr. T. S. Lansdown, architect:—
Clairidge £6,677 0 0
Hallam & Co. 5,860 0 0
Liddiat 5,405 0 0
Smith 6,118 0 0

For additions to Bentham House, Furlton, Wilts, for Mr. W. J. Esdler, exclusive of timber, stone, bricks, lime, sand, and slate. Mr. T. S. Lansdown, architect:—
Liddiat £420 0 0
Phillips £545 0 0
Harris 615 0 0
Hawkins 495 0 0

For alterations and additions, Tockenham Rectory, near Wootton Bassett, Wilts. Mr. T. S. Lansdown, architect:—
Brown £1,098 0 0
Wheeler 895 0 0
Frampton 875 0 0
Twine 880 0 0
Barrett 840 0 0
Carter 830 0 0
Liddiat 825 0 0

For parsonage-house, in the parish of Holy Trinity, Kentish Town, inclusive of amounts for rain-water tank and hot-water supply. Messrs. Beck & Lee, architects. Quantities supplied by Messrs. Fain & Clark:—
Manley & Rogers £2,397 0 0
Browne & Robinson 2,302 0 0
Ashby & Sons 2,280 0 0
Colls & Son 2,275 0 0
Conder 2,262 0 0
Woodward 2,230 0 0
Webb & Son 2,191 0 0
Foster 2,149 0 0

For new buildings, Norton-folgate. Messrs. J. Young & Son, architects:—

	Refuge.	Residence.
Ashby & Horner	£6,661	£1,995
Jackson & Shaw	6,557	1,989
Ashby & Sons	6,549	1,984
Jackson	6,618	1,917
Conder	6,184	1,931
Braes	6,145	1,952
Webb & Sons	6,013	1,989
Henshaw	5,904	1,794
Hart (accepted)	5,832	1,797

For dwelling-house, at Sydenham-hill, for the Rev. J. E. Brooke:—
Hills & Son £1,769 0 0
Colls & Son 1,980 0 0
Gannon 1,877 0 0
Clemence 1,928 0 0
Jerrard 1,875 0 0
Shapley & Webster 1,640 18 0

The Builder.

VOL. XXV.—No. 1285.



Public Works in Spain.

COMMISSION was nominated by the Spanish Government to draw up a report upon the state of public works in Spain, for the purpose of laying the information thus gathered together before the world, as it is represented by the great Parisian Exposition. This report is now before us, and we find it confirms the generally received impression of the rapid progress made by the Spaniards since the commencement of this century. The commissioners excuse themselves for not having made the account so full as it might have been, by pleading the insufficiency of means at their disposal, the short period of time allowed them, and the unfavourable season of the year for the production of photographs of public works. The survey of modern Spanish enterprise forwarded by them to Paris, consists of four parts; in the first being an "album graphique" of the most notable works; the second, a collection of photographs of the same; the third, a collection of models; and the fourth, the report under notice. When we recollect that in 1820 there was no school of engineers in Spain, and that the public works there were undertaken by empirics without scientific knowledge; and at the same time bear in mind the comparatively small sums that could be devoted to constructional improvements, we must allow that Spain has done tolerably well, especially in some branches. The maritime lighting department, consisting of a hundred and forty-nine lighthouses, appears to be, perhaps, the most noticeable perfection. After this come the roads, the railways, and the ports in the succession we have given them; to which the commissioners add, with special pride, mention of the canal of Isabel II., by the means of which Madrid is provided with water, and of the Canal d'Urgel, works of merit and importance, projected and directed by Spanish engineers. The roads, in 1864, consisted of lengths amounting to 14,926 kil., of which the road known as Las Cabrillas, with the magnificent bridge over the Cabriel, and those between Sahagun and Rivadesella and Granada and Motril, are the most noticeable. The railways have a total of 7,018,587 kilometres. The ports at which most has been done are Barcelona, Tarragona, Valencia, Cartagena, and Almeria. Besides these lines of communication, navigation, and irrigation, and the ports mentioned, with their lighthouses, quays, and other maritime constructions, there is the department of civil constructions, comprising all the edifices serving for public instruction, for the administration of justice and charity, such as schools, libraries, prisons, hospitals, theatres, &c., in a word, all works executed with the funds of the Treasury or with those of the provinces and communes. All public works, generally, are under the control of the minister of public works (*Ministerio de Fomento*); some ex-

ceptional instances, however, being amenable to the minister of finance (*Hacienda*) and the minister of the interior (*Gobernacion*). The minister of public works has for his staff the corps of *Ingenieurs des Ponts et Chaussées*, supplemented by that of the *Conducteurs or Ayudantes de obras públicas*. When a construction is simply for the benefit of a province or municipality the cost is generally defrayed by the place interested, the exceptions being cases in which the Treasury affords a grant to assist the local improvers. The acceptance of such a grant brings the supervision of the works into the department of the Government, *Ministerio de Fomento*. There are two modes of execution recognised. The Government department either takes a work in hand or permits a company to do so, allowing it, as compensation for their expenditure, the profits of the undertaking for a certain number of years. This concession system is that which is most frequently adopted, as the administration is not always furnished with the large sums required for the prosecution of costly works. The minister of public works enjoys the assistance of two consulting corps. The first of these councils (*Junta Consultiva*) is composed of inspectors-general of the corps of engineers; and the second (*La Commission des Phares*) is presided over by an inspector-general of the first class, aided by several inspectors of the second class of the *Corps des Ponts et Chaussées*, and by some of the superior officers of the marine department.

The Spanish school of engineers was definitely founded in 1834, and the *Corps des Ingenieurs* was created in 1835. The latter is a corporation numbering 340 individuals: 5 inspector-generals of the first-class, 15 of the second-class; 30 engineers-in-chief the first-class, 50 of the second; 80 ordinary engineers of the first-class, 120 of the second; 15 assistant-engineers of the first-class and 25 of the second. In the details of the service these engineers are aided by the subalterns (*ayudantes y sobrestantes*) before mentioned. The surface of the country upon which they have to carry on their operations presents many difficulties. Its contour has been likened to the trunk of a cone, rising in platforms, the summit of which, if carried up, would be high in the air above Madrid; but this simile has also been objected to as conveying an idea of greater regularity than really exists. It enables us, however, to form a rough conception of the difficulties to be encountered and vanquished by the corps in question, as they lay down their long lines of communication on the vast mountainous promontory. There are thirty-three railways in Spain, if we may include four large tramways in the list, twenty-two of which are in the hands of railway companies. A general survey of these has been made, and a project of rectification made out, in which districts that are now beyond railway communication may be brought into it, and centres of production and consumption linked together by the same accommodation. These proposed additions are nearly all very short lengths, varying from one to three or four hundred kilometres, the whole not amounting to more than 3,331 kilom. Owing to the mountainous nature of the country, bridges and tunnels follow each other in some sections in rapid succession. Within about 10 kilometres on the line between Cordone and Malaga, for instance, there are twelve tunnels and six large bridges, spreading heights and spanning gorges and fissures as sombre as those of the Alpine chain. The second section of the Saragossa and Barcelona line, which extends from Cervera to Tarrasa, has sixteen tunnels, eleven bridges, and a viaduct of eighteen arches in a run of 94 kilometres.

The commission of phares was created in 1842, at the suggestion of the engineers forming the *Direction Générale des Chemins, des Canaux,*

et des Ports. It has under its charge all the business relating to lighting and signalling in Spain, in the islands of Baléares and the Canaries, and on the coasts of Africa. The most remarkable of the lighthouses are those at Santander, La Corogne, Cadiz, Almeria, Murcia, Tarragona, Barcelona, Ibiza, Majorca, and Minorca, which vary in height from 30 mètres to 61 mètres. Of these some are fixed lights and others revolving. Thus a first-class light can be either revolving, with an eclipse from minute to minute, or fixed; second-class lights permit of the same choice; whilst fourth and fifth class lights are generally longer in their revolutions, the scintillations being at intervals of three minutes' duration. Nine of the most important towers are represented by careful models in the Exposition. The materials employed in their construction are nearly always stone for the towers and for the staircases within, though, in some few instances, the latter are made of iron. To preserve the stone from the action of the salt in the sea-water a coating of oil-paint is used. Three lighthouses in Spain differ from this construction. They are those at Fangar Point, Baña Point, and the Isle of Buda. Following what is known as the Mitchel system, they are built of iron on a foundation of piles. For the sake of economy, say the Commissioners, these were made in England, but from the designs and under the superintendence of Spanish engineers. They were lighted for the first time in 1864.

Spanish legislation has divided the laws concerning Spanish waters into seven chapters. The first relates to the waters of the sea, and the second to the waters of the earth; then follow their beds and currents, their uses, concessions, and general supervision, all of which are full of sub-divisions, such as navigation, loading and unloading of cargoes, fisheries, the fabrication of salt, &c. The terrestrial waters are either pluvial, living or running, stagnant, or subterranean, and the chapter relating to them deals with all these varieties. The *alimentation* of towns, as the French have it, is, of course, an important branch of the subject. The most remarkable work executed in Spain is the canal of Isabel II., constructed for the water supply of Madrid, as before mentioned. It follows the ancient Roman method, that is to say, the water is conveyed on aqueducts built of masonry. Its length is 76 kilometres, and its transverse section is 2.80 m. in height by 2.15 m. in width. Along its course are several important works of constructional interest, as the *Prise du Ponton de la Oliva*, thirty-one tunnels, thirty-two lengths of aqueducts, four grand siphons for the passage of four valleys, and the dépôt of water of the Champs des Gardes. The subterranean galleries used in the distribution of the water complete this great undertaking of the Government engineers. Thirty-five fountains and 3,000 *bouches* for watering the roads or extinguishing fires, are supplied with water from this source, besides the liberal allowance accorded to every resident in the capital city. The Government engineers have also projected and carried out water supply works at Xérès de la Frontera and at Valencia; and have authorized others at Oviédo, Cordova, Valladolid, Cadiz, Lorca, Barcelona, Albaceti, and other centres of populations. Sixteen models of aqueducts, bridges, and machinery connected with marine engineering illustrate these works in the Exposition.

The Spanish commissioners inform us that it was not until 1862 that the laws relating to civil constructions were properly framed and digested. This department is now under the auspices of the corps of engineers likewise, and the *Ministerio de Fomento* is the commander-in-chief of it. Of the short period between this re-organization and the creation of the commission no mention is made; but before 1862 three import-

ant works have been taken in hand by the corps in question, viz., the aggrandizement and embellishment of Barcelona, the improvement and embellishment of the Puerta del Sol, Madrid, and plans for the aggrandizement of the same city generally. The project for the improvement of Barcelona was confided especially to Mr. Ildefonso Cerda. Mr. Lucio del Valle was entrusted with the embellishment of the Puerta del Sol, and the Trafalgar-square, if we may say so, of Madrid; and the general improvement of the city, already completed in various quarters, is superintended by Mr. Inspector Carlos Maria de Castro. Among other works recently accomplished are a Survey of Madrid, gardens and monuments in the Plaza del Oriente, the St. Luis fountain, the elevation and distribution of the waters of the Queen's Fountain, a viaduct in Segovia-street, and the lengthening of Bullen-street, all in Madrid, besides projects for two new quarters and further distributions of water in the same city, and the improvement of Bilbao.

In a quaint geographical work, entitled, "A Short Way to Know the World," published at the commencement of the last century, it is written,—

"Madrid, the capital of Spain, is a flourishing city, as big as the Spanish peninsula, as Paris, and a note for the royal seat, and the seat of the court, is placed on a present of Philip V. At the foot of a hill and the streets ill, but there is over a good house in it. The house is a property which is sold for a price of 100,000, viz., 100,000, the last part of it, for the first floor of every house in Madrid belongs to the king, till it be purchased by the owner. It is of note, also, for a famous bridge built over the Tagus by Philip II.; but the river in summer time is so low as to be shallow, that one could not swim, saying, his Catholic Majesty would be obliged to sell the bridge to buy water for the river."

The corps of engineers we have mentioned so frequently has put Madrid upon a different footing; but it has still gigantic tasks before it. Great credit is due to the commission who have so laboriously shown the increasing prosperity of their country. They exhibit ninety-nine drawings of bridges, 176 drawings of lighthouses, showing the whole system of lighting the coasts in possession of Spain; a collection of thirty-two drawings relating to the different ports, difficult lengths in the routes of railways, and canal works; six volumes of photographs, illustrating twenty lighthouses, thirty ancient bridges, thirty modern bridges, forty-two new bridges, forty constructional works on lines of communication, and thirty aspects of the canal of Isabel II. Besides these, the engineering world is informed of a project for a port of refuge on the coasts of Asturias, in three volumes, and of another for a railway from Cadiz to Gibraltar, in five volumes.

THE PUBLIC WORKS OF THE FRENCH EMPIRE.

THE prediction of Louis XIV., or rather the authoritative announcement of that powerful monarch, when the long-coveted crown of Spain had at length encircled the brow of a cadet of the House of Bourbon, that the Pyrenees no longer existed, has not as yet been verified by the march of events. But that which Royal power and family compact have failed to effect has to some extent been accomplished by science. Physical lines of demarcation have lost half their importance, since they have ceased to retard the transmission of intelligence. At a period when the twelve-mile tunnel through the very bowels of the Alps is already pierced for more than half its distance, and when, notwithstanding, the impatient international traffic is demanding the service of the temporary mountain railway constructed by Mr. Fell, we are fast diminishing the importance of mountain frontiers as barriers to the circulation of travellers and tourists. The collapse of speculation has alone prevented the coming off of the interesting duel between the advocates of a ferry over, and those of a tunnel under, the English Channel, supposing the latter, indeed, to have at any time entertained the intention of seriously backing their own wild proposal. Not a year passes without affording fresh facilities for that mutual acquisition of knowledge as to the habits of the various citizens of Europe, which has made such steady progress since the days of Hogarth and of Gilray. And although, ever and anon, the appearance of the conventional Englishman on the boards of the Paris stage, where we have seen him represented in a clown's outfit as a tourist, with a cape, top-boots, and straps!—an impossible com-

bination which does the greatest credit to the genius of the green-room), or the issue of some literary display of the English as certainly they do not appear to their own eyes, have testimony to the continued existence of the Channel dividing Dover from Calais, still the process of fraternisation is going on with unchecked rapidity.

While the facilities which steam-communication by sea and by land affords to the pursuit of business or of pleasure thus form a main characteristic of our times, we have perhaps hardly yet fully appreciated the important addition which is at the same time offered to the elements of national education. We do not here refer to education in the merely technical sense, to the newly-imported adaptations of the latest German grammatical confusion of either the Latin or the English tongue, or to the clear and systematic, if somewhat superficial, treatises which French ministers of education find time to publish for the benefit of the *lycees* over which they successively preside.

We refer to that broader and more permanent form of social education which consists in studying those conditions of political and of physical life in which other countries differ from our own, and in deducing the lessons as to our own future which such studies are calculated to teach. At no period in the history of the world has social experiment been conducted on so gigantic a scale, and under such widely varying conditions as at present; so that at the very time when the barriers are being cast down, behind which each kingdom or republic has so long enjoyed a more or less isolated existence, and when the man who, like the great father of modern thought, seeks to study on the spot the institutions of other countries before writing on those proper to his own, can most freely gather the incidents on which to base his work, each variety of habit, and each contrary principle may be found undergoing a portentous and unexampled development. On one hand we see the flag of the purest absolutism nailed to the mast, and the principles of that authority which, rather less than three centuries ago, literally and positively condemned every man, woman, and child in the Netherlands to be hanged, beheaded, or buried alive, as unhesitatingly asserted as by the edicts of the execrable Philip II. of Spain. On the other hand, we see the rule of the majority, pure and simple, carried to its most tyrannical extreme by the invention of the "cancans" and the "previous question," and we can watch the results of these two opposite systems in the weekly intelligence that reaches us from the shores of the Tiber and from the western coasts of the Atlantic.

The point to which, on the present occasion, we are most anxious to direct attention, is that of the opposite principles on which the public works of the British and of the French empires are at this moment conducted. And this we do not in the spirit of either self-gratulation or self-depreciation. It is not in order to say, "They manage these matters better in France," or, "Let all the world come and learn of us." It is rather in the pure spirit of inquiry. Something, nay, very much, may be due to the difference of national bent and genius; but the question whether it is better for the Government to charge itself with the conduct of the public works of a country, or whether it is better to leave these works to individual enterprise, is one which it is most important fully to elucidate.

The French Emperor has just decreed a large expenditure for the purpose of country roads, the planting of denuded mountains, and similar purposes; including, no doubt, protection against the destructive inundations which have been so much increased in frequency and in mischief by the reckless destruction of timber, and, at all events, the more important works of irrigation and of drainage. No one who knows France can doubt that the 32,400,000. sterling which it is proposed to apply to these purposes during the next ten years will be, if well laid out, highly reproductive. The expenditure in question is to be divided between the State, the Departments, and the Communes, which are to be benefited not only by the works themselves, but by the encouragement that will be given to local industry in the course of their construction. The sum in itself seems large, but it must be remembered that it amounts to but little more than 700l. per week for each of the eighty-nine departments of France,—an expenditure that can hardly be considered, when regarded as thus divided, as in any way excessive, or likely unduly to affect the labour market. The only

question as to which, hesitation arises in our mode of viewing the case is as to the mode of thus developing the industrial wealth of the country. It is foreign to our habits, it is contrary to the principles of that school of politicians which among ourselves may almost alone be termed demi-scientific, and it is contrary to the experience which we have derived from such efforts of a like nature as we have ourselves made on such occasions as that of the Irish famine.

On the other hand, it cannot be contended that our own system has effected a very notable triumph. Thirty years is much in the life of an individual; it is comparatively little in that of a nation or of a system. It is now about a third of a century since a great impulse was given to our domestic enterprise by the successful establishment of steam locomotion between London and Birmingham. Since that time private enterprise has expended on our railways a sum equal to nearly three-quarters of the national debt. The public are, perhaps, only beginning practically to realise the ill-effects of the enormous waste with which this expenditure has been conducted. It has not been the case that the tyranny of the trades' unions or the organization of the *phalanstères* has caused a wasteful remuneration of labour. As far as the actual labourers are concerned, it is probable that at no period of human history has so much hard, steady, persevering labour been called into continuous exercise as that which has executed our iron roads. With us the demoralization has been limited to the more educated classes. The "navy," indeed, may have been too much accustomed to take out the balance of his fortnight's pay at the beer-house, or to indulge in two or three days' oblivion of a month's incessant toil by the too-ready aid of John Barleycorn. But whether he drank out or otherwise spent or saved his earnings, no one can deny that they were fairly won. High as the wages paid to a skilled earth-workman seemed when contrasted with those of an agricultural labourer, there is no doubt that they were not disproportioned to the duty performed. In almost all cases piecework prices gave the workman a higher remuneration than the ordinary day-work tariff. A certain consumption of oxygen was involved, a demand on the muscle and that made necessary a more generous diet. So many millions of cubic yards could not be removed without a certain production or liberation of heat, even if the motive force had been other than human labour. As far as the actual operatives, the engineer and his staff of workmen, are concerned, we are convinced that our public works can vie with those of any nation or any time in real economy of construction. It is one thing to wheel a barrowful of earth up a plank, at an inclination of one in ten, and another to send the contents of the same distance in a dozen baskets on the heads of so many women or girls, as is done in the south of France, or in Italy. Our own choice is in favour of our own method of work.

But when we learn the actual scene of the labours of the engineer, the aspect of affairs has entirely changed. In the present silence of Westminster Hall, and disconsolate aspect of Great George-street, it is difficult to realize the state of things in the good old times of post-chaises-and-four and of express trains hasting to depart. Landowners, counsel, witnesses—what a renowned host fixed on our railway capital when in its nascent state, that condition in which, as chemists tell us, disturbing action is most powerful. Chief culprit, no doubt, was the legislature, but the legislature itself is only to some extent an embodiment and intensification of the public. Profligate expenditure on properly designed works, or rather in obtaining the necessary authorisation for such works, more profligate expenditure on works which never should have been authorised, have been steadily encouraged, or, at least, winked at, for more than a quarter of a century, by the public opinion so much glorified among us.

The result, long bitterly experienced by the unfortunate shareholders, is now becoming more palpable to the public. A great voice of grumbling is everywhere heard. Here the fares are raised; there the trains are taken off; in a third instance a distance may be certainly accomplished by railway in but little longer time than it could be performed in on foot; in a fourth case, any exact calculation of time is out of the question. The old features of the coaching competition of former days are quietly reappearing, to the grief of this more locomotive

age. Companies which, fighting one another to the last gasp, have striven by every possible blandishment to attract one another's customers, have at last, in the very agony of impecuniosity, come to an agreement which, if made in time, would have saved a third of their outlay, and enabled them to serve at the same time the shareholders and the public. For these two interests, however it may be sought to divide them, are essentially one. If the public encourage waste, the public will have eventually to bear the loss of that waste. A constituency that has disbursed from five to six hundred millions sterling forms indeed no inconsiderable portion of the public; but we are speaking of the customers of our great carriers alone. If a company be encouraged or permitted to expend fifteen millions where ten millions should have sufficed, the travelling public will certainly have, in one shape or another, increased prices or in decreased efficiency of service, sooner or later to pay forfeit for that wasted five millions; and this is precisely the stage in railway experience at which we are now arriving.

We cannot, therefore, admit that the political economists of our day, the gentlemen who endeavour to make half science do the duty of whole science, and to decide the course of social action by an appeal to some of its lowest principles, have much cause to congratulate themselves, or to look for the gratitude of the public, on the reflection that they have had altogether their own way with our public works. Still less can we admit that they are entitled to deliver an *ex cathedra* judgment as to the wisdom of the present effort of the French Government to provide for the communications of the rural districts. We are not advocating the French system. We are not expressing an opinion as to its merits or demerits. We have seen France adorning herself with noble cities; we can hardly recognise, in the Paris, the Lyons, the Marseilles of the empire, the strongholds of the revolutionists of even so late a date as the year 1830. But we feel that these palatial buildings may have been erected at too great a cost. We know that the system adopted has incurred a great and a certain risk. We are seeking, therefore, not to enounce opinions, but to collect facts. We are desirous to store up and to systematise the experience which fifteen years of the Imperial policy with respect to the relations between labour and the state has allowed our brilliant neighbours to accumulate. We know, or we are likely to know, the worst as well as the best of the results of our own system. We have, perhaps, seen the best of those of the opposite plan. It may be that we have yet to wait to see the reverse of the medal, the *backside* as well as the lights of the picture. At all events, in our own enforced idleness we cannot do better than to study carefully the different cases of this great problem, and compare the results of labour directed by the State with those of labour directed by private enterprise. It is not out of the usual course of events to suppose that some *via media* may be arrived at, that some leading principles may be detected. That private enterprise, if directed by the exclusively selfish principles, let us say the intelligently selfish principles, which are so loudly advocated among ourselves, may produce results unfavourable to the best interests of the community, we have palpable and painful proof. That State interference with labour may for a time give prosperity to the operative at the more or less compulsory cost of the trading and rent-owning classes of society, we think France is a witness. Whether or no collapse will follow, and whether the results of such collapse, if it occur, may be more or less disastrous to the entire community than the degree of inefficiency and waste that has hitherto been inseparable from our own system, it is for the future to show. In each case the decision has, to a certain extent, been in the hands of the Government. Legislative sanction is as necessary for the construction of an English as of a French railway. If we think that the prefects and ministers of the empire have interfered too much with the right of private enterprise, if we prefer the distinction which our own civic authorities attain in the way of banqueting, and of any other means of distinction, if such they have—to the addresship of the prefect of the Seine, at all events, we cannot point to the imperial sanction of such a scheme as the London, Chatham, and Dover Railway, or to a conglomeration of ill-adjusted lines like those which circumnavigate London Bridge. Our first step is to ascertain the actual facts; our second—and that is as yet a long way off—is to proceed to

apply our knowledge in the best and most practical way. The idea that the Englishman has nothing to learn from the foreigners is becoming decidedly out of date. How much evil we owe to its long, though generally tacit, influence, it would be hard to say.

THE BRITISH ASSOCIATION FOR SCIENCE IN DUNDEE.

In our last notice of the meeting at Dundee, we intimated the intention of referring to papers that were read. But selection from the number is difficult. In every one of the Sections, not excluding Section D ("Biology"), subjects were treated of immediately pertinent to the field of practical architecture; and it is simply astonishing that the profession continues to be so little represented in the Association. There were several engineers in Dundee; but excepting the representative of this journal, and Mr. Mylne and Mr. Ferguson, we know not who there were to testify by their presence that true architecture requires to take cognizance of the progression in science, just as much as of results of archeologic exploration. If architecture is to be living and progressive,—art in fact, and not in name merely,—it must be comprehensive also of all the science that relates to building. Real art in architecture is all but impossible without knowledge of the properties of materials, and of the laws of vision; successful planning of numerous kinds of buildings requires the study of branches of "Economic Science," and the history itself, of art, and the analysis of styles, is but inadequately studied unless with reference to "Ethnology" and the characteristics of races and peoples. Consequently we need offer to our readers no explanation for taking them out of the field of "Mechanical Science" (Section G), and for noting down some of the subjects of papers, in other Sections, which we are unable to report at length.

Let us refer to the Report of the Lunar Committee in the Section (A) of "Mathematical and Physical Science," for the sake of reporting the observation of Sir Wm. Thomson, the president of the Section, on the increasing importance of this subject to the science of geology. He said "the Huttonians would be forced before long to take the subject of lunar volcanoes into account," and that "a great revolution in geological speculation must soon take place."

In the same Section Mr. J. Clerk Maxwell read a paper on a "Real Image Stereoscope, with Illustrations of Solid Geometry." In ordinary stereoscopes the observer places his two eyes opposite two lenses, and sees the *virtual* images of two pictures apparently at the same place. In the real image stereoscope, the observer stands about 2 ft. from the instrument, and looks at a frame containing a single large lens. He then sees, just in front of the lens, a real and inverted image of each of the two pictures, the union of which forms the appearance of a solid figure in the air between himself and the apparatus. A number of figures of mathematical surfaces as defined by their lines of curvature have been engraved, and some of these will be published in the *Quarterly Journal of Mathematics*. Subsequently, a paper on "A New Fact in Binocular Vision" was read by Mr. A. Claudet. Mr. Balfour Stewart read a paper "On the Behaviour of the Aneroid Barometer at different Pressures." It consisted chiefly of an inquiry as to the extent to which an aneroid might be taken as a reliable instrument when exposed to considerable changes of pressure such as occurred in mountain ascents.

In Section B, Chemical Science, the president, Professor Thos. Anderson, referred to the present insufficiency of the atomic theory, at least in the form in which Dalton left it, to explain the facts accumulated in the last twenty or thirty years; which, besides other results, had given the paramount importance formerly ascribed to oxygen, rather to carbon as an element. On the same day, a paper on the Decay of Stone, was read.

Professor Wanklyn read a paper on "The Existence of Putrescible Matter in River and Lake Waters," in which he detailed several analyses which he had made in seeking to detect the presence of organic matter in London water.

Mr. Dugald Campbell then read a note on "Messrs. Wanklyn, Chapman, & Smith's Method of Determining Nitrogenous Organic Matters in Water," which was replied to by Professor

Wanklyn, and caused a good deal of discussion, in which Dr. Angus Smith took a prominent part.

A description of a new anemometer for measuring the speed of air in flues, was read by Mr. A. E. Fletcher, Government Inspector of Alkali Works for the Western District. The instrument makes use of ether, but dispenses with the introduction of any delicate contrivance into the vitiated air; and the construction of the apparatus is based on the fact that a current of air passing across the open end of a straight tube, causes a partial vacuum in it. An application of this principle is seen in a small toy in common use. The anemometer is described in the "Third Report of the Inspector of Alkali Works, 1866," which may, no doubt, be procured from the Queen's printers. With this description is a table to show the speed of currents of air as indicated by the apparatus. The instrument is so sensitive, that on a windy day the effect of each successive gust is observable as variations are caused in the draught of the chimney. By a modification, the apparatus may be used as a wind gauge. Testimony was given, in the Section, to the efficiency of the contrivance.

Mr. Fletcher then showed a "self-registering perpetual aspirator." A small fan placed in an opening in the side of a chimney communicates with a bellows which drives air from the flue through testing bottles, and thus the amount of acid passing through the flue is indicated.

Mr. G. Ansell gave an explanation of "an apparatus for indicating the pressure and amount of fire-damp in mines." The idea embodied in the machine was founded on the law of diffusion announced by Graham, that gases diffuse in the inverse proportion to the square root of their densities, or, more popularly, that light gases diffuse more rapidly than heavy ones. Mr. Ansell here showed by experiment that, when a tube closed at one end by plaster of Paris, is filled with common coal gas, the lighter part of the compound is rapidly diffused through the plaster, as is at once seen by the yellow flame and slight explosion which ensue on bringing a lighted match close to the closed end. Hence, Mr. Ansell said, his proposition. In a pit the case is the reverse of that of the tube. There the gas is ready to escape into the galleries, and the apparatus must, therefore, be modified to suit the varying circumstances. The essential parts of the apparatus may be described as consisting of an alarm-bell and a telegraph-needle,—the former being rung and the latter deflected by an electric current, which is set in motion by the action of the dangerous gas. The means by which this is effected consist of an iron cup, on which is fixed a disc of white Sicilian marble standing on a U-tube, which contains a quantity of mercury. The marble here represents the plaster which closed the end of the tube in the first experiment, and through it the dangerous gas is diffused. As it does so the mercury is pressed up into the other extremity of the tube, completes the previously broken circuit, and an alarm is given by the ringing of the bell and the deflection of the needle. When the apparatus is intended to indicate a sudden eruption of gas, marble $\frac{1}{2}$ in. thick should be used. When there is a slow accumulation of gas, rising to 10 per cent. ($10\frac{1}{2}$ being the most explosive), the apparatus detects it, and points out the danger. Again, when it is wished to give warning to a man who had left the pit that gas had accumulated in his absence, marble $\frac{1}{4}$ in. thick is used, and the danger is indicated as before. Mr. Ansell stated that he had used the instrument in the Monkland pits at Airdrie, where it had been also used independently by Mr. Mowle. It had been fitted up in the upper part of a gallery where Mr. Ansell and Mr. Mowle were unable to detect any gas. The instrument gave the alarm, and Mr. Ansell remarked that in this case it must be incorrect; but on elevating a light into the upper current, an explosion followed, showing that gas had indeed been there. Mr. Ansell went on to say that when gas was known to be present, it was of great importance to learn whether the percentage is increasing or diminishing. This he has accomplished by means of a modification of the Aneroid barometer. Mr. Ansell thought that he would be able to improve his apparatus by substituting such a corrugated metallic chamber as that in the Aneroid for the column of mercury which was used to make connexion between the poles of the battery.

Professor Anderson believed that this was the first attempt to apply the law of diffusion to

practical purposes, and it was certainly of the highest importance.

Mr. E. L. Newcastle, feared that the very nature of the work of a colliery, which would necessitate the perpetual movement of the apparatus, might impede its use by the workmen; but thought that, in the hands of the coal-viewers, it might be turned to good account, as the accidents most feared by coal-owners were those in which the atmosphere of a whole gallery, or a portion of one, is polluted. This apparatus might be applied to prevent such wholesale catastrophes.

Mr. Ansell mentioned that Mr. Mowie had suggested that the whole apparatus should be enclosed. When this was done the workmen had in no way misused it.

Mr. J. Lovibond Bell read a paper on "The Present State of the Manufacture of Iron in Britain, and its Position, as compared with that of some other Countries." The paper was suggested by the opportunity afforded in the Paris Exposition of comparing the position held by English and foreign manufacturers. Mr. Bell wished, by a comparison of foreign and British iron-masters and their mechanical progress, to discover whether the opinion that our country was advancing less rapidly than some Continental nations, was well founded. He regretted that some of the English specimens showed great slovenliness of workmanship; but, notwithstanding this, and the very fine specimens exhibited by foreigners, after careful investigation, in which he had received all possible assistance, he would maintain that British industry and enterprise had not fallen behind those of the Continent. Mr. Bell referred to the past history of the art as showing which nation had contributed most to its present advanced state. Beginning with the introduction of mineral fuel by Dudley, he spoke of Cort's rolling-mill, and Nilson's application of heated air, to aid in reducing ore, as being really revolutions in the manufacture of iron. He further noticed the improvement of furnaces introduced by the Durham and Yorkshire iron masters, which at once raised the temperature and effected a saving in fuel; the introduction of the steam-hammer for the manufacture of armour-plates; and the discovery by Sanderson that rolled plates would be more suitable. Such were the contributions of this country, which other nations had turned to account as occasion offered. The chief difference between this and other nations consisted in the fuel. Foreign coal, not being so pure as our own, gave rise to various improvements in its cleansing, and in the production of coke. Similarly in France they turned to account the excessive waste of heat, and also the combustion of the gases which burn at the top of the furnace; but our own ironmasters were not less ready to adopt these improvements when the price of coal made it profitable for them to purify it, improve the coke, and turn the gases and wasted heat to account. As to steel, Bessemer's improvements were so great as to eclipse all others. Mr. Bell remarked that his personal acquaintance with the manufacture of iron at home and abroad for many years led him to suppose that there had been no change in the relative position of our own and other nations. The present state of trade had led many to suppose that more rapid mechanical progress was being made abroad than in our own country, but this, he was persuaded, was a mistaken conclusion. In this country the royalties to be paid in connexion with mines were excessive as compared with those of the Continent, but this was counterbalanced by the expense to which foreigners were put in procuring fuel. Nor was it true that foreign workmen were better educated than those of Britain: neither can be looked on as superior, scientifically, to the other. Again, in Britain there was greater facility for reaching a seaport, owing to our insular position; but the easier charge for royalty and the lower railway charges compensated for this. This did not, however, account for the disappearance of much of the trade, which was wholly due to the cheaper rate at which labour is obtained abroad. He concluded by showing that on an examination of the economic position of the workmen they stood on almost perfect equality as to the cost of the necessities of life.

Professors Anderson, Williamson, and Odling spoke very highly of Mr. Bell's paper.

In the Geological Section (C) the most interesting part of the proceedings was the address of the president of the Section, Mr. Archibald Geikie, especially if viewed in connexion with his lecture, mentioned in a former notice. The

present state of knowledge of the geology of Scotland was clearly set forth; whilst it was allowed to be seen how much is yet undetermined as to the relative importance of time, and erosion by water, and of sudden upheavals as by volcanic action. In this Section, Mr. J. Wyatt read a lengthy paper on "The Gradual Alteration of the Coast Line in Norfolk." It described the result of observation on the changing coast line; and as others had for years past called attention to the waste and erosion by the sea constantly in progress, the author showed that the geological changes in this part of the island were not all to the loss of the nation. On the contrary, he proved that in West Norfolk there was a continual addition to the area. A secondary object of the paper was to enforce the necessity of accurate records of the changes of coast lines, and the author suggested that this should not be left to individual observation, but should be undertaken by a responsible department of the Government, who should combine the two systems adopted by the Ordnance and Admiralty surveyors, and so secure by periodical surveys accurate maps of the changing line of the coasts, the fluctuation of the levels of the sea bottoms, and the nature of the deposits within a given distance of the shore. In the same Section, a paper read by Dr. Clement Le Neve Foster.

The Biological Section (D), presided over by Professor Sharpey, was divided into two departments, viz., "Zoology and Botany," and "Anatomy and Physiology." In the first of these a paper bearing upon a subject of considerable interest to readers of the *Builder* was read by Mr. A. Murray, entitled, "The Future Administration of the Natural History Collections of the British Museum." It was a merciless, but apparently needed, exposure of the system of formation of the collections, that has prevailed. This was followed by a paper by Dr. Lander Lindsay, entitled, "Is Lichen-growth any Criterion of the Age of Pre-historic Structures?" In the other department a paper was read by Dr. Davy, "On the Influence of Air on Vital Action, as tested by the Air-pump." The author described experiments which showed how much longer some animals are capable of resisting privation of air than others. In one instance an egg, an inchoate animal so to speak, was hatched, producing a healthy chicken, after having been acted upon by an air-pump twenty-six days; a young bird expiring in about half a minute, a fish—the minnow—in about half an hour, the frog and toad in about the same time, the earthworm in about an hour and a half; insects, such as the bug, dragonfly, and butterfly, after apparent death for more than an hour, recovering on exposure to the air, and that repeatedly. By other experiments on birds by means of submersion in water, he showed that different species vary greatly in ability to bear exclusion of air: thus while all the snake-birds of which he had made trial expired under water in a minute or less, the buzzard lived about twenty minutes and a half, the common fowl about four minutes and a half, the goose and duck about ten minutes. Reasoning on the results, he infers that each individual animal has something peculiar in its organisation determining its peculiarities of function or action, peculiarities more readily described than accounted for. He holds the subject to be in a great measure mysterious, nor is he sanguine, referring to the new and ingenious views on the genesis of species, that they will tend, except partially, to enlighten the subject, considering that life itself is a mystery, and the origination of life, as regards Natural Science, an unsolved problem.

DISCOVERY IN SHEFFIELD PARISH CHURCH.—In erecting a new clock, it has been necessary to cut a circular hole in the north side of the tower, for the reception of one of the dials. In doing this a stone was found embedded in the rubble filling of the wall, measuring 11 in. by about 12 in., and about 9 in. deep. The face of this stone was carved with a simple variety of the indented chevron moulding, and had evidently formed a portion of an arch in the Norman church. Judging from analogous cases, this stone, it is thought, had probably been fixed in the chancel-arch, its size indicating that the span of the arch would be 16½ ft. The pattern upon the stone fixes the date of the church as in the twelfth century, thus agreeing with the opinion of Hunter.

ARCHITECTURAL DOINGS IN GERMANY.

Prussia.—In Berlin, the rebuilding of the cathedral, or "dom," has for some time been determined upon, and the first active step in this direction was a public competition by Prussian architects. The conditions these gentlemen had to bear in mind were manifold and difficult, particularly as the preservation of several existing parts was insisted on. Thus the "campo santo," on the north, which will ultimately be decorated with frescoes by Cornelius, was to be retained; the foundations towards the east, abutting on the Spree, were again to be made use of; the Royal Dispensary, on the south, was not to be interfered with; and whilst certain liberty was given as to the western extension, still the new building was not to exclude a view of the museum from a certain porch in the Palace. Whether these conditions crippled the competing architects too much, or whether the designs submitted were all open to serious objections, we know not, but certain it is that no better design was obtained than one prepared some years ago by the late Professor Stüler, and accordingly his plans are to be carried out. The cathedral, which will be of classic style (Corinthian), will have a length of 230 ft. by a height of 140 ft. to the ridge. A dome 190 ft. high will rise above this, carrying a tower, which, including the cross at top, will be 70 ft. high, giving a total of 400 ft. The cost is not to exceed 3,000,000 thalers, or about 450,000£.—The new Hôtel de Ville, of which we have a model in the Paris Exhibition this year, is now rapidly advancing towards completion. The style is essentially German Gothic; but the dark brick is effective, and the internal arrangement very complete. The great central tower is unique in its upper treatment, being crowned with a steeply sloping roof, flattened at the apex, and forming an octagonal plateau. From the corners of this plateau rise eight strongly curved ribs, terminating in a flag-post, and within this sort of open crown will be hung the clock-bells. We doubt the wisdom of an arrangement whereby the bells will hang utterly unprotected against the inclemency of the weather.—Count Blücher is about to erect a mansion of great size and cost on the "Pariser Platz." Mr. Richter is the architect.

The late political changes in Germany have necessarily had their influence upon this city, which is in reality, though scarcely as yet in name, the capital of Germany. One of the first necessities was the extension of the War Office, and the erection of a new wing on the park side of the present building has been decreed.—Baurath Herrmann (his full title is "Baurath and Oberbauspecter,"—the latter rather a mouthful) has received the order to visit London and Paris, in order to study the Parliaments of both capitals; this, too, is a sign of the political times, as also the fact that the subject competed for at the Academy of Arts this year was "A Design for a House of Parliament for the North German Reichstag." Mr. K. H. Schäffer, architect, of Brandenburg, was the successful candidate.—Some sixty students, who were accompanied by two professors, have just returned to the Academy of Architecture, after their annual sketching tour. They extended their trip as far as Kiel and Hamburg, where they were received with great attention. Among other civilities afforded them, the Hamburg American Steamboat Company gave them a trip down the Elbe, on board the *Germania*. We know from personal experience the value of these annual sketching tours under the guidance of the masters attached to the German "Academies," and recollect meeting a bevy at Nuremberg. Scattered throughout the town, in the churches, on the Schloss, we found them, sitting alone, or by twos, on their camp stools, sketching, and often colouring in too. The masters would go the round, now stopping to correct a perspective sketch, now pointing to peculiar features, perhaps comparing them with others elsewhere; or they would fix a date, or help to take a measurement. The evenings are passed sociably, the professors mostly joining the students, and losing no prestige by so doing.

—A year or so ago Frankfurt would have had a paragraph to itself: now it must need stake its place here, as elsewhere, under Prussia. We noticed briefly recently that a committee had been formed for the rebuilding of the cathedral. On the evening of the 26th ult., a well-attended meeting was held in the *salle-à-manger* of the Hôtel du Nord, those present being mostly members of the Archaeological Society and the

Artists' Club of Frankfort. There was but one opinion as to the desirability of reconstructing the dom as soon as possible, but the next two proposals were the subject of warm discussion. The first proposal was that the tower should be restored to its precise form before the fire, but this was met by a counter-proposal that a spire should take the place of the former cupola, which, it was contended, was not in keeping with the character of the tower itself, and should therefore not be replaced. The other proposal was one of ways and means. Some argued that all Germany should be appealed to for funds, inasmuch as the Dom was a national monument, intimately associated with the history of the nation for a thousand years. Others held that the Frankforters had ever helped themselves, and would do so now. The result of the meeting was the appointment of a committee, consisting of the leading members of both societies, for the purpose of considering both questions and reporting thereon. In the meantime we hear of subscriptions coming in from all sides. The King of Prussia has ordered 30,000 dollars (4,500*l.*) to be paid annually to the fund, and the young King of Bavaria, who promises to be as great an art-lover as his grandfather, "old Ludwig," has contributed a donation of 5,000*l.*

Austria.—In Vienna there is comparatively but little doing, owing probably to the slow recovery of the nation from the effects of the late war. The principal object of any interest and size is the new "Conservatorium," which is being erected under the auspices of the Association of the "Friends of Music." The building, which is Renaissance in style, is estimated to cost upwards of 50,000*l.*, and is being executed from the designs of Mr. Theophil Hansen, to whom the first place was accorded in the late public competition for this object. The Emperor, who takes a great interest in the matter, has presented the Society with the site, free of all expense, for ever, and has, moreover, granted them the very questionable proceeds of two "State lotteries." The Votive Church, for some years in course of construction, has come to a standstill for want of funds, but an effort recently made to meet the remaining expenses has been so far successful that the works are again to be continued. The church, however, will hardly be completed for the next five years, and even then much of the stone carving will necessarily remain in block.

VENTILATION IN AMERICA.

We have received from Mr. L. W. Leeds, of Philadelphia, a pamphlet on Ventilation, being the substance of a course of lectures delivered by him in the Franklin Institute, together with various diagrams and lithographs.* It appears that Mr. Leeds was employed during the late war by the Quartermaster-General and Surgeon-General in directing the introduction of improvements in ventilation in all the Government hospitals, and in making and collecting plans of the buildings under Government control, and is now consulting engineer of ventilation and heating for the Treasury Department, giving him charge of the heating and ventilation of the Treasury buildings, all the custom - houses, marine hospitals, most of the post-offices, and United States court - rooms, these buildings being all under the care of that department.

The following communication accompanied the pamphlet:—

"Although a stranger to you, I feel like addressing an old acquaintance, made so by the constant perusal for many years past of your very valuable paper.

I believe to-day, and have thought for years past, that the *Builder* exerted the greatest influence for the spread of correct and valuable information in sanitary science of any publication now extant, not only in the place of its publication, but in this country as well.

Your frequent articles on Ventilation, and your very urgent appeals for fresh air, greatly interest me. It is with much pleasure, therefore, that I forward you copies of some lectures delivered last winter before the Franklin Institute of this city upon that subject, and which have just been published in the *Journal of the Franklin Institute*. No greater satisfaction could be afforded me than the approval by the *Builder* of the views expressed in those lectures.

You will see that I lay much stress on the

necessity for an opening for the exit for the used air on a level with or below the floor, especially for winter. Although it is but a small portion of the year that dependence should be placed mainly on floor exits for the foul air, yet, as that small portion of the time is just when artificial ventilation is most relied upon, and that there is no disadvantage in leaving them open at all other times, I think this provision for floor ventilation thus becomes one of the most important considerations in artificial ventilation.

It has been my endeavour to illustrate clearly, in a simple way, when floor ventilation was necessary, and when ceiling ventilation was best. I have been a strenuous advocate for the necessity for floor ventilation for fifteen years; but, being opposed by all physicians and eminent writers on the subject, I could make but little impression. But within a year or two, a very great change has taken place in this country on this subject. It is now admitted by all thoughtful and intelligent writers upon the subject to be of great practical importance.

The adoption of this principle by the Government during our late war was of great advantage in this respect.

I should infer, from the tenor of frequent communications published in the *Builder*, that you Englishmen have not considered in all its bearings the effect of dispensing with that great charm of an English home, "the fireside." I know the open fire has its great inconveniences, and is entirely inadmissible in many buildings, but I think you have scarcely comprehended the value of an open fireplace alone, even without the fire, for winter ventilation. I think, therefore, the remarks in the lecture upon that subject will apply to you as well as to the Philadelphians.

It seems to me best not to encourage the thoughtless or casual observer to believe that any good ventilating arrangement can ever be made to work automatically. Automatic feeding machines or drinking apparatus, or automatic dressing machines, I think would be more likely to work successfully than any automatic ventilating machine—that would supply us at all times and in all places with air of just the right temperature and just the right quantity to meet all the various changes in the external atmosphere and the constantly varying condition of our physical system. I think we must depend only on the proper education, and on the intelligent, thoughtful care of every one to know and see that he is careful to breathe nothing but pure air all the time."

The lectures are a vigorous protest against the want of provision for the supply of fresh air everywhere apparent; and numerous simple experiments are made to show the immense importance of fresh air, and the evils that result from want of it. Their circulation cannot fail to effect much good. Mr. Leeds is quite right in urging the value of the open fireplace. In many cases floor ventilation, we agree with him, is important; but this must by no means be taken to mean that exits for foul air in the upper part of apartments are not absolutely required.

Opinions in these matters, supported equally by large experience, strangely differ. Thus, Dr. Templeton, in the very interesting communication printed in our last number, though he points to the occurrence under certain circumstances of a stratum of foul air next the floor, provides in the system he has carried into practice, for outlets and inlets only at the top: "the friction of the current on the volume of air in the room soon sets the mass in gentle motion, revolving on a horizontal axis, and sweeps out, so to speak, a portion of the impure air previously in the room. In a letter further explaining his views, Dr. Templeton writes,—

"I can best explain the principle thus: suppose a circular pond in a meadow with a stream running tangentially across one point of the circumference and freely communicating with it; the friction of the fluid will very soon excite in it a revolving motion round its centre, acquire to it a portion of fresh fluid from the stream, and detach from it a part of that which has already circulated; the activity of the change depending on the size and velocity of the stream. My stream is fresh air, and the pond the room to be ventilated. It will be seen at a glance how important it is that the stream's course should be as direct as possible. My experiments confirm this."

The papers sent by Mr. Leeds include illustrations of a stove made by his direction for the American Western Hospitals where they burn bituminous coal. Many hundreds were made, and they proved, he says, very satisfactory. This stove included a water-boiler on the top of it round the smoke pipe, perforated at the sides,

under the cover, for the escape of moisture. The lower part is cased, and fresh air is brought from outside into the chamber thus formed and passes into the room warmed. The objection that occurs to us, without further explanation, is the contact with highly heated metal of the air brought in to supply the apartment. The same objection seems to apply to the arrangement for temporary hospitals illustrated.

We sincerely hope that America will listen to the arguments and statements of Mr. Leeds as to the vital importance of fresh air.

INDUSTRIAL EDUCATION.

WHILE various continental nations are going ahead in manufacturing skill, we seem to be standing still, and to stand still in such a position is to retrograde, all the more especially while other nations are surpassing us. We are glad to observe that a consciousness of our position in this respect is awakening manufacturers themselves to the necessity for being up and astir in the industrial race. Messrs. G. H. Nussey & A. Nussey, of Leeds, manufacturers, have issued a pamphlet, "A Technical Institution for Leeds and District," in which they take an enlightened view of our shortcomings and of what we require to enable us to hold our own in the markets of the manufacturing world. The late wool sales, they state, show effectually the progress of the foreign woollen manufacturers, half the wool having been bought by them for their own consumption, although fifteen years ago foreign buyers were rare. The woollen manufacture is what the authors of this pamphlet are more especially interested in; but the question is one which applies to all our manufactures. Messrs. Nussey suggest that a school of weaving and designing should be established at once in Leeds, and the present local school of art improved. They propose:—

"A building to be erected, with every convenience for lecture-rooms and workshops, suitable for the various trades taught. The building to be as handsome as possible, compatible with economy—the taste of the inhabitants of a town being much improved by being surrounded with beautiful objects. An efficient staff of professors to be attached. The professors to give free lectures twice a day (say morning and evening) in order that all classes may enjoy the advantages of the institution. Pupils to be taken either as in or out-door pupils; the terms to be as low as possible, only high enough to meet that department pay for itself. Comfortable quarters for the boys to be considered as a most important part of the arrangement of the building."

They state that "in our standard textile manufactures, cotton, woollen, worsted, silk, hosiery, and articles of common use, we are almost nowhere," and that it is "in these trades we find the greatest want of technical education." The inventive genius of foreign designers has much to do with the superiority of foreign goods, as in those of silk especially. The Lyons designers, for example, are all educated at the School of Fine Arts and Manufactures, where they are taught to weave, as well as to design and paint flowers, &c. Even the partners in a firm, or one of them at least, must have had artistic education. In short, the sound system of technical and scientific education for workpeople and employers that has been established by foreign Governments, and the great attention that has been paid to the scientific improvements relating to various manufactures, are the chief cause of the advance of manufacturing industry abroad.

The Nottingham manufacturers are astir on the subject. At a special meeting lately of the local Chamber of Commerce, the following motion to the Associated Chambers of Commerce was unanimously resolved upon:—

"That the importance of more extended education in relation to the various arts and manufactures of this country is recognised by us, and it is recommended that an inquiry should be made at the instance of the Government as to the state of education abroad as it affects the industries of various nations, and that a committee be appointed by the associated Chambers to counsel and assist the Government and the Chambers of Commerce in the promotion of industrial education."

The chairman said, that since this motion was drawn up he had ascertained that the Government had made some appointment for the purpose of making inquiries into industrial education abroad. The other day Mr. B. Samuelson, M.P., called upon him and informed him that he was commissioned by the Government to pursue this course of inquiry. He (the chairman) suggested that some gentleman should be associated with him in the important work, and, having communicated with the Government on the subject, they had appointed Pro-

* "Lectures on Ventilation." By Lewis W. Leeds. Philadelphia, U.S.: Lippincott & Co.

* See p. 676, ante.

fessor Leone Levi to assist him. It was high time that the subject was properly taken up, as there could be no doubt that foreign countries were beating us in our manufactures. The reason, as he went on to show, was entirely owing to our present system of education, and he was quite sure that until that system was improved no alteration could take place.

At a meeting of the central council of the Yorkshire Union of Mechanics' Institutions, also under the presidency of Mr. E. Bailes, M.P., it has been resolved to institute an inquiry into the present means for the promotion of scientific and art education in Yorkshire, and to ascertain the opinion of the principal manufacturers and others as to what measures are required to increase and extend the means for the technical instruction of the managers and foremen of manufacturing establishments, as well as the more rudimentary scientific education of artisans. In the instructions given by the president to Mr. Henry H. Sales, who is charged with the inquiry, are the following directions:—

"You will inquire chiefly into the instruction given in the classes of the several institutions under these heads:—
1. The art of design, and especially mechanical drawing.
2. Mathematics, especially applied to mechanical art.
3. The principles of mechanics.
4. Chemistry, especially applied to dyeing. You will learn distinctly whether the gentlemen whom you consult are of opinion that Mechanics' Institutions are calculated, if properly used, to effect the object in view, or whether it is essential to have some institutions of a higher class, exclusively designed for scientific and art education, and supported partly (and to what extent) by the public funds. You must also endeavour to judge how far our artisans would avail themselves of the opportunities of technical education, if offered, and whether, if even, it is sufficient, we must look to the means of supporting students during their period of study."

In connexion with this subject we may here remark that a project for transforming the machine gallery at the Paris Exhibition into a gigantic international workshop is said to be just now before the Emperor. In estimating the whole of the steam engines employed at 2,000 horse-power, 4,000,000 francs yearly, it is estimated, might be realised by the rent, and a population of workmen now scattered might be fixed on the banks of the Seine. "It would be," says the Engineer Brissac in conclusion, "a cyclopean school without rival in the world, which would render to Paris, to France, and to industry, the greatest service."

Technical education in Austria is now being attended to with increasing interest. The Imperial Royal Polytechnic Institution at Vienna, established in 1816, for the object of promoting instruction in the practical sciences, at first formed a kind of preparatory school for artisans, but it has since been gradually extended and improved into what may be termed a scientific university; and since October, 1865, by imperial decree it has been created a "Hochschule," power being given to it to grant diplomas, and the entire course of education being made strictly compulsory, whilst a higher scale of knowledge is demanded from students applying for admission. Most of the students enter at about eighteen or nineteen years of age, having generally previously passed through an education of six annual courses in the Realschulen (Government schools, where solely technical subjects, chiefly excluding the ancient languages, are taught), preceded by four annual courses in the Hauptschulen (preparatory Government schools for children).

THE ANCIENT BRITISH REMAINS IN YORKSHIRE AND DERBYSHIRE.

The lateness of the harvest has prevented the resumption of the scientific examination of the Yorkshire tumuli until now. A tumulus examined near Weaverthorpe has given up relics almost if not quite unique. In excavating, quantities of red deer and other animal bones, all split longitudinally, for the marrow, were found. In the centre, in a circular grave of 10 ft. diameter, and nearly 6 ft. deep into the solid chalk, reminding us of the so-called chalk-pits elsewhere found and not yet clearly accounted for, was the skeleton of a Briton, a warrior laid with his weapons beside him. The body was on the left side, with the head towards the north-east, and in a contracted position as usual. The right hand of the skeleton grasped a fine bronze dagger of the round ended (and early) type. The ovate-oblong blade was delicately thin, and the broad end had the three rivets (bronze) which fasten it to the handle, the mark of which still

remained. A flint knife lay upon the dagger, and below it was a double-pointed awl or bodkin, of bronze,—a curious and novel implement. Over the breast were five very large jet buttons, and one of clay; and at the back of the skeleton, in the position it must have held when slung over the shoulder during life, was the fine bronze battle-axe (a model of the old stone axe) having the mark, on the patina, of the wooden handle. Only one tumulus of similar interest to this has been found: that is recorded in Bateman's "Ten Years' Diggings." The inquiries will extend over many months.

An interesting discovery of Celtic funeral urns has been made in the railway cutting near the picturesque hamlet of King's Newton, Derbyshire, in a situation not hitherto suspected as being likely to afford matter for archaeological investigation. The height of the situation, the absence of any covering upon the urns save earth, and the paucity of other relics such as flints or bronze, prove that one of the early tribes had formed here a regular burial-place for the ashes of their dead. Cremation had been practised elsewhere, and the urns then brought to the grave-hill from the distant place where the funeral pyre had been erected. Small vases containing the ashes of infants were found; but in no case did the layer urns contain the smaller vessel called by antiquaries the "incense cup," or any bones except those of human beings. The ornamentation exhibits evidences of considerable taste and ingenuity, one fragment presenting the unusual feature of a double ring of crosses carefully impressed by means of a stamp.

IMPERIAL SCHOOL OF FINE ARTS, PARIS.

This year the subject for the grand prize in architecture was "Un Palais de l'Exposition des Beaux Arts."

The 1st prize was awarded to M. Henri Jean Emile Benard (*élève de Pécarré*).

The 2nd prize to M. Pierre Henri Manoux (*élève de Guenepin*).

Both designs were excellently drawn, and would form a very interesting feature in our architectural exhibition, if their authors could be prevailed upon to send them.

ECONOMIC AND REFORMATORY LABOUR IN PRISONS.

This is a subject we have occasionally urged in the *Builder*, and we do not see why prisoners should not be set to useful and remunerative employment, not only for the behoof of the public, but for their own behoof. It is odd that while such a system has been found practicable in other countries it should usually fail to be so in England. The Howard Association, of which Lord Brougham, Sir John Bowring, and other well-known men are patrons, have issued a circular on this subject, in which they say:—"English prisons are, in too many instances, merely places of temporary detention, and of very inefficient deterrence, inasmuch as many prisoners are re-committed thirty, forty, fifty, or even more times; and their condition, as to food, clothing, and lodging, is superior to that of multitudes of the honest poor outside; thus frequently offering an inducement instead of a discouragement to crime."

The objection sometimes urged, that prison labour would compete unfairly with honest workers outside, will be found, on examination, to be very superficial. For the prisoners, if not trained to remunerative labour, are a dead weight upon the ratepayers whilst confined, and will again be a nuisance and expense to the public when discharged. Further the number of workers in prison would, at most, be very small compared with those outside. In many foreign prisons, the strict enforcement of prison labour is found to be deterrent and preventive, as well as reformatory.

Many imprisonments, especially of poverty-stricken misdoers, are a heavy and wholly unnecessary burden on the community, and might be beneficially avoided by such preventive measures as making fines systematically payable by instalments, as in county-court debts. Prevention is better than cure.

In a few of the best managed of our prisons, as at Bedford, Holloway, Manchester New Bailey, Newcastle, &c., the prisoners earn from 5s. to

10s. each per annum. At many others almost nothing, as, for instance, a *farthing a day* at Exeter gaol. But the convict prisons (especially in Ireland) are far better. Some of the American prisons are wholly self-supporting, and return a net profit to the State, with excellent moral and preventive results in addition. But in the average of English prisons (good and bad together) each prisoner costs 30s. per annum, and earns less than 2s. Yet, to show what can be done in this country (and even by women), the inmates of the female House of Refuge at Greenheys, Manchester (under private management), earn 18s. each per annum."

Mr. Tallack, the secretary of the Howard Association, has sent to the daily papers a petition from convicts in Western Australia complaining of great cruelty and mismanagement by the Governor. The petition is accompanied by a corroborative letter from one of the warders themselves, and it is to be hoped the Government will look into the matter, keeping in view, of course, as they will, the consideration that such convicts cannot, as a class, be the best of characters.

MONUMENTAL.

A STATUE of Lord Clyde, by Baron Macchietti, has been set up on the eastern side of Waterloo-place, near the Duke of York's Column and opposite the Franklin Memorial. The statue is 8 ft. 3 in. in height, and represents the general standing in undress forage-jacket, with his right hand in the pocket, whilst in his left he holds the turbaned species of helmet usually worn by officers in the Indian service during the hot seasons in that part of the world, and in front of which the general's sword is suspended from the waist-belt. The statue stands on its own proper feet without any other support. The pedestal is a massive piece of workmanship. The base, some 12 ft. square, is composed of blocks of grey granite, and on the front part of this is a crowned female, said to be intended for the Empress of India, seated on a couchant lion, and holding in one of her hands an olive or palm branch. Behind this group is a pillar of polished red granite, the floral mouldings being in bronze, supporting the cornice and figure. The entire height from base to summit is 26 ft. The statue looks small compared with the basement, but is a good likeness and easy figure. The sire of the lion may be found in Trafalgar-square. The least satisfactory portion of the design, and this is very unsatisfactory, is the female figure, who sits weakly, with the legs crossed, and is altogether *mesquine*.

Mr. W. Day Keyworth, of Lower Belgrave-place, has just completed a statue of Andrew Marvell, which, with a view to its erection in the new town-hall, Mr. J. Widsip intends to present to the corporation of Kingston-upon-Hull, the birth-place of Milton's secretary. The statue, which is 7 ft. high and of Sicilian marble, represents the patriot at the moment when he may be presumed to be rejecting the bribe offered to him by Lord Danby on behalf of the king. The sculptor cites as his authority for the features the portrait of Andrew Marvell in the British Museum, which pictures a fine handsome man in the prime of life.

WATER SUPPLY: SEWER VENTILATION.

THE Liverpool Water Committee of the town council have just recommended, and the council adopted the recommendation, that the water engineer, Mr. Duncan, be requested to undertake the execution of the works in connexion with the Yarrow reservoir, the filter-beds, and the diversion of the river Douglas.

Mr. Alderman Cooper said he saw that the highest tender was for 151,000l. and the lowest 88,000l. Now, he wanted to ask the chairman of the water committee whether any communication had been made to the person who sent the lowest tender. He thought trouble might be saved by taking care, when accepting tenders, to have the usual guarantees with them for the performance of the work.

Mr. Beloe said that by some means the amounts of the tenders appeared, to their surprise, in the public newspapers. How the gentlemen of the press obtained their information he had endeavoured in vain to discover. But so it was, the tenders were put in, and the lowest tender was found to be far below the

estimate of Mr. Duncan, and he was not surprised to find that Messrs. S. Sim & Co., instead of giving the securities they otherwise would have done, declined to carry out their tender. They reserved the names of their securities, and their tender was accepted subject to those names being furnished. He thought the withdrawal of Messrs. Sim & Co. was entirely attributable to the publication of those figures in the newspapers. He had the authority of the town-clerk for saying that it was quite open for them to withdraw. The tender has not been accepted unconditionally; on the contrary, it was conditionally, on the guarantee being thought acceptable.

In March last the Liverpool corporation came to the determination to ventilate the sewers of the borough, and without loss of time the work was in rapid progress. At a meeting of the Liverpool Burial Board last week, it was stated that the number of interments during the past month were only 413, when compared with 786 in the same month of last year, showing a decrease of 373, and that ever since the sewers had been ventilated the death-rate had sensibly decreased in the borough.

The new reservoir connected with the water-works of the town of St. Columb, in Cornwall, has just been completed. It will hold sufficient water for the use of the inhabitants for three months, in the event of no rain falling during that time. The residents seem well pleased with the prospect of having the convenience of an ample supply of water brought to their houses, and regard it as a great public boon, notwithstanding what has been said against the introduction of the Local Government Act.

THE STAGE.

Haymarket Theatre.—As Juliet Mrs. Scott-Siddons has made a considerable advance in public estimation. It is a very excellent performance, superior as a whole to her *Rosalind*. Several crudities observable in her acting on the first night of "Romeo and Juliet" have been overcome, and a full house every night recognises her merits. Mr. Howe plays *Mercutio* with great dash and spirit, and Mr. Kendal *Romeo* with considerable elegance. Some suitable and agreeable scenery has been painted and selected, so that the spectator has no doubt the action is going on, we will not say precisely in Verona, but at any rate in Italy. The balcony scene, with the city in the distance, is, of course, made a striking feature. Tradition points, with or without truth, to a house in a close street in Verona as the residence of old Capulet; but we make no objection to the scene-painter on the present occasion for going a little way out of town.

Lyceum.—"The Lady of Lyons" on Monday, was received with acclamation by a full house. Why, it would be hard to say, for it was certainly not well played; indeed, to tell the truth, it was played very badly. Mr. Fechter, clever actor as he is, managed to make himself look more like the young lady's father than the enthusiastic young poet-lover figured by the author. Miss Charlotte Leclercq (*Pauline*), charming in many things, is not equal to the part; and Mr. G. Jordan, who played *Beauseant*, must have fancied he was playing *Glavins*, the comic conspirator. There is very little that can be honestly praised in the production, beyond some very pretty landscape scenery, painted by the Messrs. Greive.

Bristol.—The new theatre in Park-street is progressing rapidly towards completion, though much requires to be done in the way of embellishment and decoration. The front, somewhat Italian in style, is of freestone, with Pennant columns at the entrance. The dress-circle will seat nearly 250 persons. On extraordinary occasions the corridor may be used by spectators, as it presents a full view of the stage. What about the draught?

Theatre Royal, Doncaster.—This theatre, the property of the corporation of the town, is reopened for the season, after undergoing a thorough reconstruction from the designs and superintendence of Messrs. Thomas Moore & Sons, architects, of Sunderland, who are also at present engaged upon the building of the new Theatre Royal and Opera House, Leeds, and the new Theatre Royal, Yarmouth. The builder engaged at Doncaster was Mr. Thomas Wood, of that town; decorator, Mr. Jackson, of Leeds. The modelling was by Mr. Alfred Walker, also of

Leeds; the gas arrangements and sunlight, by Mr. G. L. Smith, of Birmingham; and the upholstery, by Messrs. Roberts & Woulldhave, of Leeds.

A Sweet Programme.—An American has invented a tasteful play-bill for the French theatre. The programme and names of artists are printed upon an agreeable paste by means of juice of chocolate, so that the programme can be eaten. This is a new way of having a taste for theatricals, and "devouring their discourse."

ACCIDENTS.

A FATAL accident has happened in the Strand, on the site of the new law courts, or rather in the street immediately fronting the site. A number of workmen were engaged in removing the stone pillars of the archway leading to Clement's Inn, and opposite St. Clement's Church, when the standards—two long poles, crossed—suddenly canted, and fell to the ground, striking a young man on the head, and crushing him to death. He was one of a number of persons who were standing watching the progress of the operation.

A labourer has been killed while engaged at the gasworks, King's-cross, removing the debris of a wall that was being knocked down. Part of the wall between the top and the bottom had been removed, the top, however, being left flush. A man who was on the top of the wall stepped inadvertently upon the part from which the underlayers of bricks had been removed, which gave way, but as he was falling a comrade caught hold of him and saved him. He, however, dropped his pickaxe, which, falling a distance of 25 ft., buried its point through the neck into the chest of the deceased. A verdict of "Accidental death," has been given in this case.

A bricklayer has been killed by a fall from a scaffold in Queen-street, Essex-road, Islington. Deceased was handing boards down from the scaffold, which was being taken down, to another bricklayer, who was standing on the ground, and when he came to the last board, instead of drawing the board toward him, and holding on to the pole while he lowered it, he lifted it up and pushed it from him, in doing which he lost his balance and fell into the street, a distance of about 11 ft. No one was to blame. A verdict of Accidental Death was also returned by the coroner's jury in this case.

Twenty houses have been burned and damaged at Rotherhithe, near the water side. The fire appears to have broken out in a bakery carried on in Rotherhithe-street. The fire swept along the street both east and west, and within half an hour twelve of the adjoining houses were in ruins. The flames swept across the street and set fire to a ship's bows and rigging, and it required the incessant exertions of the firemen to prevent it being wholly burned. Several houses in Lavender-lane were also burned down.

At St. Michael's Church, Bishop Stortford, an accident has occurred. Some years ago the large fire-light plain window at the east end of the chancel was taken out and a smaller coloured one put in its place, the interstices being rather tastelessly filled up with bricks. Workmen had been engaged in cutting away the face of the brickwork to the depth of 4 or 5 inches, and substituting flint stones to match the other parts of the wall. At the time of the accident two bricklayers were upon the scaffold engaged in filling up a portion they had cut away over the top of the window, and immediately below a row of stone coping partly supporting a foot or two of wall, the stone battlements, and a stone cornice. Suddenly and without any warning the stone coping, with the superincumbent wall, battlements, &c., fell forward on to the scaffold, which all fell outward to the road, hurling a lad who was ascending a ladder with a hod of flints on his shoulder, backwards on to the opposite side of the street, and overthrowing the iron railings and stone curbing under the window. One of the bricklayers fell upon the fallen railings and had one of his arms terribly lacerated. The other fell to the ground close to the church wall, and was partly buried by the falling debris. All three were taken up insensible.

At the new parish church at Strand a shed standing in the churchyard, and close to the new church which is in process of erection, was found to be in flames. In about an hour, however, the fire burnt itself out. The shed contained all the workmen's tools, and also a considerable quantity of prepared oak timber intended for the roof of the nave. The whole was destroyed, and the

loss of the timber will necessarily lead to delay in the building of the church. The loss is estimated at little short of 700l., which is wholly uninsured, and will, therefore, fall upon the contractors, Messrs. Wall & Hook. The cause of the fire is not known, but it is conjectured that a cinder from the engine used in the yard may have lain smouldering, and thereby led to the catastrophe.

A fatal accident has occurred at the Norman Station. Workmen have been pulling down the old buildings, and whilst engaged in the work a portion suddenly gave way, and, falling upon the foreman, he was buried in the debris.

A church spire has been destroyed by lightning at Sutton-in-Ashfield, Notts, where the parsonage-house had been struck by lightning. During the second storm the lightning struck the spire of the church at the distance of only a few yards from the scene of the previous visitation. No lives were lost, but the spire was shattered, many stones being thrown from it, and the upper portion twisted round. A slight wind will probably complete its destruction.

THE COAL-CELLARETTE.

A CAPITAL notion; and a capital name. You cannot have a coal-cellar in the club-room or the first-floor of an hotel; but you can now, thanks to Mr. Thompson, of Sloane-street, have a coal-cellarette, which will contain a very large quantity of coals, in an ornamental form on a small ground space. The coals are removed from the bottom of the cellarette, and the small being equally consumed with the large, dust and dirt are avoided. Its capacity, too, being made equal to the consumption of a whole floor, it can be used for all the fires, as well as for replenishing the scuttles for the upper floors (as in the case of large hotels), when placed in the corridors.

The form of the cellarette is that of a pedestal, the top being movable for the reception of the coals. It varies in size, is capable of holding from 84 lb. to 40 cwt., and can be mounted upon castors or rollers, rendering it easily movable.

It was patented under the title of the London-derry, but it is more likely to become known under its second title,—Thompson's Coal-Cellarette, which at once explains its purpose. We are not surprised to hear that it is in use at the Bank of England and many other large establishments.

LEEDS MECHANICS' INSTITUTION AND SCHOOL OF ART.

THE new building in Leeds, intended to be occupied as the Mechanics' Institution and School of Art, is making rapid progress towards completion, and will be opened, it is expected, in May next. The first stone was laid on the 31st of August, 1865. It will provide accommodation for the following departments:

1. The Institution department, offering a well-selected library of upwards of 12,000 volumes; seasonal lectures, illustrative of science, literature, and the arts; a news-room, well supplied with reviews, magazines, daily and weekly newspapers.

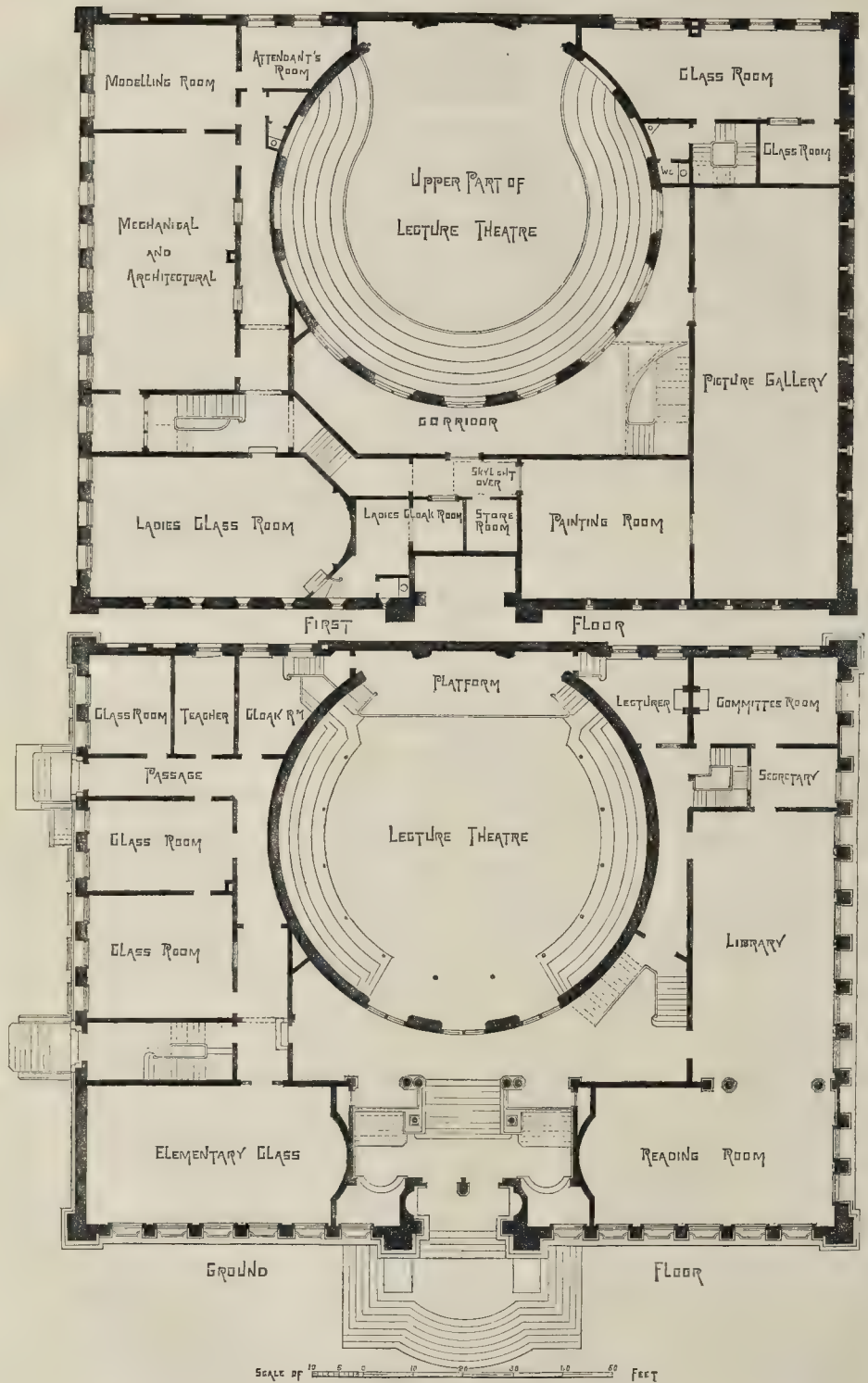
2. Evening classes, for instruction in writing, reading, arithmetic, book-keeping, the higher branches of mathematics, French, German, mechanical and architectural drawing, and chemistry, both theoretical and manufacturing.

3. A school of art, ably conducted by trained masters, affording instruction to above 2,000 pupils in the central and other schools.

4. The scholastic departments,—viz., a girls' school, with upwards of 130 pupils; and a boys' school, with 190 pupils; both these schools are self-supporting, and enable the committee, by the employment of the same teachers, to conduct the evening classes for males and females, at a comparatively small expense.

For the first-mentioned department the principal feature is the lecture-room, a circular hall, 73 ft. in diameter. The room is approached by the principal entrance on the ground-floor, and rises to the top of the building, a height of 62 ft. An ornamental coved ceiling, a roof of a somewhat novel construction, with windows immediately below it, completes the architectural features of this hall, which, with the assistance of the gallery, is capable of accommodating 1,500 persons. On the same floor with this hall are situated the reading-room and library, and large, well-adapted rooms for the purposes of

LEEDS MECHANICS' INSTITUTION AND SCHOOL OF ART.





LEEDS NEW MECHANICS INSTITUTION AND SCHOOL OF ART.—MR. CUTHBERT BRODRICK, ARCHITECT.

the Ladies' Educational Institution. The boys' school is provided in the south end of the basement floor, while on the north are refreshment-rooms and porter's residence. A tea-room is also placed in this part of the building. It is immediately below the lecture-hall, and, like that room, it is circular—the diameter being equally large, and the height 16 ft.

Two rooms for the accommodation of the science classes are to be found on the first and second floors, but the greater part of these portions of the erection is entirely devoted to the School of Art, the importance of which in a large manufacturing town like Leeds it is impossible to over-estimate. On the first floor the following rooms belonging to the school have been placed:—The ladies' class-room, the mechanical and architectural room, the modelling-room, the painting-room, and the picture-gallery. The proportions of the last-named part of the building are as follows:—Length 81 ft., breadth 28 ft., height 24 ft. It is intended to establish in this gallery, partly out of the profits of the National Fine Art Exhibition to be held in Leeds next year, and partly, it is to be hoped, from the munificence of the inhabitants, a fine art collection, which will form one of the permanent, as it will be one of the most valuable, institutions of the town. Mr. Walter Smith, we may mention, is the head-master of the Leeds School of Art. On the second floor the only part available is the south side, the centre being occupied with the top of the lecture-hall, and the north end with a similar portion of the painting-room and picture-gallery; but here space has been found for a suite of boys' class-rooms, including lecture-room, elementary class-room, and masters'-room.

The architect of the building is Mr. Cuthbert Brodrick, the architect of the Leeds Town Hall. The style of architecture adopted is Italian. The west and south fronts are of stone—the principal entrance, approached by a circular staircase, being in the first-named. The lecture-hall, as we have said, is entered directly from the doorway, whilst to the right and left are the reading-room and library, and the rooms appropriated to the Leeds Educational Institution. Access to the School of Art can also be gained from this part of the building, but a separate entrance is provided on the north side. The contractor for the masonry is Mr. D. Nichols, Leeds; for the joiner's-work, Mr. W. Britton, Leeds; for the plumber's-work, Mr. John Hall, Leeds; for the painting, Mr. W. Nelson, Leeds; for the iron-founding, Messrs. Nelson & Son, Leeds; for the slating-work, Messrs. Dauber & Son, Hull; for the stone-carving, Mr. Joseph Holmes, Leeds; and the whole is being carried on under the direction of Mr. J. T. Brown, the clerk of the works. The cost will be about 2,000l.

FROM SCOTLAND.

Glasgow.—A meeting of the Glasgow City Improvement Trustees has been held to consider a report of their committee, which proposed that for the second year of the operation of the Act the assessment should be limited to 4d. in the pound. The adoption of the report having been moved and seconded, Mr. Bain proposed an amendment to the effect that the committee be instructed to select a block of buildings for reconstruction; that in the meantime the trustees delay granting powers to borrow more than 10,000l., or to purchase property except in the block to be reconstructed; and that the assessment be at the rate of 8d. per pound. Another amendment was proposed by Mr. Lang, enjoining the committee to make no more purchases and borrow no more money without consulting the trustees, and limiting the rate to 2d. per pound; while Mr. Wm. Brown moved for the restriction of the rate to 2d., and of the borrowing powers to 20,000l., with an instruction to the committee to confine their efforts in the meantime to a partial specified block. After discussion, Mr. Lang's amendment was withdrawn in favour of Mr. Brown's. On a division, Mr. Bain's amendment was carried against Mr. Brown's by twenty-four votes to five; but when put against the restriction, obtained only nine votes against thirty-one. The report was accordingly adopted.

Peslöv.—The new waterworks have been inaugurated with local rejoicing.
 Machar (Aberdeenshire).—Lord Provost Nicol, Aberdeen, and Mr. A. Forbes Irvine, of Drum, surveyor of the county, forwarded a joint application to her Majesty on behalf of the committee

for the restoration of Old Machar Cathedral. A letter has just been received from Sir T. M. Biddulph stating that "her Majesty learns with pleasure that an endeavour is being made to preserve and restore such an interesting structure." He is also desired to forward a cheque for 100l. whenever the committee feels justified in commencing the work.

THE SOCIETY OF ENGINEERS.

A LARGE party of members and associates of the Society of Engineers visited the extensive engineering works of Messrs. J. Penn & Son, at Greenwich, last week, by permission of the proprietors. Among the company were Mr. W. H. Le Feuvre (president of the Society), Messrs. William Adams, F. W. Bryant, William Mac George, Vaughan Pendred, George Waller, Francis E. Houghton, Thomas Cargill, P. Thorn, A. Thorn, Lewis Olrick, W. H. Maw, F. C. Young, Alfred Williams (honorary secretary), and Perry F. Nurey (the auditor of the Society), &c. On arriving at the works, the visitors were told off into three parties, each of which was conducted over the works by gentlemen connected with the establishment, who explained the various works going forward in the several departments. After an instructive visit of inspection, the members returned to town, and a number of them dined together at the Bridge House Hotel, London Bridge, in the evening.

THE ARCHITECT OF THE HOUSES OF PARLIAMENT.

SIR.—We provincial pigmies of the profession, pursuing our petty projects amid the deep obscurity of commercial communities, scarce lifting our eyes from our dingy drawing-boards, awe when we open both wide in admiration and amaze as some metropolitan Titan deigns to alight among us and undertake some great commission, which, divided, would be a boon indeed to any six of us nobodies; or when we lift one eye perhaps with a hungry glare to note the number of "jobs" which fall to the lot of some lucky local farmer of draughtsmen, acquiring the world-be semblance of our craft by cleverly joining his experience at the bench with the handiwork of his clerks;—we, thus drudging through a half century, perhaps, of inglorious toil till Time lays us unseeing in the earth we have not loaded with our works, yet in our pilgrimage glancing anon at the London papers over our chop and small beer, cannot but fix what we venture to call our minds from time to time on the matters which stir the Olympian heights of architecture.

Thus we, the pigmies, presume to think a little about the battle waged or waging between a living knight of the holy Roman Empire and the shade of a whilom knight of this British Empire, and eke a giant in architecture; and it seems to us in our pigmy judgment (if allowed the term) that, while loyal to his father's memory, the Roman knight is seeking to prove too much, and that the no less loyal sons of our own much honored knight are willing to admit too little. It is scarcely seemly, we fancy, that this debate over the names of two so highly distinguished artists should on either hand run into anything like bitterness; and with such knowledge of the merits of the question as some acquaintance with works of each and some memory of the events referred to afford us, we pigmies think that the fame of both architects is safe with their countrymen without any ungenerous endeavours to exalt that of either at the expense of the other. As to the great building in debate, it was always, as we remember, admitted that the architect derived valuable aid from his gifted condottor, and it was never in the lifetime of the latter asserted, as far as we can learn, that he claimed more merit in the matter than thus accorded him. If from the letters referred to by his son it appears that he gave more aid than has been generally supposed, we cannot see that the reputation of the friend he assisted can be damaged by admitting the fact.

The plan of the building is acknowledged to be Barry's; the style is surely not Pugin's, but of a phase of Gothic work which he and his school always decried. The composition is derived from the plan, and resembles no work we know of Pugin's. The working out of much of the detail was always acknowledged to be due to his unique skill; and by the partial quotations

published from the correspondence, it would appear that the composition of some compartments must also have been entrusted to him, but we do not see that they can prove more. We all would sympathize with the feelings of a son seeking to have justice done to his father's memory, but that of Pugin needs no better monument than his known works, architectural and literary; and all who enter on such a controversy as that in question should surely, we think, beware lest the fame they seek to enhance be not injured rather than benefited by their endeavours, which cannot but be the case should a shade of egotism or self-love appear to mingle in the efforts made on either side to enlist the sympathies of the public.

AN OBSCURE PROVINCIAL.

GOVERNMENT ARCHITECTS AND GOVERNMENT SURVEYORS.

SIR,—In the *Builder* of the 3rd ult. I find a reference to the payment of architects as employed by Government at the Houses of Parliament, &c.; also an account of a deputation to her Majesty's First Commissioner of Works, who evidently is not aware of the usages of his office, sprung up of late years to suit individuals and a clique, to the serious detriment of the Crown property and of the public purse.

Objection is made to the proper payment of a first-rate architect. Now, I would ask, why do the Government pay a surveyor 1,000l. a year, standing fee, and per-centages in addition, for a few hours' work each week? This is a practice that wants inquiring into. The present surveyor is also allowed to do private practice for the builders, and occasionally dabbles in architecture.

There are plenty of equally able surveyors who would devote all their time to the duties of the office for less money. The practice there as at present pursued certainly needs revision. Moreover, the works required to be done for her Majesty's Office of Works ought to be put to public or partial competition annually, and fairly, and not smuggled to one firm only.

The works at the new Foreign and India Offices want looking to.

A LONDON SURVEYOR.

WAGES OF BRICKLAYERS' LABOURERS IN AMERICA.

A LETTER in the *Builder* for September 14th, with the initials "H. N. H.," upon the subject of emigration, and the inducements held out in the United States for the removal of our building operations to a market where their labours would be more remunerative, requires a few corrections, which, as an architect of many years' practice in America, I venture to think I can supply.

In the first place, "H. N. H." has made a mistake in his estimate of the present money value of the "dollar," which he states as 4s. 4d., a price it never could reach—4s. 2d. being rather more than its par value when in gold; but it must be understood that the current value of the dollar is now only about 3s. 6d., and has been less, so that his statement of the rate of wages must be qualified accordingly.

Had "H. N. H." resided in New York or Philadelphia, he would never have asserted that an Irish labourer can live "very nearly as cheaply there as in London." Some years ago, when the Irish and German emigrants were allowed to take temporary possession of unoccupied tracts of land not yet reached by the onward stretch of building operations, and to build their hovels thereon, such, by saving house-rent, might have been the case; but it is so no longer—and to be at all decently housed, even in the humblest manner, requires an expenditure for rent that makes a considerable hole in the wages received at the end of the week. As to cost of living, a recent letter from New York gives the following prices:—Coal, 5l. 5s. per ton (of 2,000 lb. only); flour, 4l. to 5l. per barrel (which seven or eight years ago was, to my knowledge, but 1l. to 1l. 10s.); butter, 2s. 6d. per lb.; so that the apparently increased wages are quickly swallowed up by the disbursements for the bare necessities of life, to say nothing of the luxuries.

Another error that "H. N. H." has fallen into is in regard to the price of building-land in the principal cities of the United States. The rise in the value of real estate there is something

* Vol. xii, p. 954.

Gloucester.—The Earl of Ellenborough is about at once to commence the restoration of the apsidal chapel in Gloucester Cathedral, commonly called St. Paul's Chapel.

Barwash Common.—The new church of St. Philip, Barwash Common, has been consecrated by the Bishop of Gloucester. St. Philip's consists of a nave, north and south aisles, chancel, south porch, and a vestry at the north side of the chancel. The chief characteristic is simplicity. The style is First Pointed. The chancel is apsidal, and has simple lancet windows. There are three windows facing the east, and these have been filled with stained glass by Mr. Bailey, of London. The nave is separated from the chancel by an arch, and from the nave by an arcade of three arches. The roof of the church, which is of timber, and open, is supported by pillars of granite, and the pavement is constructed of local tiles, while on the gable, between the nave and the chancel, there is a bell-cot. The walls are built of native sandstone; they are unplastered. The church will seat about 250 persons. The architects were Messrs. Slater & Carpenter, of London. The builders were Messrs. Baldock & Brooker, of Hurstgreen; and the clerk of the works was Mr. E. Piper, of Robertsbridge. All the stonework was executed by Mr. Balcombe, of Ticehurst.

Danbury.—The ancient parish church has been restored and re-opened. Mr. Scott supplied the designs, and Mr. Saunders, of Maldon, was the builder employed. Mr. Chapple acted as clerk of the works. The south aisle has been extended 4 ft. 3 in., and a new north chancel-aisle added. The chancel-stalls have been shortened, lowered, and pierced. In the course of the alterations the ancient roof was discovered, and has been made use of to roof part of the restored building; and the ringing-platform is now above the tower-arch. The whole of the seating is in Riga wainscot, at a cost exceeding a thousand pounds. The carved poppy-heads and elbows, as also the altar-table and lectern, and the other carvings were done by Messrs. Farmer & Brindley. The facing of the east part and west end is of pudding-stone and cement; a great part of this stone has been gratuitously supplied by Mr. J. Oxley Parker. The total cost of the restoration will be about 3,780l. The church will now seat about 648 people.

Wath.—At a meeting of the committee for effecting the church restoration, it has been decided to instruct Mr. Hadfield, the architect, to accept the tenders of Mr. J. Rodley, mason and builder, Sheffield, for the mason's work; and Mr. Hayball, joiner, Sheffield, for the joiner's work, the tenders amounting together to about 900l. It was also resolved to postpone the letting of the plumbers' and glaziers' and painters' work for the present.

Westminster. Arrangements are in progress for the erection of a new church in Westminster for the accommodation of a new district to be formed out of the parish of St. James's, Piccadilly. It is to be hoped that a site may be obtained for the edifice either in Great Marlborough-street or its immediate neighbourhood, and meanwhile a temporary church has been opened in the southern end of the old Pantheon.

Kirby Lonsdale.—Lord Kenlis, son of the Earl of Bective, has undertaken to defray the entire cost of restoring the parish church of Kirby Lonsdale. It is estimated that the work will cost more than 6,000l.

Liverpool.—We hear that a gentleman is about to erect, at his own cost, a church in Parliament-fields, Prince's Park-road, nearly opposite the Greek church now in course of erection.

DISSENTING CHURCH-BUILDING NEWS.

Braintree.—The chief stone of a new Wesleyan chapel has been laid here, in the Payne-road. The new building, which will be in the Gothic style, with tower, at a cost of 1,325l., is to be erected by Messrs. Farmer, of Bocking, from designs by Mr. Frederick Barnes, of Ipswich. The ground cost 260l., and it was originally intended to erect Sunday-schools in contiguity to the chapel, but it being found that this would interfere with the proposed dimensions the idea was abandoned. The building is of red brick, with Caen stone dressings, and will consist of nave and transepts, with tower and spire at the north-west angle. The vestry and offices are at the back, with entrances from the minister's house. Internally the roofs will

be of open timber, with carved ribs and braces. The fittings will consist of open benches and yellow pine, the whole stained and varnished. The building when completed will accommodate about 400 persons, with facilities for extending the accommodation to 650 persons.

Middleton Cheney.—The memorial-stone of the new Wesleyan chapel, in this village, has been laid. The old chapel being inconveniently small, the new one is being built near the Baptist one, in Queen-street. It will be of brick, with pointed arches, and a porch fronting the street. The contractor is Mr. Kimberley, jun. It is also proposed to erect a school.

Bristol.—A new Congregational chapel and school-rooms have been commenced in Stapleton-road. The chapel will be in the Italian style, with the principal entrance from Stapleton-road, and will provide seat-accommodation for between 900 and 1,000 people. At the end of the chapel will be the minister's and deacons' vestries, and behind the chapel are to be the school buildings, which will have a frontage in a new street from Stapleton-road to Pennywell-road. The cost, including fittings, but exclusive of land, will be, for the chapel and vestries about 2,300l., and for the school and class-rooms, 1,200l. The architect is Mr. Hans F. Price, of Weston-super-Mare; and the builder, Mr. James P. Stephens, of Bristol. We understand Messrs. Hall & Sons, of Broadmead, have promised the glass for the buildings, and Mr. Barrett, of Bristol, to do the glazing, free of expense. The sum of 823l. 15s. 11d. has been already contributed or promised.

WINCHESTER DRAINAGE.

A SPECIAL meeting of the Local Board of Winchester was held on the 17th inst., when the General Purposes Committee presented their report, recommending that the first premium be awarded to the author of the scheme No. 7, bearing the motto "Experience," and that taking into consideration the decided opinion of Mr. Botham, relative to Nos. 1, 6, and 11 plans, no premium be awarded to the authors of these plans. After a long discussion, the report of the committee was adopted by the Board.

The author of the successful plan is Mr. James Lemon, C.E., of Southampton. Mr. Lemon is now carrying out the main drainage of that town.

Books Received.

Sussex Archaeological Collections. Published by the Sussex Archaeological Society. Vol. xix. Bacon: Lewes.

The new volume of the Sussex Archaeological Collections maintains the character of the series and the society. Amongst the contents will be found Notes on the lost Towns of Northeye and Hydneay, an illustrated account of Ote Hall, one of the Sussex manorial residences; and Fact and Legend concerning Harold. An account is given of the Punishment of Pressing to Death at Horsham in 1735, which is thought to be the date of the last infliction of this dreadful punishment in England. How recently we were barbarians! The account of Slindon Church includes particulars of the coloured decorations it presented.

VARIORUM.

"THE Theories of Copernicus and Ptolemy." By a Wrangler. London: Longmans, Green, & Co. This is an ingenious piece of "wrangling," showing what can be said on both sides of a no longer moot question, and especially on behalf of the Ptolemaic side. Even the revolution of the whole starry system round the earth's axis in twenty-four hours does not daunt the Wrangler, but he does not attempt to incorporate this tremendous idea with the revolution of the self-same starry heavens at one and the same time round the axis of Jupiter in eight or nine hours, and round the other planets at their respective and varying rates of rotation, so far as they are actually known, like Jupiter's. Of course, on the Ptolemaic system, we must close our eyes to the known and actual rotations of all other planets, as well as the earth's, or rather we must not regard our little bit of dirt as one of these planets at all, but as the self-sufficient centre of the whole universe. The organ of cosmical self-esteem, were there any such organ

in the Wrangler's brain, must be "very la" did he really desire to uphold the Ptolemaic theory in the face of the Copernican; but only justice to him to repeat that this is an ingenious piece of argumentative wrangling, and that the author makes out a very feeble case for Ptolemy.

Miscellaneous.

THE MONT CENIS RAILWAY.—A correspondent two days ago, wrote;—"The Paris papers the news of an accident on Mr. Fell's rail over Mont Cenis, by the awkwardness of the brakeman. The carriages, &c., it appears, over a precipice at a curve, the velocity had been too great." There has been no confirmation of this statement, so we conclude it erroneous.

MEMORIAL OF A LORD MAYOR OF LONDON. According to the *City Press*, the North London Railway, in making the approaches to the tunnels in Liverpool-street, removed a brick wall which was a stone with the following inscription:—"Thomas Rowe, miles, cum prator Londinensis, hunc locum reipublica in usum licita sepulture communem suo sumptu dedicavit Anno Domini 1569." The wall enclosed a considerable space, on which the terminus stands, but which previously had been used as a garden to some houses contiguous. A pauper's charity was annually distributed within walls up to two or three years back, the place being supposed to be dispensed over a tomb, ground having been once used as a burial-place for which purpose the tablet records its dedication. Previously to 1569 the site was bogs, swampy, and ill-drained. The railway company removed an immense quantity of bones in digging for foundations.

QUANTITIES: THE HERTFORD UNION WORKHOUSE.—Last week, in our notices to correspondents, we stated in reference to a letter complaining of the architect's refusal to allow the quantities to be taken out by a surveyor was named, that the evidence that the architect was wrong was not very clear. The sequel is to show that we were right. The architect now appears, had an agreement with the Local Board of Guardians that he should furnish quantities to competing builders; and the Board have resolved, by a majority of eighteen to eleven, to adhere to that agreement. The architect, Peck, had declined to allow the quantities to be taken out by Mr. Timmis, the surveyor appointed, who had gone to various builders likely to compete, in order to obtain from them authorities to take out the quantities; and Mr. Timmis had, therefore, made a stir as to the matter amongst the guardians, of his influence amongst whom he had boasted, and had written Mr. Peck called "a peculiar letter" to him, in fact had brought the architect up before the guardians with the view of compelling him to allow the quantities to be taken out by Timmis.

BUCKS ARCHAEOLOGICAL SOCIETY: PRESENTATION OF OUR NATIONAL ANTIQUITIES.—Bucks Archaeological Society have held their annual meeting at Wotton, one of the seats of the Duke of Buckingham. An excursion was made to Boarstall, Brill, and several other places of historical interest. The duke presided at the business meeting, in the course of which Sir Harry Verney, M.P., made some remarks on the destruction of valuable antiquities through neglect, and suggested that these remains should be under the care of local authorities, and supervision of a responsible Minister of the Crown. The duke, in acknowledging a vote of thanks for his hospitality, alluded to this subject. He said—There are close to Buckingham, buildings erected in great part, by my own father, out of the destruction of most ancient Roman remains. Very curious pavements, rooms, so on, have shown that, if the search had been made fifty or sixty years before, we might have laid open the *arcana* of a Roman house, and its domestic arrangements, as perfectly as preserved in Herculaneum and Pompeii. The first thing that would result from Government care would be centralization in London. I would rather see old relics preserved in their localities, and I really think it will be done better by local associations calling the attention of local residents to them, than by any possible Government provision that can be devised.

HERTFORD CATHEDRAL.—The tower of this cathedral is being re-lead, the old lead having become useless through visitors cutting their initials on it, a practice to which the dean and chapter will for the future put a stop.

HOUSE FLIES.—An American paper says that these flies may be effectually destroyed by taking if a spoonful of powdered black pepper on a spoonful of brown sugar, and one teaspoonful cream: mix them well together, and place a mixture in a room where the flies are troublesome.

ELY CATHEDRAL.—Bishop West's chapel, at the north-east end of Ely Cathedral, is being adorned with an encaustic pavement, by Minton. A large monumental slab (by Field), embellished with a dated cross and inscription in brass, to the memory of the late Bishop Sparke, is placed in the centre of the floor.

DUBLIN EXHIBITION PALACE.—The affairs of the Company are in such a condition that, at a meeting just held, the question whether the building should be sold for what it would bring, was discussed. It was stated that a shareholder had offered, on the part of a purchaser, £100,000 for it, but the purpose to which the money was meant to devote the structure did not inspire. An absolute resolution to sell was adopted, but the matter was held over.

RAILWAY MATTERS.—The Lime-street Station Liverpool—the Liverpool terminus of the London and North-Western line—is now being largely enlarged and improved. A portion of the tunnel is being opened up for station purposes and sidings, and several new platforms are being erected. The Lancashire and Yorkshire Company have also determined upon the opening of their passenger station at Tibbald-street.

The importance and practicality of a tunnel beneath the Mersey, in order to bring into more effective union the Birkenhead and Liverpool docks, has been brought before the Mersey Dock Board by Mr. Hawker, civil engineer. Mr. Hawker thinks that the best point for crossing is between New Brighton and Bootle, as the existing dock lines are thus connected more easily and cheaply, and the rock at New Brighton offers certain facilities for working. He estimates that the cost of allowing for contingencies and excess of rates, would be under one million sterling.

METROPOLITAN POOR ACT.—That important part of this Act which provides for the establishment of dispensaries for the relief of the outdoor poor is now about to be put in force, and information to that effect has been lately given to the Boards of Guardians. The various leading principles upon which the new-law Board proposes to act:—These dispensaries must either be in separate buildings, or a suitable part of the workhouse may be set apart; but to each there must be a resident dispenser, and qualified medical officers will attend certain hours to prescribe for, at their dwellings, such as are not able to attend the dispensary. The medicines and appliances for these dispensaries will be provided by the guardians, and the establishment will be under the management of a committee to be elected by the guardians from among themselves or ratepayers to be guardians. The entire cost of dispensaries and the medical officers will be paid out of the common fund to be levied upon the metropolis.

GYPSUM MINE AT LACKENBY.—A large quantity of gypsum is now being won of excellent quality. Twenty men are employed in the mine, and work double shifts. The mine is two, one for air and the other for drawing the material to bank,—are about 500 ft. deep. The seam of gypsum is about 5 ft. thick. The super-strata of the gypsum are a green shale and thick clay. The workings are on the Newcomen Estate. The gypsum crops out for some distance to the southern shore of the Tees. The strata are very peculiar, and lie like tree-roots in the brown clay, presenting a very peculiar appearance. In one place the strata are completely insulated the stratum, a small gypsum island, not unlike a clumous contraband of larger dimensions than the island being formed. The stratum seems to dip sharply to the north, and has a lesser dip to the west. Gypsum underlies the strata of the north-eastern portion of Cleveland, and extends to Coatham, and from the base of the hills to the Tees.

INDUSTRIAL PARTNERSHIPS.—It is intended to hold in Manchester a reunion of the friends of industrial partnerships and co-operation, in the week commencing the 22nd instant. The proceedings will comprise a breakfast meeting, to give an opportunity for social intercourse; a conference meeting for discussion; and a demonstration in the evening, the whole being compressed into one day, the 27th instant.

APPLES AND OTHER FRUIT.—The scarcity of good apples and the desirability of cultivating apple and other fruit trees more extensively in this country than appears to have been done of late years, especially by landlords in tenants' gardens, have been a subject of discussion in the *Times*; and Mr. Bosch Smith recommends the planting of railway-cuttings with fruit-trees as a very profitable scheme for adoption by railway companies. We, with others, much regret the scarcity of good fruit, especially of the apple species, and wish much that something were done to restore old times in this respect; but we still retain our objection to the shutting in of railways by trees of any kind. Where they are in cuttings that conceal the country at any rate, well and good: let profitable use be made of these; but we can conceive nothing more tiresome than the miles upon miles of tree-bordered railways along which we have had to pass on Continental railways, and we hope never to see anything of this kind in England. Railway travelling, what with cuttings, tunnels, and rapidity of passage, even in a diversified country, is quite irksome enough already.

TUNNEL DRILL.—A machine for boring tunnels, driving "adits" of mines, &c., has been brought to this country by its inventor, General Haupt, of the United States army. The whole apparatus, which drives a hole in granite or even quartz, at the rate of nearly 4 in. a minute, scarcely occupies, it is said, more space than an ordinary umbrella-stand, and weighs less than six hundredweight. It is a mere powerful frame of steel, which stands in a universal point set in a little bed of iron, and the steam borer is capable of being turned in all directions. Though capable of being worked with the same facility by means of compressed air, General Haupt prefers steam as more economical. The centre of a very small cylinder contains the drill, which is 1½ in. in diameter, but the size of which may be nearly doubled at will. With a pressure of about 25 lb. of steam, the drill is driven forward like an ordinary piston-rod, but at the rate of from 250 to 300 blows per minute. When the drills have penetrated about 28 in., the blasting powder is used, and the drill is easily lifted over the debris of stone. General Haupt was the chief engineer of the Hoosac tunnel in Massachusetts.

THE IMPERIAL HOTEL, DOVER.—An important addition to the hotel accommodation of Dover has just been made. The immense building commenced by the Clarence Hotel Company some three years ago has been opened for business. The new hotel stands on a plot of freehold land, facing one side of Clarence Lawn, and commands a grand sea view. The grounds are about an acre in extent, and the house is almost surrounded by some fine old trees. The enclosure will be laid out as ornamental gardens. The building has been erected at a cost of 70,000*l.*, from the design and under the superintendence of Mr. Whichcord, architect, and its principal feature is a lofty tower at the eastern side, under which is the main entrance. The ground-floor, approached from a portico projecting from the tower, has a suite of three large coffee-rooms facing the sea. The principal one of these is 45 ft. by 30 ft.; another, 45 ft. by 25 ft., is to be devoted to the use of ladies, and it is contemplated to add a conservatory to this in the rear to lead into the gardens. Branching away to the right from the vestibule is a long open, and at the end of which is situated a large billiard-room, 42 ft. by 25 ft. A stone staircase leads to the upper part of the house, where there are some rooms adapted for receptions, meetings, balls, and other public purposes. The building altogether is nine stories in height, and contains 234 rooms. At present 200 of these are open, of which 75 are bed and dressing rooms. The kitchens have all the improvements in use in similar buildings, most of the cooking being done by steam. The stoves were fitted up by Mr. Jones, of London. Lifts have been provided for lessening the work connected with the establishment.

GAS IN JAPAN.—A company is being organized in San Francisco for the purpose of introducing gas into Japan.

PRESENTATION OF WORKS OF ART TO PUBLIC ESTABLISHMENTS BY THE FRENCH GOVERNMENT.—The usual report of presentations of works of art by the Ministry of the Fine Arts, on the occasion of the Imperial *fêtes*, has just appeared, and is of unusual length: the recipients include churches and chapels in sixty-four departments of France, and in Algeria; more than 200 museums, libraries, and scientific and artistic institutions in the provinces, and various public bodies and institutions.

THE INTERNATIONAL WORKING MEN'S CONGRESS.—The labours of this congress have terminated. It has not had so much of the practical as of the speculative and doctrinal in it. One resolution we may quote:—"The committee acknowledges that machinery is the most powerful means to bring about the material improvement of the working classes. But to attain this it is indispensably necessary that recourse should be had to banks of mutual credit." Working men's societies are also recommended to apply a portion of their reserve or savings-bank funds to the establishment of co-operative productive concerns.

NEED OF SMOKE CONSUMPTION IN THE POTTERIES.—No attention, it appears, has hitherto been paid to the smoke-consuming clauses of the Sanitary Act of 1866 in the Potteries, which so much require amendment in this respect. A year from August, 1866, was allowed to bring the law into operation, and it is full time now that something was done. The local authorities will have the Government authorities down upon them if they do not wake up. The *Staffordshire Sentinel* complains of their shortcomings, and points to various modes and places to show the possibility of carrying out the smoke-consuming clauses of the new Act.

ROLLING ARMOUR PLATES.—One of the heaviest armour plates ever rolled has just been prepared at the Atlas Ironworks of Sir John Brown & Co., Sheffield. The size of this slab of iron when in the furnace was a little over 20 ft. long by about 4 ft. broad, and 21 in. thick. Its rough weight was over 21 tons. It was built up in the furnace before being rolled, by five mould plates, each 3 in. thick, and one solid plate of 6 in. This mass, when reduced by intense heat to the consistency of dough, was withdrawn from the furnace, and in the course of less than a quarter of an hour was passed between the enormous rollers many times, was reduced to a compact slab of iron of a uniform thickness of 15 in., and then passed on to its bed to cool till it is fit to have its rough edges planed down to the proper dimensions. The men at work were attired in thin steel leggings, aprons of steel, and a thin curtain of steel wirework dropping over their faces like a large, long vizor. All the rest of their bodies were muffled in thick, wet sacking.

NOTTINGHAM SCHOOL OF ART.—A meeting of the subscribers and donors of this school has been held in the large Room of the Institution, to adopt and agree upon the rules and regulations for its future government. Mr. R. Birkin occupied the chair. The chairman said he was sorry there was not a more numerous attendance. He believed that one reason was, because they had a debt about them. He regretted to say that there was a great advance on the part of our French competitors: he considered they were our competitors, as it was tolerably well known that the machinery producing French lace was a Nottingham invention. He was of opinion, from what he saw in the Paris Exhibition, a few months ago—beautiful and cheap articles, whether in silk, clunys, or cotton, including some of the best imitations of real lace he had ever seen, that their manufactures in Nottingham must make an effort. He took credit to himself for being a judge, and he never saw better imitations of lace made than those exhibited by the French people. Mr. Mallett said he dared venture to challenge French productions as to novelty and ability (Mr. Birkin—"And price?") As to price they had not the advantage, but there was a movement only waiting for adoption and completion—he meant the new Board of Conciliation and Arbitration—which, if carried out, would, he hoped, remove every obstacle between themselves and foreign competition. The rules of the school were resolved upon as proposed.

THE NEW INFANTRY BARRACKS AT WINDSOR.—The erection of the new additional officers' and soldiers' quarters on the recently-acquired infantry barracks site at Windsor has been commenced.

MANCHESTER TOWNHALL COMPETITION.—The instructions to the architects selected for the second competition have been issued. The sum of 250,000*l.* is named as the amount to be spent, and the designs are to be sent in by the 14th of February next.

COCKROACHES.—In *Science Gossip* for the present month is a hint from a correspondent, who says he has pretty well exterminated these pests by pouring a small quantity of common creosote, of which a gallon may be had at the gasworks for sixpence, into the crevices, and about the places in which the cockroaches usually appear. The only disadvantage is a healthy smell of gas.

THE HERBERT HOSPITAL, WOOLWICH.—According to the newspapers the foundations of the Herbert Hospital have given way in parts, and are being underpinned. "A deep drain has been discovered at the base of the concrete on which the hospital has been erected, and is probably the cause of the disaster." Before the building was finished we mentioned the threatened evil, and were contradicted and reproved in consequence.

MONSTER BRIDGE IN AMERICA.—The foundation stone of the great bridge across the Ohio river at Louisville, Kentucky, has been laid. The total length of the bridge will be 5,220 ft., or nearly one mile. The graded approaches will be 2,500 ft. in length, and the superstructure, consisting of iron suspension trusses, will rest on twenty-five piers and two abutments. The longest span will be 360 ft., 36 ft. longer than the longest span of the Victoria Bridge at Montreal.

STREET ADVERTISING.—The sooner a good deal of this sort of thing is put a stop to the better. Tradesmen's vans, omnibuses, cabs, hoardings, live sandwiches,—every available thing is seized hold of and plastered over with advertisements. London is bad enough in these respects, but Paris is going to outdo us in the advertising line. A Frenchman of fertile imagination has just invented the following ridiculous mode of advertising. He proposes to erect along the Boulevards, level with the lamp-posts, a number of lay figures, on which the bootmakers, tailors, hatters, shirtmakers, dress-makers, milliners, jewellers, &c., would, in return for a certain sum, have the right of showing off all they have of newest and best. The promenaders on the Boulevards could in this way judge at once of the beauty and elegance of the advertised article.

THE DURHAM AND NORTHUMBERLAND ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY.—The members of this society have held their fourth and last meeting for the season, on the borders of Durham and Yorkshire. They met at Croft Station, and examined Croft Bridge, the inscription on which is dated 1673. Croft Church was next visited, and in it Mr. Longstaffe gave some historical information respecting the village. The architectural peculiarities of the building were described by the Rev. Mr. Hodgson. The party afterwards proceeded to Haughton-le-Sterne, where the Rev. E. Cheese invited them to luncheon. Here Mr. Longstaffe read a paper on the district. The church was then visited, and was described by Mr. Hodgson as being entirely of Norman character. The party then proceeded to Darlington, and inspected the recent restorations of St. Cuthbert's Church.

DUNN'S FIRE PILLAR.—The invention patented by H. G. Dunn, for the saving of life and property from fire, takes the shape of a letter-pillar proposed to be placed at the corners of streets or inside public or private buildings, factories, ships, or mines. At the call of fire the policeman, fireman, watchman, or other appointed person, opens the door of the box with a key placed in the handle of his rattle, and finds therein hatchet and rope-ladder; he then takes the nozzle of hose, which is also there, drawing the hose after him, which revolves from the centre of the box and is from 200 yards to 300 yards long, so that one at a cross street would serve a length of houses. Many fires might thus be extinguished at their outbreak. The inventor's belief is that no engine would be required, but that the water as turned on would rise to the height required. We are not certain that the practice of the metropolitan water companies justifies that belief.

COLOGNE CATHEDRAL.—Cologne has just celebrated the twenty-fifth anniversary of the date on which the works of the cathedral were resumed. The King was expected, but did not attend, being represented by the Prince Royal. A solemn "Te Deum" was sung in the nave of the church in presence of the population of the town and the numerous members of the society which, founded in 1840 under the name of the Dombanverein, took the works under its patronage. There was afterwards a procession, and in the evening a banquet, terminated by a promenade on the Rhine.

TENDERS

For new buildings for Lewes Union. Mr. H. Currey, architect:—	
Reynolds	£15,152 0 0
Myers & Son	14,677 0 0
Keeble	13,865 0 0
Howell	13,865 0 0
Hart	13,864 5 0
Kirk	13,716 0 0
Nightingale	13,484 0 0
Sawyer	13,333 0 0
Heritage & Son	13,306 0 0
Henshaw	13,301 0 0
Higgs	13,272 0 0
Summs & Martin	12,946 0 0
Card & Son	12,876 0 0
Cheeseman & Co.	12,810 0 0
Peelless	12,652 0 0
Berry	11,903 0 0
Thorn & Co.	11,783 0 0
Chappell	11,397 0 0
Perry, jun.	10,651 0 0

For Public Hall at South Norwood. Mr. J. T. Barker, architect:—	
Carter	£2,300 0 0
Carter	2,260 0 0
Myers	2,200 0 0
Nixon	2,198 0 0
Henshaw	2,146 0 0
Higgs	2,065 0 0
Polard	1,776 0 0

For alterations to the Coach and Horses, High Holborn, for Mr. Charles Shalles. Mr. Henry Roberts, architect:—	
Fenn	£400 0 0
Josephs	317 0 0
Hoare & Postlethwaite ..	205 0 0

For alterations and additions to a house, Laurel-road, Farnfield, near Liverpool, for Mr. W. R. Allen. Messrs. Picton, Chambers, & Bradley, architects:—	
W. & F. Witter	£355 0 0
Wilson	345 0 0
Black	315 0 0
Crismon	304 0 0
Okills & Morrison	301 0 0
Callie	300 10 0

For erection of house in Margaret-court, Oxford-street, for Mr. G. A. Poland:—	
Sharphington & Cole (accepted) ..	£665 0 0

For alterations to All Saints' Church, York-street, Lambeth. Mr. R. J. Withers, architect:—	
Sharphington & Cole (accepted) ..	£435 10 0

For alterations to Mr. Rosche's premises, Fimlico. Messrs. Waford & Donkin, architects:—	
Palman & Co.	£765 0 0
Newman & Mann	717 0 0
Sharphington & Cole	653 0 0
Fish	648 0 0

For farm premises at Rothwell, Northamptonshire. Mr. R. W. Johnson, architect:—	
Sharnam	£675 10 0
Barlow & Stanjon	663 0 0
Austin	629 0 0
Wilson	619 0 0
Barlow & Butlin	600 16 0
Haycock	485 15 0

For alterations to dwelling-house, Kettering. Mr. R. W. Johnson, architect:—	
Hawthorn	£265 0 0
Wilson	352 10 0
Buswell & Henson	339 0 0

For new Temperance Hall at Finedon, Northamptonshire. Mr. R. W. Johnson, architect:—	
Whittinger & Wallington	£974 0 0
Watkin	900 0 0
Wilson	886 0 0
Barlow & Co.	886 0 0
Perkins	826 0 0
Henson	797 0 0

For new schools at Finedon, Northamptonshire. Mr. R. W. Johnson, architect:—	
Watkin	£690 0 0
Wilson	665 0 0
Barlow	665 0 0
Henson	660 0 0
Whittinger	639 0 0

For additions to farm premises at Barkley Torpe, near Leicester:—	
Haliday & Cave	£1,415 0 0
East	1,310 0 0
Herbert	1,189 0 0
Osborne	1,183 0 0
Neale & Sons	1,122 10 0

For additions and alterations at 50, Westbourne-grove, for Mr. C. Stafford. Messrs. Newman & Billing, architects. Quantities not supplied:—	
Ware & Joud	£255 0 0
Phillips	578 0 0
Wicks	545 0 0
French (accepted)	537 0 0

For alterations to the "Dover Castle," Great Dover street. Mr. W. A. Murphy, architect:—	
Sharphington & Cole (accepted) ..	£115 0 0

For house, stables, and lodge, at Clapham Park. M			
Notley, architect:—			
	House.	Stables.	Lodge.
Colls	£4,700	.....2820	.....220
Macey	4,696	.....696	.....201
Turner & Sons	4,624	.....603	.....223
M'laglan	4,359	.....608	.....213
Hart	4,310	.....582	.....198
Newman & Mann	4,065	.....578	.....242
Myers	4,086	.....579	.....196
Webb & Sons	4,087	.....550	.....200
Browne & Robinson	4,067	.....534	.....183

For new Receiving Wards at the Industrial School, Forest-lane, West Ham. Mr. John Hudson, architect:—	
Worskett	£4,860 0 0
Adams	4,760 0 0
Shawmas	4,686 0 0
Sheffield	4,637 0 0
Garrud	4,617 0 0
Smart & Co.	4,458 0 0
Knight	4,383 0 0
Hall	4,369 0 0
Shaw	4,369 0 0
Johnston	4,300 0 0
Abrahams	4,285 0 0
Tanatt	4,197 0 0
Rivet	4,133 0 0
Lockeby	4,077 0 0
Langmead	3,990 0 0
Poron & Co.	3,981 0 0
Blackmore	3,962 0 0
Nutt & Co.	3,895 0 0
Marter	3,738 0 0
Hill & Keddell	3,694 0 0
Henshaw	3,687 0 0
Webb & Sons	3,684 0 0
Goshawk	3,520 0 0

For stabling at St. John's-wood, for Mr. H. C. Newton. Mr. W. A. Baker, architect. Quantities furnished by Messrs. Richardson & Waghorn:—	
Parson	£249 0 0
Abbott	767 0 0
Kelly	769 0 0
Manley & Rogers	737 0 0
Mann	729 0 0
Browne & Robinson	687 0 0

For alterations and additions to Claydon Parsonage, Oxon. The incumbent to provide stone, sand, and hewing. Mr. Edwin Dolby, architect:—	
Waller	£307 0 0

For a house and smithy at Cowley, near Exeter, for Mr. Thomas Blackall. Mr. Edwin Dolby, architect:—	
Woodman	£230 0 0
Mitchell	227 0 0
Stevens	226 0 0
Godbeer & Coles	219 14 11
Inch	207 13 0

For boundary walls to the new vicarage, Abingdon Berks. Mr. Edwin Dolby, architect:—			
	Brick wall.		Cleft Oak Fence.
Selby	£224 0 0	.....	£110 0 0

For alterations at 15, Bridgewater-square, for Mr. Berg. Mr. Thomas J. Hill, architect:—	
Morland & Burton	£765 0 0
England	740 0 0
Perry (accepted)	568 0 0

For a manufactory, Normans'-buildings, St. Luke's, for Mr. R. Shephard. Mr. Thomas J. Hill, architect:—	
Morland & Burton	£3,998 0 0
Page	3,220 0 0
Taylor	3,160 0 0
Ardley	2,726 0 0
Perry	2,675 0 0
Sabey	2,390 0 0

For works at Tottenham, for Mr. W. Robinson (Second contract). Mr. Thomas J. Hill, architect:—	
Patman, Brothers	£948 0 0

For a country inn, with stabling, offices, and smith adjoining, proposed to be built at Clewer, for Sir Dan Gooch, bart., M.P. Mr. William Sim, architect:—			
Inn, with Stabling.		Smithy.	
Kelly	£269 0 0	£109 15 0
Fish	850 0 0	112 0 0

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The Builder.

VOL. XXV.—No. 1286.



Harmony in Colour and Sound.

It is a hard saying of Dr. Helmholtz,* that for all the marked analogy that exists between sound and light (light, like sound, is dependent on the undulations of a special medium, and its undulations, like those of sound, are subject to the incidents of interference, and vary in effect according to varied rapidity of vibrations), all this agreement notwithstanding, there is, we are told, one material failure of physiological analogy as between the organs ultimately addressed, the ear and the eye, and in consequence "the eye has no sense of harmony answerable to that of the ear,—it has no music."

Such is the paradox to which an investigator arrives, and so complacently is he apt to accept of who follows too exclusively the clue that has served him for one-half of the labyrinth he investigates. He would usually do well, since the object is not merely to get out of the labyrinth, but to explore it,—to cast himself free from a change from his favourite guide even the more readily because he might reasonably apprehend temptation to favouritism. Let him strike for once independently into a road that at first seems to lead widest away, and so may he, perchance, for the first time master the true bearings of his former track by looking over it from new points of view.

The sense of musical harmony, says Helmholtz, depends ultimately upon this physiological peculiarity of the ear which we have been expounding; and, as there is nothing answerable to this in the eye, as the eye has no power of resolving a compound colour into its constituents (green, for example, into blue and yellow), as the ear distinguishes the overtones,—the harmonics, combined in a note, by a faculty which is the condition of the sense of musical interval,—the eye is excluded from a sense of harmony. And yet is there surely another aspect, a different entrance, to the subject.

The harmony of colour is a matter of experience—the highest of all matters of fact. The discordance, even to painfulness, of some combinations of colour to cultivated and refined senses, is as real as is the painfulness of a wound with a knife. As matter of fact, this is established far on the hither side of any æsthetic speculation; and the pleasures, no less than the pains, from this source, being facts in sensation, must needs have, like all other such, a set of facts in physics and facts in physiology too, of like diversity to back them and account for

them. We do not need philosophy to explain what the material diversities are upon which the differences of two colours depend, in order to be assured that a difference of such kind there must be; and if combined colours are in some cases delightful, and in others, at least with equal certainty, disagreeable, we justly assume that the primary physical difference affecting tint is susceptible of still another variation, affecting pleasantness; and we hold fast by this conviction, however reluctant physiology may be to go at our bidding on a search for its material vindication, however positively she may avouch on her return from the excursion that none such exists. If the physiological comparisons of Helmholtz are really well founded, we are perfectly entitled, apart from a possible error in his inferences, to enunciate that it is the ear which has a disability as compared with the eye. Taking our stand upon the restricted analogy of the eye, we might rashly infer that, being destitute, as appears, of a power of distinctive appreciation answering to that by which the eye becomes susceptible of harmony, it is the ear that must be condemned as incapable of music. Harmony is a term so constantly associated with sound that we are apt to assume that sound has an exclusive, or at least a prerogative, right to it, and to the idea that it expresses. But this is gratuitous. Harmony is a word that simply translates into Greek, fitting, or adjustment in coincidence,—coincidence in the very widest application, and limited to no one sense, and no sets of senses, and not, indeed, to the senses at all.

The word harmony in itself, then, meaning accurate fitting, it is found consistently used by the ancients to express even a detail so secondary after all in architecture as the wonderfully close jointing of marble ashlar in a Greek temple. But a certain dignity has accrued to the word, and it is, therefore, now the appanage of noblest applications. Thus it is applicable currently to conditions of social life, to tranquil order, or effective discipline,—the order that may "reign at Warsaw," or might be established by a Spartan Harmost,—and to the liveliest and happiest activity, effective co-operation in a family, a firm, or a constitutional government.

The essence of harmony, then, is the exquisite adjustment of differences, of whatever kind, with each other, to whatever agreeable result; and this adjustment is in general form dependent upon apt modification of degrees, of quantities, as amongst the associated elements. The value of the result depends on the delightfulness it realizes; but the process and its theory are no more the property of the ear and the musician than gravitation pertains especially to the bodies most conspicuously heavy, or that prove, it may be, to have the greatest specific gravity.

When, therefore, we speak of an experienced pleasure as due to harmony of colours, it is clear that we postulate, and surely equally clear that it is with justice, the dependence of our pleasure on degrees and differences, in quality, arrangement, coincidence; on colours, not merely as such, but as adjusted thus or thus relatively to each other. Such a pleasure of the eye manifestly corresponds in the general principle of its conditions with the pleasure derivable from simultaneous sounds adjusted to each other in degree and coincidence, in a manner to be consistent with, to conduce to, enhanced enjoyment,—that is, that are in harmony.

We conclude, then, that either the special faculty of the ear to which Dr. Helmholtz ascribes its competence to appreciate harmony of sounds has not, if it exists, any such prerogative function; or else that the eye is endowed with an analogous faculty which has yet to be searched for, or ultimately it must have some compensating relation to its objects as coloured that makes its sense of harmony,—its musical

competence,—independent of any such condition.

The inquiry, therefore, it is clear, may be taken up independently from the side of vision, and the conditions of visible harmony,—the music of colour,—as matters of experience and experiment, must provide the leading clue; while the physiology of the ear and the conditions of audible harmony become but matters of reference, and when glanced towards for an analogy must be ever jealously repulsed at every attempt to impose dictatorial mandates.

The ancients were, doubtless, justified in the enthusiasm with which they fixed their attention on the hint ascribed to Pythagoras of the mathematical quantitative relations sublying the consonances of musical notes, and right and sagacious also in their assumption that the analogy must hold good through the whole of nature. But erring in a too cramped comparison, they expected that the music to be detected in the rest of the universe would adhere to details that, in truth, resulted from special and distinctive conditions of sound; and so the theorem became fairly exposed to an objection that, inasmuch as the conditions failed elsewhere, the assumption of music elsewhere than in sound was a mere delusion. It may have been too early in antiquity for such a paradoxical protest, however provoked, to be ventured on, and it is too late now for us to rest in it.

The larger theory, with all its defects, did not do the world ill service; it originated schemes of astronomy, not to say of theology and creation, in which the visible planets were forced with some violence to assume the intervals of the diatonic scale; but it was the conviction,—the primary assumption,—of a harmony that held Kepler to his work: assuredly it led him a strange dance, and desperately did he strain the records of observers on the racks of prejudiced imagination. Practice teaching him independence, however, he waded clear from a slough of more artificial absurdities than ever before did a benefactor of his kind entangle himself in, and came out at last holding high above his head those half-dozed sentences,—the laws of Kepler,—that vindicated his earliest assumption of comical harmony at the same time that they convicted of absurdity all his earliest conceptions of it.

When the solar beam was first drawn out before a really philosophical eye, into a sequence of bands comprising every characteristic colour, the ancient prepossession was again prompted to seize upon its theory; and intervals and intensities of colours were soon impressed as rigorously as had been the planets before them; and all was done that could be, and ineffectual but pitiable enough it was, to make them also keep step to the march of sound. In due time light made good its claim to have a vibrating medium, an elastic ether of its own, and was then allowed to escape from the restrictions of the audible gamut; its right was by this time established, to participate in the mathematics of vibration; and pulses, waves, and interferences, as we have seen, are common to the philosophies of the sister senses. But this being so, in the face of common experience and current expression before the claim of the eye to a harmony of its own is given up, we must surrender plausible analogy as well as palpable experience, and in such case it will assuredly be the fault of the expounder if the sacrifice has to be allowed.

The colours of nature are as varied and numerous at least as its sounds; and as sounds are recognised as either noises or notes, accordingly as they affect the ear, or fail to affect it, with a pleasing unity, a certain wholeness of resonance,—by experiment it is found, accordingly as they are due to more or less regular vibrations,—so have colours a difference appreciable by the eye by which we recognise them

* * * "Ueber die physiologischen Ursachen der Musikalischen Harmonie." Heidelberg.

as more or less pure,—more or less delightful and susceptible of delightful combination. The natural colours of flowers are especially beautiful; and in colour to be beautiful is to be pure. In using the word pure, we may seem to be assuming a theory; but, in truth, we are declaring an experience,—the experience that the beauty of a colour concurs with a certain sense of undisturbed unity, of a leading effect not interfered with and reduced in value by foreign admixture.

And this touches, in fact, upon a main point in dispute. If the eye cannot distinguish pure blue and red in the secondary purple, how is it likely to be able to separate the still more complicated impressions that impair the effect of a colour that ought to be a pure primary. It is sufficient in the first place, so far as the sense of harmony is in question, for the eye to be competent to condemn a colour as defective in clearness, decisiveness, and homogeneity, without pretending or caring to specify the cause. This is what eyes, finely gifted with sense of colour, certainly can do with wonderful nicety, this and much more, as certainly as every musical ear appreciates the purity of a note. The test of pleasure approves or condemns with every degree of vigour, from absolute repugnance, to satisfaction rested in as entirely undisturbed and complete. Moreover, to assist appreciation of present effect, the eye has memory, and the eye has imagination; it can recall and conjure up, if not the actual spectra of impressions of colour, some perfectly serviceable associations with them. Then when intuitive and inspiring tints do not betray themselves immediately even to the best and cultivated eyes of an artist, they respond as to a test on the approximation of another tint; and the actual application of the testing colour as it heightens or declines in effect by proximity of the first, makes the existence of a latent perceptible admixture as manifest as the application of a sounding-board makes audible the note of a vibrating reed.

The delightfulness betrays to the sensitive that there must be some cause for it, and for every mode and qualification of the delightfulness, though it is far from giving direct information as to the physical nature of the causes. These qualifications are endless yet most definite, and the eye does not wait for a justifying experiment when it responds to severe provocation, and calls many a bad colour dirty,—the contradiction of pure. We may rejoice when physicists trace and inform us of the causes of the differences, but we want no information from them as to the fact of their existence.

Purity and impurity of tint are quite distinct from darkness or lightness, deepness or its antithesis, and therefore we assume that it depends on a defect of composition in the colour itself. The impure colour is thus of necessity a mixed colour, and the impurity must arise from a defective proportion between the elementary colours involved; the remedy remains to adjust this proportion and so reduce the colour to a pure one. Here, then, the eye recognizes a pure tint as the ear a pure note, and in one case as in the other, the ultimate cause probably depends upon coincident or non-coincident vibrations; but in any case as regards the sensibilities of the organ, it is matter of adjustment—of harmony.

Let us now assume that we are in possession of a pure colour, be it natural or artificial. We may consider it as variable in degree of deepness of tint without its ceasing to be the identical colour. By way of illustration this is effected by successive layers of the same pure pigment: how successfully this can be achieved in practice, it may not be easy to say. The principle, however, is secure; and if, in applying each wash successively, we leave an uncovered margin, we shall or ought to produce a scale of gradation from deepest to lightest tint of the particular colour.

The most natural comparison of the steps of such a scale is to the repetition of a single note from the lowest to the highest pitch; but in the case of a musical note we proceed from octave to octave, and each successive note ascending is produced by double the number of vibrations of its antecedent. It would seem as if there was no such limitation to the degrees of a colour. The limits of musical octaves is reached after comparatively few repetitions, but the gradations of a colour seem infinite. Is it possible that in this sequence there may be degrees which give peculiar excellence by some law of interval? At any rate, tints taken out of such a series are to each other in a relation of harmony that will seem, until the physicist can show us otherwise, very fairly analogous to unison in the music of sound.

The frequent application of this harmony in decorative work is familiarly called putting one tint of colour in relief on another of the same.

When we come to compare one colour with another, with others, we are not far from this discovery, that they admit of being all arranged in a sequence that has, at least, an analogy with a scale of notes, as one element of the succession,—one colour as one note,—follows another in easy and agreeable succession, until our circuit comes to an end by our being reconducted to the starting place,—to the colour we commenced with,—by a gradation as easy as that by which we left it.

Further, when a succession of colours has been disposed by no other rule than easy gradation and visible relationship; when green has taken its place between yellow and blue under no other guidance than our sense that it has gradations within itself of which some lose themselves gradually in blue in one direction and the rest verge towards yellow in the other, and so of the rest,—this verdict of the eye is found to be confirmed by the changes that are independent of sensation. The prism arranges colours in the same order as the eye; and no less independently than notes upon a gradually shortening string assume the same order that the ear would give to them though ignorant of their dependence upon strings of certain length or strings at all.

We must carry on our remarks in another number.

IRISH RAILWAYS.

A VERY momentous subject is now occupying the attention of the Government, and was recently debated in Parliament, and that is, the present state and condition of the Irish railways. It appears that upwards of 27,000,000, have been absorbed in the construction of them, and that the great majority of the lines pay little or no dividend. The parties whose capital is embarked in these undertakings are clamorous for the Government to purchase them, or to make some endeavour to improve their financial condition, either by taking them into their own hands, and leasing, or otherwise, to competent parties, who would guarantee a moderate dividend, or by a system of amalgamation to lessen the working expenses, so that a better dividend might be realized from the property.

It is stated that the gross income derived at present amounts to 900,000, a year, or 84 per cent. on the gross expenditure; and this railway property may be purchased for 19,600,000, and it would therefore pay 4l. 12s. per cent.,—not a bad per centage in these days of panic; but if the money could be borrowed at 3 per cent., it would take 634,000, to pay the interest, and leave a surplus of 266,000, to the Government. Again, it is held out that by a system of amalgamation and consolidation of interests a considerable saving may be made in working expenses, amounting, it is said, to at least 80,000, a year, and making a total profit of 346,000, for the purchase, leasing and working the lines upon the most approved system, and which might be applied in the reduction of the fares, or in improved facilities for the traffic, and increasing the accommodation to the population of Ireland.

There can be no doubt that the present lamentable position of the Irish railways has arisen in a great measure, like that of their English contemporaries, from a variety of causes, over which Government and Parliament ought to have exercised a more vigilant supervision and control. It appears from a Parliamentary return, that the legal and Parliamentary expenses of these lines have amounted to the average of upwards of 1,000, per mile, and some lines have paid as much as from 1,500, to even 2,400, per mile, for the discharge of this simple and preliminary business. And this does not include the expenses of the long and costly feud between the London and North-Western and the Great Western, and other lines.

This exceedingly heavy expenditure certainly reflects no credit upon the country; and if Parliament had exercised ordinary vigilance and precaution, this dead weight upon railways might have been considerably lessened or modified. It has been the unwise and variable policy of the Legislature, with reference to railways, that must be ranked as one of the principal causes of their present embarrassed state and depressed financial condition.

Another "Old Man of the Sea" that has ham-

pered and oppressed them has been the enormous sums paid for land and compensation, the sums paid by many of the companies having been almost of a fabulous amount. Land valued at 5,000, previously to a line of railway being projected, has been sold to the company who formed for 120,000. A great portion of the land taken for railway purposes has realized to the fortunate owners prices varying from 2,000, to 10,000, per mile; and it is upon record that the sum paid to one wealthy landholder for his land and to buy off his Parliamentary opposition, was so preposterously large that after his death his heir absolutely returned the greater portion of it as conscience-money. In another instance the proprietor of a small piece of land received 5,000, compensation for loss of minerals under it, and the minerals had absolutely been worked out as far as was practicable, the remainder being hopelessly submerged in water. Their market value was absolutely nil, but a railway land agent appeared upon the scene, and he converted, as if with the wand of a magician, these fabulous minerals into bright and sterling gold.

The wrongs that have thus been inflicted upon railway property might be multiplied, but we have said enough to produce a lasting impression as to one of the great causes of railway depression. Another cause which has operated unfavourably has been an extravagant outlay on works; as if railways had not suffered enough from legislators, lawyers, and landholders, the contractors must step in to superadd to the evil, and to heap Pelion on Ossa.

Too much money has been spent in ornamental work of a costly character, where substantial and less expensive work would have sufficed, except to establish reputations; double lines have been made where single ones would have served the purpose; and works have been carried out at a lavish expenditure, and without any attempt at economy; and contractors (once navvies and masons) have realized large and even immense fortunes, and have become the envied purchasers of some of the richest domains of our ancient gentry and aristocracy.

Other evils have arisen from the construction of branch lines on the same expensive system as the main lines, the purchase of contractors' lines at exorbitant prices, and giving unduly considered and ruinous guarantees. There is scarcely one of our main lines whose dividends have not gradually become reduced year by year, from 14, 12, and 10 per cent. from the above causes; and to prevent competition by keeping out other companies from their district.

"Fine by degrees and beautifully less."

to 5, 4, and even less per cent.; and now every one looks with suspicion on railway securities; and many congratulate themselves, and say, "Thank God, I am not a railway shareholder!"

But, notwithstanding these adversities, however, and while the effects from them continue, we must not expect a considerable extension of the railway system in this country until confidence is restored and they are put into a financially good and proper position. There is hope dawning in the future; and in the same way that the Government could relieve a panic or great pressure in the money market, as in May, 1866, they could place railways in that position that would enable them to work out their own redemption.

It is highly desirable that the railway system in this country should be extended and completed, so that every town, and even village, should be placed on the iron web of communication with other parts of the country; otherwise they are completely isolated,—shut out from proper facilities of trade and commerce; and they must inevitably decline in prosperity and population.

It is surely the imperative duty of the Legislature to encourage and foster these undertakings, and to aid their legitimate progress in every way; and means should be taken to secure Acts of incorporation by steps more simple and inexpensive than at present.

Competing lines, with their ruinous contests, should be avoided and discouraged as much as possible, and an independent attitude should be assumed by railway promoters towards landholders; as, wherever railways traverse the land in the vicinity is greatly increased in value; in fact, landholders have derived more pecuniary benefit from the introduction of railways than any other persons; therefore they should surrender their land at its fair market value; become cordial promoters, not greedy antagonists, bearing in mind that the land wanting the facilities of railway communication loses at least

half its value. Greater circumspection is required in selecting and forming branch lines, the estimated cost of which should be properly and correctly ascertained, not left for contractors to work out, and then to be bought up at their valuation. The works should be substantially and economically carried out, specially adapted for the amount of traffic that is likely to pass over it, and suited to the wants of the country through which it passes.

If most of the stipulations here shadowed forth had been adopted as a rule, and which we expect has been the exception on the Irish lines, we should not have heard of the urgent appeals to the Government of the country to endeavour to relieve them of their pecuniary difficulties; and, indeed, I do not see what greater claim they have than many lines in this country similarly circumstanced: probably the latter would be only too happy to meet with a benignant, fatherly Government that would arrange and satisfy their debts, and place them in a more useful position for the future. After the completion of the works, one of the most important items in railway finance is the working expenses: the cost of working the Irish lines has been stated to vary from 37 to 75 per cent.; but it is said that two of the principal Irish lines cost only 43 per cent., which compares favourably with many of our English lines; if there are any lines whose working expenses exceed the sum named, the companies are conducting the traffic at an enormous sacrifice, requiring immediate provision and retrenchment, which it is just as possible to do on one line as upon another.

From the length of time many of the Irish lines have been constructed and in operation, it must fairly be supposed that the traffic of the country is pretty well developed (though there are complaints to the contrary), therefore the only chance of reaping proper returns on the capital invested must be contingent on an amelioration of the lines, and a necessary reduction of the working expenses. It is strange that notwithstanding so many years the railway system of this country has been in operation, there is very little trustworthy data or statistics to enlighten and regulate companies or their officers in the working of them; and I think there ought to be full and complete statistics prepared by every company, to which every shareholder might have ready access, so that in every way the relative expenditure of each line might be compared, which would lead generally to a more economical and uniform rate of expenditure and system of management.

It is not sufficient that Government alone should be furnished with this information, as that too often is shelved in the dull recesses of their offices, or issued in an impermeable Blue Book; it should be published far and wide, and exposed to the broad light of day, so that every party interested may run and read, if he so desire it.

On looking over some statistics we had collected from about twenty-two of the principal lines of railway of this country, we find the working expenses to vary from 37 to 62 per cent., and this great difference ought not to exist, because the circumstances and conditions of the respective lines could not differ so much as to make the working expenses of one almost double that of the other; and in the instance of the Irish lines before mentioned, quite double the actual outlay of some lines. The extravagant expenditure in the construction of the works and other causes, are now unhappily producing their effects on the prosperity of the undertaking, and telling fearfully on the dividend; and although the Irish lines compare favourably at that respect with those of England, still they have been too expensively constructed to be worked with sufficient profit, and that is felt strongly through every artery, vein, and nerve of their system.

The average cost of the English system of railways amounts to the exorbitant sum of £6,698. per mile, and there is only one of the Irish lines that has exceeded that amount, and that is the Dublin and Kingstown, which has cost 45,000l. per mile; the Newry and Enniskillen cost 32,934l.; and the Cork and Passage, 44,478l.; but the great lines did not cost so much: the Great South-Western (Dublin to Cork, &c.), cost 21,898l. per mile; and the Midland (London to Birmingham, &c.), cost 11,023l. per mile, while other lines varied from 10,021l. to 21,398l.; and the lines from Londonderry to Enniskillen, cost only 8,449l., and the Killarney Junction, 5,863l. per mile respectively.

The latter lines compare favourably with the cost of some of the continental lines. In Belgium, for instance, their system of railways averages about 8,000l. per mile; the Sardinia railways, from 7,000l. to 8,000l. per mile; but it has been the special privilege of the United States to show us the way how to construct cheap railways. It is true they had no heavy Parliamentary expenses, or grasping landholders to deal with, and, so far as the cost goes, they have certainly set us the example how to make cheap railways.

In quoting from an official report of the State of New York, the average cost of constructing their single lines, with turn-outs, or sidings, at intervals, was only 7,448l. per mile; and for a mixed gauge (double and single) 9,483l. per mile, for the whole of the lines in that State, comprising a length of about 2,341 miles. While in other parts of the United States single lines have been constructed at a much cheaper rate per mile; for instance, the Maine Central, 109 miles long, cost only 2,306l. per mile; the Macon and Western, 102½ miles, cost only 3,237l.; the Madison and Indianapolis, 132 miles, cost 2,331l. per mile; and the "Niagara," 180 miles long, was estimated to cost 3,050l. per mile: the first line paid 13½ per cent., the second 12½ per cent., and the third 8½ per cent. dividends.

And our Canadian brethren, with the dread of the Grand Trunk and other lines before their eyes, have taken a leaf out of brother Jonathan's book, as the new line from Halifax to Riviere de Loup has been estimated to cost only 7,000l. per mile, and we have no doubt will be well executed for the money.

Some of the Indian railways have also been cheaply executed: the Scinde has cost from 7,000l. to 8,000l. per mile; the Great East Indian, 8,500l. per mile; the Bombay, Baroda, and Central India, 6,144l. per mile; and others equally moderate in price,—and these lines have been carried out under Imperial guarantee and control. Some of these lines, executed under the direction of English engineers, have been well and substantially made; and it must not be inferred that, because we instance the American railways as models of cheapness, they are all that could be wished, and that they possess no defects. We know well there is great room for improvement; but what we would deprecate for Ireland is the heavy cost of construction of the English and their earlier lines, and, on the other hand, the cheapness of the American lines, at the sacrifice of utility. There must be some happy medium, some intermediate point of excellence and cost, between what are known as the European and the American systems,—a combination, or, it may be, various different combinations and adaptations, which will decrease working expenses in a greater ratio than they can possibly increase first cost.

The American system has opened out and developed the resources of a considerable extent of country in virtue of its cheapness, which would not have been possible if the English system of construction had been adopted, and a modification or adaptation of the two systems, avoiding the defects of the one and the great cost of the other, occasioned by elaborate works and other causes, might be usefully employed to complete the Irish system; indeed, it might be applied with advantage in completing the small arterial lines of even our English system.

To show the extravagant manner in which some details of our railway works have been conducted, even the "permanent" way or upper works of our lines have exceeded the entire cost of many of the American lines, and, indeed, of some of the Continental ones. They have varied in many instances from 4,500l. to 7,000l. per mile; and on the London and North-Western, with a 75 lb. rail, it cost 8,000l. per mile, while the elaborate and complicated works of the Great Western cost 9,000l. per mile.

But the American system consists of light works, no heavy cuttings or embankments; the gradient skims over the surface of the earth, just filling up and lowering slight inequalities; their gradients are necessary short and chopped up, not long and continuous like ours, and they have ventured to ascend steeper gradients than with us, our steepest incline being the Bromsgrove Lick, on the Midland line, which is 1 in 27½; while the Americans have had the boldness to mount inclines of 1 in 18 and 1 in 20 on the Virginian Central Railway.

The advantage and importance of steeper gradients is fast gaining ground in the opinion of engineers and scientific men, as evidenced

recently by the construction of the Mont Cenis Railway, which forms an important link connecting the system that traverses France with Italy and the southern part of the Continent.

This line of railway passes along that extraordinary engineering work constructed by the fertile genius of Napoleon I., for military purposes; and in addition to the double line of rails, it has a central rail laid so as to be about 12 in. above the level of the outer rails, and on this central rail horizontal guide-wheels attached to the locomotive and carriages act on either side, so that they are enabled to pass very sharp curves, even of 44 yards radii, and with the additional bite or grip of the rail to ascend the steep incline from Lanslebourg to the summit, a distance of 6½ miles in length, with an inclination of 440 ft. per mile, or 1 in 12, and after passing along the summit level of 3 miles in length, skirting the lake Cenis, to descend gradients of 6½ miles long to Molaretta, at the rate of 376 ft. per mile, or 1 in 14, and from Molaretta to Susa, of 6½ miles, or 1 in 15.

On the subject of inclines, just as the bulk of our principal lines are completed at an unprecedented cost, we are turning our attention to a cheaper system of railways with steeper gradients when it is almost too late to reap much advantage from them: if these gradients had been taken into consideration at an earlier period of the railway era, we probably should have heard less of railway panics, difficulties, and depression of railway economies.

There cannot be much doubt that one of the greatest drawbacks to the railway system of Ireland is the number of little petty companies that the Legislature has permitted to be organized to construct and conduct their management, with the inordinate number of employees to work the traffic of the respective lines. To manage their 1,583 miles of railway, they have thirty-five companies, and I suppose thirty-five staffs of officers of all kinds, from engineers-in-chief down to stokers and platelayers, with separate rolling stock and working plant; and it appears it has only just dawned upon them that, by a judicious system of amalgamation and consolidation, their boards of management may be considerably reduced, likewise their staff of officers, and other expenses.

To show that this can be easily accomplished, what has been done in this country in the shape of amalgamation, on the London and North-Western Railway, may be pointed out. They work satisfactorily 1,319½ miles; the Great Western, 1,311 miles; and the Midland and other lines have great lengths of railway under their management and control; the whole of these are satisfactorily worked and managed with success, and are not so large as to be beyond the power or scope of single boards of management. The reduction of boards of directors, and staffs, would at once add a considerable per-centage to some that already pay a dividend, and would possibly enable others to pay one that have hitherto been without, and would not detract one iota from a proper system of control and management, the reduced staff of officials would be fully employed, and the greatest available benefit derived from a constant and regular use of the rolling stock and plant.

To accomplish this object the Government, or new companies established under their auspices, might purchase the existing lines at the market value of the stock, form new boards of management and officials, and commence the working of them upon a new, improved, and economical system, regulating the trains according to the amount of the traffic, the density of the population, and the resources and necessities of the country.

It should not be said that railway companies rejected traffic, as is asserted of some Irish lines; their object ought to be to increase and develop it in every way, and convey it at those rates that would be remunerative to the shareholders; at the same time looking at them in a commercial point of view, we would not work a line at a loss, as it cannot be expected that capitalists should establish means of communication, and be compelled to work them *pro bono publico* at a dead sacrifice of the sinews of war, as the profitable employment of that precious commodity alone justifies its uses, and thereby increases the stability, power, and wealth of the nation.

On comparing the map of Ireland, published by the Royal Commission in 1858, and the present one with the lines of railway laid down upon it, it will be found there is very little deviation

from the Government plan as originally laid out, as the present lines are carried out almost identically with it, showing forcibly the advantages the country derived from the preliminary step taken on that occasion. It appears to us, on attentively studying that map, that the Irish lines of railway may be advantageously worked by dividing them into three districts, with boards of directors; and, taking Dublin as a centre and focus of traffic, with the lines radiating from it, I would divide them into the northern and eastern district, the northern and western district, and the southern district.

The northern and eastern district would comprise Dublin to Belfast, with the lines radiating from the latter town, and from Dundalk, and the Irish North-Western line, making a total length of about 622 miles; the northern and western district, comprising the Midland Great Western, and the lines to Meath and Clonsilla, making a total length of about 490 miles; and the southern district, comprising the lines from Dublin to Wexford, Cork, Waterford, and Limerick, with the branch lines, and the lines radiating from the above and other towns, and making a total distance of about 741 miles or thereabouts.

The above divisions would be convenient to work, and much less in length than some of our English lines, that are worked with advantage and success; and our leviathan companies are not even satisfied with the great extent of railway now under their management, as they are adding annually to the lengths, by the construction of new works, or absorbing or amalgamating with other and competing lines.

If the Irish lines of railway, which have cost twenty-seven millions of money, can be bought up for 19,500,000, which is a sacrifice of nearly one-third of their first cost, and these lines now yield a revenue of 900,000, per annum, and by a careful revision of management, the working expenses, be brought within reasonable limits, such as those of their two main lines, or to even say fifty per cent., for the sake of illustration, the Irish lines of railway ought to yield a very handsome revenue, something like 5l. 10s. per cent., and thus to make the Irish railway sought for as an investment.

But from the tone of the discussions at the half-yearly meetings of some of the principal lines, it appears the shareholders are fully alive to the value of their respective properties, as those that pay a moderate dividend are satisfied with things as they are, and would rest thankful; nevertheless not doubting that the Government would pay the full value of their property if they purchased; and it is only those lines that pay no dividend, and are hopelessly involved, that are ready to make heavy sacrifices to be rid of their troubles and responsibilities.

Of course, if a general plan of purchase and amalgamation be carried out, the same course of policy would have to be adopted as was pursued in South Wales under the new Road Act, where the Turnpike Road bonds were taken at their market value; but I have no doubt that the mere supposition or probability of Government purchasing the railways would have a sensible effect on the value of those securities, and considerably enhance the market-price.

Therefore, if any step be taken it should be done promptly; otherwise, from the improved prospects of trade and commerce, the gradual, slowly, but surely approaching period of returning confidence, with a fair harvest, a cheap rate of money, and a plethora of it in the coffers of our capitalists waiting but for the happy moment to employ it with advantage, safety, and success, a much higher price will be demanded for them; and though the shareholders may ask a small sum, comparatively, in the day of their difficulties and depression, this will not satisfy them, nor be accepted, when that period has passed away, and trade and commerce flourish once again, with all their attendant train of blessings in profusion, peace, and happiness.

NEW CORN EXCHANGE, NEWPORT, MONMOUTHSHIRE.—At a meeting of merchants and others interested in the formation of a corn exchange, it has been determined to form a limited liability company to raise a capital of 1,000, in 200 shares of 5l. each. Mr. Hancorn, architect, has been requested to draw up a plan for the erection of a building, on a suitable site available for the purpose, at the back of the Steam-packet Inn, Old-green, and close to the High-street market-place. Several gentlemen have already promised to take shares.

THE BRITISH ASSOCIATION IN DUNDEE.

CONTINUING our notice of the proceedings of the Association, we come to the Section E, "Geography and Ethnology." After an address by the President of the Section, Sir Samuel Baker, a paper was read by Lieut. S. P. Oliver, R.A., descriptive of two proposed routes through Nicaragua for interoceanic communication between the Atlantic and Pacific. Various routes, he explained, had been proposed at intervals during the last twenty years, from the Tehuantepec route on the north to the Darien Canal and Humboldt's Atrato River route at the south. Of all these, the only line in operation was the railway between Panama and Aspinwall, successfully worked by an American company since 1855. Of the others, the only routes at all capable of competing with the Panama Railroad were those through Nicaragua. One of these, according to the paper, has been and is partially worked, though unsuccessfully, by the Transit Route via the River San Juan and the Lake. The other, soon likely to be carried out, is that proposed by Captain Pim, R.N., for a railway. The first of the two last-mentioned routes has been more than once advocated as suitable for water-communication—indeed, even for a ship canal—from the Atlantic to the Pacific, in 1850. The other has been only in want of sufficient capital to carry out the terms of the local Government concession. Both these routes, he said, necessarily follow the configuration of the valley through the elsewhere uninterrupted chain of impracticable Cordilleras. Lieut. Oliver then gave a description of the country surrounding the Nicaraguan Lakes. The difficulties of the navigation of the San Juan, against which the Transit Company have to contend, were exemplified on his ascent of the river after having passed the harbour of San Juan del Norte, or Greytown. The steamer they were in, drawing but eighteen inches, at last got aground, and could not be got off, so that they had to take to flat-bottomed boats and canoes. At the divergence of the San Juan with the main stream, or Colorado month of the river, about nineteen miles from Greytown, they observed the remains of a futile attempt to dam up the Colorado branch, in order to divert the stream down the San Juan branch—a stupendous undertaking. The low banks and marshes of the delta are such that the closing of the Colorado would cause the flooding of the surrounding country. Mr. Oliver thought that a more direct and easy route might be found, up the valley of the San Juan, across the mountains, to the tablelands of Costa Rica, and San Jose. He hoped this would soon be effected, as Captain Pim proposed to explore this unknown river. From San Carlos, the regular transit route, as at present carried out, is by a paddle-steamer to Virgin Bay, sixty miles, then across the narrow neck of land, twelve miles, to San Juan del Sur, making the total length of this route, from ocean to ocean, 165 miles. On the 28th March, Mr. Oliver and his friends started off to follow the party under Mr. Collinson, which was cutting its way through the woods to the Rama River. They had been cutting a whole month, so that they had made considerable progress. The cutting, called by the Spaniards El Picquet, commenced at the very shore of the lake at San Miguelito; the pathway being bored out at intervals as required for the levelling and survey, did not make the tract a difficult one to follow, but for the first seven miles over savannah and jicaral they found it a better course to follow the regular cattle-route to the uttermost rancho. They, therefore, skirted the foot of some hills to the north through occasional thickets of bamboo, and halted first outside the denser forests at the last station, where water was procurable in a grove of stately coroso palm. The mosquitoes drove them nearly mad in the night; and at early daylight they were glad to be off, entering the cutting into the vast and hitherto impenetrable forests of the Musquito frontier. The path travelled through very difficult for the oxen with cerones to pass, and frequent halts took place in order to shift the cerones and rest the beasts. On the 7th of May they came in sight of Captain Pim and his party, who had come in search of them. He accompanied them to their last camp, and at once despatched a pipan full of provisions up to the party still left behind. They proceeded in canoe on the 8th down to the Rama station, where the bulk of the stores was deposited, and, leaving all rapids, found themselves in the

navigable waters of the Rama River, reaching the village of Rama Indiana by night. Here Collinson returned to finish his survey; and Lieut. Oliver's presence being no longer required, he accompanied Captain Pim down the Rama to the Atlantic, proceeding on the 9th to Greytown by canoe. Of the engineering details of the line, he said, it was not his province to speak. Mr. Collinson's report would soon appear in full when many erroneous ideas about the course passed over would be done away with. However, too much credit, he affirmed, could not be given to Mr. Collinson and Mr. Deering for their perseverance, energy, and courage with which they prosecuted their survey in the face of more than ordinary difficulties.

Admiral Ommanney asked as to the harbour that might be formed at the ends of the proposed line.

Lieut. Oliver said the engineering question was almost taken out of his hands; but he knew that two harbours were proposed by the engineers—one at Monkey Point, on the east coast, which would be well sheltered from the only dangerous winds that prevailed in that place, and the other at Realejo, on the west, at which there was a splendid bay, capable of sheltering a large fleet.

Subsequently, a paper "On the Physical Geography of Nicaragua," by Captain Manry, of the United States Navy, was read. It showed that without meteorological observations, which might be undertaken through the agency of the Academy of Science established by the late Emperor, and by the Geographical and Statistical Society of Mexico, none of the routes proposed could be adequately considered as to the respective merits. The author compared the Panama and Nicaragua routes, referring to the prevailing winds of the Pacific ocean, and concluded by expressing an opinion favourable to the Nicaraguan route as compared with that of Panama. A paper by Captain Bedford Pim, "On the Mining District of Chontales, Nicaragua," was afterwards read.

To the papers on Ethnology and the Races of Man we shall give attention elsewhere.

In the same section a Report of the Palestine Exploration Fund was read by Captain Wilson, R.E. This fund, as our readers may know, was commenced with a subscription of 500l. from Miss Burdett Coutts; which was followed by one of 100l. from the Royal Society, and 100l. from the Royal Geographical Society. The original object was that of a water-supply to the city of Jerusalem. Capt. Wilson's report stated the manner in which the 100l. voted by the British Association last year had been expended. The half of that sum had been used for general purposes, and the other half for instruments. The first sum had been applied towards paying the expenses of Lieut. Warren, R.E., who had charge of the second expedition sent out by the society. The results already obtained might be stated as follows:—The construction of a map, on a scale of 1 in. to a mile, of the highland districts of Judea, to the north-east and south-west of Jerusalem, of the Jordan valley for about 16 miles north of the Dead Sea, and of a large portion of the plains of Philistia. These surveys, combined with those made in 1855-56 by Wilson and Anderson, gave, for the first time, materials for a correct map of more than three-fourths of the Holy Land, and do much to remove the reproach that no trustworthy map existed of this most interesting country. The sum of 50l. granted for meteorological instruments has, under the superintendence of Mr. Glaisher, F.R.S., been expended in the purchase of four sets of standard instruments, which have been sent to different cities in Palestine; and the observations taken at these places will, with those taken at Jerusalem, form the basis of an accurate knowledge of the climate of Palestine, so remarkable in many respects.

Captain Wilson then read a detailed paper, giving an account of recent discoveries in and around the site of the Temple at Jerusalem. The writer first referred to the publication of the Ordnance Survey maps of Jerusalem, under the direction of Colonel Sir Henry James, among the most interesting and valuable of which were those of the Haram ash Sharif, the enclosure which contains within its walls the site of the Jewish Temple, and, as some hold, that of the Holy Sepulchre also. The paper gave a minute description of the present appearance of this piece of ground, and of the buildings still remaining upon its surface. With the exception of a deep hollow in front of the Golden Gate, a slight rise towards the north-west corner, and

the raised platform in the centre, the surface of the area is almost level, and has an elevation of 2,419 ft. above the sea. On the platform stands the well-known mosque Kubbat as Sakbra (Dome of the Rock), which contains the sacred rock from which Mahomet is said to have ascended to heaven. At the south-east corner the level surface is formed by the vaults known as Solomon's stables, the age of which has been much disputed. In connection with the mass of masonry at the south-east angle, Lieut. Warren has made important discoveries (already referred to in the *Builder*). During the progress of the survey, a large arch connecting the Haram area with the causeway was discovered north of the Wailing-place. This arch is one of the most perfect and magnificent remains in the city. Much information was also obtained about the ancient water-supply, which was admirably arranged. The water was brought by an aqueduct from the pools of Solomon, and stored in rock-hewn cisterns, with connecting channels and arrangements for overflow, &c. Several of the cisterns were found to be of great size, ranging from 25 ft. to 50 ft. in height.

Lieut. Anderson next read a paper, entitled "Notes of a Reconnaissance of some portions of Palestine." Explorations on horseback were made in different directions over the valley of the Jordan, and with a prismatic compass, the positions of all the important points were fixed by bearings taken to points previously determined. A map is to be prepared showing all the important features that were seen as they travelled from Jerusalem, through Kefer Saba, to Caesarea and Athlit, and southward along the plain of Sharon, including Ramleh, Beit Jebrin, Kebron, &c.

A long discussion followed, in which Sir Henry James, Sir John Bowring, and others took part.

The Rev. H. B. Tristram read a paper "On the districts of Palestine as yet imperfectly explored." He said there were many castles which, if visited, would throw great light upon the surrounding districts. The place of the murder of John the Baptist and the Moab district were almost *terra incognita*. Of the country of East Moab nothing whatever was known. He hoped that this section of the British Association would go on the principle that nothing was known while aught remained to be known.

In the same Section a paper was read by Mr. Cyril Graham on the "Explorations in Palestine to the east of the Jordan, and on future intended operations." After some opening observations, he said what was proposed was in the first place a trigonometrical survey on a large scale, in which every village, and every mound which marked the site of what was once a village, every glen, every spring, every feature, be it ever so small, of presumptive importance, would be delineated. He continued: "Then we want to know the materials of which old Hermon and the other mountains were composed, the fossil remains of ancient creatures which were embedded in their sides, the nature of the soils, all the trees of Lebanon, all the flowers of Carmel (which cover it like a carpet in the spring of the year), all the fishes of the Sea of Tiberias, and the phenomena of that most wonderful of basins, the Dead Sea. We want, too, a catalogue of the beasts and reptiles, in which the crocodile will appear; of the birds, of the butterflies and beetles, and the smaller entities of creation in all their varieties. In short, we wish that book rewritten, which has not been transmitted to this day, composed by a master of science nearly 3,000 years ago, that treated of plants, from the hyssop which is on the housetop, to the cedar which is upon Lebanon, and of the birds, and the beasts, and the creeping things, and the fishes of that land." He then spoke of the material that was to be expected from the country on the other side of the Jordan.

In Section F, "Economic Science and Statistics," after an address from the President of the Section, Mr. E. Grant Duff, M.P., who referred to the omission of teaching of the principles of Economic Science, from the Universities, to the questions connected with Trades Unions, and to the importance, not merely of "technical education," but of having, like Germany and Switzerland, a really good system of elementary and middle-class education as a foundation, the report of the Committee on Weights and Measures, and Coins, or so much of it as related to the first branch of the subject, was read by Professor Leone Levi; and a paper was read by Mr. James Yates, entitled "Reasons why the Office of Warden of the Standards should include Standard-weights and Measures of the Metric

System, in addition to the Standards of the Imperial Weights and Measures." It appeared from the report that the method recommended to the Board of Trade by the Metric Committee of the Association, by the International Statistical Congress, and by Mr. Ewart's Committee of the House of Commons, and adopted in the Quarterly Account of Births, Deaths, and Marriages, of having items stated in the terms of the Metric as well as the Imperial System, had not been adopted by the Board of Trade, simply on the ground of "clerical difficulties." The mural standard, which had been the subject of so much care, both as to precision and material, the report said, was now completed. The two units now authorized by law—namely, the yard and the metre—are shown together, for comparison, with their divisions, the yard in red and the metre in blue. "By very careful observation," according to the Committee, "it has been found that the measures on this instrument are exact to within the two hundred and fiftieth part of an inch, or the tenth part of a millimetre." The standard is made of white glazed porcelain (porcelain being the material found to be least affected by changes of temperature), and it is fitted into a mahogany frame for suspension on to the walls of Custom Houses, Markets, Chambers of Commerce, and other public buildings.

The report then detailed the proceedings of the Conference with delegates from the Chambers of Commerce, when resolutions were passed in favour of the provision of standards of metric weights and measures, and of the stamping those in general use, so as to avoid the inconvenience which would prevent adoption of the system as permitted, and in favour of an introduction of the system into the public departments, as the Post-office and the Customs, and otherwise. It also gave particulars of the Conference in Paris held in connexion with the special exhibition which the Imperial Commission organized at the suggestion of the Committee and of the International Decimal Association. At that meeting M. Jacobi's report on weights and measures, which had been adopted by the organizing committee, was read. As regards nomenclature, that report was against any material change (and very rightly so); and it is of course equally opposed to the use of old names for new quantities. Neither did it favour the combination of the old and new systems, such as the use of the foot side by side with the metre, even as a measure of transition. M. Jacobi's report, in conclusion, recommended the immediate tuition of the metric system in schools, and its use in statistical and other public documents. At the same conference there was an important discussion as to the state of the standards in France, and as to the exact correspondence of those at the Archives and the Conservatoire des Arts et Métiers. A commission being appointed to inquire and report, it was stated that on the 15th of October, 1863, a commission had been charged by the Ministry of Agriculture, Commerce, and Public Works to make a comparison, when the metre at the Conservatoire was found to be 0.0000329 more than a metre. The statements were considered to be "highly satisfactory, as giving every guarantee of exactitude, and completely dispelling every doubt suggested on the subject." The commission appointed by the committee afterwards inspected the metre and kilogram at the Archives and Conservatoire, and made a protocol signifying their satisfaction. The report read in the Section concluded by saying that though the introduction of the metric system throughout the Continent had been accelerated by the Conference, the use of the system in the United Kingdom, though legalized, had made little progress, or even in the education of the people; and the committee of the Section were of opinion, and recommended, that a bill should be introduced in Parliament to make the use of metric weights and measures compulsory after a given and not distant time. Mr. Yates's paper showed that metric weights and measures are now made in considerable quantities in London, Birmingham, and Sheffield; but the manufacturers apply in vain at the proper offices to have them tested. It may be useful here to mention that the report of the English Royal Commission declared the metre to be of the length 39.37079 in., and that, on this, Dr. Craig, the author of an account of the metric system lately published at New York, which Mr. Yates says appears to be written with great skill and care, observes,—"More recent determinations reduce this somewhat; and the figures 39.37 accord very nearly with the average

of the measurements made in this country (North America) and in England, and may be assumed as practically the exact truth." Mr. Yates's paper showed that besides the introduction and promulgation of the system by France, Belgium and Portugal had adopted it, that Germany and Russia were tending in the same direction, and that the United States had introduced the system into the Post-office and the Customs department. There are now, in the States, postal scales graduated in grams; whilst a law ordains that the half-ounce is to be considered equivalent to 15 grams.* Mr. Yates concluded with the recommendation that the recently appointed Standard Commissioners might be made the instruments of expediting the adoption of the metric system in this country.

Mr. Edward Hall mentioned the discrepancies he had found to exist between the centimetres marked on a London 2-ft. rule, and the mural standard on the wall opposite the Senate in Paris of 1862 in metres in the French department of the Exhibition. He also referred to the inconvenience and confusion which sometimes resulted from the French printers using commas for decimal marks, instead of periods, as in practice here.

Colonel Sykes said that wherever the decimal system had been introduced it had been found to save three-fourths or at least one-half of the labour. He believed that the discrepancy mentioned by Mr. Hall must have been owing to the measure he had applied having been affected by the atmosphere.

Mr. Hall said that the discrepancy he had found was too great to be accounted for on the supposition of Colonel Sykes.

Sir John Bowring spoke in favour of the decimal system, and said that he never knew of a Chinese boy making a mistake in an account, simply because he used his ten fingers, and their different joints, in his calculations.

Sir George Campbell said he believed that if they were to begin on philosophical principles to make a new multiplication-table, they would not use 10 but 12 as a multiple; and it might be for consideration whether, as they proposed to make a change, it should not be a more radical one than had been suggested.

Mr. Manockjee Cursetjee said that the adoption of the metric system would be particularly beneficial in India, where the weights varied every 200 miles.

Professor Levi said it was too late in the day to adopt 12 instead of 10 as a multiple. He regretted that Professor Piazzzi Smyth should spend his time in looking at the Pyramids, and in trying to find out what was the use of the casket inside that tremendous amount of bricks. He thought all men of science should co-operate in endeavouring to procure the general adoption of the metric system.

Professor Rogers moved "That this Section recommend to the Committee on Recommendations the propriety of moving the Legislature on the necessity of introducing a knowledge of the metric system into all schools which receive Government aid, and are under Government inspection, at as early a date as possible."

Sir John Bowring seconded the motion, which was unanimously adopted.

Decimal coinage was taken up on the following day: Professor Levi read so much of the Report of the Committee on the "Uniformity of Weights, Measures, and Coins" as related to "Coins" [it might better have been said to coins and accounts]; and Mr. F. P. Fellows read a paper "On the various methods in which our Coinage may be decimalized; the advantages and disadvantages of each." The report, or portion of report, was confined to the statement of resolutions arrived at in Paris at the International Conferences lately held. Mr. Fellows proposed a scheme making the farthing the unit. Sir John Bowring believed that the adoption of such a method would cause confusion in the monetary system both at home and abroad. He was of opinion that the sovereign should be the decimal unit of all coinage.

Professor Levi gave an outline of what had taken place as to coinage at the International Conference. The first proposal was for the gold

* How long is the stupid system of the English and French international postage-rates to be allowed to be in the rear of all other arrangements in the relations between the two countries? An ordinary letter between Dover and Calais, 21 miles, will cost 3d. postage; whilst the same letter would go, say, 700 miles or more in the United Kingdom, for 1d. The persistence in such a state of things is enough to make every friend of progress in either country lose all hope and heart.—Ed.

five-franc piece as standard, but it was found to be objectionable as being too small and very costly of manufacture. It was considered that a 25-franc piece should form the unit, but as the present sovereign was equal to the value of 25 francs and 20 centimes, its value would require to be reduced, or the present coinage recalled. Such a step would seriously interfere with the commerce of the country. Lastly, the 10-franc piece, which happened to be equal to the value of 100 pence of the most recent form, and had been recommended, in the first instance, as a subsidiary coin only, and were it introduced, the people to be recommended to keep their accounts in ducaats and pence, and, if successful, they should replace the pound by its present division. The two systems of the pound reduced, and the ducaat of 10 francs, were essentially international, but with the difference that with the sovereign brought to 25 francs as a unit, calculations would still be rendered necessary for reducing international value from one system into another.

On the last day of meeting of the Section, a paper was read by Mr. P. H. Thoms, entitled "Observations on Community of Language, and Uniformity of Notation, Weights, Measures, and Coinage." The author, by examples, such as those of the Admirable Crichton, and other Scotchmen, who acquired distinction, and even held professorships on the Continent, showed the value of the Latin tongue as a means of communication, and that the growth of French as a prevailing language led to the conclusion, which was by no means to be regretted, that in two or three generations it would become the spoken language of the Continent generally. English would, however, supplant all the other languages of North and South America, and even of India, if not all Asia, besides Australia, New Zealand, and the islands of the Pacific. English would prevail over the southern portion of Africa, and French over the northern. The remainder of the paper was chiefly devoted to advocacy of the views put forward in reports and speeches that we have mentioned.

A not-unimportant paper, as connected with the subject of weights and measures, and we may say with the matter of the supply and purchase of certain building-materials, and entitled "The Measure and Value of Oats," was read by Mr. A. S. Wilson, in the same Section. It showed that, whereas, in various districts, corn was sold by one or other unit of weight, which had usually reference to a weight per bushel, the weight of the measure might differ enormously, because there was no legal or uniform way of filling the bushel. Assuming it is correct that the weight per bushel is an index of quantity of meal per grain of the corn, there should be one uniform way of filling the measure. The author of the paper had adopted the arrangement of a perforated filler placed one-fourth of an inch above the rim of the measure; and he stirred the corn through the holes, thus filling the measure equally all over, constantly from the same height, and without enclosing masses of air. Generally, this mode of filling increases the weight above that from the ordinary basket-filling, from three to eight pounds. Moreover, with certain sorts of oats, the weight generally increases each successive trial with the same sample. "The weight per bushel will thus increase, while the absolute weight diminishes." The paper concluded:—"It appears, therefore, to the writer, that a uniform corn-trade should be based on a uniform unit of weight, the quality or comparative value to be tested in the manner adopted in these experiments, and that the bushel should be wholly set aside."

THE DECAY OF STONE: ITS CAUSE AND PREVENTION.

In the Chemical Section of the British Association for the Advancement of Science, at the Dundee meeting, a paper on the decay of stone was read by Mr. John Spiller, of Woolwich, who has been for several years occupied at intervals in studying the causes of the decay, and in experimenting with such chemical re-agents as appeared to offer any promise of being usefully applied as means of prevention. We report the paper because of the peculiar importance of the subject, though it does not establish much conclusively. The author said:—"At an early stage of the investigation I arrived at the conclusion that the corrosive action of sulphurous and sulphuric acids in the atmosphere, resulting from the combustion of coal fuel, operates, in large

towns especially, in a destructive manner upon dolomite and the numerous class of limestone commonly employed in public buildings. This chemical action, aided no doubt by the simultaneous attack of carbonic acid and moisture, and in the winter season further supplemented by the disintegrating effects of frost, must, I conceive, furnish a sufficient explanation of all the facts observed. I would here remark that Dr. Angus Smith, Mr. Spence, and others, have already directed attention to the immense scale of production of these sulphur-acids, and have even quoted statistical data showing the extent or degree of pollution of the air from this cause in the manufacturing districts of Lancashire. When it is known that the best class of coal and coke contains usually one per cent. of sulphur, and that this proportion reaches a treble equivalent when stated in the form of the final oxidised product—hydrated sulphuric acid—it follows that a ton of coal of this high quality necessarily evolves during its combustion nearly 70 lb. of oil of vitriol. Here, then, is the origin of the sulphates which we find invariably present in the loosened crust of decayed stones, whether of calcareous or magnesian character. I have tested numerous samples of dolomite, Caen, Bath, and Portland stones fresh from the quarry, and in no instance found more than a trace of ready-formed sulphate, whereas scrapings taken from the decayed portions of the stone of the new Palace at Westminster are bitter to the taste, in consequence of the comparatively large amount of sulphate of magnesia formed during a few years' exposure to the sulphurous gases occurring in a metropolitan atmosphere. Caen stone from several buildings and localities, Portland stone, and even old faces of chalk cliff in the neighbourhood of Woolwich, were in like manner found to contain appreciable quantities of the sulphate of lime, having undoubtedly a similar origin. A close examination into the circumstances attending the decay of stone at the Houses of Parliament invariably shows an increased liability to corrosion under the projecting eaves and moldings, and at such sheltered parts of the stone surfaces as are usually covered with soot and dust, and are in a position to retain for the longest period the moistures absorbed during a season of rain. The plain ashlar are throughout very much less affected than the buttresses, gables, and other elaborately carved and highly ornamental portions of the work, which appear to be more assailable by reason of their relatively greater superficies. In many places the disintegrated stone exhibits white crystals of the sulphate of magnesia, which, alternately dissolving and recrystallising in the pores of the stone, may be conceived to exert a disruptive action sufficient to account for the scaling and fracture of the dolomite, which has been so often made the subject of complaint and regret. With the view of overcoming some of these difficulties, I submitted a plan to the Royal Commissioners charged with inquiring into the decay of stone at Westminster, in May, 1861, which consisted in the application to the cleaned surfaces of the stone of an aqueous solution of superphosphate of lime, a salt remarkable for its action in hardening the surfaces of chalk, Caen stone, or other calcareous building stone to which it may be applied either by brushing or immersion, and which acts upon the carbonate of lime in the stone, giving rise to the formation of Böhmer's salt (crystallized diphosphate of lime— $2\text{CaO}, \text{H}_2\text{O}, \text{P}_2\text{O}_5 + 4\text{Aq.}$). My suggestion received a practical trial in a competition, to which other five candidates were admitted by the Right Hon. the Commissioner of Her Majesty's Works in April, 1864; and, in regard to the work executed on that occasion upon three faces of the Westminster Palace, I fearlessly await the Government report. In the meanwhile, another promising scheme for the treatment of the decayed stone, especially applicable to dolomite, has been submitted by me to the notice of the First Commissioner, but this new proposal has not yet been selected for trial. It consists in the employment of baryta conjointly with the hardening salt, so that a base may be presented which is endowed with the power of destroying the soluble sulphate of magnesia in the pores of the stone, forming with it the remarkably insoluble sulphate of baryta, and at the same time engaging the magnesia in one of its most difficultly soluble combinations. On a recent occasion I applied this process on a small scale to some Caen stone facings at St. John's Church, Woolwich, which were badly decayed. With reference to the application of the superphosphate to decayed

Caen stone, I am able to refer to several successful examples of its use. In the year 1862 I applied the process upon some almshouses forming part of Northfleet College, where the decay has been completely stopped. In 1864 I operated upon a window and buttress of St. John's Church, Woolwich; and in the following year the façade of the Grand Hotel, Brighton, was treated by my process. With respect to Portland stone, the earliest experiments were made at the Army Clothing Establishment, Woolwich, where in 1861 some decayed window-sills were treated, and with perfect success. I have some interesting results to record in connexion with the treatment of Portland stone, which serve to illustrate the increased hardness and strength, and the diminished rate and capacity of water absorption attending the employment of the superphosphate. Small cubes of Portland stone, each 1.8 in. dimension, were treated with the phosphate solution, and left to dry in the air; these were then subjected to gradually increasing pressure, until crushed between plates of lead in the American Testing Machine at the Royal Gun Factory; and the breaking weights of two precisely similar cubes of the native stone were at the same time carefully determined. The results were as follows:—

	Crushing weight.
I. Stone, in original condition.	3,650 lb.
II. Do., do.	3,800 "
Mean.	3,725
III. Stone treated with superphosphate.	5,375 lb.
IV. Do., do.	5,500 "
Mean.	5,437

Thus acquiring an increased strength amounting almost to 50 per cent. The relative hardness of the stone before and after treatment could be readily ascertained by mutual friction of their surfaces, and also by scratching with a pointed instrument of copper, which metal proved to possess a degree of hardness intermediate between the original and treated Portland stones.

The porosity of the stone, as indicated by the amount of water absorbed, in equal intervals of time, proved to be greatly diminished in the case of the treated cubes. On this point several experiments were made, the stone being first weighed in the air-dried condition, and then immersed in distilled water at the temperature of sixty degrees Fahrenheit for the several periods named, and the increase of weight in each case noted:—

"Whit Bed," Portland.			
	Original Stone.	Treated Stone.	
	Grs.	Grs.	
Weight of Cube (dry),	1,421	1,420	
Water absorbed in 5 min.	70	7	
Do. do. 15 min.	91	8	
Do. do. 30 min.	91	12	
Do. do. 1 hour 30 min.	82	25	

"Base Bed," Portland.			
	Grs.	Grs.	
Weight of Cube (dry),	1,291	1,335	
Water absorbed in 5 min.	120	20	
Do. do. 15 min.	122	33	
Do. do. 30 min.	124	39	
Do. do. 1 hour 30 min.	129	78	

These results have been further controlled by other experiments, in which the same block was used in the original condition, and again after treatment with the superphosphate. It will be noticed that the advantage of the process is most clearly apparent in the case of the denser and more compact variety of Portland known as the "Whit Bed," which alone is employed for external building purposes. The other, the "Base Bed," is softer, and only fit for internal decoration, and its texture is so porous that in becoming saturated it absorbs nearly 10 per cent. of water. Samples of Mansfield dolomite absorbed amounts of water varying in different specimens from 6 to 8 per cent. After treatment by my process the degree of absorption was reduced one-half, and the results were even more favourable in the case of Caen stone. The cost of materials employed in the treatment of stone according to this plan is very trifling, and bears but a small proportion to the cost of labour necessarily expended upon the cleaning and preliminary preparation of the stone before the solution can be applied. One gallon of solution will cover about 300 ft. superficial, when two coatings are applied upon Caen or Portland stone. The superphosphate employed must not contain any appreciable amount of sulphuric acid, and the specific gravity of the solution, when diluted for use, should be about 1.100.

In the discussion that followed, the President of the Section (Professor Thomas Anderson) said:—"The decay of such magnificent buildings as the Houses of Parliament had been naturally regarded as a most

serious question, along with that of the prevention of further decay. Mr. Spiller's account of the results of his process were, therefore, peculiarly interesting to us, and the observations he had made were of considerable value, inasmuch as they afforded some explanation of the cause of the decay. They could see what was peculiar in the decay, and it showed them how important it was to bear this in mind. At the time when the erection of these buildings was commenced, immense care was bestowed in the selection of the stone; and the peculiar magnesian limestone was selected because it was found that all the buildings erected at it in the Middle Ages were in an entire state of preservation. However, it had been seen that these were not exposed to the atmosphere of large towns, and other influences peculiar to such populous places, so that, when the same stone was built in London, it was found not to serve the same end. He was satisfied that the crystallization of the soluble salt on the pores of the stone subjected to wet and dry weather, was a great cause of the disintegration of the stone; but the results obtained by the application of Mr. Spiller's preparation, as illustrated by the several instances shown them that day, were of great importance, and he thought there was little doubt but that the process would meet with general approbation."

Mr. Spence said he thought it was the presence of sulphuric acid which had the influence on the stone. In London they used a larger quantity of coal than in other towns; but then it was of a better quality than in other towns. Manchester they used coal with 2 per cent. of sulphur; and as they consumed in that city 2,000,000 tons per year, they put daily 120 tons of sulphuric acid into the atmosphere. This was rather a serious thing, did they see it fully. Then the first shower that came brought down the acid—it lay under the cornices of the buildings; and he had no doubt the acid then commenced to seize on the stone, especially if there were any cracks in the stone, and the disintegration. This was done, and the influence spread abroad. In speaking of the emission of sulphuric acid from smoke, he said, it was known, some peculiar opinions, and these he had put before them, did not think the acid came mostly from the black smoke, which was the subject of the prosecutions. He thought that when the black smoke was cleared away they would have the acid stronger than at present—(had the acid been stronger than at present, the time was, perhaps, distant to carry off the acid in the towns' atmosphere, and he thought they would never be right till they got it carried away so far that it would never come near them. Mr. Gilbert asked Mr. Spiller whether he had got, or thought it would be difficult to get, rid of all the sulphates in his preparation; and on being answered that he had not got a preparation without these, Dr. Gilbert remarked that a Frenchman had made a discovery which might do away with the difficulty.

Professor Ansted then made some remarks. He first referred to the different characteristics of the stones before brought from the quarry, and then spoke as to the manner in which the softer classes were disintegrated by the atmosphere of different places, such as Oxford and London. Then he showed, he held, a careful selection of stones for building purposes; and his opinion was that were they to be preserved, the appearance of any material for that purpose should be made when the stones were taken from the quarry—that when decay once got in it could not be removed from a house—though the same means were sufficient on a stone in a laboratory—but that the stones then cracked and broken up time after time—so that perhaps preservation was impossible, and it might be well to give up the attempt, save on the stones of new buildings.

Mr. Spiller replied, and said that the opposite of Professor Ansted's views had been seen from the trial for six years of buildings in London. They had given results which removed from his experiments any appearance of a simple laboratory experiment, and indeed yielded them real practical benefits.

Mr. Ansell suggested that the best mode of getting the preparation put on the stone might be to enclose it in a chamber of glass, in which the atmosphere was excluded, and then introduce fluosilicic acid into the stone in a gaseous state.

The President, in a few closing remarks, expressed his opinion that the subject was of the very great importance that it could not be too often considered. No doubt many of the methods suggested yet admitted of considerable improvement; but one of the advantages of these discussions was exemplified by the suggestion just made, and there was no doubt that the ideas might be turned to some account. A stone might be treated by a preparation, in the same way as timber was made impervious to water.

NOTES FROM FLORENCE.

ONE must make many walks in and around this city in order to see all that has been undertaken for public improvement. Besides the several new and broad streets, the promising quarter that is fast springing up on the northern side, we should follow the yet unfinished roads, excellent specimens of engineering, that are opening communications between the capital and various points of its vicinity; two of which are especially attractive, one skirting the Arno's right bank eastward, the other winding round the gentle ascent of the hills beyond the southern line of walls, that still remains intact, both these new highways promising to become favourite resorts, both offering the loveliest views of the luxuriant and populous Arno valley at every turn. The new enterprises for conferring substantial benefit upon this capital are numerous. A few days ago the Scottish Company of Leyden intimated to the Municipal Council its readiness to commence immediately the works for its much-desired aqueduct, which is to bring water from the Seine river into the heart of Florence; but the decision by that contracting company in favour of the system

of metallic conduits along the whole extent meets with opposition from another party, who desire to see a construction in masonry. The Council has conceded the ground requisite for three large buildings, beyond three of the city's gates, destined for the lodgings of artisans and families in poor condition, with a moderate rate of rent, on the same method, generally speaking, as the several other establishments for lodgers of such class built during the last two or three years, either within or at short distances beyond the walls of Florence; in this last instance the concession being made to a company at whose head is a capitalist named Barlasina, and with which is connected the engineer undertaking to carry out the works, Signor Fiorucci, a young man of ability, who pledges himself to have these dwellings built on a plan quite his own, with baths for both sexes, illumination by gas, and a supply of water to each floor, from the time that the city itself shall have been secured this same benefit through means of the aqueduct. One among many things proposed is the formation of a public cemetery at the Certosa, that interesting old monastery, about three miles from Florence, whose inmates must of course share the fate of other such. At S. Miniato works are still going on for extending the area occupied by vaults and monuments; and it is generally thought that as a place of sepulchre the premises of that church no longer answer to the requirements of the enlarged city.

We have commended the principle acted upon in most public works here, of respect for the claims of whatever is historic or artistic, but have to regret one exception, however it may be defended as unavoidable, in the demolition, now in progress, of the arcades for family monuments, extending at an angle from the front of S. Maria Novella, to the entrance of a street that leads to the railway station, and thereby limiting that thoroughfare in a manner very inconvenient. These monuments are of antiquity, at least as high as the Dominican Church itself, commenced about 1278, and offer interesting examples of the ancient Tuscan style, in the modes of entombment: under each of the centre arches, faced with the usual alternations of black and white marble, is a sarcophagus filling the lower part of the recess, adorned with heraldic devices, beside a central cross in relief, but without any sort of epitaphs. It is satisfactory, however, to see that the new works will not necessitate the destruction of the whole series, and that another species of decorative building, in coloured marbles, ecclesiastical in style, is being raised along the narrower premises still left to the church in a line flanking the enlarged street. The modernization of a stately mansion, the architecture of Brunelleschi, on the Lung-Arno (next door to the house of Alfieri), is a less excusable example of the renovating spirit that now provokes criticism, but for which private, not official, proprietorship is alone responsible. Since the S. Marco Convent was destined for its new appropriation as a museum of sacred art, the project has been advanced of uniting all the Florentine galleries in one great edifice, or rather cluster of edifices, to comprise those cloisters the extensive buildings of the "Accademia," and the royal stable, that occupy a wide space between the convent and the academic premises, and will no longer be wanted for their present purpose after the completion of the much stater Strozzeria, now almost ready, beyond the Porta Romana, on ground adjacent to the Boboli Gardens. When lately submitted to the Minister of Public Instruction, this project met with approval, and was referred for final decision to a committee, at whose head is the chief of the civil engineering department. One might be loath to see the favourite Mount of the Uffizi deprived of the art-treasures that have long attracted all Europe to its walls; but such advantages as is proposed would have its advantages, and many of the pictures, as well as sculptures, now in the Uffizi, might be much better placed as to light.

An esteemed antiquary, Professor Gamurrini, has been appointed to succeed to the late Professor Migliarini as "conservator" of ancient monuments in the Florence galleries. In the Uffizi our attention is excited by the addition, since last year, of a few paintings, on sacred subjects, from the earlier Italian schools. In the Mediceo museum at the "Pretorio" the cast of Michelangelo's "David" now occupies a permanent place at the centre of the largest and finest among the vaulted halls of that old Gothic building. The frescoes attributed to

Giotto in the refectory of the S. Croce convent may now be seen without difficulty, though that great room has not (as intended) been made actually public, but is used as the magazine for official documents of a ministerial department now established on the premises.

The long history of projects and competitions for the Duomo façade is not yet at an end. We hear of another expected exhibition of designs, and of the probable preference for one that has lately attracted much notice, and is now seen in photograph at many shop-windows, by an engineer named Tasinio, who is, we understand, the son of a well-known engraver. Of rich and imposing effect, and conforming to the character of Italian Gothic in the church it is intended for, this designed façade terminates in a depressed gable at the centre, with lean-to roofs at the sides, and a projecting gallery arched along the whole extent of sky-line, with pointed canopies to the three portals, each adorned with sculptures in canopied niches, as the tympanum above the central door, a relief of the Assumption and colossal statues of Apostles at intervals between those three entrances; the whole receiving splendour from the profusion of sculpture and such elaborate details as to justify a very high estimate of probable expense. The thing has not yet been officially announced, but it is certain that a report of the third competition, and the designs then exhibited, is soon to appear from the pen of the secretary to the committee and judges. Many doubt the possibility of giving new impulse to the long-suspended subscription for this work, which had brought in about 100,000 francs, collected in weekly rates, for which persons of every class, rich and poor, had pledged themselves. Years have passed since this mode of collecting was abandoned, and the subscribers have been, in most cases, dissatisfied at finding their money left so long unproductive at the disposal of those who were doing nothing towards the object in view. Perhaps the chief obstacle exists in the but too manifest animosity against all that pertains to the ecclesiastical causes in the Italian mind, as now is the policy of the Italian Government.

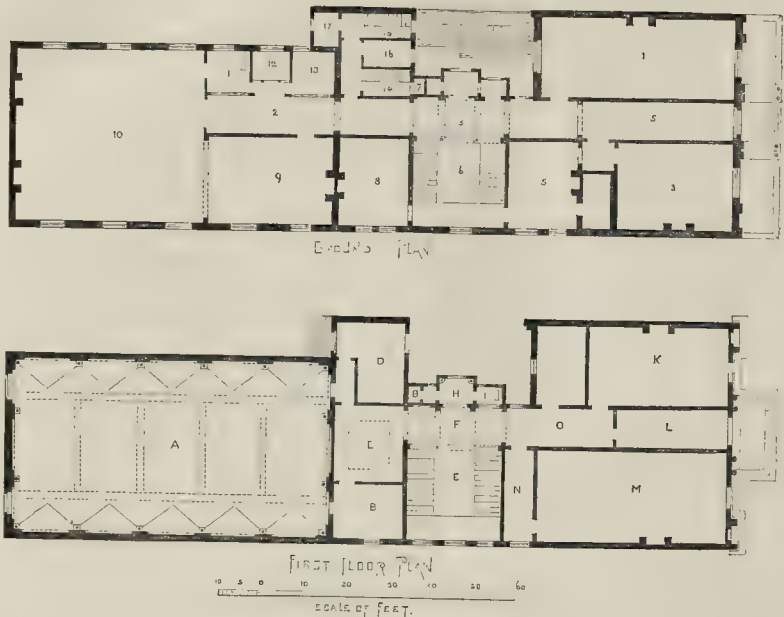
A society calling itself the "Italian Association for Instruction of the People" has offered a 5,000 francs prize for the best work as a theme analogous to that of the admirable "Self Help" by Smiles, with no prescribing of modes of treatment, but the requirement that the writer should efficiently show, not only the benefits of knowledge, but that "man can often do just as much as he wills." Another prize has been liberally offered by Adelaide Ristori (who lately gave two performances at the diurnal theatre here) for the best dramatic composition suited to the stage.

The restitution to Italy of all the art works removed by the Austrians from Venice, and of all, save one-twelfth, of the historic documents at the same time taken thence to Vienna, is an act of tardy justice we must rejoice to hear of. Such was the determination lately made by a committee at Milan, empowered to decide in this affair, and the small modicum reserved from the documents is confined to such as have reference to possessions still held by Austria south of the Alps. We hear from Cortova of a projected monument to a man of letters, Francesco Benedetti, native of that town, whose story is tragic, for he put an end to his existence at Pistoia in 1821.

OPENING OF THE DOCKS AT BARROW-IN-FURNESS.

So little was Barrow known quite recently, that after speaking of its progress in the *Builder*, we were asked, from Lancashire itself, where Barrow is. Its locality is the extreme north-west corner of Lancashire, near Ulverston, and facing an island known as Barrow Island, said by tradition to have been the burial-place of the Norse rovers, who, in the "good old times," carried fire and sword round the coasts of Great Britain. For centuries Barrow was a mere dull fishing village, and even ten years ago the entire population did not amount to 1,000 souls, and most of the "bread-winners" of the village were either sailors or fishers. Now it contains a population of nearly 20,000, and is a rapidly-increasing and prosperous town. It has recently been incorporated, and will soon, in all probability, be a flourishing seaport, and the seat of an immense shipbuilding and timber trade. The magic thing which has so rapidly transformed Barrow from stagnation to activity is the great genius of

THE MASONIC HALL AND CLUB BUILDINGS, DUBLIN.



modern days—iron. Hematite iron ore is found in immense quantities at Barrow; and some ten years ago Messrs. Schneider, Hannay, & Co. established works for smelting it there. Assisted by the *apropos* discoveries of Mr. Bessomer, Messrs. Schneider & Co. rapidly increased their business, yearly adding furnace to furnace, and speedily making an immense fortune. These iron-works soon gave employment to a large population, which rapidly increased year by year, until an active, prosperous town superseded the old quiet fishing village. The great natural advantages of Barrow soon attracted the attention of Mr. Ramsden, for several years the managing secretary of the Furness Railway, which was constructed expressly to develop the trading and commercial specialities of the district. Assisted and supported by the Dukes of Devonshire and Buccleuch—who are large local landowners—Mr. Ramsden's efforts were crowned with unprecedented success; and, fostered by such powerful influences,—regulated by rare commercial tact,—Barrow soon attained the rank and dignity of a town; and, when incorporated, Mr. Ramsden was elected the first mayor. In the meantime, Mr. Ramsden became a director of the railway, the Duke of Devonshire being chairman. Connected with every line of railway in the kingdom, Barrow soon attracted the notice of the Midland Railway directors, who resolved to run their line of steamers to Belfast from it, the Furness Railway Company having resolved to make a series of docks by damming up the channel between the town and old Barrow Island.

The plans for these docks were prepared by Messrs. M'Lean & Stillman, of London, engineers, Messrs. Brassey & Field being the contractors. The total cost is about 200,000. In their entirety the Barrow Docks will extend from Crow's Nest Point to Cunningham Point, and be adapted for the accommodation of vessels of all sizes, while Walney Island,—sheltering them from the roughest weather,—will render them safe at all seasons of the year.

The dock, opened so auspiciously, is named after the Duke of Devonshire, and is 30 acres in extent. There is another dock of 33 acres, named after the Duke of Buccleuch, which is to be ready for business early in the ensuing year;

while adjacent to it is a "timber pond," extending over an area of 35½ acres.

Every requisite for making the Barrow Docks useful has been provided by the promoters. Huge capstans and cranes, worked by hydraulic power, and manufactured by Sir William Armstrong, will open the dock-gates and hoist goods into the warehouses, which have a storage accommodation of 17,000 yards. The quay space extends over 100 acres of ground, while the remaining portions of the island,—about 300 acres,—will afford sites for shipbuilding yards. In fact, Barrow Island will, in all probability, soon become the seat of an immense trade in iron shipbuilding, for the steel and iron can be procured on the spot from the Hematite Iron Company (Limited), who now carry on the business of Messrs. Schneider, Hannay & Co., and it is proposed to establish in connexion with it a manufactory for flax and cordage. Round the island are about 10 miles of sidings connected with the Furness Railway, so that ships can load and discharge with the greatest possible facility and despatch.

MASONIC HALL, DUBLIN.

The accompanying engravings illustrate the new Masonic Hall and Club buildings which are in course of erection in Molesworth-street, Dublin. The front elevation is executed in Ancaster stone, and is divided into three stages: the lower one of the Doric order, the centre of the Ionic, and the upper of the Corinthian. The total height of the building from ground-line to top of pediment will be 73 ft. The whole of the club portion of the building is arranged on the ground-floor. The Grand Lodge room, which is to be on the first floor, will be 72 ft. long, 39 ft. wide, and 32 ft. high; the other portion of this floor is divided into Royal Arch Chapter, Libraries, with regalia and preparation rooms, which are approached by a flight of stone steps 6 ft. wide. The Prince Mason's Chapter and Grand Encampment will occupy the second floor.

The contract was undertaken by Mr. Michael Mendo, of Dublin, at 7,600*l*.

The architect is Mr. Edward Holmes, of

Birmingham and London, whose design was selected in public competition.*

REFERENCES.

Ground Plan.

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|-----------------------------|-----------------------|
| 1. Coffee and Reading Room. | 9. Dining-room. |
| 2. Corridor and Lobby. | 10. Dining-hall. |
| 3. Board-room. | 11. Serving-room. |
| 4. Safe. | 12. Wine-room. |
| 5. Secretary's Office. | 13. China. |
| 6. Staircase. | 14. Back Stairs. |
| 7. Coal-lift. | 15. Hats and Cloaks. |
| 8. Clerk's Office. | 16. To Dressing-room. |
| | 17. Lavatory. |

First-floor Plan.

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|-----------------------------|----------------------------------|
| A. Grand Lodge Room. | J. Library of Superior Order. |
| B. Preparation Room. | K. Library. |
| C. Waiting-room. | L. Regalia and Preparation Room. |
| D. Store for Paraphernalia. | M. Royal Arch Chapter. |
| E. Staircase. | N. Porch. |
| F. Landing. | O. Ante-room. |
| G. Coal-lift. | |
| H. Lavatory. | |
| I. W.C. | |

* Some extraordinary structures, it appears, are being raised for "the craft" in America. An illustrated American paper, containing four illustrations of the "Grand Masonic Celebration and Dedication of the New Masonic Temple, corner of Tremont and Boylston streets, Boston, Mass.," thus speaks of the edifice:—"Upon entering the building one is reminded of the descriptions which are preserved of those Egyptian temples, miles in circuit, with pillars 80 ft. high and lintels 40 ft. long, which were evidence of the architectural skill of an almost extinct race. The famous temples of Isis and Osiris are celebrated, and the Temple of Apollonopolis is alluded to for its many peculiar features. The Egyptian architecture, with its cylindrical shafts enriched with rings of richest sculpture, crowned with bell-shaped capitals, wrought in the foliage of the palm or papyrus, embracing the caryatid order, was well adapted to give form to the metempsychosian creed of the people, and many of these marked features have been produced in this hall; while the painting by the artist, Mr. Haberstroh, who, having adorned an Egyptian Hall in Munich, came to this task with no inconsiderable experience, presents the novel combination of colours which forms the peculiarity of this style of decoration. The walls are finished with massive columns, having capitals enriched with leaves of the palm, the Nile lily, and human faces. The ceiling is divided into compartments by heavy beams above each column, which are decorated with various patterns, laid in with blue, red, orange, and green, in unbroken tints. The ceiling is tinted sky-blue, and studded with golden stars, and from the centre hangs a forty-eight light chandelier. The two main pillars at the east end of the hall, between which is the throne of the High Priest, form the most striking feature of this apartment. These pillars are ornamented with hieroglyphics, taken from the western face of the Obelisk of Luxor, now standing in the Place de la Concorde, Paris, and refers to Rameses III. (Sesostris), B.C. 1550."



THE MASONIC HALL AND CLUB BUILDINGS, DUBLIN.—MR. EDWARD HOLMES, ARCHITECT.

THE FREEMASONS' ALMSHOUSES,
MELBOURNE.

THE foundation-stone of these almshouses has been laid, with all the formalities appertaining to the Masonic order. The Government having granted a piece of land of about five acres and a quarter in extent, fronting the Punt-road and contiguous to the Wesleyan College, a plan was agreed upon to erect buildings which will form the nucleus of a number of charitable institutions for the poor and indigent, the widows and orphans of the brethren. The piece of ground is of a quadrangular form, 650 ft. in depth by 350 ft. in width, and the architects are Messrs. Reed & Barnes. The plan embraces the erection of twenty-four cottages or almshouses, and a centre building to form an orphan asylum. Entering the ground from the Punt-road, the design shows twelve triple semi-detached cottages ranged on the right and left of the quadrangle, which will be planted, and form the chief approach to the orphan asylum and superintendent's quarters, to be erected at the north end of the ground. Each cottage will be replete with every convenience. The first portion of the almshouses has been contracted for by Mr. Thomas Dalton, for 659l., the funds being subscribed by the brethren of the various lodges of the order.

PARIS.

RECENT works have been carried on, to restore to its primitive state the elegant chapel of the ancient College of Beauvais, behind the Market of the Carmes and the Place Maubert. This chapel is a simple structure, without collaterals, terminated by a five-sided apsis, supported by solid counterforts, and pierced with lofty ogival windows. The spire, decorated at its base with an arcature of three lobes, has also been completely restored, and the building has been disengaged on the south side by demolishing an old house in the Rue Jean de Beauvais, which was attached to it. The chapel of the Beauvais College has become the property of the religious order of Dominicans, who have added a cloister and spacious buildings, where they are now installed, after having left the ancient monastery of the Carmes, in the Rue de Vaugirard, which was cleared away for the Rue de Rennes.

A remarkable fountain has been just constructed in the Avenue de l'Observatoire of the Luxembourg gardens, nearly on the site of the ancient gateway. It is composed of two great basins of Jura marble, the upper one having a jet d'eau. The parterres of the grand avenue, on the portions laid down in grass, have been furnished with handsome monolith columns of various coloured marbles; on these have been placed Florentine vases, in bronze. These parterres are to be surrounded by candelabra and lighted with gas. The iron gateway which separates the newly transformed garden from the ancient Avenue of the Observatory has been put in place.

The circular railway of Paris is at last being joined in so as to have no break. Between the Batignolles-Clichy station and that of Levallois Perret the works are being actively pursued. This connecting line passes under the Western Railway, crosses the Rue d'Asnières and the Boulevard Malesherbes, near its point of junction with the Boulevard Berthier; then, turning to the south, it cuts the Boulevard Pereire and joins into the old line of Auteuil and the rest of the circular railway. The passage of the line under the Boulevard Malesherbes is attended with much difficulty on account of the levels. In fact, the line passes over the great collecting sewer, but the crown of the arch is higher than the level of the rails. Thus the arch of the sewer will have to be flattened down so as to lower it 1m. at the key.

On the 25th inst. the works for the new water supply from the valley of La Vanne are to be adjudicated at the Hôtel-de-Ville of Paris. It is estimated that this valley, so rich in springs rising from chalky soil, can easily furnish daily to a maximum height, in Paris, of 230 ft., 22,000,000 gallons of water, equal in quality to that of the valleys of the Champagne now delivered into the Menilmontant reservoir. The reservoir for the new supply is to be constructed at Montrouge, on the summit of a rising ground not far from the Barrière Saint-Jacques. Like that of Menilmontant, the Montrouge reservoir will be arched over completely.

On Tuesday, the 27th ult., the roofs of the catacombs of Paris fell in two places, at the corner of the Rue de l'Ulm, and underneath the Place du Pantheon. An artist painter who was going to his domicile was dragged down along with the footpath to a depth of 5 ft., and had a narrow escape of his life, escaping unhurt. The usual periodical inspection took place a month ago, and many visitors obtained the favour of accompanying the cortege of municipal officials. All the streets have been accurately laid down underground and permanently marked, and the blocks upon which houses stand have been consolidated from time to time by substructures. A budget for this purpose is annually presented to the municipal council. The visitors, usually numbering 100 or 120, and all the persons present, are counted by the guard four times;—on first descending, at the foot of the staircase, at the first lower door, again at the second door, and at the final entrance into daylight again.

The disengagement of the fine tower of Jean-sans-Peur, masqued by the houses in the Rue Française, has created such a sensation among antiquaries that the municipal authorities are determined not to leave the work undone; it is to be completely restored, and surmounted by a recreation garden or square, like that of the Tour Saint-Jacques.

The Church of Saint-Jean-Baptiste de Belleville, near the Buttes Chaumont, is but little known. It was commenced in 1854, and finished in 1859: it was the last work of the architect Lassus. It is seen from all quarters of Paris, being conspicuous from its two spires and three porches situated on an eminence. The town of Paris has lately gifted the nave with stained-glass windows. At right and left of the choir apsidal chapels are being decorated by M. Alphonse Chaignon, pupil of M. Viollet-le-Duc, for the Abbé Demures, curate of the parish.

On the 18th ult. a statue of Napoleon I. was uncovered. It is due to the chisel of the Comte Payol, eldest son of the illustrious general who fought so bravely at the battle of Montereau, and reaped the principal share of the glory.

The principal statues of Napoleon I. hitherto erected in public places are—1. That of the Place Vendôme, by Lanoy, in 1808; 2, on the plains of Marengo, erected by the Sardinian Government, inaugurated 14th June, the anniversary of the battle; 3, a statue by Joffroy, on the "place" of the town of Auxonne; 4, Lyons has a fine statue raised in 1854; 5, Cherbourg possesses one in the Place de l'Hôtel de Ville; 6, Ajaccio, inaugurated lately. Of these principal monuments to perpetuate the memory of Napoleon I., those of Lyons, Cherbourg, and Ajaccio are equestrian.

The following is the consumption in ordinary times of various articles in Paris:—There enter annually 90,052½ tons of flour. These gave about 273,155 lb. of bread. The potatoes consumed in Paris during an average year amount to 895,500 bushels. The poultry and game sold and consumed are classed as follows:—1,090,000 pigeons, 187,000 ducks, 2,535,000 brood rabbits, 1,869,000 fowls, 377,000 capons and hens, 590,000 turkeys, 155,000 partridges, 197,000 wild rabbits, 37,000 hares.

There have been sold for the value of 7,866,487 fr. (314,638l.), poultry and game; 5,085,503 fr. (203,420l.), of salt-water fish; 479,960 fr. (19,199l.), of fresh-water fish; 8,505,384 fr. (340,215l.), butter; 4,377,302 fr. (175,092l.), eggs. Total, 1,052,584l.

M. Petit et Cie. have been entrusted by the municipal authorities of Paris with the execution of the prolongation of the Rue Réaumur, between the Place de la Bourse and the open space in front of the new Opera-house. It is said that the above firm, ordinary contractors for the works of the town of Paris, are to receive for this last section of the Rue Réaumur the sum of 1,120,000l., payable by annuities. This street, 66 ft. wide, will absorb wholly the Rue Méne, and cut through the Rue des Filles-Saint-Thomas, des Colonnades, de Richelieu, de Grammont, de Choiseul, de la Michodière, du Port Mabon, and Louis-le-Grand. The Jacobine convent of the Filles-Saint-Thomas was founded in 1742, by twenty nuns. Mention of the Filles-Saint-Thomas has revived an anecdote. A *dameuse* of the opera, Mlle. Chameroy, died in 1812. The funeral cortege proceeded to Saint-Roch, the curate of which refused to admit the remains, stating that all comedians should be excommunicated; so the procession went to the church of the Filles-Saint-Thomas, the curate of which performed the service. A few days afterwards a communication, not signed, ap-

peared in the *Moniteur*, to this effect. "The curate of Saint-Roch, in a moment of *dérailson*, refused to pray for Mlle. Chameroy, and to admit her into his church; one of his colleagues, a reasonable man, received the *cortege* in the church of Saint-Thomas, where the service was performed. The Archbishop of Paris has suspended the curate of Saint-Roch for three months, in order that he may be reminded that our Saviour ordered him to pray for even his enemies."

The great military road which encircles Paris at its new boundary, close to the fortifications, the width of which was only 12 mètres, has been rapidly transformed into a spacious boulevard, 40 mètres wide, and planted with trees. On the left bank of the Seine this thoroughfare is unbroken, and continues from the Quai de la Gare, on the east, to the Quai de Javel, on the west. On the right bank it will continue from Bercy to the Porte de Bagnelet; then from the Porte de la Chapelle to the Route de la Revolute.

THE NEW CASUAL WARDS FOR
MARYLEBONE PARISH.

In times gone by, and long before such matters received general attention, we described the miseries of the "Casual Ward." In those days it was thought desirable to give as little comfort as possible, that no inducement might be offered for the return of the lodger. Public opinion, however, gradually brought about a demand for the provision of decent accommodation, and the guardians of the parish of Marylebone have just now completed some wards which meet that demand.

The building is situated at the north-east corner of the workhouse ground, at the back of the old Relief Offices. The entrance passage of the Relief Offices affords access to the new buildings; at the end of this passage is a general waiting-room, and adjoining is another for females only, next to which is the Female Bath-room. The bath-room is 12 ft. long, 9 ft. wide, 18 ft. high, and is lighted by windows in the upper part of the walls. These windows are hinged at the bottom, and open like hop-pens. The baths, of which there are two, are made of Stourbridge clay, each in one piece and having a white glazed surface, present at all times a cleanly appearance. The water for these baths is heated by a stove, which, being in the same room, is under the supervision of the attendant. The stove consists of an upright cylinder, the casing of which is hollow and forms the boiler, while the fire is contained in the central portion of the cylinder; a pipe passes from the upper part of this boiler to a galvanized wrought-iron cistern fixed above, from which another pipe descends to the lower portion of the boiler; thus, by a well-known law, causing a continual circulation of hot water to the cistern, which is always ready with upward of 100 gallons of boiling water for the supply of the two baths.

Adjoining this bath-room is the Female Sleeping Ward, 58 ft. long, 18 ft. wide, 15 ft. high to the lowest part of the sloping sides of the roof, and 22 ft. high to the apex. The roof is supported on circular cast-iron ribs, bolted to iron stanchions contained in the thickness of the walls, and which rest on solid stone bases. Running along the whole length of the room is a ventilator, 5 ft. wide. The upright sides of this ventilator are fitted with wide flaps, having a very simple apparatus for opening and closing when requisite, the top portion being glazed to afford slight to the apartment. On the floor immediately beneath this ventilator is a cast-iron grating covering a brick air-channel. This channel is supplied with fresh air, which passes from the outside of the building by covered channels running under the adjoining floors. It also contains hot-water pipes for heating the apartment in cold weather. The room is well lighted at night by two pendant star burners, the lower parts of which are some 9 ft. above the floor. It will thus be seen that the arrangements for heating, ventilating, and lighting, are so arranged as to be entirely out of the reach of the inmates. Ranged down either side of the apartment are the sleeping bunks, affording accommodation for 44 women and 20 children. These bunks are generally 6 ft. 6 in. long, and 2 ft. 4 in. wide, but ten of them are made wider to afford accommodation for a woman and two children each. The boards forming the bunks are so hung on pivots as to be capable of being turned up every day for the purpose of cleaning.

floor under. The head of the bed under the pillow is slightly raised, and is hinged separately, for the purpose of lifting and depositing the clothes of the sleeper; the clothes each inmate being thus under his own protection. It should also be observed that the head of each bed is some 6 in. from the wall, and a current of air is consequently always to pass under the bed and upwards towards the ventilators.

Scripture texts, the Lord's Prayer, and the Commandments, are printed on the walls and ceilings, the red letters and blue tinted and forming a pleasing decoration.

At the end of the room is a door leading out to a lobby to the water-closets. These closets are constructed on the latrine principle, and seem well adapted for the purpose.

The arrangements for the accommodation of males is identical with that described for females, excepting that the shape of the t-room stove is so modified as to allow the smoke and heat to pass by an iron flue-pipe through an adjacent disinfecting chamber. If examination it is found requisite, the clothes of the casual are, whether male or female, hung in this heated chamber, and well fumigated with sulphur.

In each side of the main buildings are ranged working sheds, where the casual in the morning picks oakum or performs such other work as may be assigned him. These sheds are at 12 ft. wide and 9 ft. high, and are well lit and ventilated by skylights.

The wards are constructed as "temporary buildings," by which means their cost is thrown into the general London rate. They are formed of iron and wood, plastered internally, and covered with metal externally. The design appears to be very creditable to the architect, Mr. Saxon Snell. The builders were Messrs. Job & Vaughan, and the total cost was about £20.

It will not be out of place in our pages to describe the course now pursued in Marylebone reference to Casuals.

Applicants for admission have to apply at the station, Marylebone-lane, about a quarter of a mile from the Workhouse, for an order. The test the master does not impose upon a man with a family, or a tired or aged applicant. On presenting the order at the Workhouse, the casual is at once admitted; and, if certain information has been obtained from him and duly recorded, he is searched, and all prohibited articles taken from him or her, and restored in the morning. The pipes, which are the chief articles found, form a small collection. On two occasions only during the past two years were persons found with money concealed upon them, and each of them was taken before a magistrate and committed to prison. The clothing of the casuals is examined, and, if it is clean, it is placed in a small box forming a portion of his bedding mentioned, and thus placed out of the hands of any of his companions, who might otherwise pilfer or change some of the garments. If the clothes are filthy, which is the case with the majority of the poor, they are placed in a disinfecting chamber, and are handed back in the morning thoroughly fumigated.

The casual undergoes the bath process, with plentiful supply of hot and cold water, and is at his command. He is then supplied with a new woollen night-shirt, conducted to his room, which consists of a mattress filled with straw, and two rugs weighing 8 lb. each. The strictest silence is maintained in the wards, which are all night under the supervision of paid officers; and prayers are read at night in each ward by male and female casual readers, especially appointed and paid for the purpose. The shirt and trousers coverings are disinfected in the morning, and are thus ready for another occupant.

At six o'clock a.m. in summer, and seven in winter, the casuals are ordered to work—the men employed in cleaning the wards or picking oakum. The strong, sturdy, idle men are selected and put to stone breaking—the rest to oakum picking. The task of work allotted by the guardians being, males, to pick two bushels of stone or pick two pounds of oakum. It frequently happens that the idlest fellows, well-known to the officers as professional casuals, will improperly linger at their work, and not have executed a considerable half-hour's labour in the four hours. These characters may be charged before the magistrate with wilfully neglecting to perform

their allotted task of work; and, thanks to the assistance given by the magistrates at the Marylebone Police Court, this class has been pretty well weeded from this parish. Casuals who complain of being ill or unable to resume their journey, are examined by the medical officer, and if he thinks they are proper cases for the Workhouse Infirmary they are at once admitted. The breakfasts and suppers of the casuals consist of 6 oz. of bread, and one pint of gruel each meal; and they are permitted to take with them in the morning the fragments of bread collected from the sick and infirm wards, which previously found its way into the waste tub of the establishment. There is no limit to the number of times a casual may be admitted into the same ward. If he find no employment he may return again at night; and if he show a willingness to work, and cheerfully conform to the rules, an effort is made to provide him with some temporary employment.

It is the wish of the guardians of St. Marylebone that care should be taken to discriminate between the deserving houseless poor and the sturdy idle loafer; and while all is done to render the position of the former as comfortable as the law will allow, it is sought by a strict exaction of the labour test to drive the latter class from depending upon the pockets of the ratepayers for their nightly shelter. Mr. Douglas, the master, appears to devote himself with great earnestness to carrying out these views.

The total number that can be accommodated is about 100. We were not surprised to hear that the number of applicants has fallen off since decent conduct, silence, and other wholesome requirements have been insisted on. On Saturday nights the wards are always full, a circumstance not difficult to understand, when it is remembered that no labour is required to be done on Sunday morning.

COMPETITIONS.

Bedfordshire Middle-Class Schools.—Twenty-nine sets of plans were originally submitted, and four were reserved for consideration and selection, viz., those of Mr. F. Peck, London; Mr. John Usher, Bedford; Mr. John Day, Bedford; and Messrs. Mayhew & Calder, London. Ultimately, they selected Mr. Peck's design as the most suitable for the school buildings. Feeling a difficulty as to the claims of Mr. Usher and Mr. Day for the premium of 50l. for the design and plan the best of those rejected, they liberally paid them each a premium of 50l. For the fourth design they sent thanks.

Tannton.—The Tannton College School Company lately solicited designs from six architects. Mr. Giles, of Tannton, was the successful competitor, Messrs. Norton & Macey getting a premium of 50l., and the Messrs. Francis one of 25l.

Workhouse, St. Martin's-in-the-Fields, London. The Board of Guardians have selected the design by Mr. Cross, subject to the approval of the Poor Law Board. The building is to be erected at Wimbledon, and will provide accommodation for 201 males and 201 females, including 6 married couples and 40 permanent sick. The cost of the building is estimated not to exceed 28,430l., viz., main building, 24,680l.; infectious wards, 1,500l.; lodge and receiving ward, 700l.; boundary fences and gates, 1,550l.

A. WALHALLA ON THE THAMES.

It was early urged in our pages that the Thames Embankment would afford admirable sites for the statues of such men as England might wish to honour, while they might be made to form one of the best and noblest adornments of what will be a national highway. Lord Winchelsea has recently given expression to the same suggestion, and it has been well received by the public. He proposes that the line of the Thames embankment be garished with statues of the worthies of England—simply treated—in bronze; and he thinks that to confer a place in such an array would be striving for in future, as now is the Victoria Cross. We do not think that the man who deserves a statue seldom thinks or cares much about it; but such a setting forth of our good and great men would be an incentive to good deeds nevertheless.

A lady-correspondent, earnest in well doing, writes to us,—"Pray aid in obtaining statues of England's great men for the adornment of the

parapet of the Thames Embankment. I like the notion immensely, and would fain be a 'great man' to go there myself." We hope, however, if the scheme be carried out, that it will not be absolutely necessary to be a great man to obtain a place in the Walhalla on the Thames, but that our great women will also find there fitting pedestals.

A SHEFFIELD CHAMBER OF INDUSTRY.

A Chamber of Industry has been formed at Sheffield,

"to look to the interest of both capital and labour, in order to bring them into closer union; to give advice in cases of dispute between employers and employed; to study the principles of political economy; and to examine the laws relating to capital and labour."

The business of the Chamber is conducted by an executive of thirteen members, including president, vice-president, secretary, and treasurer, to be elected by a general meeting of the body. The executive have issued an address explanatory of their objects, and in which they say:—

"The Sheffield Chamber of Industry owes its origin to a few working men, who have long witnessed with pain and regret the frequency of disputes between masters and workmen, and they believe the Chamber will have a tendency to bring them together for their mutual good. The executive believe that disputes often arise from mistaken notions of the relations of capital and labour, and they propose to inquire into the laws which regulate the production and distribution of wealth. They are also of opinion that the true interest of capital and labour is identical, and that, like manufacture and commerce, they are twin sisters, and ought ever to go hand in hand. It is intended to have lectures on political economy and other matters relating to capital and labour; also short essays, to be followed by discussion. Efforts will be made to secure the services of the ablest men of the age for these objects. The Chamber will use its influence to establish a Board of Arbitration and Conciliation, and until that is accomplished it will give its counsel, with the consent of both masters and men, to the settlement of trade disputes. . . . Strikes and lockouts are evils prejudicial to employers, workmen, and the public, and it is hoped that all classes will come forward and prevent, as far as possible, their recurrence."

ACCIDENTS.

THE inquest on the body of the young man killed by the falling of a stone pillar in the Strand, as recently reported, has ended in a verdict, "That the deceased met his death by want of proper caution being used by the Messrs. Forster."

A dangerous and curious accident has occurred in Coleman-street, Bunhill-fields. It appears that near the Quaker burial-ground extensive excavations have been made to form the foundation of a large factory. The house adjoining has during the operations been shored up, but it seems that the excavations have weakened it, and the side wall fell into the excavation. In the room, of which the wall formed a side, a woman had lately been confined, and through the aperture she and her child, with all the furniture, were exposed. The frightened woman, however, was soon removed.

A man has been buried alive at Dalston. He was a labourer in the employ of Mr. Morley, a builder, and on Saturday last he and Robert Morley, his employer's son, were engaged in making a tunnel underneath the footpath and garden in front of a new villa, recently built at Navarino-road, Dalston. Robert Morley said, at the inquest, that the old man was told to make an open cutting in order to reach some pipes in connexion with the drainage, but he preferred to make a tunnel. The tunnel was made through a sandy soil 6 ft. below the surface of the earth, and it was 2½ ft. high. It was only intended to make it 5 ft. long, but the deceased while tunnelling made a mistake, missed the pipe, and carried the tunnel 8 ft. farther on. The coroner asked the witness why he was such a goose as to enter an unshored tunnel through sandy soil. The witness said that he trusted to Martin's experience. While they were both in the tunnel, 2½ ft. of the top of it suddenly gave way, and the deceased, who was at the end of it, was instantly buried alive. Witness was near the opening, and he had just time to get out of the way when the sand fell. It was half an hour before the body of the deceased could be dug out. He was then quite dead. The jury returned a verdict of accidental death.

The stand on the Racetrack at Mallow has fallen. The timber of the stand-house, which was densely crowded with people, was heard cracking, but the noise occasioned only a

momentary panic. A few minutes later, however, again the timber was heard cracking, but this time too late to allow the crowd to avail itself of the warning. Half of the stand sank to the ground, a distance of between 20 and 30 ft., together with the people on it. One boy sustained internal injuries, and cut and bruised heads, faces, lips, and arms were numerous. Hats were crushed, and coats and other garments torn; but no life was lost.

At Newbury, Berks, some men in the employ of Mr. Samuel Elliott, builder, were engaged in digging sand on Wash Common, when the ground fell in upon one of them, and killed him on the spot.

At Stroud a subscription has been commenced on behalf of the contractors, Messrs. Wall & Hook, for the rebuilding of the parish church, who suffered to the extent of about 700l. by the fire in their shed, which we have already reported. 100l. were raised at once. The destruction of all the prepared timber for the roofs will cause some delay in the rebuilding, as seasoned oak is difficult of obtainment, to say nothing of the time required to work it.

Three serious accidents in connexion with buildings have just taken place in Liverpool. While a man, his daughter, and another young person, who reside at No. 18, Johnson-street, were in the back part of the house, washing themselves, a portion of the building gave way and fell upon the three people, inflicting injuries of a very serious nature. The houses in the street are being taken down for corporation improvements. Another accident, resulting in the death of Mr. Bell, master joiner and builder, occurred at Bootle on the same morning. Mr. Bell was upon some scaffolding surrounding a new building at Bootle, when by some means he lost his footing, fell to the ground, and was so frightfully mutilated that he died shortly afterwards. A third accident has happened at the corner of Church and Paradise streets, where some houses are being taken down for the purpose of widening the street. Three men were engaged, on the first-floor of the building, in removing a wall, when another wall opposite to where they were employed gave way, carrying with it to the floor below the three men. Two of them are suffering from scalp wounds and other contusions, while the third is injured in the spine.

At the Parish Church, Leamington, a serious accident has occurred. A considerable portion of the scaffolding surrounding the new wing fell, and three of the workmen were buried in the debris. The men were at work on the scaffold, and fell from 80 ft. to 100 ft. There were only two large stones on the scaffold, and a hand-barrow of bricks. Under the scaffold where the poor fellows fell, was a heap of stones, and not only were they seriously injured by falling on these, but also by the planks and woodwork which came down upon them. Mr. Marriott, of Coventry, is the contractor of the works.

THE WINCHESTER DRAINAGE COMPETITION.

SIR,—Knowing that the pages of the *Builder* are always open to vindicate the rights of our profession, and also that several letters have been published in that journal within the last six or eight months relating to the Winchester Drainage Competition, I beg you will allow these few remarks to appear in your columns with regard to the latest transactions in this matter, viz., the special meeting of the Local Board on Tuesday, the 17th inst.

At that meeting it was resolved to adopt Mr. Botham's report; that is, to give the first premium of 150l. (which by the bye, is no premium at all, being included in the commission for carrying out the works) to Mr. Lemon, the author of No. 7 plan, and to withhold the second and third premiums on the miserable grounds that the other designs were not according to the printed particulars. So, in fact, they have got designs sent in, and the professional advice, of eleven gentlemen for—nothing, by simply offering three glittering baits; the first of which is a bubble which bursts directly it is laid hold of, and the other two turn out to be as ethereal as the first, and vanish in the end; a cheap (and decidedly nasty) way of getting professional advice.

Last week I saw by your paper that at Dorchester some board or body had offered a premium of 25l. for a church design, and, when several were sent in, had refused to give any premium at all.

Now, sir, are these facts to be established as precedents? Are young engineers, who are obliged to enter these competitions sometimes, to be ridden over roughshod by these local boards and others, because they think they are out of the reach of punishment? Have they never thought that there is a moral obligation in these cases? and when they hold out offers for gentlemen to compete, are they not bound to see their part of the contract carried out as well as the competitors? I would suggest to the Winchester Local Board that there are other trusts and duties entailed upon their office as important as that of saving the city the sum of 150l.

CIVIL ENGINEER.

COWPER'S SUMMER HOUSE AT OLNEY.

On making a recent visit to the village of Olney, in Buckinghamshire, I was grieved to find that the summer-house in which "The Task" was composed is fast relapsing into ruin and decay. This "nook" or "summer parlour," as the poet has differently designated it, is situated at the bottom of the garden attached to the house in which Cowper resided from 1767 to 1786, and is a small plain rustic building of lath and plaster, covered with red tiles, and run around the interior with a small bench. In this retreat, which is contiguous to the remains of the tree beneath whose shade the poet was wont to linger in the peaceful summer hours, he isolated himself from the social and domestic interruptions to his literary labour, and it is in obvious allusion to the delicious solitude which he here enjoyed that he writes in the "Task,"—

"To me an unambitious mind content
In the low vale of life that early felt
A wish for ease and leisure, and ere long
Found here that leisure and that ease I wish'd."

And again,—

"Had I the choice of sublimary good,
What could I wish that I possess not here?"

The walls are covered with initial signs and names,—a noble testimony to genius; and amongst others I may select those of Hugh Miller and Sir Walter Scott. The Throckmorton family have attended only to those spots associated with the memory of Cowper which are situated on their estate near Weston, and the summer-house, where one of the noblest poems that adorn the pages of English literature was composed, has fallen into the hands of a baker and confectioner, whose means are inadequate to the placing of the retreat in a proper state of repair. Is sensibility to the beautiful wholly extinct? J. CAMPBELL NUGENT.

SINGLE-SPAN CHURCHES.

SIR,—Let me add to the examples of single-span churches recently mentioned in the *Builder* a notable one in Bordeaux. I saw it a short time since while passing a few hours in that city. Divine service was being performed, and my observations were consequently very superficial; of necessity; but I was much struck by the contrast between the nave and choir—the former spacious and broad, without pillar, or much-projecting columns; the latter having an aisle all round it, and separated from it by acutely pointed arches,—the former equally illuminated over its whole area, the latter broken up into a most effective combination of light and shade. The style of this church is Early Decorated throughout, except that over the south transept are two tall spires of elaborate pierced stonework, apparently of later date than the rest of the building.

Cannot our architects design churches for us which, while thoroughly ecclesiastical, would admit of every member of the congregation seeing and hearing the clergyman? Aisles too often prevent both. J. M. A.

BUILDING IN A LONDON GRAVEYARD.

SIR,—Close to Victoria Park Cemetery is a graveyard attached to the Globe-fields Wesleyan Chapel, Mile-end. It is no long time since this burial-ground was in tolerable condition with the usual array of head-stones, &c.; but about a year or eighteen months ago I observed that the stones were being gradually removed and packed in a corner, and the graves levelled. These stones were soon altogether taken away, and about a quarter of the graveyard was used as a cabbage-garden! On the walls of this burial-ground were painted the usual large figures, indicating to the visitors the latitude and longitude of the graves, but as visitors for long relations in a cabbage-garden might be inconvenient and anomalous, these figures were soon obliterated, and the whole space used for the purpose of a sort of market-garden.

At the present time, six, semi-detached villas are springing up in the place of the cabbages, several pairs of which are already erected. In digging out the foundations for these houses, the burial-ground was incised and excavated in a shocking manner. This "resting-place for the dead" is close to the embankment of the Great Eastern Railway; and, as I have to

constantly pass and repass it, I have had the opportunity of observing the desecration from the beginning.

There was once a burial-ground attached to Spa-fields Chapel, Exmouth-street, Clerkenwell, recently the gravestones were removed, and make-belief garden was planted, but the shrubs and plants could not live; so they were not rooted out to make way for other transformations hidden from the public by a tall boarding which, however, was not sufficiently perfect to prevent the fact of certain excavations having taken place in the graveyard being pretty generally known. S.

CONCRETE HOUSES IN THE METROPOLITAN DISTRICT.

SIR,—Being about to erect some concrete cottages, I should be glad if you or any of your readers would inform me whether there is anything in the Building Act to prohibit it; and, further, whether any concrete houses are known to have been built within the Metropolitan District? The District Surveyor tells me cannot be allowed.

BUILDER.
We are not aware that anything in the Building Act would prevent the erection of concrete buildings within the Metropolitan district. The requirement that "the thickness of every stone wall in which the beds of masonry are not laid horizontally shall be one-third greater than the thickness prescribed in the rules" might possibly be held to apply. The Board of Works could settle this.

CHURCH DESIGN ABOUT SHEFFIELD.

SIR,—I think your "Commissioner" would do good service in reviewing the designs of the new churches that are springing up in and around Sheffield. Draughtsman's and carpenter's (architect) Gothic very much predominates the exclusion of fine-art architecture, and I feel will not redound much to our credit in the pages of history.

One of the leading "Goths" admitted to me about two years ago that he knew little of Gothic architecture, and now he carries off all the prizes with the aid of experts from London offices, and thereby argues that the "bench" is in the suburban road to destruction and success. C. E.

THE NEW ENGLISH CHURCH OF BADEN-BADEN.

On the 14th instant the church of All Saint Baden-Baden, was solemnly opened. The edifice was designed by Mr. Thomas Wyatt, who furnished all the drawings gratis. It has spire and belfry. A stained-glass window, presented by Lord and Lady A. Loftus, decorates the east end. It was painted at Munich. The mosaic pavement, reredos, brass railings, and other ornaments, the pulpit of carved oak, the Bible and Books of Common Prayer for the reading-desk and altar, were also the contributions of Lady A. Loftus, and offered by her as a memorial of her eldest daughter, who died at Baden-Baden nearly two years ago.

The Queen of Prussia, who takes great interest in the English Church, has contributed liberally towards the erection of this church. Her Royal Highness the Crown Princess of Prussia provided a font. The lectern, in the form of an eagle carved in oak, with Gothic stand, having four Evangelists at the four corners of the base is the present of the Grand Duchess of Baden. His Royal Highness the Prince of Wales, during his late visit to Baden, took great interest in everything connected with this church, and sent the treasurer as a donation 1,000 francs.

RESTORATION OF ST. MARTIN'S CHURCH, EXETER.

SIR,—A "Visitor" very justly reprehends the work that is going on at this church, situated as it is in the very Cathedral-close, *vis-à-vis* with the best original Norman and Decorated work.

He is a little hard upon the pointing, which nearly follows the old joints; but does not notice that the old bell-chamber windows have not had their tracery replaced, and some small quater-

Statham, Leicestershire.—The restoration of John's Church has been commenced. The works will comprise the removal of the present unsightly pews, opening out the clerestory, new pulpit and benches, removal of

the organ, complete restoration of the chancel, heating, &c. The new woodwork will all be executed in oak. The works are being carried out from the designs and under the superintendence of Mr. R. W. Johnson, architect, of Melton Mowbray and Leicester.

Wolverhampton.—The memorial stone of the new Church of St. Jude, Wolverhampton, has been laid. The church is being put up on the north side of the Tottenhall Road, nearly equidistant between those of Tottenhall and St. Mark's respectively, and it will form the centre of a district having 2,000 inhabitants, to be made by the division of that of St. Mark's. The scheme originated with the Rev. A. B. Gould, the vicar of the last-named parish, who, upon laying it before Miss Stokes, a benevolent lady, residing in Wolverhampton, received her authority to draw upon her to the extent of 2,000l. in support of it, and also to take as a site for the church-buildings any land she possessed in the parish of which Mr. Gould is the vicar. The land taken in is about one acre in extent. The church is in the style of the thirteenth century, and consists of nave, north and south aisles, and chancel, vestry on south side of chancel, organ-chamber on north side of chancel, and a tower, through which is the principal entrance at the west end of south aisle. The height of the tower will be about 70 ft. The walls are faced with Godesall stone, and the dressings of Box Ground stone; the roof timbers stained and varnished. The seatings provide for 812 adults. The design has been prepared by Mr. Bidlake, of Wolverhampton, architect, under whose superintendence the works will be carried out. The contract has been taken by Mr. Nelson, of Dudley, at 4,250l.

Hevenorth.—The chief stone of a new church has been laid here. The land selected for the site of the church, and also a parsonage, the latter of which will likewise be built, consists of about an acre and a half of ground, situated at the entrance to the village, and immediately adjoining the road leading to Tang Hall. The church, which is to be designated the Holy Trinity, will cost in the erection upwards of 5,000l. Its style will be Early English, and it will have a nave and chancel, with a tower and spire. There will be a porch on the north side of the church, an entrance underneath the tower, and another entrance by the vestry. The church will have an open-timbered roof, the rafters of which will be stained and varnished; Westmoreland slates will be used for the covering in of the edifice. There are to be no side aisles, as the interior will be sheltered by one roof of 35 ft. 6 in. span, which will be the breadth of the church, and its length is to be 114 ft. Provision will be made for having an organ chamber underneath the tower. The floor of the nave will be flagged, but encaustic tiles will be employed in the paving of the chancel floor and the sanctuary. The nave and chancel walls will be pierced with two-light windows. The east end of the church will have three single-light windows surmounted by a cinquefoiled window, and the west wall will have four single-light windows of the same character; above which there will be a cinquefoiled window. All the windows will be filled in with cathedral glass, and have coloured margins. The sittings of the church will be open, and stained and varnished, and will accommodate 300 adults and 150 children. Mr. G. F. Jones, of York, is the architect; and the tenders of the following York tradesmen for the execution of the work were accepted, namely:—Mr. Joseph Keswick, mason and bricklayer; Mr. John Holmes, carpenter and joiner; Mr. Francis Rawling, plasterer; Mr. Richard Walker, plumber and glazier; and Mr. Thos. Wood, slater.

DISSENTING CHURCH-BUILDING NEWS.

Llanelli.—The memorial stone of a new Congregational chapel (being the fifth belonging to that body in the town) has been laid at the New Dock, Llanelli. The architect is Mr. John Humphreys, of Morriston, and the builder Mr. David Edwards, of Llanelli. The style of the erection is a mixed one. The dimensions over all are,—length, 58 ft. 3 in., and breadth, 43 ft. The height from the floor to the wall-plates is 28 ft., and to the centre of the pitch in the roof about 8 ft. more. The walls will be of stone from a neighbouring quarry, except the front, which is to be of dressed stone and rock work or pool work. On this side there will be six windows. The principal entrance is a large folding

door in the centre of the front side; this leads into a porch, from whence doors on the right and left hands open into two side aisles, running from top to bottom of the chapel. The ceiling is a concave one, formed in plaster and with panel-work. A gallery, supported on iron pillars and girders, and the front, of cast iron, is to run round two sides of the end of the building. At the end, and facing the entrance, a platform will be erected at a convenient height from the ground, and in front of this a small reading-desk of polished Memel wood will be placed. The pews are to be of yellow pine and red Swedo timber, the top being of polished mahogany, as well as the top of the gallery round the whole of the front. The windows behind the pulpit will be of enamelled glass, and the small lobby-windows are to be glazed in the same material. Seat accommodation is provided for about 600 persons, and it is estimated that the entire cost of the building will be about 1,400l.

Plaistow.—The memorial-stone of a new Independent chapel has been laid at Canning Town, Barking-road, Plaistow. The new building, which will cost 1,586l. 19s. 9d., is being erected by Mr. E. Stevens, of Poplar, from designs by Mr. J. W. Morris, of the same place. It will be a plain building, with platform pulpit, and vestry underneath, and the interior will be so arranged that galleries can be afterwards erected if necessary. Accommodation will be provided for 495 persons.

Eardisley, Hereford.—A new chapel for the Primitive Methodists has just been opened in this village. The edifice, which is in the Early English style, is built with brick and Bath stone dressings, open sittings, with rostrum set in a recess. The roof, which is open, is framed and braced, with boarding under slate. The wood-work is stained and varnished. Mr. J. H. Evans, of Hereford, was the architect.

Lower Cwmbran (Monmouthshire).—The foundation-stone of a new English Wesleyan chapel has been laid here, by Mrs. Bytheway, who officiated in the absence of Mrs. Greenway, of Glantworth House, Pontypool. The architect for the building is Mr. Samuel Hancock, of Bristol and Newport, Monmouthshire; and the builder, Mr. Joseph Parfit, of Cwmbran.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Doncaster.—The new church of St. Peter has been opened with great ceremony, and in the presence of large congregations. The church occupies the site of the old chapel in Princes-street. The style of architecture is First Pointed, and it is very simply treated. The material used in the work is brick, stone being sparingly introduced for the dressing of doors, windows, and other points of detail. Messrs. M. E. Hadfield & Son, of Sheffield, were the architects; Mr. Rodley, Sheffield, the contractor; Mr. Hayball, of the same place, executed the wood-work. The building has accommodation for 400 people.

Richmond, Yorkshire.—The foundation-stone of the new church of St. Joseph and St. Francis Xavier has been laid. The site selected is in close proximity to the old church. The plan consists of a nave, entered from an extended porch, such as may be seen at Fountains, and as existed at Ryland, in this country. The nave is flanked by two aisles, giving a total width of 50 ft., and is terminated by a chancel of apsidal form, the total length being 101 ft. There are a side porch and two confessionals, whilst a sacristy, with a turret and upper chamber, terminates the eastern aisle. The aisles are separated from the nave by circular shafts of red stone and pointed arches, with a clerestory above of circular traceried windows. The roof is framed with arched principals, springing from stone corbels. The plans have been prepared by Mr. George Goldie, of London, the architect of the new Roman Catholic church at York; and the contractors are Mr. Smith, mason, and Mr. Naylor, of Richmond, builder. The cost of the whole will be under 3,000l.

Shipley.—The new chapel of St. Mary and St. Walburga, Shipley, has been opened for divine service. It is two years since the site, an acre in extent, in Victoria Park, was purchased of Mr. Canliffe Kaye. It looks down on the mill and the village of Salthwaite, and commands an extensive view of Airedale and its background of undulating hills. A Gothic presbytery has been erected, and between it and the

present chapel there is an extensive plot of ground, intended for a better church at some future time, when the present chapel would be converted into schools. The chapel, which is in plain Gothic style, is 84 ft. by 30 ft., including a small sanctuary.

SCHOOL-BUILDING NEWS.

Hawsker.—Hitherto the extensive township of Hawsker-cum-Stainsacre has been ill-provided with a school-house and place for religious worship. Some time since the farmers and land-owners resolved to make an effort to raise a suitable building, and their appeal for aid was so promptly responded to, that the erection was soon commenced, and it has now been opened. The school is conveniently situated, in a central part of the township, about three-quarters of a mile from the village of Hawsker. It is built of stone, supplied gratuitously from one of Mrs. Cholmley's quarries. The site, including playground, has been granted by the lord of the manor and Mr. Moorsome. The cost of the building, including a house for the teacher, is 550l.; and about 150l. are still needed to start the institution free from debt. The design of the building was furnished by Mr. E. Smiles, architect, and the sole contractor for the erection was Mr. Wood, of Malton. The room is capable of accommodating upwards of 200 people.

Hucknall-under-Hathwaite.—The foundation-stone of a new school for the parish of Hucknall-under-Hathwaite, a large village situated between Sutton-in-Ashfield and Alfreton, has been laid by the Dowager Countess Carnarvon. The site of the building is upon a declivity near the road leading from Hucknall to Blackwell. Mr. C. J. Neale, of High Oakham, is the architect. The principal room in the building will be used as a chapel of ease for the use of the village, which possesses no church. Accommodation will be provided for about 300 children of both sexes. The girls' and infants' school will be in dimensions 35 ft. by 22 ft.; and the boys' room, 22 ft. by 20 ft. There will also be a class-room, 22 ft. by 12 ft. It is contemplated to erect two teachers' residences if the funds permit. At present the contemplated expenditure is about 900l.

Hanley.—The chief stone of a new ragged school has been laid here. Mr. Snaith, the borough surveyor, who is a member of the committee, prepared the necessary plans without charge, and he has designed a building which will cost about 600l. It will consist of one large room, with a moveable partition, two classrooms, and a gallery, and will accommodate about 400 scholars.

Penzance.—The memorial stone of new Wesleyan day and Sunday schools has been laid close to the enlarged chapel in Chapel-street, the front abutting on the thoroughfare to the quay, and having a second approach for the infants' school from Voundervour-lane. They will be built from the plans of Mr. John Tronson, of Penzance, architect, who was the successful competitor among five for a premium of 10l. Messrs. Philip Thomas & Son are the builders. The cost when complete will be about 1,500l. The elevation in Chapel-street shows a building of dressed hammer-raised granite, with granite ashlar dressings. This frontage will be 33 ft. high, to the parapet of cut granite, and will have six circular-headed windows and a square porch, surmounted by a bell-turret 12 ft. above the parapet. The carpenters who have contracted for their portion of the work are Messrs. Hill & Jenkin. Mr. James is clerk of the works.

STAINED GLASS.

St. Peter's, Quernmore, Lancashire.—The east window of St. Peter's Church, Quernmore, Lancashire, has lately been filled with coloured glass under somewhat singular circumstances. Mr. Garnett, late M.P. for Lancaster, having been led to visit Cannes, in the south of France, for three successive seasons, assented to a proposal made to him in the spring of last year to join with the chaplain and another layman in providing a coloured window for the English church at Cannes, which was to be enlarged. An order was given in London, and the window was finished and sent out by the *Fairy Vision* for Marseilles, in October last. The ship foundered almost within sight of port, on one of the

dangerous sandbanks off the mouth of the Rhone. The window was insured and an order was sent to London for another, which in due time arrived, and was fixed in the church. The unfortunate *Fairy Vision*, at the bottom of the Mediterranean, was sold to a Greek, who set to work to recover the lost cargo, and while Mr. Garnet was at Hyeres in the spring of this year, the window was fished up and sold by auction at Marseilles. He bought it and sent it home, not much the worse for its five months' dip in the sea, and it is now in Queenmore Church. The window represents leading events in Gospel history.

Books Received.

Mushrooms and Toadstools: How to distinguish easily the Differences between Edible and Poisonous Fungi. By WORTINGTON G. SMITH. London: Hardwicke, Piccadilly. 1867.

MR. W. G. SMITH is a devoted and enthusiastic student of the Fungus tribe. For many years he has devoted every moment of his leisure to it; and some time ago he received the gold medal of the Royal Horticultural Society for his drawings and dissections of fungi. By means of the little book before us, and two large sheets containing figures, one of twenty-nine edible and the other of thirty-one poisonous species, drawn the natural size, and coloured from living specimens, he seeks, while preventing disasters, to make known the large number of fungi that may be pleasantly eaten. He invites his readers to partake of the bountiful feast spread all over the country for those who care to partake. We must, nevertheless, inculcate care. The knowledge generally possessed regarding the immense fungus tribe of this country is embraced in the words mushroom and toadstool.

If we take the mushroom type of fungus as an example, we have, it appears, some 600 species, all possessing a certain general similitude of form. This has caused many to look upon fungi in common as equivocal productions, difficult or impossible to distinguish as permanent species; but when the study is once entered upon in earnest, the student will soon perceive that the species, as a rule, are marked with great distinctness and permanency, rendering the recognition of most of them as certain as any species of flowering plant. Mr. W. G. Smith has done a good work well. He brought to the task an accurate pencil as well as special knowledge.

Examples of Bridges and Viaducts: from the Contract Working Drawings, or Admeasurements. By W. DAVIS HASKOLL. Second edition. London: Lockwood & Co. 1867.

THIS edition of Mr. Haskoll's "Examples of Bridges and Viaducts" has the advantage of containing more than 500 estimates of over-rail and under-rail bridges, and some sensible observations on the practice of setting out works, and the value of practical knowledge to the engineer. It is a very valuable volume, and may be added usefully to the library of every young engineer. It will be very useful, too, in the colonies.

We will take an item of information from his pages. He has found the average number of bricks laid by one man in a day of ten hours.

1,600 in abutments and foundations.
1,400 in arches of large span.
1,100 in 18-in. walls, with joints struck.
1,000 in 14-in. walls, with joints struck.
He notes, too, that 12 tons of Blue Lias quick lime will make about 47 cubic yards of first-class mortar, 53 cubic yards of second-class mortar, and 81 cubic yards of concrete.

VARIORUM.

"JOURNAL of the Transactions of the Victoria Institute, or Philosophical Society of Great Britain, 1867" (Hardwicke). "Annual Address of the Victoria Institute, May 27th, 1867. By J. Reddie, Hon. Sec." (Hardwicke). Although some members of the Victoria Institute are obliged to reason on restricted principles, no member being admissible who is not a believer in the Bible, and, in fact, at least a nominal Christian, the subjects discussed are of great interest, and one mode of discussion liberal, and free from anything like bigotry. The society have a "devil's advocate," as they call him, in Mr. Worthington, who defends the ultra-liberal side

of various questions, and so gives piquancy and life to discussions which would read rather flatly if all the speakers were on one side.—"The Civil Service Geography. By the late L. M. Dalrymple Spence, revised by T. Gray, assistant secretary, Board of Trade" (Lockwood). "Not to make too fine a point of it," this little volume is a crammer, but a very good one. We have heard of a machine by means of which live geese could be stuffed to the throat, and so in time made fit for the roasting to which they were destined. If any machine will stuff Civil Service candidates with grains of geography, and fit them thus far for their examination, this little manual will do it. There are members of the Government, too, of pretty high rank, who are said to be not by any means posted up in their geography: here they will find the pure grain winnowed from all the chaff, and available at any ally moment. As a help to children at school the book is by no means unsuitable.—"Report of the various Proceedings taken by the London Trades Council and the Conference of Amalgamated Trades in reference to the Royal Commission on Trades Unions and other subjects in connexion therewith" (Kenny, printer, Parker-street, Little Queen-street). This is a clear and business-like report of proceedings connected with the trades-union question. Amongst the recorded matter is that relating to the endeavour to obtain a bill to secure the funds of trades-unions from dishonest officials. A temporary bill was introduced into Parliament, but thrown out. No doubt the whole subject of trades unions will come before Parliament next session, and some protection will be granted in this respect.—"Country Life is a periodical that many people living in the country will value, treating as it does of the farm, the garden, the house, and so forth. "A North Northamptonshire Rector," by the way, who has commenced some jottings in it, when he quotes a line known to every one in this fashion.—"Some one has said that 'man made the town, and God the country,'* does not give a good impression as to the precision of his knowledge.—Hardwicke's *Science Gossip* progresses capably. It is invaluable for young naturalists, indeed to all living in the country.—Mr. Tegg has published a new edition of Wright's "Eton Greek Grammar," revised by the Rev. John Massie, M.A.

—And from the same publisher comes a fresh issue of Strat's "Sports and Pastimes of the People of England," with Hone's Index: an amusing and valuable book. A really new edition, properly edited and added to, is wanted.

—Mr. Wyld, always prompt, has just issued a new Map of Abyssinia, which will be of interest at the present moment. It is well marked with numerous names of places, and appended is an interesting section of the land levels of this mountainous district of country, from the Gulf of Aden to Agauader.

Miscellanea.

OUR INDIAN RAILWAYS.—A leading article in the *Times of India*, of the 19th of August last, relates to serious defects in the management and execution of the railway works in India. The writer says:—"There can no longer be any evasion of the truth that faulty construction is one of the blots of our railway system—the shingle embankment at the Sukkee Nullah, the seven suspected bridges within seventy-five miles between Shergaum and Budhaina, and the utter destruction of the great viaduct on the Blore Ghant, are indications of a general flaw which more or less seems to pervade all railway constructions in India." He complains of the operation of the sub-contract system, and the construction of embankments formed of "shingle," arches of "rubble masonry," and piers composed mainly of rubbish called "concrete." "Happily," he remarks, "some check is already being given to this system. The contract on the Eastern Bengal line has, we believe, been quite regular and satisfactory, and the same may be said regarding the progress already made with the Delhi line. It is imperative that a stop should be put to the illusory and expensive procedure which is inseparable from the practice of amending contracts."

* "God made the country, and man made the town."
Cooper: "The Task."

The Roman writer, Varro, substituting "divine nature," for "God," had said the same thing seven years before Christ.

THE CO-OPERATIVE PRINCIPLE IN AMERICA.—Co-operative associations are multiplying among the working men of New York. Two co-operative building societies have been formed, and it is proposed to establish a co-operative savings-bank, also a store.

THE LATE M. HEISER, ARCHITECT.—M. Heiser, architect of the Austrian department in the Paris Exhibition, has died. He was only forty-four years of age. M. Heiser received the cross of the Legion d'Honneur, on the 1st of last July, from Napoleon.

THE TREE THAT GROWS GREASE AND TALLOW. In China there grows a tree known as the Grease Tree. It is said that large forests of this vegetable lubricant are to be found there, and they form the source of a considerable local traffic. This tree not very long ago was imported into India, and it is said that the experiment of cultivating it there has proved quite successful. Dr. Jameson, a chemist in the Punjab, has prepared hundredweights of grease from this particular tree, and has forwarded on trial a portion of it to the Punjab railway, to have its qualities tested as a lubricant. The grease thus obtained, it is said, forms an excellent tallow, burning with a clear, brilliant, and white light, emitting no unpleasant odour or smoke.

THE ATMOSPHERE OF THE UNDERGROUND RAILWAY.—In a letter by the secretary to the vestries of St. Marylebone and St. Pancras the writer says:—"It has been suggested that openings might be made at several points in the Marylebone and Euston roads, where important thoroughfares cross this line of road, by means of handsome and ornamental hollow columns, which should be connected with the tunnels, and which should support street lamps similar in principle and fashion to the lamps at each end of the new street in the Borough. Of course such works could only be undertaken by or with the consent of your vestry, and I am, therefore, desirous to ascertain whether the vestry would be prepared to assent." On the reassembling of the vestries the subject will be considered and determined upon.

TRADITIONAL RELIC OF THE SLAYER OF THE GREAT SNAKE OF SLINGSBY.—It has been found necessary to pull down one of the few ancient churches now remaining in Yorkshire—the church of All Saints, Slingsby—in consequence of its decayed condition. The church formerly belonged to the abbey and convent of Whitby. The old church contained a cross-legged effigy of one of the Wylls, who, tradition and the Dods-worth MSS. say, slew the famous snake of Slingsby, which is reputed to have been so terrible that the highway to Malton was diverted one mile to the south, to miss the snake's lair. In the tomb below the effigy a skeleton was found, the bony hand of which wore a splendid and massive gold ring, having the death's head and cross-bones picked out in coloured enamel. The tomb, the skeleton, and the effigy have been preserved, and will be restored to the chancel of a Norman church, which is to be reared on the old site, of which the foundation-stone has just been laid. From below the foundations of the old church coins of the Hane Towns Confederation (twelfth century) were dug up.

THE ROCHDALE PIONEERS.—The annual return has been issued of the statements rendered by industrial and provident societies in England, registered under the Act of 1863. 240 neglected to send a statement of the business of the year 1866; 436 complied with the requirements of the Act. The business carried on is that of dealers in provisions, some associations also supplying drapery goods, or boots, or both. The number of members of the 436 societies had reached 173,423 at the close of the year 1866. The shares are commonly 1l. each. At the end of the year the amount of share capital was 1,048,961l., and of loan capital, 118,023l.; the trade liabilities, 334,561l.; the assets and property, 1,009,849l.; and the cash in hand, 192,803l. The Rochdale "Equitable Pioneers," established in 1844, still take the lead. This association had at the end of the year 1866, 6,246 members, and a share capital of 97,459l.; grocery and provisions sold in the year to the amount of 249,122l., cash, realised a profit of 31,811l. There is a quarterly audit by members. The profits were disposed of thus.—For interest, 3,823l.; dividend on the amount of purchases made at the shop, 25,829l.; education, 681l.; reserve fund, 252l.; for depreciation of fixed stock, 1,197l.; charities, 165l.

ARCHITECTURE: UNIVERSITY COLLEGE, LONDON.—Professor Hayter Lewis has issued his programme. The first term in each course will commence on October 8th.

GLoucester Cathedral.—Mr. J. Roddis, of Birmingham, has completed the last of a series of figures, thirty-three in number, for the chapel of St. Andrew, in Gloucester Cathedral, at present being restored under the direction of Mr. Gambier Parry and Mr. Scott, R.A.

JOHNSTONE, SCOTLAND.—The chief stone of a public hall has been laid here. The cost is estimated at nearly 3,000l. The building, the site of which is in Ludovic-square, is intended for a public library and reading-room, and will contain a hall for public lectures. The walls are a few feet above ground.

TRANSPARENT DOOR-PLATES.—Messrs. Drury & Westrup have patented a new knocker, which includes an arrangement by means of which the number of the house or name of occupant can be seen at night. A small opening is cut in the door to fit a plate of ground-glass at the top of the knocker, on which the number or name can be written; a light in the hall would, of course, be necessary to make it obvious at night. For the design of the knocker at present made we can say nothing very flattering; but the transparent part may be found useful by physicians and others, and for houses in the suburbs which have a plot of garden in front, as the number can be seen from a distance.

THE BRADFORD NEW TOWN-HALL.—"There is a very general opinion," says the local *Observer*, "that the town council has made a great mistake in deciding to build their new offices on the west side of Chapel-lane. The objection is manifold. It is urged that the site is inadequate, unsuitable, expensive, and required for other purposes. Further, that we ought not to be satisfied with 'offices,' but should go in for a town-hall as pretentious at least as those of Leeds and Halifax, and that on the site chosen such a building is not possible. Also, that a better site in all respects, less costly, equally convenient, and more commodious can be found, upon which temporary offices may be erected if thought advisable, and a grand town-hall eventually."

THE CHAPELS, BEBINGTON.—At the monthly meeting of the Bebington Burial Board, it appeared from the proceedings of the former meeting that the second premium for the designs for the chapels, &c., had been awarded to Mr. Thomas Holmes, Tranmere, and that the tender of Mr. John Dobson, Rock Ferry, had been accepted for the carrying out of the designs of Mr. Hamilton, in accordance with the plans selected for the first premium. It having been stated that some remarks had been made respecting a disparity which it was said existed between the specification for which tenders had been invited and the original one submitted by Mr. Hamilton, the surveyor had been instructed to examine them and report, which he now did to the effect that the two specifications were substantially the same, any small alterations made being principally explanatory, and that in almost every instance their tendency was to increase the cost.

THE RAILWAY CUT ACROSS AMERICA.—The last, the longest, and by far the most costly of the excavations along the line of the Central Pacific Railway is the great tunnel which has just been completed. Of this tunnel while in progress we have already spoken. It is 1,660 ft. in length, and was begun at the east portal on the 16th of September, and on the west portal on the 20th of September last, and the work upon it has therefore occupied about a year. The material which had to be drilled and blasted was granite of the hardest grain. Advantage was taken of a depression in the centre, and a working shaft of 159 ft. was sunk so as to present four working faces. The average rate of progress with powder was about one foot per day to each face, or from 20 ft. to 30 ft. per week in all. In March last the company accepted the services of an experimenter in nitro-glycerine, which article was manufactured on the spot, and the average was increased to nearly 50 ft. per week. The workmen, principally Chinamen, laboured in three gangs for eight hours each, and proved very serviceable in this kind of work. At times the consumption of powder reached 400 kegs per day. The Pacific Railroad is thus making rapid strides to a successful completion.

SPONGE FOR SEAT AND MATTRESS STUFFING.—A grass sponge, hitherto not made use of, has been found to be very suitable for stuffing chairs and mattresses instead of hair. It grows in shallow water among the coral formations of the Bahamas and on the coasts of Mexico and Florida. A new trade in this article has been established in New York and Boston amongst the upholsterers. It is used instead of feathers in beds as well as hair in mattresses, and at much less cost,—at least one-half, it is said,—than either. It is prepared by a patented process, in which glycerine is used to render its elasticity permanent.

A LIFE-SAVING MATTRESS.—Experiments have been made in America with the view of testing Golding's Life-saving Mattress. The mattresses in question are intended to take the place of ordinary mattresses on board vessels. The lower portion is composed of cork cuttings encased in canvas, while on top is a second mattress of hair—the whole intended to serve the double purpose of a bed and life preserver. Thus, if a passenger is awakened in the night and finds the vessel sinking he has only to pick up the mattress and jump into the water in order to be safe. The steamer *Silas O. Pierce*, having a party on board, arrived within half a mile of the shore, when five men, each having a mattress, jumped off from the vessel. The beds proved to be exceedingly buoyant, and the men sat on them and paddled themselves ashore by using their hands as paddles.

INCREASE OF LARGE CITIES.—The following statements are from a work entitled "Étude Médicale et Statistique sur la Mortalité à Paris, à Londres, à Vienne, et à New York, en 1865," by Dr. Vacher. In 1865 the population of Paris was calculated at 1,863,000; of London, at 3,028,000; of Vienna, at 560,000; of New York, a year earlier, at 1,025,000. The annual ratio of increase per inhabitant was, in Paris, 0.02 (in other words, 100 inhabitants became 102 in the course of the year); in London, 0.017; at Vienna, 0.016; and at New York, 0.35. The average number of inhabitants in a single house is, for Paris, 27; London, 7; Vienna, 64; and New York, 14; so that Vienna is the most densely peopled town of the four. From these data it appears that the increase of population at New York is equal to that of the three other towns taken together—a circumstance owing, of course, to the stream of emigration constantly flowing in that direction. In 1790 the population of New York was 33,131, and it has since been fully four times doubled. With regard to the other towns, Dr. Vacher attributes their increase to the tendency of the country people to migrate to the large centres of population, for the mere excess of births over deaths cannot account for this increase. Paris has doubled in the course of 32 years, London in the course of 40, and Vienna in the course of 44. Yet the excess of births over deaths in Paris was only 41,934 from 1836 to 1856, while the increase of population during the same period was 305,908. In London, from 1841 to 1861, the excess of births over deaths was 328,189; the increase of population, on the contrary, was 926,026.

TENDERS

For the erection of new schools at Tranmere, in connexion with the Birkenhead Union Workhouse. Mr. T. Layland, architect. Quantities supplied by Mr. W. Longman—

Aldis	£9,208 0 0
Dobson	9,104 0 0
Cameron	8,887 0 0
Barroughs & Son	8,799 0 0
Kirkham	8,760 0 0
Chuck	8,900 0 0
Harkness & Dempster	8,608 0 0
Jones & Co.	8,237 0 0
Koberts	8,161 0 0
Campbell	8,123 0 0
Boniface	8,100 0 0
Forde	8,066 0 0
Roberts & Robinson	8,048 0 0
Hogarth	7,987 0 0
Calbe	7,950 0 0
Ridehalgh	7,775 0 0
Blakeley	7,683 0 0
Anderson	7,642 0 0
Mullholland	7,535 0 0
Roberts	7,438 0 0
McCormick	7,360 0 0
Corrie (accepted)	7,360 0 0

For erecting only, two houses at Thornton Heath, Croydon. Mr. J. Berney, architect:—

Hall	£1,433 0 0
Nightingale	1,232 0 0
Crabb & Vaughan	1,190 0 0
Loe	1,182 0 0
Brett & Bradbury	1,148 0 0
George	1,127 0 0

For Congregational Church, Eastwood, Notts. Messrs. Bidlake & Tait, architects:—

Thomson.....£2,181 0 0

Trow & Sons.....1,834 0 0

Wright.....1,833 0 0

T. & H. Herbert.....1,833 0 0

For the erection of new workhouse, infirmary, &c., at

Hertford. Mr. Fredrick Peck, architect:—

Chappell.....£10,500 0 0

Glassecock.....8,600 0 0

Moxon & Mutton.....5,400 0 0

Edins & Sons.....5,373 0 0

Patterson.....8,200 0 0

Smith.....8,155 0 0

Savage.....7,808 0 0

Norris.....7,847 0 0

Perry, jun.....7,777 0 0

Huddleston.....7,714 0 0

Blund.....7,683 0 0

Henshaw (accepted).....7,349 0 0

For a terrace of ten houses at Kensington, for Mr. S.

Ullman. Mr. John Dale, architect. Quantities supplied

by Mr. Shrubsole:—

Macey.....£16,490 0 0

Johnson.....14,890 0 0

Carter & Sons.....14,176 0 0

Cowland.....13,540 0 0

Butt & Son.....13,075 0 0

Parsons.....12,986 0 0

Nightingale.....12,743 0 0

Whitcomb.....12,696 0 0

Nutt & Co.....12,613 0 0

Munday & Hutchinson.....12,470 0 0

Thorne & Co.....11,946 0 0

Grover.....11,690 0 0

Cockrell.....11,675 0 0

Pearse.....11,500 0 0

Baxter.....9,975 0 0

For new Berner's Hall, for the Agricultural Hall Com-

pany, Islington. Mr. Charles Bird, architect. Quanti-

ties supplied by Mr. Shrubsole:—

Axford & Whittier.....£4,512 0 0

Perry & Son.....4,515 0 0

Falman & Fotheringham.....4,410 0 0

Webb & Son.....4,338 0 0

Sharnau.....4,300 0 0

Brass.....4,046 0 0

Hill & Kedell (accepted).....3,965 0 0

For Masonic Hall, Birmingham. Mr. Edward Holmes,

architect. Quantities supplied by Messrs. Batston &

Hunt:—

Naden & Son.....£17,000 0 0

W. & B. N. Smith.....16,950 0 0

Hardwick & Son.....16,985 0 0

Matthews.....16,850 0 0

Parrell & Son.....16,400 0 0

W. & J. Webb.....16,078 0 0

Moffatt.....14,998 0 0

* Accepted, the tender of Mr. Moffatt not being in

accordance with the former form.

For pulling down and rebuilding the court and offices

of the Coopers' Company, Basinghall-street. Mr. Geo.

Barnes, Williams, architect to the company:—

Coleman.....£4,888 0 0

Myers.....4,867 0 0

Asby & Son.....4,824 0 0

Brass.....4,778 0 0

Asby & Horner.....4,750 0 0

Rider.....4,680 0 0

Browne & Robinson (accepted).....4,627 0 0

For the new London Pottery, Lambeth, for Messrs. J.

Stiff & Son. Mr. Jas. Taylor, architect. Quantities by

Messrs. Birdseye & Stone:—

Webster.....£20,090 0 0

Lathey, Brothers.....8,224 0 0

Kilby.....8,223 0 0

Holland & Hannen.....8,108 0 0

Richards.....8,080 0 0

Clemence.....7,729 0 0

Gammon & Son.....7,631 0 0

Higgs.....7,500 0 0

Hill & Kedell (accepted).....7,401 0 0

For cottages at Bonchurch, Isle of Wight, for Mrs.

May. Messrs. Habershon & Pite, architects:—

Pritchard.....£1,280 0 0

Tharle.....1,282 0 0

Lale.....1,260 0 0

Foran & Smith.....1,210 0 0

Newham.....1,200 0 0

Beavis & Son.....1,200 0 0

Loe.....1,178 0 0

Moses & Walder (accepted).....1,150 0 0

Parson & Saunders.....1,121 0 0

Denham.....992 0 0

For schools at Ventnor, for Rev. A. B. Peile. Messrs.

Habershon & Pite, architects:—

Pritchard.....£498 0 0

Tharle.....464 0 0

Lale.....450 0 0

Newham.....450 0 0

Parsons & Saunders.....424 0 0

Foran & Smith.....420 0 0

Loe.....412 0 0

Beavis & Son.....376 0 0

Moses & Walder (accepted).....365 0 0

Denham.....363 0 0

For Congregational church and schools at Tottenham

Messrs. Smith & Son, architects. Quantities by Mr.

Shrubsole and Mr. Faice:—

Entire works. Church only.

Adams.....£4,150 0 0.....£3,865 0 0

Gordon & Co.....4,085 0 0.....3,687 0 0

Barker.....3,968 0 0.....3,378 0 0

Nightingale.....3,957 0 0.....3,125 0 0

Blackmore & Morley.....3,883 0 0.....2,800 0 0

Crabb & Vaughan.....3,400 0 0.....2,650 0 0

Munday & Hutchinson.....3,153 0 0.....2,403 0 0

Palmer (accepted).....2,650 0 0.....2,179 0 0

For detached villa near Epsom, for Mr. M. Angelo.

Messrs. Bacon & Bell, architects. Quantities supplied by

Mr. Shrubsole:—

Munday & Hutchinson (accepted).....£1,200 0 0

The Builder.

VOL. XXV.—No. 1287.



What is your
Name?
Who gave you that
Name?

S language is one of the most important of the endowments of the human race, all inquiry into its sources, or into that of any of its branches, must ever be of general interest. Philologists, or philologers as they used to be termed, put forward large claims in its behalf, which we can but allow. Philology, they aver, is one of our most valuable aids, or reliable clues, in the study of ethnology. The names of the geographical features of any help us to a knowledge of the race who peopled it, or who were sufficiently civilized to leave any decipherable trace behind. In and, for instance, the names of hills, valleys, and places clearly indicate a succession of nations possessing different languages. We find the Celtic wave in the names of some of our rivers, such as the Avon, Esk, Derwent, and in the names of places containing the Tre, Ceor, signifying in the Cymric tongue a fortified or otherwise; we realize the occupation in the names of places containing in "chester," and its varieties in *castra*, in which we recognise Latin *castra*; we own the Anglo-Saxon of places that affix the terms *ton*, *ham*, *wick*, or include a reference to natural features in the Saxon speech, as *ford*, *brook*, *dale*, *hurst*, *wood*, &c.; we note a naming of settlements, in certain cases, in which words having Danish termination are used, such as *by*, *thorpe*, *dale*, *beck*, *ness*, *thwaite*; and a fifth in the Norman names *Mowson* (*Malvoisin*), *Malpas*, *Beaumaris*; in a word, we find in the names of our chief places exact corroboration of the facts of history. If we look abroad, by this clue, the names of places will give us very important information. We have seen this fact pointed out more clearly than in Mr. Picton, who, in a paper read before the Philological and Philosophical Society, at the great value of nomenclature in historical researches by various illustrations, mentioned the state of Massachusetts as a sample of the working of the same principle. In Massachusetts the rivers and promontories of the country retain their Indian names, just as ours have kept their appellations. There are the rivers *Quinnipiac*, *Piscataqua*, *Saco*, *Ammonoosuc*; the lakes *Sebago*, *Winnepesaukee*, &c.; and the mountains, *Monadnock*, *Wasect*, *Adirondack*, all terms having a meaning in the language of those who named them. Planted amidst this Indian nomenclature are the

settlements of the English emigrants, named after their old homes,—Plymouth, Portsmouth, Cambridge, Manchester, York, Dover, Gloucester, &c. Here, however, the correspondence of the two cases ceases; but the tracks of other settlers may be pursued by the same guidance. Mr. Picton lays it down as a rule that a colony will always betray its origin in the names it gives to the localities and peoples, as the Dutch have done on the shores of New York, at Staten Island, Hoboken, Middleburg, New Amsterdam, the Hudson river; and the French along the banks of the Mississippi, as witness New Orleans, Baton Rouge, Pont Chartrain, Chaudesale, Plaquemines, and St. Louis. Applying this principle to remote times we can make some curious deductions. The Celtic names of our rivers occur in continental countries; and so do the Celtic terms for rock, hill, hollow, lake, valley, whence we may see the existence of an early Celtic population in Europe; and in proper names we may find a clue to the origin of the people apparently akin to the Laps and Fins, whose small remnant now occupies the district around the base of the Pyrenees. "Throughout the north and centre of France," says the philologist we have mentioned above, "the names of places have generally a Celtic base, first Romanised, and then corrupted and contracted into modern French,—as *Lutetia Parisiorum* (now Paris), *Ambiani* (now Amiens), *Rotomagus* (now Rouen). In the south-west of France this Celtic element almost entirely disappears. The base of the names can only be explained from the Euskarian or Iberian speech." Now, if we found Euskarian or Iberian terms occasionally scattered over Europe,—as, indeed, we are supposed to do in the names Britain, Tyne, and Tweed,—may we not lend serious consideration to the suggestion that this Iberian race may have been a pre-Celtic wave passing over Europe? Mr. Picton, however, makes no such suggestion. After showing us the successive occupation or colonization of Spain (the country of rabbits) by the Iberian or Euskarian race, the Phœnicians, Tyrians, Carthaginians, Celts, Romans, Goths, and Moors affirmed by the names of places, and disentangling some names that are composed of two languages, as the Arabic and Phœnician *Guardiana*, he pursues a more intricate question. The root *Ar* or *Ir* or *Er*, common to the appellations of many nations of the great Aryan family, has derivatives in most of their languages expressive of skill and noble qualities. *Ar* meant to plough, in days when to plough or cultivate the land was a work of skilled labour, and the Greeks, Latins, Gauls, Goths, and Anglo-Saxons all framed words to express ploughing from this root, as well as derivations to indicate the idea of refinement. Thus excellence is expressed in the Greek *Agri*, in the Latin *artifex*, for a skilled workman in distinction to a common labourer; in the Gaelic *air-airnach*, signifying noble, excellent, rich; in the Anglo-Saxon *ar*, glory and honour; led on by this wide presence of the same term for this quality, Mr. Picton confesses it would be easy, by drawing together all the words containing the syllable *ar*, as in *Ararat*, *Arabia*, *Ar of Moab*, &c., to make the whole world kin; but he is withheld by the consideration that there is another great family of man in which the same root expresses quite a different thing,—namely, the Semitic *ar*, awaking or watching; and so he comes upon two mighty streams of humanity in which the same sound represents distinct ideas.

The names of places have given designation to many articles, such as coffee (*Kafa*), calico (*Calicut*), dimity (*Damietta*), as well as to some actions, such as to roam, a pilgrimage to Rome, sometimes serving as the pretence for a long absence from home; but most especially have they conferred names on man. In the south of England the great majority of surnames are derived from the names of places, the

remainder being made up by a description of the peculiarities of the first person so named, by the affix of the name of the trade of the first person of the family assuming or having a surname conferred upon him, or by the application of some nickname, or by some foreign importation. In the north of England, as in Wales, the majority of surnames are patronymics; and in Scotland and Ireland they are clan or tribe names. The Danes gave us the idea of affixing the word son to the paternal name, as Nelson, the son of Niel. The Saxons designated the children of Billa, Wera, and Walla as Billings, Warings, and Wallings, who, in their turn, as Mr. Picton also points out, called the lands they acquired by their own names, Billingham, Wallingham, and Wellington; but as these were tribal names and discontinued when association for mutual defence was no longer necessary, this very large proportion of the population were without patronymics when subsequently it became necessary to use them. The curious and comical names of which some persons find themselves possessed, in virtue of this necessity coming to pass in days when refinement was not one of the most striking characteristics of the world, read like nonsense when grouped together.

Nearly every portion of the human body has given a designation to multitudes. We have dozens and dozens of people called Head, a great many more called Foot, plenty of Legges, some Arms, a few Backs, several Figures, not so many Necks, several families of Blood, more of Bone, and others of Skin, Thew, Hair, Gore, Beard, Whisker, Whitehair, Body, Skull, Nail, Shinn, Keel, Lipman, Lightfoot, Hand, and its French representative Main, Wort, Mole, and Mark. All of these cognomens are at this day possessed by respectable London householders. No one appears to have been called after the most prominent of all features, the nose; the only resemblance to the same sound being Nosworthy and Noyes. And a further dignified exception has been made in favour of our internal organs, for we can point to no Mr. Heart, or Kidney, or Liver, or Lung; the nearest approach to any reminder of them being Heartwell, Kidner, Livermore, and Lungby. This reserve is compensated for by a vigorous ring of changes upon some of our limbs. Arms, for instance, are combined in several ways. We have Armstrong, Armstead, Armsworth, Armsby, and Armsford. Legg is less flexible; it only runs into Leggett or Leggett. But head is transformed into Headman, Headland, Headworth, Headen, Heading, Headfoot, and Headlam. Minor parts are treated with equal freedom. Nail becomes Naylor, Nailor, Neal; bone is twisted into Boner, Bonell, Boning, Bonner, Boniwell, Bonham, Bonney, and Smallbone; and Hand into Handey, Handiside, Hands, Handover, Handman, Handford, Handley, &c. These groups are not taken from the same roots in all cases; thus some of the Bones, doubtless, are descendants of some one surnamed the good, in French, whilst others may have Scottish ancestry who were "bonnie."

Nearly every component part of a house has given names to men. We have Story, Dore, Chambers, Hall, Stair, Step, Roof, Post, Board, Rafter, Gable, Wall, Dormer, Oriel, Slate, Kitchen, Pantry, Ovens, Hinge, Hobbs, Shutter, Key, Lock, Pipe, Pole, Vane, Tower, Lodge, Loft, Court, Yard, Weatherstone, Stone, Wood, Ivory, Iron, Brick, Brass, Alabaster, Glass, Gold, Silver, Waters, Stairs, Steel, Clay, Flint, Sand, with House and the Field, or Appleyard, or Orchard in which it stands. Is not this curious?

Then, again, we have many names identical with those of our household goods. We have Dresser, Fender, Kettle, Potts, Scales, Rugg, Challice, Pitcher, Tubb, Caster, Broom, Box, Bell, Thickbroom, Doll, Cole, Cushion, Irons,

Bedding, Cruse, Davenport (an example, by-the-by, of the case of a piece of furniture being called after a man, as well as *vice versa*), all of which are borne either by merchants, tradesmen, or professional men, occupying respectable positions in the various grades of London society.

Here is another set of names that is comical when viewed as a group, though scarcely striking when taken separately. It is a string of consonants and their varieties. No one would deem Lee anything but an euphonious title, till they saw it strung with its peers, Bee, Dee, Gee, Key, Mee, Sea, Tee, and Rea. We may ask, incidentally, by what mystery of pronunciation the last link in this chain of consonants should be pronounced Ra, when sea is sounded as *see*? The missing consonants are nearly made up in the following variations:—Ceeley, Heeley, Keeley, Neeley, Queley. Again, the string May, Ray, Day, Jay, Fay, Gay, Kay, Lay, Pay, Nay, Say, Quay, Way, must raise a smile. The set of names that have arisen out of the various offices of ecclesiastical establishments are also curious when seen as a whole, beginning, as they do, with Pope, and running through the various grades of Abbott, Bishop, Priest, Clerk, Prior, Frier, Nun, Monk, Vicar, Parson, Parsons, Parsonage, Parish, with Church, Chapel, Kirk, Temple, Templeman, Palmer, and Tabernacle in great profusion. The same may be said of those beginning with King, and running through the peerage, as in Prince, Duke, Earle, Lord, till they terminate in legions of Knights and Squires; as well as those representing the coinage, Farthing, Penny, Shilling, Dollar, Pound, Sterling, with the odd variation of Twopenny.

A great many of these names have significations that take them out of the groups in which we have momentarily placed them. It is a recognised fact in philology that all names have a meaning in the language in which they were originally conferred. If, therefore, our names have no meaning in our own tongue, we may look for it in another. This is clear to us in the matter of Christian names. We all know that our Christian names are translations from other tongues, principally Greek, Latin, and Hebrew, conveying in a compact form some hope, conviction, or expression of feeling in connexion with the circumstances of the birth or prospects of the little one first named by it. In the soft, sad word, Benoni, for instance, the dying Rachel bequeathed, in her new-born infant's name, a vivid remembrance of her sorrows. We have names founded on foreign bases that are identical in sound to some of our own familiar words having a different meaning to the foreign root. These are probably more numerous than commonly supposed, the correspondence in sound of many names with words giving them a naturalization to which they are not entitled. Some scholarship is, therefore, necessary in determining the exact meaning or nationality of a proper name.

The points of the compass form the nucleus of a large family of names. So do the seasons. The colours, too, are curious when viewed and contrasted as a whole. We have a great many Browns, Greys, and Greens; nearly as many Blacks and Whites; several Lily-whites; several Pinks; not so large a number of Duns and Hazels; some Scarlets and Rose; only a very few Lavenders and Ambers. The domestic ties have given rise to a still more comical group. We have Child, Young-husband, Husband, Bachelor, Strongchild, Nurse, Cook, Youngson, Steward, Widows, Lover, Winnen, Manlove, Houseman, Boy, Bratt, Ladd, Dadd, M' Bride, Maiden, Home; and gallant readers may add Darling, Angell, Love, Paradise, and Eden.

We cannot but note the great number of qualities which are used as surnames. Bigg, Little, High, Low, Strong, Sturdy, Swift, &c., are all very well, though often misnomers; but the descendants of those who assumed, or upon whom were conferred some examples of the class of name, cannot feel very pleased with them. What young lady can be contented who is known as Miss Giddy, or Miss Dry, Lean, Thin, Vile, Tite, Sharp, Cross, Smellie, Tame, Sly, Wild, or Vice? On the other hand, some of the fair possessors of such cognomens as Sweet, Pretty, Wise, Witty, Tidy, Smart, Neat, Bright, Quick, or Blythe, might be almost reconciled to single blessedness. One could not but feel sorry for a lady converted by the great lottery of life, matrimony, from Virtue to Vice, from Meek to Cutting, from Speedy to Slow, from Pleasant to Tough, from Frank to Reckless, or, for another instance, from Loving to Curt; and yet these are

but a few of the risks in store for her. Miss Single might become Mrs. Double; Miss Strange be developed into Mrs. Savage; the widow Good, in course of time, suffer a seachange into the widow Crabbe; or Miss Young be converted by a ceremony scarcely lasting more than a quarter of an hour into Mrs. Old. Some of these quality-names, so to speak, must almost entail a necessity for a certain line of conduct on the part of their owners. How could Mr. Moody be jolly, or Mr. Jolly be moody, with propriety? Or Mr. Grave be gay, or Mr. Gay be grave? How could Mr. Hard be easy, or Mr. Easy be Stiff? Why should Mr. Merry ever be sad, or Mr. Broad be otherwise than stout and short?

With so many misnomers the most warm-hearted and generous of beings may be known as Cunning; the ever remote policeman as Cumming; the feeblest invalid as Hale, Sturdy, Strong, Doughty; the most exorbitant of cabmen as Just; the most stiff-necked of individuals as Curling; the rosiest possessor of ringlets as Straight; the fairest of Lucretias as Miss Frail; or, but for the theatrical license with regard to names, a *première danseuse* as Miss Heavyweights. Past generations have certainly made a mull in our names, although they may have dubbed their contemporaries with their peculiarities with much pungency. They could scarcely, we will hope, have realized the discomfort of bearing such a name as Greedy, of growing up and dying, known as Greedy. We have among us, however, names that are far more unpleasant than this.

It is difficult not to laugh at the number of animals we are named after. There are few who do not own a Bull, or an Ox, or a Heifer, in their acquaintance. Cow is not so common, for there are but two householders of that name in London, and Calf is still more exceptional. Bullocks, however, are quite as plentiful, and Steer scarcely less so. The nearest approach to sheep, in London, is Sheepiey, if we do not count the numerous Muttons.* Lambs are to be told off by the score. Ram occurs, but is scarce. We have Foale, Colt, Cobb, Kid, Hart, Buck, Stag, Deer, Hare, Goat, Beaver, Roe, and Rabbit for familiar friends. Then we have Hogg, a *au naturel*, and as Bacon. Nor are we confined to domestic animals. Some of us are flatteringly called after wild beasts: Lion, Tiger, Panther, Badger, Fox, as well as Reynard, Wolfe, to wit.

Our feathered contemporaries furnish us with the fine titles of Peacock, Pheasant, Partridge, Cocks, Wren, Fowle, Pigeon, Parrot, Duck, Drake, Dove, Martin, Lark, Kite, Sparrow, Swan, Heron, Sparrow, Hawk, Gander, Gosling (and even giblets, but no goose, notwithstanding all that might be said to the contrary); Starling, Daws, Crow, Crane, Jay, Bat, Gull, Rook, Grouse, Widgeon, Eagle and Woodcock, with Egg and Brace. Some of these birds reappear in various combinations, but none so frequently as Cock, which appears in guise after guise, as in Cox, Cockburn, Wilcox, Hancock, Poccock, Groncock, Adcock, Noccock, Badcock, Boncock, Hitchcock, Allcock, Toccock, Alecock, Colcock, Cockerell, and almost incognito in Hensman. As if to confirm the theory that we cannot have wings without previously having fins, we find such names as Codd, Salmon, Whale, Seal, Pike, Herring, Roach, Chubb, Sole, Ling, Grayling, Codling, Mullet, Haddock, Sturgeon, Whiting, Cockle, Crabb, Leach, and Turtle preserved among us. Wasp, Bee, and Fly are more names associating us with creatures of the air; and Worms, Beetles, Bugg, and Emmett, to the things that crawl upon the earth.

Fruits furnish us with other names. A solution of the eccentricity of the laws of selection on this matter would be easy, if we could have pointed back to Medieval fruit and flower shows, and to the possibility of the *specialité* of a successful contributor sticking to him as an appellation all the days of his life. But we can, in truth, suggest no such origin to the titles Nutt, Raisin, Lemon, Orange, Plum, Peach, Cherry, Biffin, Pear, Pine, Gage, &c. We call our modern pages Buttons and Tickers, from the profusion of those articles of Birmingham manufacture on their attire in the first instance, and the agile and feline knack of springing upon the foot-board of moving vehicles, with extreme nicety of calculation as to distance in the second; but what peculiarity of costume or custom can account for calling man, woman, or child, Mustard, Salt, Pepper, Butter, Cheese, or Curry? We have a patriarchal precedent for Ham, but

whence Veal? Who was the humourist that first called a fellow creature Tripe? Was a joker, or a retaliating sufferer called Hogst or Gammon?

We take a few surnames from beverages: Beer, Porter, Goodale, Perry, Mead, Port, She and Claret.

Topographical and geographical features, as a great many names. Amongst these we call to mind Mountain, Lake, Hill, Way, Road, Ridgeway, Street, Field, Town, L, Townsend, Place, Moss, Moore, Stack, Banks, Miles, Vale, Brook, Beck, Acres, Al Dyke, Syke, Cragg, Cave, Woods, Forest, Dale, Mills, Waterfall, Pond, Middleditch, diebrook, Poole, Dean, Barn, Hedges, Bo Marsh. The elements and the weather sented further fields for the eccentric system naming in which our forefathers appeared indulged. Airey, for instance, is an honour name in scientific circles to-day. Eyre, fam to St. John's Wood's residents, might be a variation of the same name, if we did not know that it related to itinerant courts of justice from the old French word *erre*, a journey. There are plenty more names that are not explained away, as well as some that may be treated. Piling them up as they occur we note Snow, Raine, Hoare, Frost, Fogg, Eddy, Dust, Dew, Dewy, Hailstone, Day, De Light, Cloud, Tempest, Moon, Doubleday, Do fire, Mudd, and Mould.

Curious sequences may be made of some names, as in Pain, Death, Coffin, E Grave. Sets of precious stones may be looked out as in Alabaster, Agate, Amber, Diamond, &c. So may lists of apparel, as Coates, Clo Caps, Stocking, Cotton, Bonnet, Hood, Cal Silk. The old Puritanical names found lining among us that we should scarcely look out of the "Pilgrim's Progress" are appointed out. Among London householders streets thronged with pedestrians and noisy the roar and rattle of passing omnibuses cabs, are such quaint names as Makepeace, beloved, Goodchild, Strangeways, Strug, Such, Swadling, Goodwill, Goodspeed, Goodbody, Goodfellow, Goodbody, Goodchop, G day, Kiss, Comfort, Delight, Lightup, Honour, Justice, Wouldhave, Gladman, G head, Sneezum, Rich, Late, Last, School Gentry, and Gentle. Some sequences are ously incomplete, as in the last-mentioned there being no Simple out of Captain Marry novel, and no Fool in the whole metropolis.

The plan of naming a man after his wife has the disadvantage of applying only to generation and not to all. A man named Slat because he was a slater by trade, makes his carpenter, and the surname, is a misnomer. This custom is still rife with us although we do not go to the length of perpetuating name of a person's occupation in writing. board a steamboat we call the attendant the passengers "steward" from his office; i hotel we call him waiter; at college we call gyp and scout. The man who cleans our ur we inconsistently identify with those articles apparel; and the person who prepares our di we address as cook. In this way, in the day old, arose such names as Silversmith, Har smith, Goldsmith, Cutler, Barber, Draper, S Baker, Tayler, Potter, Constable, Carpenter, Glover, Cooper, Groom, Coleman, Fack Woodman, Forester, Parker, Page, Tanner, S man, Taverner, Weaver, Workman, B Bogler, Hind, Herd, Fisher, Waterman, Ste Stainer, Scrivener, Porter, Plater, Plum Piper, Chapman, Chandler, Chesswright, Sex Fuller, Chayler, Mason, Joiner, Thacker, Dr Shoesmith, Tiler, Mason, Joiner, Thacker, Dr Dyer, Gardener, Ashman, Farmer, But Bowman, Archer, Messenger, Carter, Bowyer.

The custom of calling a man after his wife place also gave rise to immediate misnomer. When Alexander de Cheswick removed to London and settled there, his name was a clue his identity, doubtless, but still a misnomer more especially for his sons. But, as a rule, plan would answer better for those who left than for those who remained there, for who would be too confusingly common. That was not, invariably, given to those who removed to other parts of the country, and so we strangers identified by the name of the place from which they came, we have evidence in cases of the landed proprietors whose surnames and lands correspond, as the Cresswells of Cresswell, the Crasters of Craster, the Rodds of Roddam, &c., in Northumberland.

If men have taken names from objects, but

* The London Directory gives no *butcher* of that name, but at Brighton there is one.

have also bestowed those borne by themselves upon many articles of their invention. The theodolite has been traced back to D. Corolium Theodolium, or, perhaps, some member of his family, all of whom were mathematicians. But these instances are too numerous to mention. A volume has, indeed, been compiled of words derived from proper names by Mr. Charnock, so large is our stock of them. Etymology has had a fascination for the human mind for centuries. It is a study that advances in intricacy as years roll by, and so, like wine, improves with age. Words that were in every-day use two thousand years ago are now the special possession of the scholar. Greek names that are high-sounding, and are called "high-flown" by us, were simple enough to those who first gave and owned them; such as "a fight of men" (Andromache), "far-famed" (Pericles), "possessing equal rights" (Isocrates), "strife" (Ptolemy). The first Caesar was merely "long-haired" in the eyes of his Roman name-givers.

THE SOCIAL SCIENCE CONGRESS IN BELFAST.

THE meeting of the Social Science Association at Belfast has gone off very successfully. Politics, Law, Crime, Education, and Trade, appear to have been the chief subjects treated of, wound up, however, with something about Health. The Ulster Hall was the place of the opening meeting, and Lord Dufferin, president of the council, delivered the inaugural address before a brilliant assembly. Mr. Hastings, who was active during the week, read a report from the Council.

In the Health Department, under the presidency of Dr. Lankester, coroner for Middlesex, the first special question for discussion was,— "What measures are necessary to secure efficiency and uniformity in the working of the sanitary laws throughout the kingdom?"

Mr. W. H. Michael read a paper on the subject. He assumed that a uniform system of health legislation should apply to all parts of England and Wales; that the system should be compulsory; that a central body, or Ministry of Public Health, should be established in all cases, to direct local action, and to act as a court of appeal; and that the whole of the kingdom should be divided into districts, each district to be under the control of one local authority, which should have attached to it a medical officer of health. The object of health legislation should comprise,—Prevention and removal of nuisances, regulation and supervision of dwelling-houses, the making and keeping in repair of roads and streets, water supply, public lighting, and, where necessary, private lighting; affecting public improvements and directing private lighting, establishment and supervision of markets, supervision of food, and providing baths and washhouses public recreation grounds, and burial grounds. The writer was of opinion that a general system was required, under which it would be impossible that defects should be unrecognised or no steps taken to provide a remedy. He contended that, in conserving public health, culpable negligence of sanitary precaution must be remedied by some supreme authority; and where it was for the good of an extended district that combined works should be undertaken, the central authority should have power to compel those districts so to be benefited to join in the work, and to share per rate the expense. In conclusion, the writer suggested that what was at present required in order to secure efficiency and uniformity in the working of the sanitary laws throughout the kingdom, was their consolidation and the adoption of means to enforce them.

Dr. Robert Elliot (Carlisle) next read a paper on Health. The problem was—how most readily to secure efficiency and uniformity in the working of the sanitary laws throughout the kingdom. After reviewing at some length the legislation which has taken place on the sanitary question, and the imperfect manner in which it had been carried out by local Boards, Dr. Elliot went on to observe that he was forced to the conclusion that the source and cause of the unsatisfactory and imperfect action, as compared with what it might and should have been, of our sanitary laws, must be looked for in the fact of our having had combined in one our municipal and our sanitary Boards. He asked either for an extended inquiry by a committee of this Association, or for a petition by the Council to her

Majesty's Government for an investigation into the composition and constitution, history and action, of local Boards of Health in all corporate towns since the adoption of the Public Health Act, with the object of ascertaining how many are interested, directly or indirectly, in continuing what the said Act anywhere prohibits, and how many (if any) members have been proceeded against by the local Board.

At a subsequent meeting the special question proposed in the Section was "In what form and to what extent is it desirable that the public should provide means for the recreation of the working classes?"

Mr. W. Hardwicke, M.D., medical officer of health for the parish of Paddington, replied in a paper which set out by observing that the want of means for recreation was one of the causes why the industrial classes resorted to artificial stimulants. The writer believed it to be a public duty to provide means of recreation. This duty was to be undertaken not in the spirit of the schoolmaster, but with the view to take advantage of a healthy instinct. For this purpose, baths, reading and news rooms, picture-galleries, museums, recreation-grounds, promenades, &c., were necessary. Before these could be properly used it was requisite that a change should be made in the opinions of the people with regard to Sunday.

Miss Barbara Corlett also read an interesting paper on the subject, in which she strongly advocated the establishment of places of recreation for the lower classes, especially for children.

Dr. McGee said the evils that had been pointed to as to the want of places of recreation suggested to them the necessity of looking to the source of them. He thought that Miss Corlett had very clearly drawn attention to where they should begin first—with the young. With the elder members of society, he feared, they would not be able to do much. He did not think that the blame of not providing amusements should be thrown upon the higher classes of society; for they should remember that a mechanics' institute had been established in Belfast, but through the apathy of the people it was allowed to fall into decay. Upon Monday mornings he found that there were seldom less than double the average number of drunken and disorderly cases brought before the magistrates. And why? Because there was no place of recreation for the lower classes to frequent on Sundays, when they were idle.

Mr. H. C. Knight, of Belfast, called attention to an effort being made to establish a "Workmen's Club" in Belfast.

The Rev. W. M'Ilwaine repudiated the idea that clergymen were opposed to lawful recreation on Sundays.

Dr. Martin, of England, was in favour of physical exercise and intellectual improvement, which, if provided, would give them men, in the true sense of the word, with healthy minds and healthy bodies. With regard to "Workmen's Clubs," he thought it was a great mistake to confine their operations to the providing of amusement. After a time, that generally failed; but, when education was combined, it was generally found a success.

Mr. Early, of Scotland, said that, in Glasgow, institutions such as they wished to establish had met with great success. Last winter there had been no less than 900 successful *soirées* held in Glasgow, and the result was that all the singing-houses, with the exception of two, had been superseded.

Dr. Martin proposed that it should be recommended to the council to consider how best provision could be made for providing places of amusement for children in large towns. Mr. Roper, of Manchester, seconded the motion; and the Chairman said he would convey their wishes to the council.

The congress have also had the fisheries of Ireland under consideration.

Mr. Blake, M.P., read a paper as to the best mode of promoting the extension of Irish fisheries. It stated that, according to the last returns, out of thirty-eight fishery districts, twenty-three were represented as declining, and six showing no signs of improvement. The fisheries of Ireland were, if properly worked, capable of affording support to 500,000 people. He maintained that in the first instance these fisheries should be placed under the management of a special department of three commissioners. A competent staff of inspectors should collect statistics, and afford information to fishermen as to the best mode of capture, and

give instructions in oyster culture, &c. Some present restrictions on fishing, especially on trawling in bays and estuaries, should be removed. Another most important requisite was that better harbours and piers than at present existed should be provided at suitable places. Loans should be granted to small fishing companies. The fishermen should have a little land to support them when not engaged in fishing. The erection of curing-houses would be desirable; and another most important desideratum was increased facilities of transit to market, which he hoped would be afforded by the Government purchasing Irish railways.

In the discussion which followed, the necessity of having a greater number of good harbours of refuge round Ireland was strongly insisted on.

We give notices under separate headings of what was said on some subjects with which we particularly concern ourselves.

Public Health.

Sir Jas. Y. Simpson, as president of the Health Section, said in his address that public health might be defined as public wealth. It was important to attend to it, because, in relation to disease, prevention was much better than cure. At the outset he referred in some detail to the great evils which arose from the overcrowding of dwellings in great cities and towns. Nature had everywhere provided a bountiful supply of that most essential requisite for healthy life, pure air. Man everywhere endeavoured to contract this supply, and to putrify and corrupt it by the internal arrangement of his dwellings; outside his dwellings also, in entire disregard of the laws of health, or the manner in which manure and sewage are allowed to collect in rural and other districts. He referred to the way in which foul matter was allowed to collect in the inferior class of Irish hovels, in consequence of pigs and other animals being allowed to occupy them with the inmates. Some years ago a doctor, visiting an Irish family located in the upper story of a large house in Edinburgh, found an immense pig, and asked a man in the room how it had been got up-stairs. "Faith, yer honour," the man replied, "she never was below." In the country districts, worst off in these respects, the people were better off than in the towns, and human life more prolonged in the former than in the latter. Cowbyres, and even stables for horses, ought to be banished out of every town. In Westminster there were 1,000 cow-houses vitiating the air required for 30,000 human beings. In Edinburgh, still, they had splendid house-fronts, and confined squares and spaces behind them, in which the air was poisoned by offensive exhalations. A splendid problem for modern science to solve, and statesmen to carry out was, What was to be done with the vast amount of their sewage matter? For it, as well as for everything else, there was a natural use; and he believed the time was coming when they should not toss so much of it into the sea as they did. The true use to make of it was to return it to the soil. The value for each human being was calculated at 10s. a year, which gave 70,000l. worth of sewage wasted every year in Belfast.

We have various kinds of hospitals—medical, surgical, obstetrical, &c. There are as yet, unfortunately, no means of making a general estimate of the comparative efficacy and cost of hospital and home treatment. Materials of the kind have been provided with respect to obstetrical hospitals. In the great Rotundo Hospital in Dublin, than which there was not a better in the world, the cost of each patient was about 30s. It was found that the cost of treating the same class at home was about 10s. Now, the pecuniary loss in hospital treatment was a matter of no small moment. The French Government issued a commission of inquiry, which collected statistics on this subject of nearly a million cases from all the hospitals of Russia, Prussia, Sweden, Denmark, Great Britain, Germany, Switzerland, and 900,000 cases of poor patients confined in their miserable hovels. Hospitals afforded by far the greatest advantage in respect of medical advice and care. Yet the conclusion afforded was most startling. The report stated that in hospitals there was one death in thirty, whilst of the same class at home only one in 212 died. It had been found the same all over Europe. With regard to surgical and medical hospitals, the collection of patients, and the exhalations arising from them and their wounds and diseases, into comparatively small spaces, could not but be pernicious. One patient labouring under a contagious disease often caused the spread of it through the

hospital. In the hospital with which he was connected, after a case of cancer had come in, it was often found necessary to stop operating for a week or ten days, because it was found that, after the arrival and partial treatment of such cases, all the other cuts and dressings and sores began to go wrong. The man treated in a surgical hospital was exposed to more chances of death than the soldier on the field of battle. The great object in hospitals was to increase the amount of pure air for each patient. Any one who went into an empty room which had been shut up for a few days would find it smelling musty in consequence of the decomposition of small material particles. Everything, in fact, was secondary to pure air. Mr. Hepworth Dixon, in an account of the settlement of the sect called Shakers at Mount Lebanon, in America, mentioned some interesting facts. The married women there lived as nuns, and the men as monks. They had no doctors among them, and took close scientific care of ventilation. Every building was provided with shafts, fans, flappers, and vents. Stoves were so delicately adjusted as to keep the temperature in winter within one degree of warmth. The elders, or queen of the community, told him that they had had only one case of fever during thirty-six years. The head elder said good food and sweet air were their only medicines, and said to him, "Is it not strange that you wise people of the world keep a set of men called doctors, who lie in wait for you, until, by some mistake of habit, you fall sick and then come in and poison you with drugs?" How were our hospitals to be improved? They should be given up or greatly altered. It was now an important point of dispute how many cubic feet of air were required by each individual per day. He had often thought that if their hospitals, from being crowded palaces, with a layer of sick in each flat, were changed into villages or cottages, with one, or, at most, two patients in each room, a great saving of human life would be effected. The village should be so constructed of iron or wood as to be movable, so that it could be placed where required; and in case of epidemics the accommodation could be easily increased. He would pass to another subject, namely, the dreadful mortality among children. Having given statistics of this mortality, he attributed it to the ignorance on the part of mothers and nurses of hygienic laws. One great requisite for infant children was pure air; but it was essential that the air should be warm. Cold air was most destructive. In Belgium, where children had to be brought out for baptism when only a fortnight old, one half more died in winter than in summer. Want of clothing of the neck and arms of the child was also mischievous. What a shame, too, to put children into cold baths—little creatures that should be always warm. In a Highland regiment in which that practice prevailed amongst the wives of the men—hardening it was called—enough of the children did not live to make pipers for the regiment. He then alluded to the mortality caused by the criminal starving by mothers of their illegitimate children. It was recorded of the founding hospitals which formerly existed in Ireland that from 1791 to 1796 the number of children admitted into them was 12,686, and that of these 135 walked alive out of the hospitals and the rest were carried out in the dead-cart. He then referred to Jenner's invaluable discovery of cow-pox. It saved 80,000 lives every year. The Government ought to be able to stamp out the small-pox as well as the cattle plague, but improved regulations were still needed for this. Jenner received 30,000l. Had he slain 100,000 men in battle he would probably have got much more, and have been made a duke. The French erected a statue to him at Boulogne. A few years ago one was erected, by subscription, in Trafalgar-square. It had been since removed, with the sanction of the House of Commons, to make room for one of those fighting Napiers.

Sanitary Condition of Belfast.

Dr. Samuel Browne, R.N., read a paper on "The Progress of Sanitary Inquiry in Belfast." After the close of the years 1847-48, when nearly 15,000 of this community were struck down by fever and dysentery, and 2,500 individuals hurried to untimely graves, the public began to be directed to the inquiry, whether there were not some ascertainable causes which had aided the progress and increased the fatality of the epidemic through which they had passed. A committee organised by the late Dr. Malcolm drew up a report on the sanitary condition of

Belfast, and afterwards an influential committee was appointed for the purpose of carrying out its recommendations. This was the rise of the sanitary reform in this town. It gives me (he said) great satisfaction to be able to inform the Congress that the town council, having obtained the requisite legal enactment, have purchased and set apart a large plot of most eligible ground, about forty-three acres, for the purpose of safe and decent sepulture, and are now pushing on the inclosure and laying out the ground with all available speed. In the meantime, the town council have taken the proper steps preliminary to closing all the graveyards within the borough against what may be termed free interments, and, at the same time, of limiting the burials in proprietary grounds by certain fixed salutary rules and regulations. The next important sanitary work to which I call attention is the introduction by the Belfast Water Commissioners of an abundant supply of water. This, I understand, will be on the continuous and high-pressure principle, and is calculated, I believe, to give for all purposes at the rate of about twenty gallons a-day for every inhabitant; besides which, the commissioners have obtained power, by their Act of 1866, to compel the owners of all tenements to introduce a proper water supply. And when it is remembered that there are still 4,227 habitations without it, the action recently taken by the commissioners, and their stated determination to enforce their powers, cannot be too highly commended. The borough, including Ballymacarrett, is divided into seven districts, with one medical attendant for each. There are also three dispensing stations, the two in Belfast having each a qualified apothecary attached. He then gave some suggestions relative to a system of sewerage such as would prevent the present evil effect resulting from floods, and also recommended paving some of the principal thoroughfares instead of macadamising.

A paper on the same subject by Mr. James Kennedy was read, in the course of which he stated:—The Registrar-General reported that last year the death-rate of Belfast exceeded the death-rate of any town in all Ireland. The ratio is reported thus:—Belfast, 1 person out of 32.2 persons; Armagh, 1 out of 56.3; Antrim, 1 out of 64.3; Ballymena, 1 out of 73.8; Banbridge, 1 out of 64.8; Downpatrick, 1 out of 56; Lisburn, 1 out of 54.3; Lurgan, 1 out of 62.5; Dublin North, 1 out of 36.2; Dublin South, 1 out of 35.8; Cork, 1 out of 46.5; and Dundalk 1 out of 59.2 of the population. The ratio of all Ireland is 1 in 62; and thus it is that proportionately twice as many die in Belfast as in Antrim, Ballymena, and Banbridge; 50 per cent. more than in Cork; and nearly twice as many as in all Ireland. Our people have been in the enjoyment of good wages, and of the means that usually promote health and longevity, and yet our death-rate exceeds that of Dublin itself, wherein there is much poverty, and which last year was severely visited by cholera and epidemic. The writer then proceeded to trace the causes of this calamitous state of things:—1. Out of our 937 streets, between 400 and 500 are unpaved, unsewered, and, consequently, uncleansed. These streets are receptacles for stagnant water, and for all manner of filth and dirt. 2. In Belfast we have had since 1845 powers to allocate 1,500l. a-year to the widening and sweeping away of our very numerous old lanes and alleys, that are the hotbeds of drunkenness, immorality, disease, and death. During this time, however, our two Boards have spent 100,000l. on Acts of Parliament and in litigation, all of which outlay yields no return; but not one shilling has been expended in carrying out the benevolent designs of the Legislature, and which, probably, would have eventuated in little or no pecuniary loss to the town: the legitimate duty was overlooked; the others were observed. 3. For the erection of baths and wash-houses the necessary funds have been subscribed long since, and the money still lies unused in the hands of the treasurer. The importance of such establishments in a town like Belfast was universally admitted, and the town council were not ignorant on the subject, as a report which he had before him very clearly showed. 4. Our old streets are hollow in the centre, and badly formed, and are no more than impounding reservoirs for water, mud, and filth. This, he observed, was not the fault of the surveyor, for the funds available for the necessary work were devoted to another purpose. 5. In Belfast we have been obliged to drink the water from the River Lagan, which contains in it the

sewage of many towns, villages, and numerous establishments for dyeing, spinning, and bleaching.

Dr. Lankester said a few words on the paper which had been read. He considered that the most important point with regard to Belfast was a correct death-rate. They found, when discussing the matter, that the death-rate did not show the true state of affairs. They found that the registration of deaths by the Registrar-General was defective not only in Belfast but throughout Ireland, and that thousands of people died whose deaths were never registered. If it was true that there was a death-rate of thirty in the thousand in Belfast the time had come for immediate Government interference. In a healthy community, where people were healthy, and were not dying or calling doctors, money was saved. If they looked at it from a money point of view, the prevention of disease and death ought to induce Corporations to spend money. They had a moral and better population, when they had a healthy population, than when they had a sick and dying population. He appealed to the clergy to do something in the matter, as there were a great many things to be done in Belfast. With regard to the supply of water, he was glad that something was about to be done to provide a better supply. The Lagan water was not fit to drink, and they were constantly in peril of typhoid fever, which, in many instances, had been brought on by drinking bad water. He recollected being in Belfast fifteen years ago, at a meeting of the British Association, and he then passed by that Blackstaff ditch, and he was shocked to see it, but he found that that nuisance still existed. The Sanitary Act was one of terrible power; and, if the Corporation wished, they could compel the owner of every house in Belfast to have it properly cleansed. If the Corporation refused to do that, then they had the power under the 49th section of the Act to appeal to the Secretary of State, who would send down a Commission of Inquiry, who would compel the Town Council to remove the nuisances.

Rev. Hugh Hanna said he wished to call the attention of the Council to over-crowding and sub-letting of houses; and he regretted that the Sanitary Act of 1866 could not deal effectually with this great cause of complaint. Benevolence and wealth were absolutely essential to meet the great evils which existed.

Mr. John Hancock, J.P., Lurgan, said that under the Act of 1866 most extensive powers had been given to all corporate bodies in the United Kingdom. A considerable amount of sanitary reform might be carried out under that Act; but there were still some defects in the Act, which, however, might be remedied. There was no doubt that if the Town Council did not carry out the sanitary operations under the Act, the inhabitants had the power to apply to the Lord Lieutenant to compel the Council to do it. He thought that course would not be necessary in Belfast, as a great deal had lately been done by the Town Council, and they had lately taken a most important step,—that of having proper back-yards constructed in the rear of houses.

The President said he wished to correct the statement made by Mr. Mowatt that Loch Katrine had done no good for Glasgow. The fact was that the death-rate now was only twenty-two in the 1,000, while it was thirty-three in the 1,000 in Belfast. The rate of mortality in Glasgow was much lower than before the water of Loch Katrine was introduced into that town.

Dr. Browne then replied. He said that they had now a population of 147,400, with a death-rate of about 24.9. These numbers had been taken by himself and by the inspectors of the Council, who had taken great care in preparing them. His calculations were made up to the 30th June, and he had got the death-rate from the registrar at the workhouse, so that they had not so large a death-rate as had been propounded in the Section that day. He believed that the greatest necessity existed for their putting those sanitary laws into force at once. Whenever they increased a water supply and improved the sewage, there could be no doubt that there would be a decreased mortality. He believed that in a large town like Belfast they were obliged to have hospitals, but, if they had the means, they might have cottage hospitals, as had been suggested by the President in the morning.

The President said,—I am sure you will agree with me when I offer your thanks to Dr. Browne, through me, for his excellent paper. According to his observations, you lose here every year

three or four people in the 1,000 more than they do in either Bristol or Dublin. If you lose four in the 1,000 out of a population of 150,000, you lose 600 people every year that should not be lost. If the Town Council or any public body allow this mortality by any act of omission, it amounts almost to an act of commission. You would be horrified if the Town Council should order 600 inhabitants to go to a jail or place of execution, and be hung up there; but if they allow this mortality by any act of omission on their part, it comes to much the same.

Mr. Hancock then moved the following resolution:—"That the Council be respectfully requested to renew its exertion to obtain a complete and uniform sanitary code for the United Kingdom of Great Britain and Ireland."

Dr. Macadam seconded the resolution, which was passed unanimously.

Dr. Macadam afterwards read an interesting paper on "Town and Domestic Water Supply."

The reading of the paper led to a brief discussion, and the following resolution was come to:—"The Health Department resolved to recommend to the committee of the Association the desirability of memorialising Government to take into consideration the present mode of taking evidence in water and other health Bills, and to suggest that the evidence in such Bills be taken by the referees on the spot where the sanitary measures are required."

Trade Unions.

In another Section Mr. H. Rathbone read a paper on "The Moral to be drawn from Trade Outrages at Sheffield, and the Limits of Personal Freedom." Our great difficulty in inquiring into questions of social science is the liability to be under to mistake facts that are exceptional for facts that are typical. In the case of trade societies there are peculiar difficulties, because, through the ignorance of the habits and customs of certain trades, inquirers are apt to attribute to trade societies actions which are a natural expression of the daily life of that set of workmen. Now, in inquiring into the moral to be learned from the Sheffield trade outrages, there is yet another error to be avoided, and that is the assumption, that because trade societies must sometimes be tempted to do unjust actions, they must necessarily yield to that temptation. Every man who goes into business is himself into the temptation of over-reaching; but it would be hard to condemn business together on this account. The question we ought to ask ourselves is, Are these outrages natural—I do not say necessary—outcome of trade-unionism, or are they rather to be attributed to the exceptional character of Sheffield workmen and of Sheffield employers? On glancing at the outrages which took place prior to the repeal of the Combination Law, and showing they were more frequent than at present, he went on to say—think a close examination of the evidence available will prove that the practice of committing outrages is on the decline; and though it is not extinct, unhappily in other places than Sheffield, still the improvement in this respect is great and undeniable. Time will not permit me fully to illustrate the position that, if you effectively to influence any class, whether striking men or not, you must address yourself to the leaders in whom they have confidence. Therefore, when worthy members of Parliament search of facts relate interesting conversations with intelligent bricklayers, who have been engaged upon their own houses, and who confidentially complain of the tyranny of their unions, a question naturally arises, Why do not these men form a union of their own if they really want what they say? The real remedy against the tyranny of a union lies, I venture to think, in the formation of a free labour union, as has been done at Staveley; for, in my opinion, as in an organized army will have the best of it against a disorganized mob of two or three times its size. Referring to the building trade and the restrictions imposed by the workers, he said, no wise man will employ his capital in a trade, because whenever, through these qualities, he secured a profitable contract, his workmen, taking advantage of the special penalties which he is bound to complete the work by a certain time, dishonestly grab all the results of their work, but of his foresight, ability, and command of capital. I do not say this is a state of things now, but that, unless great steps are taken on the part of the building unions, it will rapidly become so. The probabilities are that in the next few years the present power of the

unions of the building trades will be broken up, and then, but not till then, may we hope to solve the mixed question of providing decent habitations for our working men. For philanthropists can do very little until they can prove that to build decent working-men's dwellings will pay a fair return for capital invested. I have taken the building trades as an example, because the mischief of which it is capable is not so easily demonstrated as in other cases. The amalgamated engineers is another most powerful union, with an income, if I recollect right, of some 30,000*l.* a year, and in these trades I have never heard of outrages; but, on the other hand, it is a fact which ought to open the eyes of our engineers that we are importing instead of exporting locomotive engines, and that the Paris Exhibition has demonstrated that in many trades where we considered ourselves quite beyond the reach of competition we are equalled, and in some cases surpassed, by the Continent. To sum up, the moral, I think, to be derived from the trades union inquiry, seems to me to be that—First, when trade outrages occur in a trade, the union should be held responsible as the authorized expression of the public feeling of the trade, and that such outrages would not occur if the public feeling of a trade were not bad. Secondly, the great object of all should be to clear away all the sentimental cobwebs which obscure the question. Labour does not differ from any other commodity, except that it is perishable, and in that resembles fish or any other perishable commodity. As man, selling his day's work, must get as much for it as he can, just as a fisherman selling his fish, which is his night's work, must get as much as he can; the more fish the fisherman has the more he will get for them; and the more work the man does the more eventually he will get for it. It may be worth while for a certain body of fishermen to agree to stand out for a certain price, and let the whole take of two or three nights go bad rather than take a lower price; but, as a matter of fact, they do not seem to find that plan answer. Let it now be understood that labour is only a commodity; that employer and employed stand in relation to each other merely as buyer and seller of that commodity; and that the laws of political economy, when rightly understood, are as much the laws of Providence as the laws of gravitation, and I doubt not the good sense of the leaders of our working classes will step in to prevent the danger that now threatens us of sinking in the scale of nations as an industrial people.

Mr. David Smith next read a paper on "Trade Societies," in which he held that lock-outs and strikes were evils deplorable in their consequences to the surrounding community, bringing suffering on those not directly connected with the matter under dispute, and, if indulged in, they ought to be made criminal, and the trade society ordering such ought to be made amenable, and, if possible, made to indemnify the sufferers. In the second place, he considered that trade societies ought to be incorporated, properly legalised, and a constitution given them by Act of Parliament, and simply registered under it as a trade society, in the same way as some of them were registered as friendly societies at the present time. Disputes between employers and their workmen should be referred to arbitration—the award of the arbitrators to be final and binding, and no appeal to be allowed from their decision.

A paper contributed by Mr. Tito Pagliardini, headed "How to put an End to Strikes," was read. The writer stated that the disastrous extent to which strikes and lock-outs had been and were still being carried, inflicting equal injury on masters and workmen, and on the public, proved that the time had come when it behoved all thinking and practical men to reconsider the mutual relations and duties of capital and labour. Those long and bitter contests, while causing a lamentable stagnation in public and private works, and great misery to the working classes, generally ended like a protracted and disastrous campaign, leaving the field of battle strewn to no purpose with the victims of a useless and ruthless struggle. As long as the workman had no direct interest in the success of the enterprise he was engaged in, he naturally looked upon his employer as a milch cow whom he must turn to the best account; and whilst his employer's aim was to extract from him the maximum of work for a minimum of pay, the workman's aim was to lengthen out his work, that it might last longer, and to strike for an increase of wages, or for its equivalent, a limitation of time. The legality of

strikes afforded no room for doubt; and since the strong arm of the law could only interfere when the tyranny of the unions assumed the form of open intimidation or violence, it was decidedly high time to seek for some equitable adjustment of these seemingly opposed interests. The writer stated that the regenerating principle he should wish to see introduced into the field of production was that of the association of masters, managers, and men (capital, talent, and labour), so that each might participate in a fair degree in the advantages of any work which was the result of their combined concurrence.

The Children of the Poor.

Mr. Allworthy read a paper on "The Neglected Children of the Poor, and what we owe to them." He said,—The most casual observer must have been struck with the vast number of those who experienced misery untold as their lot. The daily papers frequently contain instances of widespread demoralisation in the treatment of the young, but this was nothing to the crimes daily committed against them, as the majority of outrages was unrevealed. The natural result of parents' neglect was to enchain children to all evil, but, beyond this, thousands of parents train up their children to the most vicious courses, which was the most prolific source of crime, disease, and death. The State should devise laws for preventing, as well as for punishing, crime, and not act, as it hitherto has acted, on the principle of non-intervention. I would propose that inspectors should be appointed to look after the young, and compel parents to show cause, and in cases of cruel treatment to punish the offenders by law. The causes of vice and brutality would thus be made known, besides conferring a great boon upon "the little ones." The education of children is, to a certain degree, provided for by the Act of 1862, and the Factory Acts only allow them to be employed for certain hours. Daily we interfere with individuals and property when the general good is concerned, and, therefore, interference in this matter is not infringing on the liberty of the subject. The expense of this supervision would be very little compared with the gain, and surely no one will deny that a Government should protect the lives of its subjects.

Mr. C. Wolfe Shaw, one of the Honorary Secretaries of the Malone Protestant Reformatory, read a paper on the same subject, having reference principally to the Malone institution, from which we take the following extracts:—It appears that juvenile crime has been generally declining since the year 1860, which was the time when Irish reformatory schools were first established, and this was urged as a strong argument in favour of the reformatory system. The commitments of juveniles to the County Antrim Jail under sixteen years of age, which amounted in 1859 to 151, was only sixty-seven in the year 1865. The paper noticed the fact that so few magistrates throughout the different counties took advantage of the Reformatory Act, as the inspector-general of prisons makes special mention of this in his different reports, on finding so many children under detention in the different prisons he inspected, who, he said, should have been sent to reformatory institutions, instead of allowing them to return to their criminal pursuits. The report of the working of the Malone Protestant Reformatory was most encouraging. It stated that out of thirty-eight discharged on completion of sentence, only one had fallen back into crime. Those who had emigrated and joined the army kept up a continued correspondence with the officials there, and in several cases sent home money to pay the expenses of other boys to enable them to join them in their new homes.

Technical Instruction.

The Rev. Canon Norris treated of "Technical Instruction." He understood by the term, an education to enable a workman to use his mind as well as his hand and eye over his work. In a thousand ways England was wasting her resources for want of intelligence in their employment. What we wanted was to teach our youth those branches of applied science most nearly related to their future craft. The kind of instruction needed to make an intelligent artisan touched the elementary school on one side, and the workshop on the other. It should not require any preparation beyond what an average village school supplies. It did not imply the learning or practice of an art. The teaching required was something between the science teaching of Universities and that of the commercial teachers. In applied science, we are

defective. There is a broad gulf separating the men of theory from the men of practice. Its subject-matter embraces mensuration, perspective, commercial arithmetic, engineering, &c. For the teaching of these subjects, good manuals were wanted; and to educate the teachers, Normal Colleges, like that of Clancy, in France, were required. Mr. Norris described the steps taken in this country and in Belgium to promote technical instruction. The complete organisation which France is giving to this kind of instruction was accomplished in Prussia eleven years ago. The machinery existing in this country included the School of Mines, the School of Naval Architecture, the Royal College of Chemistry, the College of Science in Dublin, and the Glanavin Agricultural Training College, with the staff of South Kensington as a superior Council of Reference. There are now 620 science teachers, and 200 science schools, with 8,000 pupils. The most successful of these were the Hull Navigation School, the Bristol Diocesan Trade School, and the Manchester Mechanics' Institute. The schools at Oldham, Newtonards, Oldcastle, Glasgow, Bolton Mechanics' Institute, Plymouth Science School, and the Stroud Institution were mentioned favourably. The schools at Bristol, Hull, Oldham, and Plymouth were specifically instituted for the teaching of science. Mr. Norris did not see why Town Councils should not be empowered to levy a rate for the establishment of schools of applied science in all large towns, especially the centres of manufacturing industry.

PARLIAMENT SQUARE.

"PARLIAMENT-SQUARE!—Parliament-square!—where is it?"

"In my mind's eye, Horatio!"

We have been street-hunting,—wandering about from Pall-mall to Piccadilly, from Piccadilly to Parliament, by palace, prison, and purlieu, to discover the *locus in quo* of "Parliament-square." Directories of posts, places, and "peoples" have been explored with keen eyes, but "Parliament-square" has not as yet reached our note-book. "London Ancient and London Modern," "The Right Side," "As it is To-day," "To Fulham," "The Town," "Haunted London," "Up and Down the London Streets," and all their piracies and plagiarisms have been examined and cross-examined, but to no purpose. All the "squares," "crescents," and "circuses" have been asked the question, and the unanimous answer has been,—“Never heard of the party before. Must be some new-comer from the country, I suppose. At any rate, we don't know her hereabouts.” We went to Covent-garden, as the oldest member of the family, and found the good lady in a very testy mood. In answer to our kind inquiry she said,—

"My friend, I have not been a square for many years. When that promising young Inigo piazzade me, he meant me for an Italian model, but that other lordly man of the world, he of the *che sara sara* goat, covered me with fruit and potato sheds, and made me a hideous thing, misnamed 'a market,' instead of being a pretty little *piazza* for you. Those who come to see me in my onion and cabbage capacity, insult me with the laughter of contempt, and those who have to use my premises, overload me with their coarse, boorish anathemas, because my circumstances are so straitened! I am utterly unable to bear the work that he lays upon me. Oh, that it would please the providence of the mighty metropolitan Board to put me out of my misery! Go to Lincoln's-inn-fields; she is my next younger sister—her lot is a heaven-on-earth compared with mine—the stranger you are seeking may have visited her." And the poor old lady disappeared beneath the deep shadowy portico of St. Paul's Church, and continued to sob and moan until we were out of hearing.

On speaking to Lincoln's-inn-fields, she repeated the name we were inquiring for, and pointed to "that big house at the corner. It has long been jointly occupied by law and gospel, and a prime minister once lived there; they are sure to know something about the square of Parliament as well as the—," and she laid her fore-fingers at right angles upon one another, and nodded her head towards the "big house." As we crossed the road she called out, laughingly,—“Try Whetstone Park; perhaps they have 'squared' its dimensions to something like what you are looking for.” The

"big house at the corner" we found to be occupied by a highly-positioned legal firm, and the Society for Promoting Christian Knowledge; whilst "Whetstone Park" was a dirty mews, and cab stables, running from one turnstile to another.

Thus we spent our time, receiving more or less caustic or impertinent answers, and continued our course on a west-south-west sailing line, from the eastern parts of Bloomsbury until we reached the limits of Tyburnia, when we fell off a point to the head of the Serpentine, and passed down through Belgravia to the Broad Sanctuary, where we rested ourselves. We surveyed the prospect for some time, until at length we were aroused by a rather heavy rap on the shoulder. Upon looking round, we were somewhat astonished to see the smoke-begrimed statue of Canning nod to us; and the brazen image of the great statesman began to speak.

"I knew you," it said: "as usual, on one of your midnight rambles trying to spy out the nakedness of the land."

"Hillo, old friend; why, what in the name of wonder are you doing here? I thought that I missed you from the original place."

"Oh, I'm all right; it does not much matter where I am, now. At any rate, I have a much better prospect in front of me than an improvised cab-yard, with all its dirt and smell. Listen, there go the dozen. How splendidly Big Ben gives tongue to-night. But what are you doing out so late?"

"Well, I'm trying to find where 'Parliament-square' is."

"Parliament - square! Parliament - square! Well, that is as good a joke as I've heard for some time."

"Well, where is it?"

"Why, it was a joke of that funny fellow, Lord John Manners. You can see where I used to stand; step out on one side a little."

"Oh, yes, I see it right enough."

"Well, when Manners shifted me he had a road out through the enclosure—and a nice bungle it is;—and, after dinner and trimmings one night, they were asking some questions about me, I think, when he spoke of that wretched lark's-cage patch as 'Parliament-square!'"

"Oh, you're making fun of me?"

"Not a bit. And now shall I tell you how to make a real, first-class Parliament-square; one that shall be worthy of the name and the country?"

"Let us hear."

"Begin, then, beside the new Foreign Office, and draw a line from the Park front along Storey's-gate, down Princes-street, by the end of the Westminster Palace Hotel. Then continue along the line of Dean-street until you reach Peter-street, then turn to the east to Wood-street, and down to the junction of Abingdon-street and Millbank-street."

"My goodness! that would be a square."

"Yes; but I have not done yet. I would cross over from the India Office to Richmond-terrace, down to the embankment line, and back again to Westminster Bridge. I would clear every bit of that ground except Westminster Abbey. Such a change would remove the block from the India Office to Great George-street, Great George-street itself, the Stationary Office, Westminster Hospital, the Westminster Guildhall and Sessions House, St. Margaret's Church, Westminster School,* Dean's Yard, and other lesser places. Richmond-terrace would go on the east side of the plan, Parliament-street, Cannon-row, the Board of Control, and minor buildings. As St. Thomas's Hospital is coming so close to that locality, I would remove Tothill-fields prison into the suburban commons of Wimbledon, build middle-class houses there, put Westminster Hospital on the play-ground of Vincent-square, and send the Westminster School on an estate of its own somewhere up the river, where boating, football, and cricketing would come more to them by nature than ever it can now. I know the sentimental cry of '*genius loci*,' but after what I saw in my old quarters, and a railway coming under the clock-tower, and within sound of the Speaker's bell, you must not let the '*genius loci*,' nor any other genius, in these days, stand in the way of real improvements. I would, furthermore, lay hold of all the houses from Storey's-gate to the barracks, pull them down, and rebuild them with something of architectural character be-

longing to them. Around this great square I would place such buildings belonging to Governmental departments as were not already provided for. A new Stationary-office, with something better than a stable-yard front elevation to sadden the eye of the stranger, might arise. I would also ask all our leading architects to give us, each of them, a building that would best illustrate their own particular speciality, and I would then have such a square, that for grandeur, novelty, and originality the modern world has never yet seen. I would make it the Mecca of architecture, and I would have it so contrived that there would be space enough for statues like me for ages to come.

Then what would you have on your "finest site in Europe," as my friend Peel used to call it? Why, you would stand on the steps of the National Gallery, and, looking down the broad vista of Whitehall, the sight would expand upon a plain of architecture that would be making monumental history for our country and our race. And yet, we need not forget the poor. I declare that we have in old, tumble-down, rickety London more wasted space than would serve to house comfortably and cleanly three times the present number of people. Sometimes I step down from this pedestal, when everything is quiet, on a hard-freezing winter night, and stroll through the back slums of Westminster, and I see houses there that seem to me to be an absolute disgrace to any Government or people, and an allowance of the local self-government, and do-what-you-like-with-your-own-principle, bordering on the maniacal. Look at the Millbank Penitentiary. Sixteen acres of ground devoted to the lodgment of the very human poison of society,—ground, too, that lies between what you now call South Belgravia and Parliament—even under the very shadow of the great Victoria tower.

You may say, "How about the expense?" My answer is that, a country with an income of 72,000,000*l.* a year, the colonizer of the world, the very soul of personal and political freedom, and the nursing mother of nations, ought to be able to afford an open space in accordance with the greatness and dignity of her institutions, from which could be viewed that majestic pile under whose roof are made her powerful and far-reaching laws. Such a place can only be satisfactory on the scale of magnitude sketched here. Although it may be best for every nation to pay as it goes on, still there must be exceptional cases in all matters. I know something of the Chancellor of the Exchequer,—Minister of Finance would be a far better name,—and I do think that, if we can afford to spend 100,000,000*l.* in going to war about a neighbour's quarrel, we ought to be able to spend something more than we do on ourselves. You can mention this matter at "the Institute," and tell them, from me, that in this way they may have a genuine, complete, and English-worthy PARLIAMENT-SQUARE!

THE BRITISH ASSOCIATION FOR SCIENCE.*

PROCEEDING with our report of the more interesting proceedings of Section F, "Economic Science and Statistics," we have to tell that Sir John Bowring read a paper on "Productive Labour in Prisons, as associated with the Reformation of Criminals," which was an able argument in favour of effort towards the reformation of criminals, through putting them to remunerative labour,—a trade being taught them if necessary. It was followed by a paper by Mr. James Oldham, C.E., of Hull, on "The Utilization or more profitable Employment of Male Convicts." This paper began by speaking of the regret felt that the grand old rivers of our country are not in a better state of efficiency, and that, in wet seasons, and during heavy rains, they overflow their banks, inundate our beautiful valleys, and cause great destruction to property and even to life; and Mr. Oldham suggested that about fifty or one hundred convicts should be placed, under a proper guard, on one of the rivers—say, for instance, the Trent—that they should be put on board one or more vessels, fitted for their accommodation and the service required, having suitable steam, tread-wheel, or hand dredgers, barrows, planks, and all other necessary implements and tools for their use, with competent overseers to direct

* We are not to be understood as going all the way with our "brazen" suggester.

* See pp. 676, 691, 708, ante.

the work of dredging and clearing the beds and channels. The rivers, he said, would be vastly improved as to their draining powers in clearing the country of surplus surface-water, and to a great extent lessening the danger of flooding the valleys, their navigable qualities would be increased; and the matter excavated would go partly to strengthen and improve their banks where required, and partly to fill and lead up low-lying ground, and enrich poor land. On many portions of the rivers the banks could be straightened, and the width of the stream advantageously contracted, and so a considerable extent of land would be reclaimed, thereby adding wealth and general improvement to many districts.

The next point of importance was the safe keeping of the convicts. In this, Mr. Oldham argued, the army might be employed, and advantageously for the soldiers themselves.

Admiral Ommanney had been inspector of the convicts at Gibraltar, where 800 convicts had made a break-water. In Bermuda, convicts had erected works and dockyards, and made a very substantial naval port; but he was of opinion that departure from a system of employing convicts on Imperial works, only, would be very injudicious, and might interfere with private enterprise.

Captain Verney, and Mr. T. Thornton, also spoke. The latter, in addressing himself to the point of Sir John Bowring's paper, said it appeared to him that the unremunerative character of prison labour, as at present, might be attributed to two causes, one of which had been alluded to by Sir John Bowring. The first of these was the state of our present buildings, which are not constructed so as to admit of many trades being carried on; and the second was the want of some common trade to which all those wanderers on the streets, who constitute to a large extent the present population, might be put. A carefully compiled paper was read by Professor Leone Levi, "On the Condition and Progress of Scotland in relation to England and Ireland in Population, Education, Wealth, Taxation, Crime, Consumption of Spirits, Savings, Banks, &c." We regret that we have not space for even a statement of the whole of the "conclusions." Two of them were:—

"1st. That, as regards population, Scotland and Ireland are increasing at a much slower rate than England, the effect rather of a lower rate of marriage and an increase of emigration than a larger mortality."

"2nd. That, in education, Scotland stands in a higher position than England and Ireland."

Others were to the effect that "property is increasing faster in Scotland than in England and Ireland;" that "as regards pauperism, the number of persons receiving public relief in Scotland is less in proportion than in England, though much in excess of Ireland;" that the number of persons committed for trial for indictable offences in Scotland is greater in proportion than in England and Ireland; and, though he shows less propensity to offences against property, she stands in an unfavourable position as to offences against the person; that a common assumption that Scotland consumes more spirits than England is unfounded, the quantity of spirit in all spirituous beverages consumed being taken into account, though there is diminished consumption of gin and whisky, which is more than counterbalanced by the greater quantity of spirit consumed in the other beverages, principally ale and wine; and that in so far as the savings of the working classes are represented in the capital deposited in the savings banks, the amount per head in Scotland was £s. 5d., in England 37s. 5d., and in Ireland £s. 5d. per head.*

Colonel Sykes, M.P., acknowledging that the paper was a valuable one, would have all statements of the subjects on hand to compare the facts with the figures, if they would avoid many fallacies which commonly arose from statistics.

Mr. Moncrieff, M.P., said the striking diminution in ordinary crime commenced with the reign of James V., but the first impression in the detection of thefts, &c., was perhaps immediately after the discovery of the Australian gold fields, which must have drained off a large portion of

the idle population. Juvenile crime had wonderfully decreased, which was mainly to be traced to the action of reformatories.

Prof. the Rev. J. E. T. Rogers read a paper on "The Funds available for Developing the Machinery of Education," which produced one of the most important discussions in the Section.

Sir John Bowring said that the bearing and importance of the paper could scarcely be over-estimated. This question of education had in these days become the question to which the future of this great country must look. Professor Rogers had pointed out the cause of the abuses and inefficiencies of our public institutions, and the means of reforming them. The cause of these irregularities and abuses was pretty obvious, when, looking into endowments, they considered the ignorance, the prejudices, the tendencies of the age from which they emanated; for, unfortunately, these endowments naturally represented not our own forwardness but the backwardness of our ancestors. This was not the only mischief: they were turned to fearful political account. He was himself connected with a city in which it was impossible for the child of a freeman not belonging to a political party to obtain the chance of anything like a fair education. Most of these establishments are monkish in their conception, and bring down with them the ecclesiastical organization of the Middle Ages. What they profess to teach they teach very badly, and they do not teach at all that which is the most important and useful to learn. They constantly heard Latin and Greek spoken of as instruments of great value. Now, he ventured to say that the mode in which these languages were taught was absurd, and so little reducible to any useful account that one could scarcely find a boy who could think and write in either of those languages. Within the last few weeks he had occasion to speak to boys who had carried off Latin prizes, and he had desired that they would return thanks in Latin to the donors. It turned out, however, that none of them had any idea of Latin except in the translation of English words into Latin form. The very sweepers of the streets of Rome would have shrugged their shoulders and smiled with contempt at such attempts at the language as fell from the lips of these boys. Students had a very imperfect acquaintance with a foreign language, living or dead, until they could think in that language—until thoughts could present themselves in the peculiar forms and idioms of that language. In the neighbourhood of the Danube, the natives spoke a language very much resembling Latin, and when foreigners came and could not speak to them in other languages they generally resorted to Latin, and, in such circumstances, he had seen learned Professors, who had devoted their lives to the study of Latin, prove that it was a "dead" language, in respect that they could impart to it no living vitality, not being able, in that language, to carry on a flowing conversation with any ease or accuracy. Whatever there might be of eloquence and elegance in the ancient tongues, out of the scale of mathematics and ethics, their ornamental phraseology could represent very little. They could not go to the past for knowledge. If they wanted to find a race wholly occupied in the past, let them go to China, where they found everybody inquiring what their forefathers were, but nobody asking what their own children were to be. Their great duty was not to forget the past, not to suppose the past could give them no good, but to take out of the past what was true and sound and good, and to fling out the masses of ignorance on many points associated with by-gone centuries. Whenever any scheme such as that of his excellent friend, Professor Rogers, was brought to bear, the country would be almost revolutionized; there would be that gradual progress towards prosperity, that gradual development of the national resources, associated with the great principles which would not only unite, as he proposed to unite, the different portions of the kingdom with one another, but would associate them with the whole world. There were only four or five languages of any considerable importance representing in the world the progress and civilization of the times. These languages were French, German, Spanish, and probably Italian. With these five elements almost all that the world knew was most thoroughly accessible. By Greek and Latin they learned nothing of the progress of science. What was wanted here was an educational machinery, universal as that in China, for gathering together great masses of the young people of the nation for training. If they could

only examine and teach the children that came to be examined in Pekin as to what concerned the present and the future, instead of what only bore upon the past, he ventured to say their machinery of education would place China at the head of the civilized world. There would be little difficulty in establishing similar machinery here. If they could only get a good educational legislation, he did not think there would be much difficulty in getting a good educational executive. When the powers of Government were transferred to the multitude, they were bound to consider with great seriousness the responsibilities of the situation, and to see that the multitude were enlightened, instructed, and intelligent, so as to be able to fulfil well those functions which, probably, with too great a haste, and with too little hesitation, had been placed in their hands.

The discussion was continued by the Rev. Principal Tulloch, of St. Andrews; Mr. W. E. Baxter, M.P.; Mr. Leng, of the *Dundee Advertiser*; Mr. Holyoake; Prof. Ramsay; Prof. Campbell; Col. Sykes, M.P., and others; and it seemed to be admitted on all sides that the system of Privy Council grants was a complete failure, that Scotland could claim to participate in English endowments, and that as regards middle-class and other education the United Kingdom stood in an unfavourable position contrasted with several other countries.

After this, Col. Sykes read an "Analysis of the Report on the State of the Empire of France, presented to the Senate and Legislative Body, February, 1867," which, we believe, will appear in the "*Journal of the Statistical Society*."

The question of public health was touched in a paper read by Mr. H. J. Ker Porter on "the Prevalence of Spedalsake or Leprosy in the Kingdom of Norway," and in one by Mr. P. M. Tait "On the Population and Mortality of Calcutta," as well as in one by Mr. A. Robertson entitled "Statistics of the Social Condition of Dundee." The manufactures of the town were exhaustively treated of. Mr. A. J. Warden, the most competent person, being the author of an excellent volume on the subject, read a paper on the "Linen Manufacture of Dundee," which was followed by a paper on the "Engineering Trade" of the town, by Mr. J. G. Orchar; one on the "Iron Shipbuilding," by Mr. H. Gourlay; one on the "Seal and Whale Fisheries," by Mr. J. Yeaman; one on the "Leather Manufacture," by Mr. F. Henderson; and one on the "Confectionary and Marmalade Trade," by Mr. C. C. Maxwell.

The subject "Employer and Employed: Capital and Labour," was that of a paper by P. Mathew: but, time running short, it was only "taken as read." It has been printed in the *Dundee Advertiser*. The writer claims the position of a working-man; and the paper directs attention to the two great impediments in the way of rapid improvement,—first, war between employers and employed, causing outlocks and strikes; and, second, great national warlike preparation. The author says he wrote the paper to extend the utility of association and combination among working-men. Wages-combination, however, he urges, should cease on each side; whilst he has no doubt that combination is necessary to regulate hours of labour, and to see that the sanitary conditions of workshops and factories are what they should be. Alluding to means of regulating labour other than strikes, he refers to co-operation by working men of small capital. Then, apparently disposed to argue very much as we have done on several occasions, he says,—"It is a pity that factories cannot be placed in rural villages," but adds,—"The advantage to the employer of being every day in the market in a large manufacturing town overbalances the advantage to the employed, which a sanitary rural situation affords, and more especially to their children." "In Germany," he continues, "I have seen the great advantage of manufacturing villages in promoting the well-being of the employed. Here every head of a family had a garden excellently cultivated—as gardens generally are in Germany—and such was the demand for gardens that for a mile around a large village there was nothing but gardens of the manufacturers, who, in fine weather, went out in the evening to tend and cultivate and enjoy their gardens, their dwellings being closely adjacent to the factories for convenience. In this country the employers only have their gardens and rural dwellings, while the employed are subjected not only to indoor labour, but also to city dwellings in crowded ill-ventilated localities, where the human

* During the last ten years the change in the habits of people as regards the consumption of spirituous beverages was as follows:—

	England.	Scotland.	Ireland.
	Per cent.	Per cent.	Per cent.
Spirits.	1857, 1866, 1857, 1866, 1857, 1866,		
Wine in beer	21 20	77 62	68 63
Wine in wine	76 76	21 35	30 44
Wine in spirits	3 4	2 3	2 3
100 100	100 100	100 100	

organism must gradually in the course of a few generations dwindle away and die out. The town of Dundee is in this respect highly defective; and I hope that before leaving the Dundee meeting, a number of the members will accompany me on an excursion through the close alleys and vennels of this town, which have quite as much need of scientific examination as the vestiges of an ancient barbaric age." He then alludes to Robert Owen's experiment at New Lanark, as successful to the extent of securing the health, and the elevation of manners, of its workers and their families.

A paper was read "On Arbitration in the Nottingham Hosiery Manufacture," by Mr. E. Renals. It showed conclusively, from six years' experience, that beneficial effect had resulted from the establishment of a Board of Arbitration and Conciliation in the Hosiery Manufacture of the Midland Counties; and the writer argued that if such success was possible in a manufacture including so many varieties of goods, difficulty of adjustment could no longer be pleaded as an excuse for deferring the adoption of such Courts or Boards in other fields of industry. The particular Board referred to in the paper was founded in December, 1860. The immediate cause of its formation was a strike, for an advance of wages, by the hands employed in one branch of the manufacture. Before resorting to an outlook of those at work, who were maintaining the others, the manufacturers sought a conference with their workmen: the dispute was settled, and the existing Board was formed. The difficulties with which the Board has had to contend, have been caused by the small manufacturers rather than the operatives. The Board now consists of nine manufacturers and nine workmen; and there is a mutual agreement to abide by the decisions. Questions affecting the remuneration for labour are settled generally in advance. One rule of the Board is that no advance or reduction in the rate of payment for work can take place without a month's notice being given. The decisions of the Board are generally arrived at, after discussion, without the necessity for votes being taken. The paper gave illustration of the Board's action. These showed the hold that the Board had obtained on the minds of the workmen as a means of remedying any grievances believed to exist, and proved the advantage to the manufacturer, namely, in securing something like a uniform rate of payment for labour. Within the Board, there is a Committee of Inquiry to whom are referred questions of unusual difficulty. Should there be a determination on the part of any manufacturer not to pay the prices set forth in the authorized list or statement, then the Board itself operates against him through what is in fact a strike, but a strike differing from other strikes inasmuch as it is a strike of masters and workmen both. Instances of such a course being taken are however rare. The results, every way, of the Board's existence seem to have been most satisfactory. In the periods of transition and alteration in trade, it renders essential service; it has caused acts of intimidation to cease; it has abolished the truck-system; it has saved the men what would have been their contributions to union-funds: there are no stoppages of labour when demand for the article of manufacture is active; and there is a process of enlightenment always going on. As regards the masters, the advantages, says Mr. Renals, are equally obvious. First, all contracts may be taken with confidence, because the delivery of the goods can be safely guaranteed, and thus orders are prevented being sent to other countries; second, machinery and capital are employed to the fullest advantage during periods of prosperity; third, there is uniformity in the rates of labour, so that any unscrupulous and oppressive employer is prevented from underselling a more liberal and humane manufacturer, and in this way bringing down wages to the lowest level compatible with the bare subsistence of the workmen; and fourth, there has been a discontinuance of those abusive attacks on employers which were formerly so frequent, not one having been published for more than seven years.

The influence exercised on other trades has been most salutary. In the lace manufacture of Nottingham, in which strikes and lock-outs have proved so detrimental, a Board is now being organized. In Leicester, a Board has already been established for the settlement of disputes in the hosiery-trade; and in Sheffield, a chamber of industry, on similar principles, is about to be founded, for the adjustment and prevention of disputes in the trades of that town.

At the conclusion of the reading, Sir John Bowring alluded to the arbitration-system at Lyons, and remarked that this excellent plan was only a development of a principle which had existed twenty years before in Denmark, in the shape of Courts of Conciliation. All disputants had to go to these Courts and state their cases without the exaggerations of counsel; and the cases being often thus amicably settled, there was much less resort to the superior courts. The disclosures at recent conferences on these matters were not only degrading and disgusting, but damaging to British reputation. England was bound to give an example of sound political economy. If masters and workmen could be brought together in a conciliatory spirit more frequently, they would at once see that they could no more alter the conditions which ultimately ought to rule, and which ultimately would rule, questions regarding their respective relations, than they could alter the course of the planets or the succession of the seasons.

Mr. Hermann said he at first anticipated a difficulty from the circumstance that these courts had in their decisions no binding effect, and because such decisions were not legal; but when it was considered that the interests of the masters and men were in this way so far combined, and that they were being brought together to discuss questions relating to the trade, he was glad to say that he found the system to be productive of good. The men were made aware of the state of trade; and if labour was greatly wanted, then they received increased wages, and, if not wanted in a great degree, they were made aware that such was the case, and were led to accept the terms of the masters without having recourse to a strike. What was wanted was a knowledge of political economy,—that masters and men should become convinced that their interests were the same and must be.

Mr. Senior also gave corroborative testimony to the success of the Nottingham system; after which Prof. Rogers, who was in the chair, called on Mr. Briggs to speak of the other process by which disputes might be prevented, namely, the principle of co-operation.

Mr. Briggs said he had long been of opinion that strikes were often brought about by reason of the masters and men standing so much aloof from each other, and because the masters did not explain to the men the true position of the trade. The masters did not appreciate the difficulties of the men, and the men did not appreciate the difficulties of the masters. Mr. Briggs then gave the particulars with which our readers are acquainted, of his Limited Liability Company, or Industrial Partnership. They had had great difficulties in establishing their system of co-operation, because the men did not appreciate the advantages, and because also the masters in the neighbouring collieries had great fear that they (the Messrs. Briggs) were allowing their men to obtain a much greater insight to the trade than men should be allowed to have; but these difficulties had been overcome, and now they were able to avoid all disputes with their workmen; whereas during the four years precedent there had never been a week without a strike.

Mr. Edward Hall remarked that there were instances of the success of industrial co-operation of a much longer date than that alluded to by Mr. Briggs. In the house-painting establishment of M. Leclaire, Paris, such a system had been in operation for the last thirty or forty years. Conjoined with it there were a mutual aid society, pensions for deserving workmen, a library, lectures, &c., and, what had been referred to, the "annual statement." Nothing whatever was concealed from the men. A complete account of the system had been given in the *Builder* some time ago, and he believed that was the only complete account that had ever been published. M. Leclaire had informed him (Mr. Hall) that in the revolutions which had taken place in France since he established the co-partnership—and there had been two very important revolutions—not one of the men in connexion with it had ever taken part or joined the revolutionists in the streets. It was important to notice that M. Leclaire had sent over men who did work in the decoration of houses in London and in Ireland.

Prof. Rogers, in winding up the discussion, said that political economy should be taught in all schools, and that he had not the smallest doubt that the great mass of masters and workmen were not cognisant of the absolute laws which governed the relations of employers and employed; and to that he attributed the many disputes which so frequently arose.

THE QUEEN'S THEATRE, LONG ACRE.

ALL playgoers have heard with great satisfaction that Mr. Alfred Wigan is again about to resume the management of a theatre. St. Martin's Hall, as our readers know, has been transformed for that purpose, and is advertised to be opened on the 17th inst. The principal entrance, leading to the stalls and two tiers of boxes, is in Long Acre, through a loggia, opening into a vestibule 42 ft. by 22 ft., immediately facing which is the grand staircase, a double flight of stairs, 6 ft. wide, leading to the boxes. The stalls have a separate approach by a few steps, and an incline under the pit, without ascending the staircase. The entrances to pit and gallery are in Wilson-street; where, also, at some distance apart, is the royal entrance, opening immediately upon a private staircase to the royal box on the grand tier, and forming also, on ordinary occasions, an exit way from the stalls, level with the street. The entrance to the stage is in Charles-street.

The plan of the auditorium is peculiar. Each tier recedes, so that two balconies are formed. The plan of the front of the dress-circle tier may be described as three-parts of an egg; the upper-box tier similar, but larger in radius; while the gallery tier resolves itself into a complete circle, carried round over the proscenium, and forming as it were, a cornice. The effect of the junction of the square top of the proscenium with this circle does not promise to be pleasing. The audience in the amphitheatre do not occupy more than to the half-circle, the remaining part, where it would, of course, be difficult to see, is occupied by a circular frieze, taking the same line as the circle of the gallery, crowned with a cornice. Upon this frieze is a wall-painting, 30 ft. long and 7 ft. deep, by Mr. Albert Moore. This painting, which is in a flat medium, like fresco, represents a group of life-size Greek figures, in various attitudes, listening to and watching the representation of a play which is being enacted.

The better to judge of the size of the new house, we append a table, giving the dimensions of some of the principal London theatres:—

	Length from curtain box, to centre of stage	Width between boxes	Width of proscenium opening	Height of proscenium	Height from top of centre of ceiling	Depth of stage from curtain line	Width of stage between walls
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
Her Majesty's	88 0	59 0	17 0	31 0	35 0	—	—
Covenant Garden	31 0	63 0	13 0	43 0	45 0	40 0	30 0
Derry Lane	45 6	51 0	13 0	—	30 0	48 0	—
Lyceum	—	38 5	32 0	35 0	—	—	—
Haymarket	46 0	35 0	32 0	28 0	—	48 0	38 0
Olympic	—	33 0	27 0	29 0	—	—	—
Her Majesty's	—	—	26 0	30 0	—	—	82 0
Britannia	58 0	56 0	35 0	37 0	47 0	60 0	—
Adelphi	40 0	31 0	31 0	38 0	44 0	55 0	57 0
New Surrey	146 0	44 0	—	—	—	—	—
The Queen's, Long-acre	147 6	43 0	—	—	—	—	—
	150 0	46 0	—	—	—	—	—

The computation of the seating accommodation is as follows:—

Place.	No. of Rows.	Distance from front to back.	Width of Seat.	No.
		ft. in.	ft. in.	
The Stalls	5	3 0	22 4	(arm-chairs) 110
Dress Circle	7	2 9	21	do. 230
Private Boxes	—	—	—	64
Upper Boxes	6	2 8	21	(arm-chairs) 230
Amphitheatre	2	2 2	20	100
Pit	12	2 0	18	do. 640
Gallery	14	1 10 1/2	16	do. 610
				Seating
				Standing
				Total

The decorations have been executed by Messrs. Green & King, and are of a Raffaellian character. The ceiling consists of a semicircle, prolonged horizontally over the greater part of the auditorium, and beyond this a flat portion raking up over the gallery. The lower-box fronts are painted with arabesques and borders, and are further embellished with gold mouldings and amber satin curtains, resters, and Vandyck valances.

The lighting is effected by a powerful sunburner, manufactured by the patentees, Messrs.

* To grand tier box front. + To upper box front.
‡ Gallery tier.

Strode & Co., placed in the centre of the ceiling, but not depending more than 18 in. below it. There is a large ventilating shaft, 6 ft. in diameter, immediately above the sun-burner, carried through the roof, in the centre of which is another fine, specially to take off the combustion from the gas. The same firm has also fitted up the float-light. It consists simply of the Argand burners reversed, with the lights burning downwards, all the combustion being taken away through a large iron cylinder underneath to a flue at the back of the proscenium. A joint on each burner is so contrived that if any one of the glasses breaks it falls, and so shuts off the gas in that burner.

The stage is separated from the audience by a brick wall, carried on an arch over the proscenium, opening up to the roof, and behind the proscenium are stone staircases on either side, leading from the basement to the roof, with communications on every level.

The difficulty of arranging satisfactorily for the multifarious requirements behind the scenes is evident from the lack of width between the walls.

There are two tiers of flies, 9 ft. 6 in. wide, the upper or working flies being about 30 ft. above the stage, and the lower 20 ft. On these last are arranged two dressing-rooms, on either side approached by staircases at the back of the stage, opening on which are four tiers of other dressing-rooms. Under the stalls are placed the green-room, and a large room for the ballet, with two small dressing-rooms, approached by the staircases in proscenium before mentioned.

The painting-gallery is at the back of the stage, on a level with the first tier of flies, having two frames, 36 ft. wide, which can be made available for ascensions of scenery, &c.

The works have been carried out by Mr. Samuel Simpson, contractor, of Tottenham-court-road; the gasworks, except as before mentioned, by Messrs. Jones & Co., of Bow-street; the stall and dress-circle seats by Wadman Brothers, of Bath; and those in the private boxes by Mr. Church, of Bath; Mr. Phipps being the architect.

A BORDER TOWER.

HER MAJESTY'S recent progress through the old classic and historical Border-land has once more brought into full light a number of interesting but forgotten shrines. The beautiful ruins of Melrose and of Jedburgh will, of course, never die, even although time shall have completed the process of their ruthless destruction. But there are numerous objects of interest in the valley of the silver Tweed which are slowly sinking into oblivion and decay; and of these we desire to mention the Fortalice, the Peel Houses, and Border Towers—the residences of those famous chieftains who harried under the Bold Buccleuch, and rode with their retainers under the banners of the Earl of Douglas. Staying at Melrose not long ago for a couple of days, we were taken to see one of the most ancient and best preserved of these Border peel houses, and we think some account of our visit, and its relative investigation, may not be without interest to our readers at this season of the year.

Half-way between Melrose and Abbotsford there is a picturesque village, or, as it is before more properly described in Murray's Handbook, hamlet, called Darnick; which is chiefly famous in consequence of containing the very fine specimen of a Border keep which is known to all true lovers of the Border antiquities as Darnick Tower. On approaching the village the traveller will readily observe this old tower as it rises its grey weather-beaten head over the crest of the railway embankment, half hid in a wood of ancient sycamores and silver birches. The splendour of the halo, so to speak, of the Middleval romance with which the genius of Sir Walter Scott has surrounded this district renders every object interesting and romantic; but it is not often the practical man can be so well satisfied with romantic ruins as he can be with an examination of Darnick Tower. The architect will feel interested in its construction, the artist with its picturesque appearance, and the antiquary with its high and most creditable state of preservation. Above all, the historical student will be gratified with the study of its associations, which range in their diversity from scenes of the coarsest butchery and brutality to incidents and illustrations of the finest and most plaintive poetry with which our annals are adorned.

There is nothing so calculated to excite a feeling of melancholy curiosity in the mind of the traveller as to trace the chain of ruined castles and fortresses which line the valley of the river to Neidpath Castle above Peebles, and far Midlothian. There was an intermediate chain or cordon of fortalices (of which Darnick Tower is the finest remaining type) often elated together, like Horsaugh and Smallholm, but always so situated that a flag, a light, or a beacon fire could be seen from one to another. Antiquaries can find no better reason for the elating of these peels, other than the evident one of their having been erected for mutual defence; though it is not improbable that some other reasons, peculiar to the times, may have contributed, such as that of the national security in places more than ordinarily exposed to foreign invasions. But, in any view, they are interesting features of the Border landscape even in their ruins, and must always be examined with respect as well as curiosity; most notably as showing the kind of embattled residences in which the Border gentlemen of former times were obliged to reside when domestic peace was a blessing, only, as it were, snatched at intervals from continual turmoil and interminable feuds.

"The barons and gentlemen," says Foster, in his review of Sir Walter Scott's "Border Antiquities," "had for their residence an inferior kind of fortress, often heard of in Border history, under the denomination of 'strataghts,' constructed upon a limited scale, usually in some situation of natural strength. Having very thick walls, strongly built and cemented, they could easily repel the attack of any desultory excursion, and the village which almost always adjoined, contained the abodes of the retainers, who, upon the summons of the chieftain, took arms either for the defence of the fortress, or for giving battle in the field."

In these circumstances, then, every lord had his castle or fortress, and every laird his peel tower or fortalice. Each dwelt in an embattled keep, of greater or less size and strength, according to his status and means of resistance.

Darnick Tower on one occasion was signalized, as we are told, in a Border legend, by a joyous passage of arms between the Scots of Buccleuch and the Kerrs of Cessford, to obtain the person of the king, wherein Andrew Heiton, of Darnick Tower, turned the tide of battle in favour of the loyal party. One curious fact we must relate: the lady of the tower put her husband in the donjon till she saw which was to prove the conquering party!

For this valorous deed he obtained his charter, which may still be seen signed by Bothwell on the account of Mary, and confirmed under the Great Seal of the Chancellor Lethington. The laird of Darnick was thus constituted an original vassal of the Crown; and this charter was a satisfactory evidence that he had fought in the ranks of the king. And although this charter was not granted by King James V. himself (who was supposed to have favoured the design of the Bold Buccleuch), it was given by Queen Mary, whose councillors were not led by nice political distinctions, and who had great regard to *prima facie* evidences of loyalty in their Border adherents.

The next incident respecting the history of Darnick Tower will lead us to say a few words about Hertford's invasion. After the death of James V. the country was torn by the factions of the Church on the one hand, and the dissatisfied nobles on the other. A promise of marriage had been made between the heir-apparent of England and the youthful Mary of Scotland; but the queen-mother, Mary of Guise, supported by the Regent Arran and the Cardinal Beaton, broke through the contract, and Henry VIII., annoyed at this duplicity, gave immediate expression to his dissatisfaction by entering upon a war. An invasion took place under Hertford; and in 1544 Sir Ralph Evers, with Sir Brian Latoun, were directed to harry the Border towers and churches. Under these instructions Henry's two generals laid waste the whole of Teviotdale and Tweeddale with unexampled ferocity and barbarism: corn was wasted, fields were fired, cattle carried off, towns, towers, and churches were ruthlessly razed, burned down, destroyed, and in some instances obliterated. The Abbey of Melrose suffered severely. The ancient tombs of the Douglases were defaced. A long and heroic line of Douglases was buried on the north-east side of the high altar; but no vestige of these tombs afterwards remained to indicate their names or their deeds of valour.*

* The property and tower of Darnick must have been in the family of Heiton from a period long before the visit of Hertford; but it was after this time that they

During this invasion of Hertford there are plenty of historical evidences that evil days had fallen upon Darnick Tower. We may easily imagine that it had its full share of the battles and skirmishes of the period; and as Hertford's generals were animated by the promised rewards of feudal grants of such fortresses, we may be sure that such places would not escape the general havoc. But, to set all conjectures at rest, Mr. David Laing discovered a MS. account of the Earl of Hertford's invasion, in the library of Trinity College, Dublin, in which the Tower of Darnick is described as one of those which had been "razed and cast down."

The present tower was either the old one repaired (for the word "razed" did not always signify total demolition, an act requiring more time and labour than invaders, in the midst of an angry people, could bestow), or a new one erected on the old site, and probably, as was often the case, with part of the old stones. The repairing or rebuilding of the present tower was probably accomplished by that principal member of the family, Andrew Heiton, soon after the passing of the Act, in the reign of Queen Mary, for the improvement of the kingdom, by planting and rebuilding.

We must now say a few words about the construction. Sir W. Scott tells us that,—

"The smaller gentlemen, whether heads of branches of clans, or of distinct families, inhabited dwellings upon a smaller scale, than the feudal castles, called Peels or Bastle-houses. They were surrounded by an enclosure or barmkin, the walls whereof were, according to statute, a yard thick, surrounding a space of at least 60 ft. square. Within this outwork the laird built his tower, with its projecting battlements, and usually secured the entrance by two doors, the outer of grated iron, the innermost of oak, clenched with nails. The apartments were placed directly over each other, accessible only by a narrow tortuous stair, easily blocked up or defended."

This description is so good a picture of the peel of Darnick as it now stands that it almost supercedes the necessity for our describing it. The apartments all over each other and the stair may still be seen, and, in addition to Sir Walter's account, a door at the top leading out to the battlements, which run entirely round, so that in the very last extremity, and when the inmates were actually driven up out of the apartments, they had still not only a refuge, but a position from which to harass the enemies or whoever remained in the court-yard. Two-thirds of the peels, we may add, of which we have any remains, were built between the middle and close of the sixteenth century in conformity with an Act of the Scottish Parliament, 1535, "For Bigging of Strengthis on the Bordouris;" and this is the statute to which Sir Walter Scott refers.

At one time this tower, the family property of the Heitons, stood along with two others, both of which are now extinct, and were of inferior dimensions.

It was a palpable mistake in the "Border Antiquities" to denominate this tower as belonging to the Fishers, that of the latter being at the time in ruins. The mistake was the more extraordinary, as Sir Walter Scott had made several attempts to purchase this tower from the late Mr. Heiton, and had he succeeded, intended to convert it into an armory.

The stone of which Darnick Tower is built appears to be the same as that of Melrose Abbey, a yellow and red sandstone; and if this be the case, the red must have been obtained from Dryburgh. There had been a quarry of red sandstone, formerly worked near Oakendean, on the base of the Eldons, as like the Dryburgh stone, that it is impossible to distinguish the difference. From these sources we are led to understand the stone was derived of nearly all the old buildings in the neighbourhood of Melrose; and there is no other possessed of such fine qualities for carved work. Mr. Currie, of Melrose, the well-known sculptor, recently saw a beautiful corbel which had been dug up near this quarry; and, curious to say, its counterpart (a fac-simile), is built into the walls of Darnick Tower. It would be of importance to know how so many fragments of moulded stones came to be built into the rubble walls; our informant is inclined to believe that they must have come from the ruins of a convent, which Sir Walter Scott tells us once stood near the same spot.

The walls of the basement are 4 ft. thick, diminishing to about 3 ft. at the top. The

acquired what was termed their out-field. Andrew Heiton, the then proprietor, was one of those men of substance selected out of the Crown vassals for receiving land under the provisions of the Improving Act, as appears from two charters by Mary, in 1556 and 1567, signed, the one by Lethington and the other by Bothwell.



DARNICK TOWER. South-west View.

doujon is vaulted; the hall, 9 ft. in ceiling, with narrow windows deeply embrasured; the floor above is 12 ft., and above that the granary reaches to the roof. The beams were originally of oak extremely massive. The tower is square, with span roof, and crow-stepped gables corbelled near the top, and the whole roof is embattled. The slate roof is modern; it had originally been constructed with slabs of stone. The present building, as appears from the monogram over the door, was built in 1569, fourteen years after Hertford's memorable defeat at Ancrum Moor. The other existing tower (incorporated in the house of Mr. Currie), belonged to the family of the Fishers, and was also, along with the other two, destroyed at the same visit of the English. It was partially rebuilt, and the massive walls may still be seen in Mr. Currie's house.

From the sculpture referred to, it appears the builder of Heiton's Tower was one Andrew Heiton, his wife's name Fisher—one of the Fishers of Darnick. The present tower has not been used as a dwelling in the memory of the oldest living in Darnick; but some eighteen months ago the idea of restoring the old tower to something like its former appearance in the interior, and rendering it inhabitable, occurred to Mr. John Heiton, of Edinburgh, the proprietor. Meeting with a suitable tenant, in Mr. Murray, architect, of Newcastle, means were at once taken for its restoration. Assisted by the antiquarian and artistic judgment of Mr. Currie, the work has now been accomplished, and this old Border tower is open to visitors, who may in it see as good a specimen of the old peel house, or laird's dwelling, of 300 years ago, as is to be found in Scotland. Among other restorations we may notice the fitting up of the Heiton crest in the east wall—the bull's head surmounting a shield emblazoned with other three. The interior contains four large square apartments, one above another, some of which have been re-floored, the walls plastered, and all put into thorough repair. Two of the rooms are adorned with sculptures corresponding with the Mediaeval character of the building. The original doors and locks are still in use—the former studded strongly with great iron nails, and the latter of prodigious size and strength. One of the most pleasing views of the vale of "fair Melrose" is obtained from the tower which overlooks the "old Abbey," the windings of the Tweed, the triple Eildons, and the whole valley north and south.

Darnick Tower was among the chief objects of Sir Walter Scott's passion for territorial acquisition; and so well was this feeling understood in the district, that he at length obtained the local sobriquet of "The Duke of Darnick." The late Mr. Heiton, although inclined to dispose of a portion of the lands, was rather reluctant to dispose, even to Sir Walter Scott, of the old

tower, which had been for hundreds of years the peel of the family. Of course, the great novelist could not but respect this noble hereditary *penchant*. But Mr. Lockhart, in his *Life of Scott*, thought fit to indulge in a sneer on the subject. He tells us that the proprietor of the tower having made money in Edinburgh as a builder, was unwilling to part with the tower. He had forgotten the obvious antithesis. Sir Walter had also made money in Edinburgh as a writer. No doubt he had reason to be proud in founding a new family; but surely the Laird of Darnick had at least equal reasons for preserving an ancient one.

According to a tradition delivered from father to son, the Heitons came originally from Normandy, in a company of French knights, about the year 1425, to assist the Scots against the English. They were well received by James I., by whom a grant of land was given them in the vicinity of the village of Darnick, where they had settled. The name is a translation into Saxon-Scotch of the French *Hauteville*, a word common in Normandy, and serving, according to the usage of the time, as a patronymic derived from the family property or residence. We have an analogous example of the Norman designation in "Heiton," or the "hill," in Roxburghshire. Melrose Abbey has been the burial-place of the Heitons for many generations.

The present proprietor is Mr. John Heiton, of that ilk, a descendant of a long line of Border warriors, who were afterwards builders in Edinburgh; and the heir-at-law is Mr. Andrew Heiton, city architect of Perth, who, we believe, superintended the restorations.

HOP AND MALT EXCHANGE BUILDINGS, NEW SOUTHWARK-STREET, BOROUGH.

This building, the first stone of which was laid August 31st, 1866, is now about being opened for business.

The want of a building of this description has been long felt by the general public, there being no exchange or proper place for carrying on the hop, malt, and seed trades. To supply this want a limited liability company was formed, who, upon the advice of their architect, purchased a freehold site of above half an acre, or, 28,000 superficial feet, in New Southwark-street, London Bridge. The company have by a subsequent arrangement obtained additional land to the extent of 21,000 superficial feet, making in the aggregate 47,000 feet, or one acre and a tenth, and having a frontage in the new street of 340 ft., and in Red Cross-street of about 75 ft.

The works have been pushed on without intermission since the commencement, and six-sevenths of the entire area are now covered and carried to the full height. The façade in South-

wark-street has an elevation of about 100 ft. above the level of the pavement, and consists of twelve stories with a double basement of brick arches carried on iron hollow columns and girders. Of this we have already given some account.

In consequence of several difficulties the company had to contend with, it was found more to their advantage that the works should be carried on without the assistance of a builder. The company's architect, Mr. R. H. Moore, of Walbrook, City, who, it appears, is a large shareholder, has taken more than ordinary pains to carry out and complete the works.

Great difficulties were encountered in the excavating for the foundations; the whole ground, from 12 ft. below the level of the street paving, was found to be running sand and water, which had to be taken out to a depth of about 23 ft., in order to obtain a proper foundation. From this more than sufficient sand has been procured for the whole of the buildings, as well as ballast and core sufficient for the concrete in all the foundations, basement-floors, &c.

The whole of the main walls (which are one brick in basement, and half a brick throughout, more than the thickness required by the Building Act) are laid on concrete foundations, 8 ft. wide by 5 ft. deep. The concrete is composed of gravel, ballast, and brick core, mixed with hydraulic lime in the proportion of 6 to 1.

The whole of the bricks used in the building are hard well-burned stocks. All the basement walls are laid in Portland cement as well as the two tiers of arched cellars, with the entire front, and all walls and piers of a less area on plan than 10 ft. super., the best *lias* lime being used for all the other portions of the brickwork.

In the front, Portland stone pedestals, about 4 ft. 6 in. high, forming the base of cast-iron ornamental columns, extend along the entire length of front, excepting at the ends and principal entrance to the exchange. The latter is flanked with pillars of Portland stone, in all about 27 ft. high. The caps and entablatures are executed in Connans stone, which harmonizes well with, and is become as hard as, the Portland. The crowning members of the cornices are of Portland stone. From this line to the top of the building, the whole is executed in bricks and Portland cement, excepting the keystones and corbels to all the windows, which are of stone. There is a bold cornice carried on trusses, 3 ft. 6 in. high, surmounting and running the entire length of the front.

The building consists of an exchange-room, 80 ft. long by 50 ft. wide, and 75 ft. high to crowning member of cornice, from which springs an iron roof of 25 ft. radius, with a lantern-light surmounting it, and in which is provided ample ventilation. From the ridge of this lantern to the floor the height is 115 ft. The roof is formed of 3 in. by 3 in. by $\frac{1}{2}$ in. angle-iron in the shape of lattice-girders, each rib being at the springing 3 ft. deep, and diminishing at the top to 18 in. The foot of each rib is securely bolted to strong cast-iron corbels built in the walls to receive them. The ribs are also in pairs (24 in. apart), connected with each other by lattice or trellis tiers of 3 in. by 3 in. by $\frac{1}{2}$ in. metal. The bays between each pair of ribs are 14 ft. wide. The purlins are also of trellis form, and these carry the sash-bars, which are bent to the curve of roof, and are placed about 2 ft. 10 in. apart. The roof is glazed with stout 32 oz. bent sheet-glass.

Around the Exchange are four stories of offices and show-rooms. The three upper floors are approached from ornamental cast-iron galleries running all round. The stone staircases at the opposite angles of the Exchange, and one at the principal entrance, lead up to these galleries, giving easy access to each office. The floors of the galleries are of diamond-shaped pattern, and glazed with small squares of plate-glass, and are carried on ornamental cast-iron brackets of appropriate design, as well as the balcony railing, in both of which the hop leaf and seed have been introduced.

A refreshment-room of first and second class is provided, and also a subscription-room 40 ft. by 35 ft., and 24 ft. high, having a rich ceiling, and supplied with six glass star-lights. An ornamental self-supporting iron-roof gallery is carried along one end of this room, affording access to a set of offices fronting the street.

The principal entrance is placed at the end next to the London Bridge side of the street, and nearly opposite the Alliance Bank. There is a

* Lockhart's Life.

* P. 348, ante.



THE HOP AND MALT EXCHANGE BUILDING, SOUTHWARK STREET, BOROUGH.—MR. R. H. MOORE, ARCHITECT.

fine flight of steps within the porch leading to the Exchange. The vestibule consists of a centre and two side arches. The outer pillars are of Portland stone. The inner arcade consists of segmental-arched and panelled ceilings, supported by four elaborately wrought Irish red marble columns, and twelve green marble pilasters, all of which were supplied by a Dublin manufacturer. The whole of the caps to the marble columns are carved in Connans stone, principally in natural foliage.

A large portion of the building being designed to be used as warehouses, a certain portion fire-proof floor is carried on wrought-iron girders throughout the building, so far as the offices extend, making a party separation between them and the warehouses.

The wrought-iron girders are built into the front and on to the walls at the rear, forming a perfect tie to the whole of the front and outer walls; in every other story of the building, from the ground-story to roof, strong iron ties, 7 ft. apart, are built, tying the front and back walls. The floors of all the corridors and passages, as well as the Exchange (80 ft. by 50 ft.), are laid with encaustic tiles.

The area of the warehouse-room for the storage of hop and other produce exceeds 220,000 superficial feet; the area of brick-arched cellars, to which ample access is provided, to compartments over room, each 80 ft. by 50 ft., the size of Exchange, and two 40 ft. by 35 ft. each; and in all exceeding an area of 63,000 ft.

Machinery is being fixed for the purpose of loading and unloading from the warehouses, seven cranes, or jibs, standing about 100 ft. high from where the wagons will stand, worked by a fixed steam-engine of 8-horse power in the first basement. There is a Cornish boiler and upright shafts, which run from the engine to the roof of the building, with about 70 ft. of horizontal shafting, with all proper drums, gearing, &c., to work the jibs. When complete, there will be 240 ft. of horizontal shafting running the entire height of the back of building, to which will work the seven cranes. The engine now fixed is also designed to pump water on to the roof of the building. Troughs of wrought-iron are now being fixed for the purpose, which will hold several thousand gallons of water. This water, which will be pumped from a deep well in the sand, the company purpose using for the supply to the building, the architect having, amongst his other requirements for economy to the company, provided filters for the purpose of preparing it fit for use before it comes into the offices. The large supply which can be obtained by means of the engine being daily at work, hydraulics will be fixed for safety from fire, as the cistern at their elevation will be of immense value, and before their contents can be exhausted, a fresh supply can be obtained in case of fire: this will be of a great advantage, as well as an enormous saving to the company by way of water rent. The small remaining portion of the building, part of which is up about half its elevation, will be built to its full height in elevation in about three months, and will consist of warehouses and offices in the front the height of four stories. There will be in all above 100 offices, fifty show-rooms, sixty stands, besides basement offices for wine-merchants and others, with warehouse room for 50,000 bales of hops and other produce, and cellars for about 3,000 barrels of ale or other goods. The cost of the entire building up to the present is 40,000L, and it is estimated the part unfinished will cost about 10,000L. It is anticipated that the rents will be not less than 3,000L per annum; this may be inferred from the fact that the ground and first-floor offices, which are all now let, realize nearly double the original estimate for return on an outlay in all of 120,000L, the first capital of the company.

The interior, as may be seen from our view, presents a striking appearance. The panels under the roof are not yet painted.

RE-NAMING OF STREETS.—The intention of the Hackney authorities to give the name of Church-street to the whole line of Mare-street and Church-street is meeting with great opposition, according to the *Parochial Critic*. The inhabitants are rightly desirous of retaining the name of Mare-street, which it has had 150 years, before which it had from time immemorial the name of Mare-street. A memorial has been signed by 46 inhabitants of Church-street, and another by 90 inhabitants of Mare-street.

THE CHÂTEAU-GAILLARD.*

The history of Château-Gaillard is intimately connected with the lives of Richard Cœur de Lion, its founder; of John, his brother, who basely neglected to support it; and of Philip Augustus, who besieged and captured it. It also plays an important part in the most critical period of the history of Normandy, its loss by the English, and its absorption into the kingdom of France.

The Dukes of Normandy, with their capital at Rouen, and their command of the lower Seine and the ports of the north, were always a dangerous thorn in the side of France; but when they became kings of England, and could bring the forces of the country to fight on a Norman quarrel, their presence upon the Seine became a question of life or death with France, and as such Philip Augustus seems from an early period to have regarded it, and to have prepared himself for a deadly struggle with his contemporary, Richard.

The two princes assumed the cross in 1188, and met before the walls of Acre in 1190-1. Philip soon returned to attend to his affairs at home, and Richard, fearing his designs, followed him in October, 1192. The adventures of Richard, and how he was detained in prison, are well known. Philip profited by the opportunity, and especially by the weakness and baseness of John, the natural guardian of his brother's interests.

Philip commenced by the recovery, by treason, of Gisors, a strong place on the Epte, built by Rufus, strengthened by Henry I., and which, after many changes of masters, had come to Philip, and by an oversight been given to Richard as a part of the portion of his sister Alice. Philip re-entered in April, 1193, and with Gisors acquired Le Vexin, the territory between that fortress and Andelys.

In 1194 he took the field on the opposite or left bank of the Seine, possessed himself of Ivry, and, crossing, laid siege to Rouen. The Earl of Montfort, then governor, was too strong for him, and he retired, burning his siege artillery. In April Richard re-appeared upon the scene. The advance of Philip was checked, but the war continued with much ferocity.

In January, 1196, occurred the treaty of Issoudun in Berry, by which France was to retain the Norman Vexin and Gisors, and, on the left bank of the Seine, Ivry, Vernon, and Gaillon. Richard was to hold Eu, Arques, Amale, Drieucourt or Neufchâtel, and certain places in Perche, Berry, and Auvergne. Richard was outwitted. He lost Gisors, the shield of Rouen, and the frontier of the Epte, and he further bound himself not to fortify Andelys, the only point by which he could hope still to retain the Seine and the Andelle, and thus cover Rouen. He, therefore, as the manner was, determined to break faith by fortifying the rock of Andelys, a part of the estate of the church of Rouen, represented by Archbishop Walter, the king's old and trusted counsellor.

As it was certain that France would resist this infraction, and the church would remonstrate, no time was to be lost. His preparations were vast, but they were made silently and rapidly, as became the greatest soldier of his day. The time of his commencement is established by a letter from the Archbishop to his friend Ralf de Diecio, the chronicler, Dean of St. Paul's, in 1196, in which he speaks of ditches and barbicans trespassing upon the property of the church. It will suffice to say that, after an interdict and an appeal to Rome, Walter obtained excellent terms. Richard, meantime, stayed neither for Pope nor bishop, and swore he would not stop for an angel from heaven.

He commenced operations upon an island in the Seine, below the castle. Upon this he constructed a fort, with mural towers and a ditch, in advance of which was a strong palisade. Here he posted himself during the progress of the works. A wooden bridge crossed from the fort to either shore, and as a *tête du pont* to that toward the right bank he constructed what is now the town of Little Andelys. The waters of the Gambon were deepened into a lake, which extended from the Great Andelys downwards, and two streams from which encircled the Little Andelys, which was fortified and provided with two drawbridges, and thus was covered the foot of the rock on its eastern and northern sides. The Andelys defences were strengthened with towers of wood, embattled and looped, and placed at convenient distances.

* See p. 645, ante.

Finally, across the Seine, above the island, was constructed a dam of three lines of piles, just opposite to and commanded by the rock; and again, about four miles up the river, on the right bank, rather above Toeni, was placed a detached work in masonry, which bore the name of "La Boute-en-Avant," or "Boutavant," "*Pulsus in anteriora*," a name given to one of the advanced towers of Corfe Castle.

The actual promontory, upon which the castle itself was to be placed, was about 600 ft. to 800 ft. long, 200 ft. broad, and 300 ft. above the river, and there the ditches were cut and the towers and walls raised, such as they have been described. It was a grand stroke of genius, audaciously conceived and perfectly executed. "*Ece nam pulchra filia mea anni*," "Is she not fair, my daughter of a year?" was the royal vaunt, and as he happily designated it, "C'est Château-Gaillard," its official name, however, for some time was "Castrum de Rupe," "Bellum Castrum de Rupe," or "Rupes Andolici," but Le Breton, Philip's historiographer, and his contemporaries use the more popular and permanent name.

Richard at once reaped the fruit of his exertions. In the war which broke out the presence of Château-Gaillard saved central Normandy, and forced Philip to confine his attacks to the northern provinces. Richard, however, detached from him his ally, the Earl of Flanders, and Philip, beaten, fled to Gisors, where he was nearly drowned in crossing the river. Richard brought 100 prisoners to his castle, and soon afterwards (1198) received there his nephew, Henry, Duke of Saxony. In the Record-office is a charter of confirmation to St. Peter's, Chertsey, by Richard, date, *apud ripem andeliacum*, 10th January, 10 R.I. (1199); that is, three months before his death, which took place in the following April.

John's first step, in August, was to make a treaty with Renaud, Count of Boulogne, and Philip's marriage and subsequent excommunication gave him a further respite. Philip, when once more in a condition to act, commenced by destroying Boutavent. The murder of Arthur, which occurred soon afterwards, induced him to draw off his forces from Arques and the north, and to concentrate his efforts in good earnest upon Château-Gaillard, the siege of which he determined to conduct in person.

His first step, advancing down the left bank of the Seine, was to take position upon the peninsula in front of the castle. Here he cast up lines, extending from Toeni on one bank to Bernières on the other, to provide for the defence of his rear.

The castle was commanded by Roger de Lacy, the constable of Chester, with a garrison sufficient for its defence, but powerless for operations in the field. Upon Philip's appearance, Roger's first step was to break down the further bridge from the island. Richard would have chosen this time to attack the French before their lines were ready, and drive them into the river, but John lost the golden moment. Thus established and protected in front of the castle, Philip next formed a communication with the right bank, and so prepared to support his attack upon the place, and secured a retreat if molested by a superior force in his rear. He proposed to bridge the river above the island, between it and the stockade, which was first to be broken down, to allow of the navigation of the river. Powerful mangonells, machines for casting missiles, introduced from Turkey, were planted on the left bank, and, thus protected, the piles were cut by divers, notwithstanding a continued discharge of arrows from the castle above. A gap opened.

Philip brought down ferry-boats from the upper Seine, and laying planks across these, connected the head of the island with either bank. The fort was not yet taken. To command it, and to protect the bridge, four large barges were anchored above it, and upon them were constructed tall wooden towers. Thus strengthened, the French crossed the Seine, established their headquarters before the walls of Little Andelys, and so opened an un molested communication with Le Vexin, whence they drew provisions.

King John, now seriously alarmed, employed William Mareschal, the great Earl of Pembroke, to relieve the garrison. The earl, with 300 men-at-arms, 3,000 sergeants-at-arms on horseback, and 4,000 infantry, besides a band of tried mercenaries under Algis and Marceadus, two of Richard's captains, planned a double attack by land and water, the success of which obviously depended upon their being simultaneous.

The land forces were to attack the lines by night, while the flotilla came down upon and broke the bridge, thus dividing the French army, and reinforcing the fort. Seventy vessels laden with munitions and food for 3,000 men, were prepared at Rouen, and brought down under the command of Martin of Arques and De Brandin. With them was Alan, a well-known Breton seaman and pirate.

Mareschal drew up his men in the peninsula, by night, outside the French lines, and awaited the signal from the boats. This never came; so, as the night was passing, he waited no longer, but advanced on the lines. In so doing he routed a horde of cutlers and camp-followers, who fled across the works, spreading terror and confusion among the troops. These fled towards the bridge, which broke beneath their tumultuous passage. They fled, however, more quickly than they were pursued, for the English were delayed by the lines, the remains of which attest their passive strength. This gave Philip time to come up from his camp to rally and support his troops, and hastily to repair the bridge. The English were driven back.

Some hours after this, at the dawn of day, the flotilla appeared, having been delayed by the navigation. It was met by a force on either bank, and the bridge and towers were armed and ready. The flotilla came down in mid-stream, and the two leading boats struck the bridge; a sharp hand-to-hand fight took place, in the midst of which a heavy oak beam was flung upon the two boats, and sank them in front of the bridge. Upon this the rest took to their own, and retired up the stream, and two more were taken. The failure was complete, and showed the garrison that their reliance must be on themselves alone.

Philip now attacked the island fort. The stockade in advance of its ditch was burnt, and the fire spread to the fort itself, which surrendered, and was repaired and garrisoned at once by the French, now completely masters of the river and of either bank. Alarmed for their personal safety, the bourgeois of Little Andelys, to whom had been trusted the defence of their town, deserted their posts, and fled to the castle, where De Lacy was weak enough to admit them, 1,700 in number: a dangerous addition to a place of small area, and already fully garrisoned. Philip at once took possession of Andelys, the defences of which were very strong, re-peopled the town, and now, in August, 1203, commenced the actual siege of the castle. Leaving others to make preparations, Philip was compelled to absent himself to besiege Radepepe, a castle about five leagues distant, which he reduced in about three weeks, during which time De Lacy attacked Andelys, and a system of single combats was established between the knights of the two nations, who met to perform those feats of arms in the level space below the castle rock.

Philip returned in September, and winter being in prospect, and the period of service of many of his retainers reaching its close, he decided on a blockade. The first step towards effecting this was the formation of lines of contravallation round the west and south of the castle, from the Seine to the Andelys lake. They chiefly took the higher ground, and were out of shot. Besides the usual ditch, bank, and stockade, which composed every field-work, these were strengthened by seven large wooden towers, each with its special ditch and draw-bridge. The troops garrisoned these towers, and were lodged in wattled huts along the lines. On the top of the ridge, opposite the southern front of the castle, an open space was left unprotected by earthworks, in contemplation of a future attack. These preparations completed, Philip's person was less necessary, and he departed for the winter. The general course of these works may still be traced.

As the winter came on De Lacy's provisions began to fail, and he turned out 500 aged or infirm persons; and, soon afterwards, an equal number more. On hearing this, Philip ordered no more to be received; and in consequence, a further number of 400 persons put out of the castle were forced to remain in the open ditches exposed to wintry weather and great privations for three months. Very many died, and it was not until the return of Philip in February, 1204, that he allowed the survivors to be relieved.

February was the seventh month of the siege, and Philip, preparing for more active measures, took post upon the southern ridge in front of the salient of the outwork, and in the centre of his

own lines. Here he levelled a platform and opened a covered way towards the castle ditch. A wooden turret was then constructed upon four wheels, and pushed forward to the crest of the counterscarp. When there, it was raised, under cover of large shields, to three stories, so as to overtop the tower. Thus protected, the engineers commenced filling up the ditch. When this was partially done, stimulated by the king's presence, the soldiers jumped down, scrambled up the uncovered part of the scarp, and under a fire from the turret, which kept the battlements partially cleared, succeeded in applying miners to the foot of the tower.

An aperture was quickly made, and thus shelter obtained while the mine was dug, and the wall supported on wood props. These were then set on fire, and the miners withdrawn. In a short time a part of the tower fell. The cloud of dust was the signal for the assault; but the outwork being no longer tenable, De Lacy fired the building within it, and withdrew the garrison into the castle, for the defence of its outer ward, next to be attacked.

Philip proposed, under cover of the outwork, to renew his attack upon the curtain of the southern face of this ward; but in the meantime five resolute men, having observed a window in the wall to the south-west, in the buildings below the chapel, pushed up one of their number, who by aid of a cord drew up the remainder. Once in they gave the alarm. The garrison, uncertain what had occurred, blocked up the door of the building with fascines. These took fire, the flames spread, and so great was the confusion that the garrison, regarding the ward as lost, fled into the inner *enceinte*, while the assailants took refuge from the flames in the chambers within the chalk rock of the counterscarp of the inner ditch, and thence, as the flames somewhat subsided, they rushed out upon the gate, lowered the bridge, and admitted their friends. Thus Philip became master of all but the inner ward, the garrison of which was reduced to 180 fighting men.

The provision of Richard had placed the gates of the middle and inner ward at some little distance, laterally, from each other, and the space between the two wards was here far too narrow to allow of the setting up of an engine. Unfortunately, however, the inner ward gate had no drawbridge. The approach was over a causeway of rock, left when the ditch was cut, and by this causeway Philip at once decided to make his approaches. A "cat" was placed upon the causeway. This was a covered frame, under which two miners abreast were pushed forward to the base of the gate towers, which they proceeded to undermine. De Lacy at once sank a countermine; but Philip placed his most powerful engine at the root of the causeway, and flung his heavy stone missiles at the gate tower with such force, that, being weakened by the mining, at the third blow it came down, and with it a part of the adjacent wall.

De Lacy and his men were seen lining the breach; but the French, equally brave, had greatly the superiority in numbers. They rushed up, and so outnumbered and mixed themselves up with the garrison that these were unable to retire by the narrow exterior stairs to the donjon, and thus, with De Lacy, were taken prisoners, and with them fell the castle on the 6th of March, 1204. There was taken De Lacy himself, and with him 160 prisoners, including forty knights. So fell Château-Gaillard, and with it the English rule in Normandy. De Lacy was well treated, and certainly lost no military reputation by his defeat. Philip repaired and garrisoned the place at once, and the former so completely that, although the particulars are to be identified with great certainty in the earthworks, there is no trace of the ditch having been filled up, or of the main tower of the outworks having been injured by a mine such as that described.

The details of this siege, no less than its general conduct, show very considerable military skill, and the extent to which Middle-Age commanders had learned to apply the maxims of Roman war. Philip's approach by the opposite bank of the Seine, the care with which he fortified his rear, the pains he bestowed upon the communications between both parts of his army, are all steps which show consummate skill, and which a more impetuous and less able commander would have neglected for a direct attack. William Mareschal's attempt to raise the siege, considering the limited force at his disposal and the feeble and treacherous character of his sovereign, was well conceived; but no

doubt he should have known the risk attendant upon a joint attack by land and water, where all depended upon combined and simultaneous action.

Philip's conduct after the establishment of a safe base upon either side of the river was also able. Having thus, and by fortified lines of contravallation, secured his blockading force, he spared his own men and suffered the garrison to waste their resources by lying idle during the winter; and when, this force being thus weakened, he commenced his attack, he allowed no pause, but made one success the immediate step towards another. Looking at the great and still apparent strength of Château-Gaillard, it is difficult to understand how it could ever have been taken by storm.

With the siege of Philip Augustus ends the main interest of this castle. In 1261 St. Louis dated a charter thence. In 1314 it was the prison of Margaret and Blanch, the adulterous wives of Louis Hutin and Charles-le-Bel. Margaret died there in 1315, some say being strangled. Blanch survived for a longer period, and seems to have been kindly treated.

In 1334 King David of Scotland found an asylum here. In 1356 it was the prison of Charles the Bad, king of Navarre. Another Charles, afterwards Le Sage, was a visitor here in that same year. In 1413 Charles VI. reduced the wages of the governors.

In 1419, after the battle of Agincourt, the English besieged Château-Gaillard, which it took them sixteen months to reduce, and it is said that its surrender even then was due to the well-cords being worn out, so that the water was inaccessible,—a cause scarcely sufficient for the consequence, seeing that in so soft a rock steps could readily have been cut. The English then held it for twelve years. They were dislodged by escalade in 1431. Soon afterwards they again recovered it, but of these vicissitudes no particulars have been preserved, nor, unfortunately of their final loss of it in 1449, when Charles VII. in person laid siege to it, and by means of "bastilles," or wooden towers on the counterscarp took it in six weeks.

In 1591 the Leaguers held it, and rendered it to Henry Quatre in person. At the request of the States-General of Normandy it was then dismantled, all but the donjon. The battlements were taken off and part of the works blown up so as to render the place indefensible. In 1603 the Capuchin Monks of Great Andelys had a licence to remove timber, stone, and tiles from the ruins for their convent, and this destructive grant was extended to other orders. The donjon, however, was garrisoned until 1616, when Louis XIII. reduced the whole very nearly to its present condition.

It is thought that this is the earliest instance of a Norman machicolation, or rather of a Breton *châche* executed in stone.

Château-Gaillard has been fortunate in its historian and its illustrator. M. Deville's book on this building is not only an excellent history, of which what is given above is but an abridgement, but he has given plans of the building, which, if not strictly accurate, yet represent well its peculiar features. M. Viollet-le-Duc has made this castle the subject of parts of the articles "Siege," "Château," and "Donjon" in his Dictionary, and, although some of his restorations are only probable, his general account of the works is a masterpiece of military description.

The traveller who can afford to pause between Rouen and Paris will not regret the employment of four or five hours in a visit to Les Andelys and Château-Gaillard, or the purchase of the volume of M. Deville.

1867.

THE MANCHESTER TOWN-HALL COMPETITION.

ONE hundred and one of the preliminary designs, not selected, are now being publicly exhibited. To 78 of these (including four double sets) the names of their authors are appended. Amongst the competitors are seen to be Messrs. A. Billinge, John Robinson, Medland & Maberly, E. W. Pugin, T. Allom, W. H. Bleesley, J. Honeyman, C. S. Nelson, R. Reid, Ridge, E. B. Lamb, Mayhew & Calder, S. C. Frupp, James Hibbert, Hirst, H. S. Snell, J. B. Baddock, Finch Hill & Paraire, W. & G. Audsley, E. H. Carson, J. Pritchard, J. Moyr Smith, E. Godwin & Crisp, W. A. Moy, T. Roger Smith, Hayley & Dawes, &c.

* Mr. Giles adds; I think it a very bad and dangerous system for architects to have anything to do with "quantities."

THE GATESHEAD TOWN HALL
DESIGNS.

THE Town Hall Committee have reported that in accordance with the resolutions of the meeting of the Town Council, held on the 17th July last, specifications and detail drawings have been furnished by Messrs. John Johnstone & Thomas Oliver, and a specification and two drawings have also been furnished by Messrs. Austin & Johnson.

The Committee met on the 5th ult., and directed the specifications and detail drawings of the three designs to be referred to Messrs. Reed, with a request that they would state the total cost at which each design could be executed.

Mr. Reed stated that the total cost at which the designs of Messrs. Thomas Oliver & John Johnstone could be carried out might be ascertained for 50l., provided the Committee would also engage a competent person on their part to go through the designs with him. Mr. Reed also intimated that the two drawings sent in by Messrs. Austin & Johnson were not sufficiently in detail to enable him to state the total cost at which their design could be executed.

The Committee have engaged Mr. J. G. Brown, architect, Sunderland, to go through the specifications and drawings on their behalf, at a fixed remuneration of 50l.; and Messrs. Reed and Brown are actively proceeding with this work. The Committee requested the confirmation by the Council of the proceedings they had adopted in this matter, and their authority to pay to Messrs. Reed and Brown the sum of 50l. each, on the completion of their reports, &c., to the satisfaction of the Committee.

The Council passed the following resolution in connexion with the motion that the report be adopted:—"That the architects be invited to attend to give evidence on all occasions on which the estimates of the plans are being considered."

THE TRADES UNION INQUIRY AT
MANCHESTER.

OUR readers, who may remember the account we gave some time ago of a shameful strike against an architect in Manchester, will scarcely be surprised to learn how completely organized the system of tyranny and terrorism has been proved, by the evidence before the Commission, to be in the Manchester district. Were all the metropolitan burglars and murderers, thieves and fire-raiders to be invited into the witness-box as into a confessional, with the promise, on Government authority, of having all their sins pardoned unless they did not confess all, no more revolting or horrifying exposure of villainy could thus be obtained. The Manchester tribe of Thugs are far wiser in their generation than those of Sheffield. They have reduced their despotism to an elaborate system, with laws and regulations, under fearful penalties for infringement against all and every one who has the misfortune to come within the scope of their operations. And this is especially the case in certain branches of the building trades. The violence and plunder in the shape of broken bones and murder, fines and penalties, destruction of property, ruin in business, and so on, are not merely levelled against masters as a class, but against fellow-workmen. Non-unionists must not live, inasmuch as masters must not give them the means of life, either for themselves or their families,—in short, must not employ them at all; otherwise, both the master and his men know the certain consequences, which are of vital import to both. We spoke of one master having been ruined in his business "for life," and another for a stated number of years at Sheffield: that is nothing; in Manchester we have the principle carried out as a general rule.

A master bricklayer or brickmaker must only employ unionists, under certain stated penalties on both, ranging from 5l. to 50l. on the master, according to circumstances; and it is well with him if he has not property destroyed beyond what that amount besides, or his business stopped altogether. If he dare to complain of bad work he is fined 5l., and will be, over and over again, and compelled to pay it, too, or to suffer something worse, unless, as he is often obliged to do, he stop work altogether. The making of bricks by machinery is strictly prohibited. The bricklayers, by a special treaty with the brickmakers, have refused to lay machine-made bricks, and the brickmakers refuse to supply hand-made bricks to masters who use those made by the

machine. Moreover, the machines are destroyed. And all this is done, although it is almost universally admitted, and is undeniable with any truth, that "machine-made bricks are better and cheaper than hand-made, and would supersede them in an open market." Bricks must not even be transferred from one district to another: none but Manchester bricks must be used in Manchester district. One would almost suppose that the stupid brutes who inflict the penalties for infringing such rules bear malice against the horses used on such occasions, because they are not unionists. Hamstringing the horses is a mild mode of punishing both them and their masters, and so is cruel violence to the carters. The executioners of the decrees will even torture a horse to death for doing his work: they will tie it up by the head, apply shavings to its belly, and set it on fire, keeping up the fire for a couple of hours till it is burnt to death!! Was anything so abominable ever done in all the devilry of the first French Revolution? Never. Yet this has been done by the trades unionists of Manchester.

EXHIBITIONS.

It is proposed to hold another International Working Men's Industrial Exhibition next year in the Agricultural Hall, Islington, if the hall can be obtained for the purpose. A meeting to promote the object in view has been held in the King Edward Tavern, Liverpool-road, and there a public meeting was resolved on, to be held in St. Pancras Vestry-hall, on Monday evening next. Mr. McCullagh Torrens, M.P. for Finsbury, is to be requested to take the chair.

The Eastern Counties Working Men's Industrial Exhibition, at Norwich, has been closed, after being open daily for six weeks. It has been successful. The receipts amounted to upwards of 900l. The average weekly attendance amounted to upwards of 10,000 persons. This satisfactory result is attributed to several causes,—first, perhaps, to the novelty of the undertaking; next, to the creditable character of the exhibition itself; and lastly, to the way in which the committee have discharged the duty of management, and provided for the amusement as well as the instruction of the visitors, in the musical programmes which they have weekly issued. The various bands and musical societies of the city also came forward and gratuitously gave their services to the committee. The prizes will be distributed on the 5th of November, in St. Andrew's Hall, under the presidency of the mayor. Some of the articles exhibited are to be sold by auction.

CONTINENTAL NEWS.

Brussels.—Immediately after the death of the late lamented King of the Belgians subscriptions were set on foot throughout the country for the purpose of erecting a fitting monument to his memory, and contributions were at once forthcoming for so laudable an end. The amount collected in this manner now amounts to 252,705 francs, to which must be added 200,000 francs from his present Majesty, 50,000 francs from the Count of Flanders, and 1,000,000 francs from the State, making a total of upwards of 62,000l. A recent decree of the Minister of the Interior and of Public Works determines the form the memorial shall take. A large public park is to be laid out at Laeken, and will contain a special monumental structure (the form of which, however, has yet to be decided) to the late king's memory. It will stand immediately opposite the castle, and near the church erected to the memory of Queen Louise Maria. The park will be a great acquisition to the environs on that side of the capital, and will include drainage and other improvements much wanted in that low-lying neighbourhood.

Cologne.—The Domban Society has just celebrated the twenty-fifth anniversary of its creation, and the proceedings were the more interesting as the Crown Prince of Prussia was present, and also because the top stone of the beautiful and elaborate gable over the western porch—between the two towers—was laid with due ceremony on that occasion. His royal highness concluded his answer to the address presented to him with the following words:—"With joy and pride I am amongst you this day, for I have fresh proofs of what German industry,

German strength, and German endurance have brought about in a few years; and these mighty walls, which have risen in mensely within the last twenty-five years, should be to us a symbol of the great step our fatherland has but lately taken. Let us continue together with iron steadfastness of purpose to finish this work even to its last stone, and let us not rest until the colossal towers shall proclaim in farthest distance the glory of the German name."

Dresden.—The committee appointed to award the prizes for designs for the new Academy of Arts, to be erected in that city, has just published its award. Messrs. Viehweger & Peritz, of Leipzig, obtain the first prize; Mr. Lipsius, of Leipzig, the second; and Messrs. Rossbach & Rumpel, of Dresden, the third. A fourth design, motto, "Art is regal," received honourable mention.

Hamburg.—The authorities here have published an order fixing the size of common bricks, said order to take force on the 1st of July next. We mention this unimportant fact because the dimensions seem so curiously chosen, namely, $9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$. In the south of Germany, where the decimal system is daily gaining ground, the dimensions are $10 \times 5 \times 2\frac{1}{2}$, which seems a readier proportion, though, doubtless, in the above figures due allowance is made for joints.

SANITARY MATTERS.

Worcester.—Dr. Lankester lately delivered a lecture in the Guildhall, at the request of the United Vestries' Sanitary Committee, upon sanitary arrangements as they affect the health and mortality of the people. There was a poor attendance. The lecturer urged in a forcible way the importance of good sanitary arrangements to health, and recommended the appointment of an officer of health. The still defective state of the local drainage was adverted to, and the amount of the mortality of the city, which was said to be 27 per 1,000 of the population, declared to be more than it ought to be. The local *Chronicle* in reference to this point remarks in a leading article on the subject of the lecture, that in October, 1849, the mortality was 25 per 1,000; that since that time, 60,000l. have been expended on the drainage; and hints, therefore, that sanitary improvement is worse than useless. The argument reminds us of more than one somewhat similar case. After the drain-ge of Croydon, for example, had been effected, it was found, to the perplexity and mortification of those interested, that a very serious increase of mortality took place, with typhoid fever prevalent. Croakers against sanitary improvement had it all their own way for a little, but it was soon discovered that from defective arrangements connected with the drainage, sewer gases got into the houses and rendered them more unhealthy than they were before the drainage had been carried out. This defect in the drainage being remedied and other sanitary progress made, Croydon became far more healthy than it had formerly been, and now it is regarded as one of our most healthy towns, and a proof of the benefit of sanitary improvement. We do not mean to say that the defect in the drainage of Worcester is precisely of the same nature; but this and other cases go to show that the 60,000l. expended are not worse than useless as regards the local health, and that a little further expenditure is probably requisite before the original outlay will yield all the profit it is capable of conferring on Worcester. The writer of the leader referred to says:—

"The public are entitled to know exactly what are the points of detail in which the sewerage is pronounced to be shortcoming, and what is the exact nature of the deficiency in Worcester sanitary arrangements. If these particulars be not supplied, they will be tempted to regard the alarm so lustily rung by Dr. Lankester, at the instance of the united vestries,—an alarm recommended for the purpose, as mere empty thunder, meant to terrify them into the appointment of an officer of health off-hand, the parasites of a certain class of philosophers, who have got hold of the seal of science by the tail, for all the ill that flesh is heir to."

What is the exact nature of the deficiency or shortcoming in the sewerage details and sanitary arrangements, it appears to us, was just what Dr. Lankester urged should be discovered and remedied for behoof of the public, and in order that all possible benefit might be derived from the work already done and the money already expended; but it appears, to apply a somewhat vulgar but expressive axiom to the objector's figure of speech as to the owl and its tail, as if he willingly ate the owl but felt inclined to choke

upon the tail. Such a line of argument as this writer's is not creditable to any respectable and well-conducted journal such as many years' weekly acquaintance with it assures us the *Worcester Chronicle* is. Moreover, the editor has since discovered that both the writer of his article and Dr. Lankester were wrong: the mortality is now only 234—not 28; but even that requires a further reduction.

Maidenhead.—A Government inquiry has been made here, respecting the sanitary state of the town, before Mr. Arnold Taylor, the Government inspector. Some of those in authority were evidently inclined to throw obstacles in the way of the inquiry; and one of them, Mr. Baker Smith, barrister, who appeared on the part of the local Board, or rather of the Mayor without the authority of the Board, applied the *argumentum ad hominem* to one of the complainants, Mr. Hibbert, who Mr. Smith said was "the very personation of health," and a very fitting and proper personation too in one of those who desired to confer similar health upon the whole town. But Mr. Baker Smith's peculiar ideas on sanitary subjects may be gathered from the fact that he called a witness to prove that his hay-makers drank the water of a stinking ditch complained of, but lately cleaned out, in preference to so much beer (being a good deal stronger, we suppose), and that he had had some that morning and it was very good. The result of the inquiry was that the inspector intimated that if the local Board satisfied the Secretary of State that they were really going to work, the matter might not be pressed further. At a recent meeting of the local Board of Health, the surveyor reported that he had seen Mr. Bird, respecting plans for the drainage, and if he were appointed to do the work he could work with the present plans, but could not lay down new plans with other persons' levels. Mr. Bird's terms for making the necessary plans and superintending the works would be 5 per cent. on the first 2,000*l.* and 2½ per cent. on the remainder. Mr. Bird would be willing to let the payment for the works be spread over some years. The following resolution was carried:—"That this Board sanctions Mr. Bird doing the work at a schedule of prices to be submitted to a committee, and that a committee of the Board be formed who are favourable to the said plan, viz., to draw off all sink and waste water from houses and manufactories, to carry it out." A committee was then formed.

Canterbury.—The directors of the Canterbury Gas and Water Company having reported to their shareholders that they strongly recommend the adoption of Mr. Homersham's plan of water supply from a well in Winchelsea in preference to Mr. Filbrow's from Silverhole, or from Miller's field, the shareholders have adopted the report of the directors, and empowered them to raise 17,000*l.* for the purpose in 10*l.* shares.

DRAINAGE OF TOWNS IN THE THAMES VALLEY.

UNDER this title two members of local Boards, Windsor and Eton, and who are also medical men, have addressed a communication to members of local Boards generally, setting forth the difficulty they find in determining on the best system of drainage for their respective districts.

"There appear to us," they say, "to be three systems of drainage worthy of special consideration, either on account of their intrinsic excellence, or of the sanitary engineers who advocate them—

1st. That in which the whole of the sewage and rainfall of a district is conveyed by one set of sewers to a given point.

2nd. That in which the sewage and a portion of the rainfall is conveyed by sewers to one outlet, whilst the remainder of the rainfall is carried away in a composite manner to the nearest watercourse.

3rd. That in which the sewage and the rainfall are kept perfectly distinct, and each conveyed away by itself—the sewage to a given outlet, and the rainfall to the nearest watercourse.

The first system is that which has hitherto been in general use, wherever a town has been able to discharge its drainage into a river or into the sea. The whole of the rainfall, as well as the whole of the rainfall from the houses, streets, yards, &c., and the subsoil water, is conveyed by one channel to a given outlet. This resembles the system upon which Windsor and Eton have been drained, and upon which the drainage of London itself is now being completed.

It appears to us to require no great engineering skill to see that, to pump all this uncertain quantity of matter on to land for irrigation purposes, is simply impracticable, and a very questionable one as an agricultural experiment; for, at the very times when the soil would least require irrigating, then the supply would be most abundant, and must be poured on the ground. The profit or loss in this ultimate disposal of the sewage is quite as much a matter for consideration as the expense incurred in the actual draining in the town itself. The subsoil of the towns in the Thames Valley in flood time is in direct com-

munication with the bed of the river; so that the faster the pumps acted at one end of the drain, the faster would the water pour in at the other, and along the whole line: in fact, it would be pumping the river itself, and the subsoil would be none the drier for the process. The river also, at the same time, would rise and bring back the water upon the engine, unless there were a valve and dam to the river out. The rain, also, would be pouring off the roofs of the houses in the night-time as well as in the day, so that it would appear impossible that this system should help us out of our troubles."

After discussing the first and second systems they set forth the third, in which the drainage and rainfall are kept distinct from first to last. They incline to this:—

"We went lately with several other members of our local boards to inspect the asylum and adjoining buildings at Broadmoor, where this plan was carried out in accordance with Mr. Monzie's instructions, and under his supervision from first to last. The area of the roofs, as ascertained, was 2½ acres; the area of the site of the buildings about 17 acres; the population varying from 600 to 800, but arrangements made for an increase to 1,000. Here we found the rain-water off the roofs all saved for washing purposes; the surface water discharged into the nearest ditch, and all the foul drainage conducted by itself, filtered, and applied to about 15 acres of land for utilization. One part of this land was planted with Italian rye grass, the third crop of which was then in cut. This we were informed was given to the cattle, and they take it eagerly, and are in good condition; the cows fed on it give an excellent supply of milk, and this is used in the establishment. Another portion of the land was planted with turnips and oats, but not irrigated this year; and a third portion of the land was laid out as garden ground. Here the appearance of the different vegetables and fruit was perfectly astonishing; everything looked so fresh, healthy, and clean. The contrast presented by this garden to the surrounding heathy and barren district was most striking, and certainly most encouraging. The man who attended to the irrigation told us he had not had a day's illness since he had been so occupied. What struck us most was the extreme regularity and economy of the system; one man attending to the whole process. We visited the point where the drainage is ultimately discharged into a brook, and took notice of the water as it passed from the drain: this to the taste, smell, and sight, was not to be distinguished from ordinary spring water."

They want further advice. They do not understand, they say, the recommendation of the Rivers Commissioners (though its meaning seems to us quite clear), and they ask for a committee of members of Parliament, or some such non-professional body, to assist local Boards. If engineers cannot yet quite settle the question, we can scarcely expect a solution of it from amateurs.

SEWAGE IRRIGATION AND WATER SUPPLY.

SIR,—I suggest that sewage irrigation should be carried on under cover of a glass roof over an inclosed space, and that the sewage should also, when expedient, be heated before it is applied to the land. By this means a less area of land would suffice for the sewage. The sewage might be preferably distributed under the surface, for by that method the noxious gases would be absorbed by the dry earth. By the exclusion of rain-water the earth would receive a certain more sewage. By maintaining a high temperature the growth of vegetables would be more rapid, and, therefore, more sewage would be used. In, and above the said vegetables, fruits, and flowers might be forced and sent back to the producers of the sewage. The rain-water falling on the glass roof might be collected in reservoirs and sent on to the towns below, instead of, as now, sending them sewage. The plan of construction might be very simple. Any sized piece of land might be covered with a glazed roof, about 6 ft. from the surface of the land, supported on gutters in rows, about 10 ft. apart, and these gutters supported on hollow pillars standing in a water channel. The rain-water falling on sections of the roof would flow along the gutters down the hollow pillars and along the channels to the reservoir. The plan provides for the growth of forced vegetables, and for a supply of rain-water. For the provision of any one of these alone, perhaps the outlay might be profitable.

J. WHITE.

POULTRY FARM.

SIR,—I am about establishing a poultry farm. Can any of your correspondents inform me where any are to be seen in working, the best books on the subject, and what number of fowls are calculated at per acre?

ROOSTER.

CONCRETE HOUSES AND THE BUILDING ACT.

SIR,—Referring to the letter inserted in the last number of the *Builder*, I beg to state, for the information of your correspondent, who proposes to erect concrete cottages, that about eighteen months since I felt it my duty as district surveyor to object to the erection of concrete walls to houses; and my reason for doing so was this:—After giving the matter my most careful consideration, I came to the conclusion that the rules in the Building Act, defining the construction and thickness of walls did not apply to or include the particular kind of concrete walls described as intended to be built. For although in "Clause I, 1st Schedule, Preliminary," mention is made of "other hard and incombustible substances," yet this clause, taken in connexion with the next, "shall be properly bonded and solidly put together," I think prevents the district surveyor from allowing the erection of such concrete walls as were proposed to be built; that is, of materials mixed in a particular manner, to be held together by means of long boards, or iron plates, fixed on

both sides of the wall until the concrete had set. When done, such walls could not be said "to be properly bonded," having regard to the strict technical meaning of the word "bonded." At the same time, believing the Metropolitan Board had power to deal with this case pursuant to sec. 56, part I, of the Building Acts, I accompanied my objection with a recommendation to the builder to make application to the Board on the subject. I understood the builder did so apply; and as the houses have not been built, I conclude the Metropolitan Board refused their consent. This, however, could be easily ascertained by applying at the office of the Board.

HARVEY LARIVE, District Surveyor of Camberwell.

* * We remain of our opinion that the construction of concrete houses is not prevented by the Metropolitan Building Act. It is desirable that the matter should be at once authoritatively settled. The Board of Works have the matter now before them.

PHOTOGRAPH OF THE VICTORIA TOWER.

MR. STEPHEN ATYING has produced a very remarkable photograph of the Victoria Tower, Westminster. It is taken from a height about level with the roof of the Royal Gallery, and shows the tower from the bottom to the top, and the adjacent portion of the building below. The tower is perfectly upright, and all the detail comes out with wonderful sharpness; it is, in short, a marvellous work. Lambeth Palace, faintly delineated, is seen on the other side of the river. The size of the photograph is 2½ in. by 16½ in.

HOUSE-AGENTS' CHARGES.

At the Warwick County Court the Deputy Judge read the following judgment by Mr. F. Dmdeale, in the case of Wildigg and Brown v. Leech, which was heard at the last Court:—"This action is brought to recover 15*l.*, under the following circumstances. In the year 1866, the plaintiff, who are house agents at Leamington, were employed by the defendant to procure a tenant for the defendant's house and premises in Leamington, called Spitaland Villa. They introduced to him Mr. John Wackrell, who took the premises under a written agreement bearing date July 16th, 1866. The tenancy was to be from August 12th, 1866, to March 25th, 1867, and for three years next ensuing the latter day, and defendant paid to plaintiff the sum of 4*l.* 10*s.* as their commission on such letting. On settling the terms of the agreement, Mr. Wackrell appears to have required the insertion of a clause giving him the option during the continuance of the tenancy of purchasing the premises for the sum of 700*l.*, to which the defendant reluctantly assented, and on which Mr. Wackrell has elected to purchase the property, whereupon the plaintiff, relying upon an alleged custom of their business, claim the sum of 17*l.* 10*s.* as their commission on a sale, at the same time giving him credit for the sum of 4*l.* 10*s.* the commission on the letting previously paid to the defendant. Now, there is no question that, if in the language of Chitty, there be an unvarying, certain, and general usage or custom of any particular class of persons contracting with members of such trade upon a matter to which such usage or custom has reference, are bound by it, whether they have knowledge of such usage or not; but it is incumbent on the plaintiff to prove the existence of a custom to prove its evidence to the satisfaction of the Court clearly and undisturbedly. That the plaintiffs have this case failed to do. Having regard to the evidence of Mr. Cookes on cross-examination, and the direct testimony of Mr. Hawkes, it is impossible for me to find that the plaintiffs have proved the custom they rely upon to entitle them to my judgment. I therefore direct judgment to be entered for the defendant." Mr. Owen, who appeared for the defendant, applied for costs, which were allowed.

FALL OF A CHIMNEY IN NEWCASTLE.

A SERIOUS accident has happened in Onseburn, Newcastle, resulting in the death of one person, the injury of another, and the destruction of a very considerable amount of property. The place of the catastrophe was Mr. C. T. Maling's Ford pottery, Onseburn. The accident was the fall of a chimney, or shaft, 100 ft. in height, upon a mill, in which many persons were engaged in the grinding of flint, and manufacture of jars and other articles used by makers of marmalade and jams. Recently, Mr. Maling has been improving his premises; the flint mill, formerly of two stories, having been raised by another floor. This extension has been carried out during the past three or four months. The foundations of the shaft had been laid 30 ft. below the ground, and were of stone. The proposed work had been approved by Mr. Bryson, the borough surveyor, at the time, and even more precautions, it is said, had been taken to render the work more substantial than he had thought necessary. The chimney was about 8 ft. square, and had reached its full height—100 ft.—the last stone being about to be placed on the summit. The brick-work of the chimney was about 18 in. in thickness. The lightning conductor would have been fixed probably in a day or two. The damage, it is said, will amount to some 2,000*l.* or 3,000*l.* The chimney, it is suspected, fell through some

sinking or defect in the foundation. A cause of weakness has been suggested by some, that the chimney had not yet been tied by iron bands. The old chimney, which was to have been removed on the completion of the new, possessed bands which, it is said, were intended to be used hereafter for securing the new chimney. The demolition was so complete that scarcely a single instance occurred where two bricks were found adhering to each other. It was also observed after the accident that the mortar used was not dry, even towards the base.

PARTNERSHIP OF INDUSTRY.

A *réunion*, in Whitwood, Yorkshire, of a suggestive kind, has taken place. It was a *soirée* in commemoration of the conversion of the collieries of Messrs. Henry Briggs & Sons, at Whitworth and Methley, into a partnership concern, in which the workers have an interest, and a bonus is paid yearly to every labourer, in proportion to his wages and the success achieved. Up to two years ago the proprietors had constant disputes with their workpeople, and, as a consequence, the success of the firm was small, and the dividends by no means satisfactory. The proprietors formed a company, on the limited principle, in which the workmen are allowed to have shares, and after a fixed dividend has been paid upon the capital the remainder of the profit, provided there is any, is divided amongst all interested, including those labourers who have no pecuniary stake in it. The *soirée* was attended by 1,800 persons, all in some way interested in the colliery. The chairman said that they had been able to divide a large sum amongst their operatives. Last year it was 1,800*l.*, now it was 2,700*l.* He believed that they would continue to prosper, and that the operatives would improve in their character for steadiness, thrift, and sobriety, as they had already done. Mr. Hughes, M.P., congratulated the meeting on the great success of the concern during the past year. Both those who advanced the money, and those who worked in the collieries, being pleased with the results of their year's labours, this, he remarked, was a strong proof that they were in the right road, not only to success, but to something higher than any mere money success could bring.

PROVINCIAL NEWS.

Reigate.—The copyholders of the manor of Reigate have agreed to give up to the Corporation sixty-three acres of land on Earlewood-common conditionally, on the purchase by the Council of the sixteen acres of land formerly bought by the Government for the purpose of building thereon a military hospital, to be laid out as a recreation-ground for the people. The Council thus secure a pleasure-ground, and at Earlewood a place in which to dispose by irrigation of the sewage which the new drainage works will take from Warwick Town, and both at a comparatively small cost.

Bristol.—The contract for the new drawbridge at the bottom of Clare-street (or rather for the ironwork of it) has been obtained by Messrs. Finch & Heath, of Chepstow. Their estimate is 1,590*l.* The bridge is to be completed in about three months.—The new Colston's Hall, St. Augustine's, which has been in the course of erection for the last four years, is now completed. The portion finished forms only a part of the original design: it is said to have cost 25,000*l.*, and that 15,000*l.* more will be required to complete the plan. The new hall is 150 ft. long, 80 ft. wide, 70 ft. high, and will accommodate 3,000 persons. The capitals of the freestone columns, the window and door frames, &c., are carved; the ceiling is ornamented with panelings, and a cornice runs round the room. The orchestra will hold 400 performers, and space is left in it for a large organ. The spandrels over the arches are to be enriched with medallion portraits of celebrated Bristol citizens. Two are already occupied with busts of Mr. Geo. Thomas and Mr. Conrad Finzel. The hall is lighted with fourteen large semicircular windows of coloured glass. The chandeliers are of Mediaeval pattern brass work, painted chocolate and gold. Provision has been made for heating and ventilating the hall.

Lancaster.—A site for an asylum at Lancaster for the idiots and imbeciles of the northern

counties has been obtained, comprising 67 acres of land, and the buildings—capable of accommodating 500 patients—are now in course of erection. Nearly 40,000*l.* have been obtained, and 20,000*l.* more are required to complete the buildings and fit them for the reception of patients. Vigorous steps are being taken to realize the requisite sum, and a committee has been appointed to obtain subscriptions.

Bradford.—The foundation stone has been laid of a Tradesmen's Home, auxiliary to the Tradesmen's Benevolent Institution. The work of erecting the cluster of dwellings which are to be known by this designation has formally commenced. The site of the Home is a field at Lillycroft. The Home will consist, when finished, of thirty houses, placed so as to form three sides of a quadrangle, of which the length is about 105 yards and the width 33 yards, open towards the south. In the centre of the longest side of the square is a reading-room, 21 yards long and 10 yards wide, with an open timber roof and apsidal end. This room is intended for the recreation of the inmates of the Home. Each of the houses contains a parlour, living-room, pantry, coal-place, and outbuildings on the ground-floor, and two bed-rooms above; and as each of them has also a separate back-yard and doors at front and back, the occupant of each will be quite independent of his neighbour. The erections are to be entirely of stone, and the roofs will be covered with Taylor's patent tiling. Pointed architecture has been selected for the style of building. The windows have no mullions, however, and a domestic character pervades the whole of the structure and fittings. The contractors are Mr. Richard Crabtree, mason; Messrs. John Ires & Son, of Shipley, joiners; Mr. John Tatterson, glazier; Mr. Samuel Ullathorne, plumber; Mr. Thomas Hargreaves, plasterer; and Messrs. Brown & Pullan, painters, all of Bradford. The Home will be erected from the designs and under the superintendence of Messrs. Milnes & France, architects.

Yarmouth (Isle of Wight).—By the plans of the Bouldnor estate, it is intended to erect a large number of fashionable villas and lodging-houses, and a church is to be built in the centre of the estate. A pier is to be made to run out a long distance northward into the sea, for the accommodation of yachts and steamboats visiting the new town which is now about to spring up. In addition to this an esplanade along the seaside is to be made, besides new roads and pleasant walks which are to be laid out, to afford every convenience and accommodation to the residents and visitors. The surveyors are already engaged marking out the roads and plots for the various erections. 100 men, it is said, will shortly be employed on the works. Bouldnor is situated about one mile from Yarmouth. It is well timbered, and has a pleasant view of the Solent, ranging from Hurst Fortifications to Spithead. At Yarmouth itself there is ample room for improvement, and other lands, situated between Yarmouth and Bouldnor, are offered for disposal on building leases, one villa having already been built and another partly finished.

Overstrand.—The old church having fallen into ruin, and being very insufficient for the accommodation of the parishioners, Mr. J. H. Gurney, some time ago, originated the intention of building a new one. This, after a delay of two or three years, has now been accomplished, and a small church has been completed by Mr. E. Cornish, of North Walsham, as contractor; Mr. A. Salvin, of London, being the architect.

STATUES AND MONUMENTS.

The first of the statues to be placed in the vacant niches in the west front of Salisbury Cathedral has been fixed. It is the statue of Christ holding a globe, and is 7 ft. high.

A huge block of stone is being removed from the quarry of Messrs. Townshend, at Moscar, near Ashopton, to Heeley Churchyard. The stone, it is calculated, weighs over 20 tons, and it is intended to be erected, after suitable dressing, over the tomb of the late Mrs. Shortridge. The process of removing so vast a block has been a work of great difficulty. After the lapse of ten days since the work of removal commenced, the stone had only reached the neighbourhood of Rivelin Bridge. Day by day thirty horses had been struggling with the work of drawing it—the roller on which it rests weighing in itself 6 tons.

The group of sculpture executed in Paris, from designs by Rosa Bonheur, representing a tigress bringing food to her cubs, and presented to the city of Glasgow by Mr. Kennedy, of New York, has been formally uncovered on its site in the lower level of the West-end Park. After the ceremony of unveiling the party adjourned to Kelvin Grove House, where wine and cake were served, and various toasts were given appropriate to the occasion.

CHURCH-BUILDING NEWS.

Highway.—The little church of Highway, which has been completely rebuilt at the sole expense of the Hon. and Ven. Archdeacon Harris, the incumbent, has been consecrated by the Bishop of Salisbury. Highway is situated immediately beneath the downs, between the villages of Compton Bassett and Clyffe Pypard. Mr. Butterfield was the architect, and the builders were Messrs. Rostall & Cox, of Bisley, Gloucestershire; the clerk of the works, Mr. Knight.

Amberley.—The chapel of ease here has been re-opened for divine service. The restorations have been projected and carried out entirely at the expense of Lady Lindsay. They consist of new roofs to the nave, chancel, and porch; a repair of the masonry of the fabric, new floors, open sittings, pulpit, font, lectern, and stalls. A screen has been reproduced from the discovered fragments of the ancient one, and set up in the original position; and new bells have been mounted in the cote. The church-yard will be levelled and inclosed with a fence. The work has been carried out from the designs and under the superintendence of Mr. Thomas Nicholson, of Hereford, diocesan architect.

Chigwell.—The new Church of All Saints, Chigwell-row, erected upon ground recently inclosed from Hainault Forest, has been consecrated by the Bishop of Rochester. Chigwell-row is a scattered hamlet of the parish of Chigwell, situated on very high ground overlooking the valley of the Thames, and commanding views of Hainault and Epping Forest; and the site of the new church is almost immediately opposite the Maypole Inn, which village tradition points to as the identical old Maypole immortalised in "Barnaby Rudge." The new building as it at present stands comprises a nave 73 ft. long by 22 ft. 6 in. wide, and 50 ft. high, having an arcade of four bays and lean-to aisle on each side. Along the whole width of the west body of the nave is an open lean-to porch, with three arches in red stone, columns, and carved capitals. A tower and spire, which will rise to the height of 150 ft., is intended to be built hereafter; and the erection of the chancel, with its transepted aisles, is also postponed. All the walls are 3 ft. thick. Moulded arches of freestone, borne upon circular columns, with carved capitals, support the clearstory, the windows of each bay of which are a group of large cusped circular openings, with two small lancet windows, one on each side. Internally two red Mansfield columns support their triple near arches, while above, from a deep moulded cornice, springs the arched boarded ceiling under arch-roofed braces. This is divided by moulded ribs, and is intended to be painted hereafter. A large rose window forms the principal feature of the west end. The style of the church is Early Gothic. The designs were by Mr. J. Seddon, of London. The builder was Mr. Thos. Williams, of Canton, near Cardiff. The carving was by Messrs. E. Clarke & Son, and the glass-work by Messrs. Clayton & Bell. The building is in brickwork, faced with Godalming stone, with Bath stone dressings, and it will accommodate 300 persons. The cost, so far as the work at present goes, is about 4,000*l.*, which is only half the estimated cost of the entire fabric. The parsonage-house, commenced at the same time, is sufficiently near to the church to group with it. The cost of the parsonage is 2,300*l.*, and it is proposed to add hereafter stabling, nursery, and lawn. An organ, built by Bryceson, of London, has been placed in the church.

Heytesbury.—The church of Heytesbury has been re-opened after restoration and enlargement at a cost of about 5,000*l.* The pillars of the nave had fallen much out of the perpendicular, and they have been rebuilt. The tower has been repaired, and the eastern arch has been widened. Some Early English arches and columns, which had long been hidden behind the plaster of the walls of the chancel, have been opened and

repaired, and the side aisles which formerly existed have been rebuilt, and the high pitch of the original roof restored. The galleries, one of which blocked up the arch of the nave, and entirely separated the chancel and transepts from the rest of the edifice, have been pulled down, and the whole of the church has been reset, whereby there has been a great increase of accommodation and a gain of many free sittings. The west window of the nave, which was given by the Hon. Miss à-Court, is in the Perpendicular style, and is filled with glass of old pattern, with coloured borders. The nave is paved with Peake's Staffordshire tiles, and the seats are of deal stained with imitation walnut capping. The roof of the nave is coned with moulded ribs. The tower rises at the junction of the cross, and stands on four arches supported by piers. The eastern arch has been widened and the piers rebuilt. The window in the south transept is filled with stained glass, the expense of which was defrayed by money collected by Lady Heytesbury. The subjects in the window are St. Peter and St. Paul, with the Saviour, St. Gabriel, St. Michael, and St. Raphael. The north transept, which was formerly the burial place of the à-Courts, has been fitted with seats for Lord Heytesbury and his family, the remains of the dead having been removed into the churchyard. The stained glass window in this transept was given by the Hon. Mrs. Daly. It has figures of Abraham, Isaac, Jacob, and Melchisedec. The chancel is Early English in style, and consists of three bays. The columns and arches, which were formerly hidden, have been restored, and new aisles have been added. The old roof has been replaced by a new open roof, which has been raised to the former pitch. The walls of the church are inlaid with Minton's coloured tiles. The arcade at the east end is supported by Purbeck marble shafts, and the reredos is inlaid with coloured tiles. The east window is a single lancet, forming a triplet inside. It is filled with stained glass, the cost of which was borne by Lady Heytesbury. The subjects are the Nativity, the Crucifixion, and the Resurrection. The chancel is paved with Minton's encaustic tiles, with interlaced stone bands. All the fittings of the chancel are of oak and walnut. There are four windows of stained glass in the chancel, the gift of Mrs. à-Court Kepington, the Rev. Prebendary Fane, and the Rev. Hyde Readon. The figures in the window represent John the Baptist, Isaiah, Jeremiah, Ezekiel, and Daniel. The restorations have been effected from designs by Mr. Butterfield; Mr. Strong, of Westminster, being the contractor; and Mr. Burdett clerk of the works. The woodwork was executed by Messrs. Searchfield, of Heytesbury; and the stained glass windows are by Mr. Gibbs.

Nichol Forest.—The small church of Nichol Forest, which has been erected at Kingfield, to supersede the damp and inconvenient chapel of ease, which formerly existed there, has been consecrated by the Bishop of Carlisle, and opened for divine service. The undertaking has been accomplished chiefly through the instrumentality of Mr. Ewart, of Kingfield; the total cost of the building, including the churchyard wall, having been about 1,700l. Nearly all the resident landowners and farmers, in addition to their subscriptions, contributed to a very large saving of expense by arranging among themselves to cart all the building materials. The site of the new building is near that on which the old chapel stood. The architecture is Geometric Gothic, and the edifice consists of a nave 50 ft. by 21 ft., and transept 12 ft. by 8 ft., an apsidal chancel 20 ft. by 15 ft., and a south porch and vestry. Sittings are provided for about 220, and the church is so planned that a considerable number of sittings can be added at a future time, should the requirements of the district render it necessary. The five chancel lights and the three west windows are to be filled with stained glass, by Mr. John Scott, of Carlisle. Three of these lights are already fixed, and the remainder will be completed this autumn. In the centre light of the chancel is a representation of our Saviour as the Good Shepherd, having on either side figures of the Evangelists St. Mark and St. Luke, with their appropriate emblems in the tracery; and the two other Evangelists are to be added. The walls of the church have been constructed of stone from the Fairloan's quarry, near Riccarton, and roofed with blue Bangor slate, with out bands of purple. The whole of the aisles are laid with tiles in three colours, and a cornice of tiles is carried round the internal walls. The roof is boarded inside, the boards being laid

diagonally, and is stained and varnished. The seating is of yellow pine. The architect was Mr. Graham, of London. The builders were Messrs. C. & J. Armstrong, of Carlisle.

Woolby.—The church of the parish church of Woolby, Herefordshire, has been lately restored at the cost of the vicar, the Rev. J. B. Peploe. The restoration consists of stripping the plastering from the internal dressed stonework, replastering the walls between the same, restoring the masonry of the windows inside and out, removing the whitewash, and pointing down all external walls. The old plaster ceilings have also been taken down, and a new open timber roof, boarded above the rafter, set up in its place. The chancel has been paved with Godwin's encaustic tiles. The work has been carried out from the designs, and under the superintendence, of Mr. Nicholson, of Hereford, the diocesan architect.

STAINED GLASS.

Edenham Church (Lincolnshire).—Three stained-glass windows, executed by Messrs. Thos. Baillie & Co., of London, have just been erected in the north aisle of this ancient edifice by the tenants and friends on the Grimsthorpe estate, as a memorial of the late Lord and Lady Willoughby d'Eresby. The windows are complete, with tracery lights, and are divided in the centre by stone transoms, so that there are four openings in each window. Commencing from the west end of the aisle, the first window contains in the tracery the arms of Lord Willoughby d'Eresby surmounted by the baron's coronet, &c. In the dexter upper opening is the figure of St. Paul, with sword; below which is represented St. Paul in prison, dictating to St. Luke the "acts of the Apostles." In the sinister upper opening is figured St. Peter, with keys; below which is shown St. Peter's Release from Prison by the Angel. In the next or centre window tracery are shown the arms, quarterly, of Lord and Lady Willoughby, surmounted with their respective crests. In the dexter upper opening is the figure of St. Matthew, with pen and Gospel; below which is shown St. John the Baptist preaching in the Wilderness, and the command, "Prepare ye the way" (St. Luke iii. 4). In the sinister opening is the figure of St. Mark, with pen and volume; and below is represented our Saviour raising Jairus's daughter. In the tracery lights of the third window eastward are the arms, &c., of Lady Willoughby (Drummond). In the dexter upper opening is the figure of St. Luke, with pen and Gospel; below which is a group representing our Lord feeding the Multitude. In the sinister opening is the figure of St. John the Evangelist, with pen and volume, under which is represented our Lord raising Lazarus.

St. Philip's, Burnash, Sussex.—Three stained-glass windows have been erected in the apsidal chancel of this church at the expense of Mrs. Harriet Gould. The windows are lancet-shaped, and the centre one contains, in the middle group, the Crucifixion of our Saviour, above which is a group, the Baptism of our Lord. The group at bottom is the Last Supper, and the whole is surrounded by an ornamental border on a mosaic background of deep colours. On the north side is a window containing in the centre group the Resurrection of our Lord, above which is the Agony in the Garden, and the Group below is the Entombment of our Lord. These are also surrounded by an ornamental border on mosaic background. On the south side the window contains, in the centre, the Ascension of our Saviour, the group above being the Adoration of the Magi, and below is the Nativity of our Lord, surrounded by borders, and background similar to the window on the north side. The groups are contained in separate medallion shapes. These windows were executed by Messrs. Thomas Baillie & Co., of London.

Kensworth Church.—The east window of this church has recently been filled with stained glass, at the cost of Mr. John Harding, of Tattenhall Lodge, Leamington, in memory of his last surviving son. The window is in the fourteenth century style; and the glass has been treated in accordance with that period by the artists, Messrs. John Hardman & Co., of Birmingham. The subject chosen for illustration is the Crucifixion. The centre light contains the figure of our Lord on the Cross, surrounded by an aureole of glory, which again is edged by a band of Cherubim. At the foot of the cross kneels a figure of St.

Mary Magdalen clasping the cross and weeping over the death of the Saviour; and the background is a representation of the City of Jerusalem. In the dexter light are figures of the Virgin Mary, Mary of Salome, and Mary Cleophas. The figure of the Virgin is depicted in an attitude of grief, and one of the Marys is shown supporting her. The sinister light contains the Good Centurion and St. John the Evangelist, and in the background is the figure of St. Joseph of Arimathea. Each group is placed under an architectural canopy.

Books Received.

The Popular Science Review for October contains an excellent paper on Ventilation and Ventilators by the editor, Dr. Lawson, who is the Professor of Histology in St. Mary's Hospital, and a distinguished physiologist. It would not be easy to say much that is new in the *Builder* of what is yet known on the subject of ventilation and ventilators. Were all that has been printed within the last quarter of a century on the subject incorporated into volumes, a goodly "library" would be the result. So good and popular a *résumé* of what has been said and done of late years, however, as Dr. Lawson's, more especially with his own suggestions incisive, well merits the perusal and consideration even of those constantly interested in the subject. As we are not long since remarked, there is no little humbug in much of the popular talk of ventilation: still even that gives indication of a growing public opinion in its favour which must ultimately lead to permanent benefit to the public health. Dr. Lawson's introductory remarks on the popular cant as to ventilation are much to the point: he says,—

"If we may be permitted to define cant as the current expression of unscientific ignorance, we believe that there is no species of cant more general than that which people talk about ventilation. Go where we may, whether in the houses of the wealthy or into the miserable dwellings of the poor, we hear the same cry about ventilation and its advantages; but in no cases, or at least in few, do we see any reason to think the cry a genuine one. How many people tell us of the healthy influence of pure fresh air, but how few ever take proper steps to introduce it into their houses. How seldom do we see anything like a rational system of ventilation in public buildings, where are the private dwellings in which vitiated breathing-air is not abundantly present?"

Let us hope, however, that this smattering about ventilation is only introductory to a real knowledge and appreciation and a beneficial adoption of it in its most practical forms; and we regard such endeavours as Dr. Lawson's to be important aids towards so desirable an end. His paper thus concludes:—

"What we have said, has been said rather with a view to draw the attention of the thoughtful to a subject of the most vital interest, than to convey the idea that any perfectly satisfactory scheme of ventilation has yet been proposed. Our aim has been to lay before our readers a general expression of the conditions as to the quality of air necessary for healthy ventilation. This, we think, has not hitherto entered sufficiently into the considerations of those who have pursued the study of methods instead of principles. It must, nevertheless, be admitted that no system of ventilation can be satisfactory unless it be in accordance with the laws of hygiene. Of these laws, as they relate to ventilation, we have given our readers a general idea; and we would, in conclusion, assure them that, since they are capable of mathematical demonstration, they must inevitably form the basis of every efficient plan for the maintenance of a healthy atmosphere in our private dwellings and public buildings."

—Mr. W. E. Hickson, once the editor of the *Westminster Review* and an advanced Reformer, is publishing, under the title "Tracts for Inquirers," a selection from the notes he has been in the habit of making through many years on various subjects. No. 2 is called "Reform Illusions" (Groombridge), and is intended to show the evils that must result from government by the majority, the majority being necessarily the least wise. "The Court of Rome," says he, "would desire nothing better at the present moment than to place on the electoral register the agricultural population of Calabria and the Abruzzi." There is much in the pamphlet deserving serious attention, but Mr. Hickson is too fearful of the result of recent legislation, which we feel no doubt is in the right direction, and shouts

"Awake, arise, or be for ever fallen!"

to an entirely different class from that to which it has been heretofore addressed in England.—In the current *Fraser*, Mr. C. R. W. E. gives an agreeable view of the Paris Exhibition. The number contains some very good and thoughtful writing. Professor Owen replies in it to Mr.

Lewes's argument of "Infirmity."—The *Art-Journal* notices of the Paris Exhibition include papers on the "Northern Schools of Painting," "Adaptations from the Antique," and "Art Products in Clay, Stone, &c." The engraved illustrations of the Exhibition are numerous and valuable. The engraving of "Les Femmes Savantes," after Leslie, is not up to *Art-Journal* mark,—in fact, is a disfigurement.

Miscellanea.

TECHNICAL EDUCATION IN IRELAND.—During the past week Mr. Buckmaster has addressed meetings in the chief towns in Ireland, with a view of organising a system of scientific instruction suitable to the industry and requirements of young men, artisans, and those who have left school. The meetings on the whole have been most satisfactory.

ARTISANS IN PARIS.—If an artisan coming to the Paris Exhibition has not already made in London his arrangements for lodgings, by correspondence with Mr. Layard's committee, 265, Strand, London, or through Mr. Cook, the excursion manager, he is advised to proceed immediately he arrives in Paris, by a cab, which costs two francs, to the workmen's lodging-house, in Avenue Rapp, close to the Exhibition. If this house be full, then let him go to the British Workmen's Hall, in the Exhibition, and ask for M. Housoulter, and he will escape all fleeing.

ANCIENT SEPULCHRAL CROSSES.—On taking down the old walls of the church at Brompton, near Northallerton, prior to rebuilding the edifice, the remains of several sepulchral crosses, with the Runic knot cut upon them, were discovered. Mr. N. S. Heineken suggests that they should be most carefully preserved, either by being built into the outside walls, or within in the vestry. One of the crosses is tolerably perfect, and might be so placed in the vestry that access could be given to both sides,—a slight recess being made in the wall for this purpose.

THE GRASSHOPPERS AGAIN IN AMERICA.—A train on the North-Western Railroad, in the western part of Iowa, was recently delayed one hour and a quarter by grasshoppers, which covered the track so thickly that the engine-drivers slipped on the rails. A *Pegee County* (Iowa) letter says:—The ground is perfectly alive with them; they fill the air for many hundreds of feet upward; they strike you as you walk and from your meals; the public and private buildings are black with them; they infest everything. In consequence of their presence no fall wheat will be sown. The West is full of them, and they are journeying eastward.

OUR NEW FORTIFICATIONS.—"There appears to have been some serious mismanagement in the erection of the new forts," says a daily contemporary. "On the banks of the Medway the results of our work appear positively ludicrous. The mere substructure of the forts had scarcely been completed when these foundations settled down, and the masonry cracked and yawned in fantastic fissures from top to bottom. The mass was screwed up again by stout iron braces, and the building continued, but no sooner was a course of stones laid upon one of the faces of the work than it suddenly sank with the weight, while the opposite side rose in the air, after the fashion of a see-saw. In fact, the works at this point seem to have been fairly given up as impracticable."

THE SEWAGE UTILIZATION OF LIVERPOOL AND LONDON.—A few of the directors of the Sewage Utilisation Company of Liverpool have paid a visit to the works of the Metropolitan Sewage Company among the Essex marshes. The object of the party was to become acquainted with the operations of the London company, and to inquire into the success of the steps by which they are carried out. In this object they were greatly aided by Mr. Hope, of the International Financial Association, who is also the managing director of the Metropolitan Sewage Company, and who afforded them every possible information as to all the details of their operations. The Liverpool gentlemen, who have taken the sewage from the corporation of that town, were informed and encouraged by their visit, and will no doubt now proceed with redoubled hope. A destructive fire has occurred at the farm of the Metropolitan Sewage Company.

TAUNTON COLLEGE SCHOOL.—The successful competitors are Messrs. Giles & Robinson.

THE STONE-CUTTERS' STRIKE IN BELFAST.—According to the local papers, the stone-cutters have accepted the terms proposed by the masters. "The men were on strike for nearly three months, during which time they have lost in wages nearly 3,000*l.*"

THE NEW YORK POPULATION.—Were Brooklyn technically, as it is practically, annexed to New York, says the *New York Tribune*, it would have a population of 1,700,000, and a territory of nearly circular form with a radius of ten miles.

SHOCKING DEATH OF A LIVERPOOL ARCHITECT AND HIS WIFE.—Mr. William Green, of the firm of Green & Paislow, architects, was crossing the line of railway at the Broad Green Station hurriedly to save his wife from a coming train while also crossing, but the train caught both, and killed them, mangling the bodies in a shocking manner. They were both young, and had been only two months married. Three fatal accidents have occurred at the same level crossing during the last eight months, and when the second occurred the coroner's jury recommended the directors to throw a light foot-bridge over the line. Should they not be indicted for culpable homicide?

JUNCTION OF BRIGHTON AND CLIFTONVILLE.—Preliminary steps have been taken towards bringing Brighton and Cliftonville more immediately into connexion, by the removal of the walls which enclosed the pathway running from the rear of St. John's Church, at the top of Palmeira-square, to Church-street, Cliftonville, through what were formerly known as Hove-fields, preparatory to the formation of a roadway, for vehicles, &c., in continuation of that which now runs on the north side of the enclosure at the top of Palmeira-square. Arrangements have been made for drainage. The western esplanade is to be continued from its present point, south of Palmeira-square, to Mills's-terrace. When this desirable improvement has been effected, and the land is covered with buildings, there will be a junction between Brighton and West Hove and Cliftonville, forming an extensive and unrivalled marine frontage.

CLERKS' DINING COMPANY, LIMITED.—A final prospectus of this company has been issued. The offices are at 38 A, King William-street, City. The capital is 20,000*l.*, in 20,000 shares of 1*l.* each. Paid up capital, 5,000*l.* or 5*sh.* per share. No shareholder to possess more than four shares. "The intention," says the prospectus, "is to limit the trading of the company at first to four establishments—to be increased eventually to ten—(one at the West-end)—at any one of which, shareholders or members can dine. The cost of the dinner to be one shilling, and to consist of fish or plain soup, joint, two vegetables, bread, cheese, and half-pint of ale or porter. No fees to waiters, and all extra beer, or wine and spirits, to be charged at the wholesale price." Luncheons, tea, &c., will also be provided at equally reasonable rates, and there will be a reading-room and a smoking-room. To a certain extent the co-operative principle will be brought into operation. The plan is said to have great support in the City, and is being taken up with energy. A public meeting has just been held for its promotion.

DESTRUCTION OF THE GOVERNMENT HOUSE AT BUENOS AYRES: CHUBB'S SAFES.—Our fellow citizen, Mr. Chubb, has certainly reason to congratulate himself on the result of a fire which we see, from a Buenos Ayres paper, has ravaged the Government House there. The fire originated in the Treasury office, and spread thence to other parts of the building. The paper referred to, in describing the ruins, says:—"At eleven o'clock yesterday the only things saved in the S.W. quarter of the building, where the fire originated, were two of Chubb's patent iron safes. The Government, with admirable courtesy, before opening these safes, sent to advise the managers of Thompson's house, and Mr. Bell at once came down. On opening the safes Mr. Bell had reason to be proud: there were the papers quite untouched; the inside of the safe was not even hot. It must be stated that one of the safes had fallen from the upper story and lain among the burning ruins for several hours. The ornaments, &c., were completely burnt off, but the papers inside were as perfect as 'the cock and pound of butter,' of historic memory, in the Yankee's safe."

NEW BRIGHTON.—A new promenade at New Brighton, a fashionable watering-place on the Cheshire side of the Mersey, has been opened.

MEMENTO OF THE LATE MR. WILLIAM GEORGE DREW.—At the chapel of the Licensed Victuallers' Asylum, the memorial window and tablet which have just been erected to the memory of Mr. Drew, has been unveiled in the presence of a large number of ladies and gentlemen, friends and admirers of the deceased. The memorial was considered due to so large a contributor to the funds of the asylum as well as to those of the Licensed Victuallers' School. The window is situated on the left of the pulpit. It is composed of a mosaic background, on which are placed some medallions, coloured. In the centre of the window is the subject of our Saviour "Feeding the Hungry." This is surrounded, in oval form, by a border of flowers, leaves, and berries. Although the size of the window is only about 7 ft. high by 3 ft. 6 in. wide, there are upwards of 1,400 pieces of coloured glass, so placed together as to appear to be one piece or square of glass, if that be any merit.

THE HIGHEST CHIMNEY IN YORKSHIRE.—Bradford has acquired considerable notoriety on account of its long chimneys, but the longest of them all must hide its diminished head in comparison with one that has just been completed at the works of Messrs. Mitchell, Brothers, spinners and manufacturers, Manchester-road. This chimney, measured from the bottom of the foundation, is 110 yards long, and rises a clear 100 yards above the ground line. It is said to be the highest in Yorkshire, the next in size being a brick chimney near Huddersfield, built in 1857, the length of which from the foundation is 105 yards. The foundations, which consist of two courses, 22 ft. and 21 ft. square, and 12 in. thick each, rest upon the rock. A good bed of coal was obtained in excavating for this part of the structure. The chimney is built of stone, is octagonal in form, and measures 20 ft. across at the foundation and 9 ft. at the summit. The flue is perpendicular, and 7 ft. in diameter. The "stalk" has been erected by Messrs. John Moulson & Son, Little Horton-green, contractors, from plans made by Mr. Mark Brayshaw, Old Bowling-lane, architect. The foundations were laid in August, 1866, and the work was completed on Tuesday last, no accident having occurred during the progress of the erection.

GRINDING CEMENT.—A millstone of the style for grinding wheat is not at all fit for grinding cement. The eye of the stone should be at least 16 in. in diameter. The balance-ryne should be semicircular (old style), with chambers in the lugs for the driver to work in. However good in theory it may seem to drive a stone near its centre, all millers of varied experience know that a stone driven near its centre wears down rapidly around the verge, leaving the centre high. Under the most favourable circumstances, a stone which grinds cement wears out of "face" very fast, and is much more difficult to be kept in proper order than a stone for grinding wheat. If the cement is not ground fine and even, it is not much better than sand, unless it is by itself. When not to be mixed, it should not be ground fine; when to be mixed with sand or other material, it should be as fine as possible. In all cases, but especially with some kinds of rock that cannot be evenly burnt, the cement should be bolted. A bolt 10 ft. long and 30 in. in diameter, covered with wire cloth, would in all cases make an even quality of cement. What would not pass through the wire could be returned to the stone again. It takes a greater quantity to fill a barrel when coarse than fine. It should always be ground while there is a little heat in it, as it takes less power and makes better cement. As French Burr is best for grinding wheat, so it is best for cement. It should be as hard and free from pores as possible, the hardest block or blocks around the eye of the stone. A stone 4 ft. 6 in. in diameter (the best for cement) should be divided into sixteen parts, with two furrows to the part. The lands should all be of equal width at the verge and tapering inward. The furrows should be 1½ in. wide, and about three-eighths deep at back. There should be a cast-iron stand for the concave, with four legs obliquely set. It could be bolted to the floor. The concave need only bear in the stand at top and bottom. The crusher shaft should have an oil-cup, set screws, and centre lift, like a millstone spindle. — *Correspondent of Scientific American.*

The Builder.

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Harmony in Colour and Sound.

E are told that the eye has not the power of resolving a mixed colour. Extending our complaint,* we suggest, this is a hard saying. When comparison comes into question, at any rate, it distinguishes with facility a blue green from a yellow green, and recognises blueness in one and yellowness in the other, and we have to pursue the experiments of complementary colours but a little way to have abundant experience of the fact: if we please to press the more ob-

vions inferences to a certain extreme, we may make shrewd guess even at some of the stages of reaction beyond.

We must, however, first pass in review the varieties of colour in their orderly arrangement. It is given to us by Nature in the rainbow, and by art in the solar spectrum. Infinite as are the gradations, there is a general division that is definite enough; and upon this is founded the classification of the primary and secondary colours—red, yellow, and blue—with their intermediates, orange, green, and purple. If the eye had no power of resolving colours, it would seem that green has as good a title to be called a primary as red; but the eye can decide that whatever tint of green be taken it has still an affinity to those that absolutely affiliate on blue or yellow preferentially; while, for the case of red, it has abundant tints that absolutely repudiate the slightest taint of admixture with either orange or purple. Thus the eye independently gives a distinction to three colours, which challenges for them the designation of primaries, and leaves the justification to science. Experimentally, mixtures of these will produce other colours in great variety, but by no mixture of other colours are these producible; the sensitive eye is most sensitive of the approximations to purity in these. Their relations to other tints are, as we shall see, of the greatest possible difference, and therefore of exceptional contrast. They seem to form the standard by which the eye judges of all other tints and gradations; and it appears certain that, at any rate, by cultivation, the eye can by an exertion of the will even reproduce an image—a coloured spectrum, however faint, representing a foregone impression, in conjunction with a seen colour.

The primary colours may be conceived or arranged in radiation from a centre, with intervals for those—the secondaries, which are formed by their union, and which introduce and soften their transitions. The order will run—

red, orange, yellow, green, blue, purple, and so return to red.

Let each section be coloured with tints in gradation, with the deepest next to the centre and the lightest outward; and let a black spot occupy the common centre, and a white ring surround all. Each colour should then commence with the grade in which it is most nearly indistinguishable from black, and be extended outwards towards indistinguishableness from white. The degrees between the limits of all continuous gradations are infinite, and therefore there is no question whether all the colours are susceptible of equally numerous gradations; it may, perhaps, be a question worth asking, in what way it is possible to arrange a solar spectrum, or the electric, so as to exhibit such a parity most effectively and distinguishably.

Assuming the fact, we may see that a scale upon this plan, divided by concentric circles, would give a series of rings, in any one of which the various included tints would have the closest possible relation of quantity to each other: the secondaries in such case would, of course, accurately represent the result of uniting the adjacent included primaries. Even the primaries in such case acquire a link of agreement in respect of gradation of tone: the circular zones or bands may be called circles of tone.

In such an arrangement, in which purple, orange, and green have their tones decided by those of the adjacent primaries, we seem to exclude or not to have provided for one important form of gradation. Why may not a green, let us say, be formed by the union of a yellow of the first circle and a blue of the fourth, and so on? So we should have a new gradation of secondaries accordingly as they favoured one or other constituent,—a blue-green or a yellow-green, and so forth.

To exhibit such gradations as these exhaustively, it would be necessary to set up the gradations of one of the component primaries vertically, and that of the other laterally against it for its entire length,—to cross them, in fact, so that a horizontal line through any portion of the vertical column of blue intersecting one of its tones would pass to right or left through every tone of yellow in succession. Thus we should have every possible tint of green that could be produced by the mixture of yellow and blue in any proportion whatever.

If the tables of secondaries thus produced were placed in line, they would exhibit multitudinous tones and their affinities as determined by analogous place and derivation.

Again, we may produce tertiary colours by mingling secondaries, as

Orange and green,
Orange and purple,
Green and purple.

This proceeding is manifestly equivalent to mixing the primaries in new proportions:—

Orange and green = 1 red + 1 blue + 2 yellow,
" and purple = 2 " + 1 " + 1 "
Green and purple = 2 blue + 1 red + 1 "

To exhibit these further variations exhaustively it would be necessary to superimpose the completed tablets of secondaries, assumed to be of like dimensions, one on the other; and then,—but the permutations are all but inexhaustible: in such a tablet every square—every point—has a different tint, and has to be brought successively into combination with every point on the other.

A type of the secondary combinations may easily be prepared by the use of lines alone, to represent, by gradation of closeness, gradation in depth of colour; the lines might indeed be printed in the respective colours. Thus, in the case of the secondary colour green, a square would be printed with horizontal blue lines,

becoming more and more open from the bottom upwards, and with perpendicular yellow lines crossing them, and more and more open from the left to rightwards.

Apart from some very sufficient objection being adduced, we should scarcely hesitate to regard the phenomena of complementary colours in the eye as the correlatives of audible harmonics or overtones. When the eye has been steadily excited for a certain time by a spot of bright colour, and then closed, it is well known that a spot will be seen of a colour complementary to the original,—that is, comprising a mixture of the hues that accompany the original colour in the solar spectrum,—that are its complements in the constitution of the pure white light broken up by the prism. That the ocular phenomena are in sequence, and those of the ear concurrent, amounts to no essential difference; indeed, it is most probable that there is almost as much concurrentness in one case as in the other, and that the excitement of the eye that manifests itself when the eye is closed had been going on previously when it was still open, and though overpowered by the actual excitement of the light had not been without effect on the resulting sensation.

What relation in tone is there usually between the exciting tint and its complement? This is a matter of experiment for those who have strong as well as sensitive eyes. We assume that they are lower—the complementary; but that if the eye is to be fully satisfied by exhibition of the actual complementary colour, it will have to be taken from the circle of tone that comprises the original exciting tint. Eyes vary in strength as well as in keenness, and there is, no doubt, a great diversity in the susceptibility of excitement by complementary colours and of the distinctness with which they are seized and recognized. It is worth while to consider what are the consequences that the condition of the phenomenon taken in itself seems to lead to.

The sensation of red excites the complementary spectrum of green, and the green, if we assume sufficient vividness and sensitiveness, would, by parity of condition, re-excite red; but, by the exclusion of the red object, the stimulus is declining, and with it declines the reaction, and so both come to an end. But it is not to be supposed that the tendency to reaction is due to the withdrawal of the actual exciting redness; and, therefore, while the open eye is still fixed on it, the reaction must be constantly setting in, but as constantly checked. But now let a green spot of the complementary tone be associated with the red, the green will heighten the red, and the red the green, it may be supposed, by each positive impression having a complementary excitement to reinforce it. The eye is presented in each case with the exact stimulus that is prepared by its reactionary condition to entertain.

This is, perhaps, the explanatory fact of the agreeableness of simple gradation. Excitement exhausts sensibility, and vividness declines with it, and the succession of modified excitement falls in happily with modified sensibility.

Complementary colours, it would thus appear, are contrasts indeed, but heightening and enlivening contrasts; but in every case one of the colours is a mixed colour; and in the various contingencies of relative vividness and sensibility this will be apt to be—so at least it pleases us to speculate—practically resolved; it is produced by conjoint excitations, which may or may not die out concurrently,—and what then? Then the yellow element of green will have a tendency to excite the spectrum of purple, or the blue element to excite orange; and even when these new complementaries are not actually excited, the susceptibility for them will be stimulated; and thus in case of their actual presentation as colours to the eye, an expectation, an unconscious appetency, will be satisfied, and herein will be a harmony.

* See p. 705, ante.

The new complementaries are adjacent to red, and thus the most actively stimulant colour is heightened by the opposed contrast, green, and relieved by its allied secondaries, purple and orange. The remaining colours, blue and yellow, are now adjacent to admitted tints, into the composition of which they enter, and thus acquire an opening for introduction, although in themselves the most harshly opposed to the leading tint of red.

A certain assistance to distinctness and unity of effect is given by favour to one of the sides of the chief complementary over the other,—as in the illustration adopted, to yellow and orange, rather than to blue and purple, or *vice versa*.

But here, again, harmony depends not on absolute equivalence, but on selection of appropriate proportion.

When the selected key is a secondary colour, its complementary contrast will of course be a primary, but the rule of relief and predominance of contrasts obtains unaltered and runs its circuit all the same.

Adjusted combinations of whatever kind for a definite purpose of convenience or delight, must have reference to the variety and the degree of the elements treated of, and may fail,—may be offensive by ill-management in either respect, and by sin of excess, whether in one direction or another. The liabilities and responsibilities involved are shared by colour at least on an equality with sound.

Thus harmony is liable to disturbance—

1. By want of variety or by excess; by monotony that is, or by distracting multiplicity of elements; by absence of an essential element or intrusion of a superfluous.

2. By tediousness in gradation,—or its opposite error, abruptness,—harshness of transition. These faults have a certain appearance of tending to neutralize each other; but this is scarcely a necessity.

A composition that sins by excessive variety, let us say of tints, may offend also, and in aggravation, either by the tediousness of transitions or by harshness in intermixtures; and so not even limitation of the number of tints treated will in itself secure, accordingly as they may be selected, from tameness of transition or as distressing violence.

Elementary selection and limitation of number, therefore, are the primary conditions of harmony, and will be found to have been exercised, when successfully, under caution of the disparaging liabilities we have just enumerated and classified.

Any colour whatever, any tint of a colour, beauty and purity being always assumed, may be taken as a point of departure; and a first restriction of distracting multiplicity is effected by conferring upon it a decided predominance. How this can be done is matter for analysis. In any artistic composition the selection of a leading colour and its leading tint will of course have to be made with reference to the properties and expression involved on the occasion; we assume it now to be in these respects appropriate.

The predominance of a tint,—its manifestation as a governing tint,—is displayed by its proper strength and quantity,—its brightness and pervading distribution,—and then more indirectly, but still most important, by its influence on the tints associated and on the selection of them.

We will assume that our governing colour shall be red, and the question of predominance first concerns the relation of the particular tint of red that governs to all the other reds in the composition. The predominance of one may, of course, be favoured by secondary assistance from other colours; but we ask first,—How can a tint of a same colour come or be made to lord it over its other fellow-tints? We assume that all the tints in themselves are equal in quality, and so also that any one may be chosen for predominance over the rest. What will secure for it this predominance? In the first instance, no doubt, the lighter tint attracts the eye to the disadvantage of its darker fellows, but these may be emancipated by superior brilliancy due to higher illumination. Let a luminous beam be thrown upon any degree of the scale of red, and the more luminous tint thus distinguished will govern the rest.

Thus distinguished simply on the scale, it will have a double range of predominance as over the degrees above it and those below it. Now, concentration of effect, it would appear, would be consulted by all or the majority of the associated tints being either above or below the

luminously-distinguished key. There should be a marked difference when it is the deepest red in the series applied that is most luminous, and when it is the lightest; and then, again, as the balance of the tints above and below it is variously adjusted. It is only artistic instinct that can decide on the varieties of combination that are available for various artistic purposes within these limits. The case seems parallel to the musical choice first of a key-note, then of its pitch or of the pitch at which it shall be most frequently or expressively applied, and of the range of unisons above and below that shall be admitted. To the artist again, to his invention and his instincts, must be left the determination how far mere force of brilliancy can enable a deep tint to make head against its lighter competitors, or can contend with tints of the same colour that are indeed less luminous, but in grander masses. Daring things have been done, and happily, and graceful things also, that, in truth, involved quite as much daring; for failure, the catastrophe in either case, is quite as imminent and disastrous.

Thus it appears that, even within the limits of the scale of a single colour, there is unlimited scope for election, first, of the primary or governing tint, and then of the characteristic formula leaning first either to the grave or the cheerful, and then, whichever of these may be adopted, and in whatever form, of the characteristic formula of milder gradation or spirited contrast.

The primary tint itself, and all others associated likewise, may, of course, be exhibited on occasion in various degrees of light and shadow, the tint itself not changing tint in shade; as, if shade be thrown upon the entire scale, each degree of tint will still retain its place and still be different from all others. Thus, in a picture we may see a curtain of a self-colour, and unaffected by reflected colours, taking every variety of light and shadow in successive folds or in the same.

Even in these variations, however, there is opportunity for the assertion of unity. The uniformity of daylight illumination is the great harmonizing influence of the picture-space, every difference that different exposure produces being still relative to the primary difference. So the omission of intermediate tints of the leading colour, the affecting of wide intervals, may be responded to by similar sudden transitions from lights to shadows, and neglect or exclusion of half-tints, be kept in countenance by suddenness of half-shadows or the avoiding of them.

The variable illumination of a given tint seems most analogous to the variable loudness and emphasis that may be assigned to the occurrence of a musical note. A note when it occurs upon the accented part of a bar may be said to be in light, and otherwise, according to position, in deeper or deeper shadow.

The most gentle and insensible transitions, then, that the scale of colours affords are, first, between differently illuminated degrees of the same tint; then between successive tints of the same colour; and, accordingly, as we glide or leap along these successions, we have modes even here of contrast as well as of relief.

But a more varied succession comes in if we move from one colour to another. Here the transition is made most gently—naturally, as it is called—by passing laterally through its circle of tone. Red passes to yellow through orange, which partakes of red as well as yellow, and yellow again finds itself represented in green, which has an equal relation to blue; blue again passes into the next division, where blue is broken up with red, and the resulting purple leads back to the starting point. In some respects it is preferable to substitute a spiral for the concentric circles of tone, and so the conclusion of one circuit, which in itself will have thus acquired a new element of variation, will glide into the commencement of another, as the octave of a note is the recommencement of a new series.

From any tint whatever then in the gamut of colour, there is a way, by a series of easy transitions, to any other; the easiest transitions are to the adjacent, which include a common element; the omission of a link produces a contrast, more or less harsh, and in the interests of harmony, which above all repudiates a jar, demanding to be qualified and finally resolved.

The primary colours are the richest in contrasts; for red, for instance, has no proper immediate connexion with any but the adjacent secondaries, purple and orange; and is in contrast not only with its complementary green, but

even more violently with both blue and yellow. A secondary, on the other hand,—orange, for instance,—is only in uncompromising contrast with its direct opposite primary, of which it is the complement,—blue; it has an element of sympathy with red, and with the purple that contains red on one side,—with yellow, and the green to which yellow is a contributor, on the other. It is, therefore, the characteristic of the secondaries that they all relieve each other, while the primaries are all in strongly pronounced contrast—a principle of vigour, however, rather than a disability.

The adopted leading tint has, therefore, its contrasts, complementary or otherwise, and its transitional reliefs; and these tints of associated colours will participate in the claim to special distinction, as they will, indeed, be chief instruments in enhancing the distinction of their chief. Each associated tint, again, of the leading colour will equally have its own circle of contrasted and relieving colours of its proper tone, with supplies of tints available, most numerous, and yet all united with the principal tint by a law not the less absolute because it involves the facilities for such free modulation.

But there is a further principle of division,—a duplicate division,—applicable to the general scale, which is of the utmost importance and influence. This is into warm and cold colours,—or colours which advance and meet the eye, and colours which seem to retire, and tend to appear more remote than they really are. Red and yellow are classifiable as warm and advancing colours, and blue as cold and retiring. It is for the physicist and the physiologist together to investigate the natural differences on which the difference of effect is dependant. No doubt, association heightens the original influence, whatever may be the nature of this. Flesh colour and blood, and fire, enhance one set of feelings, and ice and wintry skies reinforce the other. Still this is not all. Things may be very hot and yet be of a cold colour; and if, indeed, specific temperature does correspond with colour in prevalent instances, it opens the question whether such colours may not be in these cases common effects of some common cause.

In painting it is certain that the contrast of effect between warm and cold colours is very remarkable, and the titles have been given to them from a sense that their effects have considerable analogy to secondary effects, accompanying, at any rate, sensations of warmth and coldness. We turn from a Rubens to a Guido, and are conscious of it at once, without any regard to the subject of the picture; and it gives the point of the epigram in Albano's picture of the Loves of Venus conquered and effortless against the boys of Bacchus.

The warm half of the scale comprises the two primaries, red,—red especially,—and yellow, and their intermediate orange; and each casts a certain glow and reflection upon the adjacent purple when inclining to red, and upon green when the yellow is predominant. The single blue, however, dominates the frozen segment of the circle, and has such power that it subdues the warmer tendencies of both purple and green.

We are inclined to think that it is in warm or cold treatment that we are to recognise in the music of colour the equivalent of the major and minor keys in the music of sound.

The same note may be made the key of either a minor or a major series, accordingly as one line of harmonizing notes or another is chosen. There are two notes very near to each other that are as an interval of a third above the key note; one of these has to be taken, involving the exclusion of the other, and the determination of the character of the scale. Thus, in the case of a key-tint of red, the effect will necessarily vary considerably, accordingly as the harmonies are taken in preference from the side of the purple or the orange, the blue or the yellow. Whether the leading colour selected, then, be warm or cold, it is of no slight moment in respect both to harmony and effect that a due counterpoise should be adjusted between colours as divisible into these classes. It is not that one set must be the exact equivalent of the other, a plan which would tend to neutralize both,—but that they should bear to each other some apt and definite proportion. It were vain, of course, to give rules for adjusting colours proportionately; as well might we attempt to teach singing by ascending to first principles and setting a future prima donna to study the mathematics of resonance, or trusting to instruction in terms of the muscles that subserve

vocalization. Enough that proportionate adjustment involves effective predominance of one element without obliteration of the other; that its successful formulas, no less than its possible failures, are infinite; and that genius must invent them, and then taste will be happy to enter into the enjoyment, asking not why, and caring not wherefore, in the first instance, but willing enough that the men of science should entertain and should answer the questions if they may.

Black and white are terms in the succession of tints of every colour, and thus are not to be assigned to the class of either the warm or the cold. They harmonize with every colour; may be interposed between any colours; and thus afford most valuable resource for tempering the very harshest contrasts. White, moreover, confers ever brilliancy without heat, as black composes without chilliness. Indeed, but for the high enlightenment that white confers upon other colours generally by its well-attenuated proximity, it might seem as if it verged rather to coldness than to the opposite.

Still both black and white are dangerous indeed for employment in absolute purity; and white especially so far disturbs the eye by irradiation, that colorists have been known to wish that all the white paint in the world were annihilated. Much may be done, and it is almost the only resource,—by a firm administrative hand adjusting quantity. The eye must be the guide; but if the eye is to be the guide, it must to original fine endowment have conjoined discreet and persevering education. Among the examples of banded architecture in Italy, the exterior of the baptistery at Pistoia is a happy example of the improvement obtained by relatively narrowing the bands of black. But otherwise these examples can only be cited either way with qualification and a caution; for time and weathering sometimes mar and sometimes rescue design, and, moreover, the so-called black bands are usually but a very deep-tinted green.

Broken tones of mixed black and white—the family of greys—have a range of applicability and a value when employed with best effect, of which it is far easier to admire the beauty than to expound the theory.

But,—*quorsum hæc?*—it is quite open to follow up the exposition of the claim of colour to be harmonious,—musical no less than sound,—by another exposition of the rightful assertion of the architect to be a master of this music even no less than the painter. Regard to the exigencies of space has restrained illustrations throughout,—otherwise, whether for good or evil, they might have been gathered in sufficiency from our own art. Nature herself will ever be the great inductor to the theory and illustrator of its perfections; and it may be, that when we have quite accounted to ourselves for all the delight of the harmony between flower and leaf and bark of the pomegranate-tree before the window, we may have little more to learn. Titian himself, in his sacred and profane love of the Borgheze Palace, can only teach us, when we come from the school of Nature, how majestic a height it is possible for man to reach in rivalry,—a height where we become conscious indeed that “the art itself is Nature.” Nature herself, it is certain, must often be contentedly left, in a climate such as England’s, to work out her own effects of colour upon the materials of our structures. But, still, her treatment can be anticipated, assisted, heightened; in any case it is an opprobrium to trust to it entirely. Never yet, it is true, was there structure that could not become picturesque, and even beautiful, in ruin and decay; but this is cold comfort for the architect. The physician can only anticipate with bitterness the return, on that “first dark day of nothingness,” of the beauty that he has been baffled in his hope of re-uniting with health, and the world may be fairly excused for grudging an average lifetime in waiting for even comparatively venial rawness to be mollowed by time. If we are to speak frankly, we should say, that as regards the application of colour to architectural exteriors, art has scarcely at present, in existing monuments, even approached its best. In this case the best prize is still to be won; it will be assigned to him who shall attain “every chord of the lyre, and be master of all,” and by the fulness and freshness of his harmonies make us forget that important buildings have too often been entirely destitute of colours or overdone with them, bedizened with streaked or spotted contrasts, or with gradation of hues so sobered or purplified down as to be still more unendurable in tameness.

SUMMER DIARRHŒA IN LARGE TOWNS.

INFANT MORTALITY is now generally acknowledged to be a useful test of the physical and sanitary condition of any aggregation of human beings, although its value for comparison may be in some cases partially destroyed by varying birth-rates. With almost greater safety may we assume that the extent of the mortality among infants in summer, from diarrhœa, affords conclusive evidence of the stamina and strength of constitution possessed by infants in different localities. Healthy parents as a rule have healthy children, and we may therefore fairly conclude that where infant mortality is habitually high, or even exceptionally so in summer, through the prevalence of diarrhœa, there is the general standard of health low.

Recent weekly returns of the Registrar-General have furnished some useful facts connected with the extent of the mortality from diarrhœa in our large English towns, during past weeks. This year, moreover, can scarcely be called exceptional; for as surely as the summer comes round, from year to year, so are the deaths swelled by the mortality from this disease. In ordinary years this mortality is principally confined to infants, as has been the case this year; periodically it becomes epidemic in a choleraic form. During the past three weeks, in ten of our largest towns, including London, of 7,673 deaths from all causes, 1,520 were the result of diarrhœa, being 20 per cent. of the total deaths. We are not able to state the exact number of these deaths which occurred among infants, but, taking London as an example, it is quite safe to conclude that at least 95 per cent. of these deaths from diarrhœa are of children not exceeding one year of age. Much of this waste of infant life is doubtless owing to carelessness and ignorance of mothers, who first probably induce the complaint, and then either neglect or are unaware of the proper treatment. Medical practitioners in crowded neighbourhoods will know to what extent these causes tend to the fatality of this disease. The presence of organic impurity, however, in either the atmosphere or the water is now thoroughly acknowledged as one of the leading causes which produce the summer scourge. It will, therefore, be useful to compare its fatality in the different towns.

Of the annual death-rate per 1,000 from all causes in the three past weeks, the mortality from diarrhœa has been 2 in Bristol, 3 in London, 5 in Newcastle, 6 in Liverpool, 8 in Sheffield, 10 in Manchester and Leeds, 11 in Birmingham, and 12 in Hull. These figures at first sight appear somewhat contradictory, but should be studied side by side with full information as to the sanitary activity prevailing in the different towns, and the nature of their water supply. Bristol, though possessing many natural disadvantages, has, in the results of the past few years, every reason to be proud of its sanitary condition, and we are, therefore, prepared to find it stand at the head of the list with a low mortality from diarrhœa. London, having spent its millions on a system of main drainage, having an efficient staff of medical officers, and a water supply which, although not beyond reproach, is now steadily improving, thanks in a great measure to public attention having been awakened to its vast importance, now stands next to Bristol, not only in its general death-rate, but also with the lowest mortality from diarrhœa. It is, however, somewhat surprising to find Newcastle appearing with but half the mortality from diarrhœa from which other large towns have suffered, when the recent and present high death-rate from all causes in that town are taken into consideration. Sheffield has recently enjoyed a death-rate below the average of the other towns, and the health of Liverpool is fast improving; but in Manchester and Leeds the continual high rates somewhat prepare us for the fatality of diarrhœa. Not so with Birmingham and Hull, both of which towns have, in the last two or three years, stood well as regards their death-rates among the list of large towns. It would be well that these towns should endeavour to discover the cause of this fatality of summer diarrhœa. The water supply of Birmingham, at least, is rather suspected of being deficient both in quality and quantity. If this suspicion be founded on fact, we need look no further to account for the prevalence of this disease.

In the Registrar-General’s return for the week ending 21st September, it is gratifying to find that the fall in the temperature of that week had somewhat influenced the mortality from

diarrhœa; it is worthy of remark, however, that whereas in London it was only at the annual rate of 1.9 per 1,000, the rate in the nine other large towns furnishing weekly returns, with more than two millions of population, averaged 7.7 per 1,000. This fact is somewhat remarkable; and should be pondered upon in our large towns. Either the ignorance and carelessness of mothers in medical towns is greater than in London, or medical assistance is not so ready to hand, or sanitary supervision is not so effective in keeping the atmosphere free from organic emanations, or the water supply is more liable to sewage contamination; it may be that any, or a little of all these causes is at work, but whatever the causes may be, the fact itself should not be lost sight of. The thousands of infants annually dying from summer diarrhœa are surely worth an effort to save.

THE EARLY CONDITION OF MAN; THE ORIGINATION OF RACES; AND THE RELATION OF THESE QUESTIONS TO PRE-HISTORIC ART, AND TO VARIATIONS OF STYLE AND CHARACTER.

THE title prefixed will sufficiently serve to show what is our idea of the great interest that should be taken by architects and others, in reports of certain papers and discussions in the Geographical and Ethnological Sections of the British Association for the Advancement of Science at the late meeting in Dundee, and to which particular importance of the subject-matter we have already alluded. We subjoin a summary. The papers, more immediately referred to in this present notice, may be said to have commenced with one by Mrs. Lynn Linton, on the “Ethnography of the French Exhibition.” It contained these observations:—

Scattered throughout the building are examples of almost every condition of human life, from the rude works of the savage, whose finest ideas of art are embodied in a necklace of shells, a mask of tattoo, or a temple of skulls, through the intermediate grades of the semi-civilized making their first awkward efforts after an intellectual life, up to the latest productions of European skill, and the grandest combinations of human power and material forces which the world has yet seen. One of the most interesting parts of the Exhibition is the Archaeological Gallery, which leads us by successive stages from the primitive condition of the lake-dwellers to the complex life of modern times. Then how expressive of ethnological conditions are the special manufactures of various races!—the intention, so to speak, of different national workmanship. At first sight it would appear that all gold and silver work would have much the same meaning; that diamonds and emeralds could never be much more than diamonds and emeralds; and that silks and satins, if they answered their final end of clothing the human body, would have no other function or expression. But seen and compared together, the work of each nation has a distinctive character of its own, evidencing the peculiar habit of thought and intellectual status of the race. Within the larger area of ethnological differences in art lies the smaller one of international differences, seen very clearly in the various European courts, and the direction which the genius of productive art has taken in each. Take the jewels as one very small but popular example. There are lovely Italian ornaments of the purest taste, broad and simple, though so highly wrought; and there are Palais Royal pretinences of diamond birds and golden boss, and green leaves, with lady-birds settled on the edge, and drifting flower-petals, bearing dewdrops in the curve, and childish toys as pins and charms, and brooches and buttons; and, to crown all, autonomic singing birds, executing a duet of song most creditably for metal windpipes. Then we have the English jewelry, culminating in Lady Dade’s jewels, incomparably the finest in the Exhibition, but owing nothing to their treatment. They are set quite quietly announcing themselves, and dependent only on intrinsic value. A Frenchman would have isolated the finest, and have massed the smaller into an overwhelming conglomerate of brilliancy. The Englishman simply sets them so as to show themselves in order. Is there no international difference here?

After a comparison of the features and costumes in the model-figures, the writer ob-

served:—Out of doors, the annexes, architecture, and restaurants offer the same immense national varieties. The forward races fill their allotted spaces with scientific material, and the latest mechanical contrivances; while Egypt builds up a model of the Temple of Edfou, with its sphinxes, lotus capitals, and the Eternal Neph upon the architrave. But as repetition invariably vulgarises, the subtle grace of line and harmony of colour of the original is lost in the copy, which, however, does not prevent our feeling the wonderful union of past and present, when we find a modern model of Lesseps' Canal and the whole Egyptian country inside the doors which Neph overshadows and the sphinx protects.

The paper concluded:—There is one little fact in the English Food department which must not be omitted, though apparently insignificant. Owen Jones, our best illuminator and ornamental artist, has given his skill for the better display of Huntley & Palmer's biscuits; and Crosbie & Blackwell have used a beautiful Wedgwood vase for their preserved ginger. The meaning of which is surely the endeavour, now making itself felt through all English life, to get a true and noble manner of art into our daily surroundings, and the desire to unite the idealising presence of beauty with the practical advantages of utilitarian science, hitherto at war together.

The subjects of race and the antiquity of man occupied a large amount of attention in the lecture. On the Saturday, three papers by Mr. Crawford were read. They were:—"On the Antiquity of Man," "On the Complexion, Hair, and Eyes as Tests of the Races of Man," and "On the supposed Aborigines of India, as distinguished from its Civilised Inhabitants." In the course of the first paper, it was said that the discovery of metals, without a knowledge of which man must have ever remained a feeble savage, attested man's antiquity. The difficult art of making malleable iron seemed to have been immemorially known and practised, even by the rudest people of the Old World, but it might be fairly conjectured that the first discovery must have been made by natives who had previously made considerable advances in civilization, and that from them the art came to be disseminated among ruder tribes. He was led to entertain that opinion because the same word of the Malay or Javanese language was given to iron, and even to steel, in all the languages of the Malayan archipelago, and in the language of the savages of Borneo. Were the languages of the negroes of Africa investigated—the rudest of whom are known to practise the art of fabricating malleable iron—it would probably be found that it was acquired from the Mauritians, Carthaginians, and Egyptians on the western, and from the Hindus on the eastern side of the continent. After reference to the ages that must have elapsed before man acquired power of making a record of his actions, the writer said:—The countries in which—through the auspicious character of the physical geography and intellectual quality of the races inhabiting them—the earliest civilization sprang up, were Egypt, Syria, the valleys of the Tigris and Euphrates, India, and China; and, in a minor degree, Persia, the region lying between India and China, Japan, and one or two islands of the Malayan Archipelago. In all these writings had been early discovered, and a calendar formed—arts indispensable to the rudest record of human events. But it was not necessary alone that the capacity of framing a record should exist; it was not less necessary that the monument containing it should be of durable materials, and be under conditions favourable to its preservation. In regions subject to violent alternations of heat and cold, drought and moisture, the most lasting materials were in time decomposed, while in tropical climates the same destruction was produced by a rank vegetation. Hume made true history begin with the first page of Thucydides; but man's story went far back beyond the time either of Thucydides or Herodotus. Egypt was, far beyond all other countries, that in which the chronicle of civilized man could be carried to the highest antiquity. After many dynasties of gods and demigods, the earliest date which, with any show of antiquity, could be ascribed to the history of Egypt, began with the first dynasty of civil writers, and the learned made that correspond with the year before Christ 8986, which would make the first dawn of reliable history 10,833 years old, reckoning to our own time. The Pyramids of the first dynasty were

built, according to the same authority, Lesneux, B.C. 3460; the Great Pyramid, B.C. 3280—respectively 5,327 and 5,127 years ago. At the earliest of these dates the Egyptians were already a civilized people, in possession of a high scale of numbers, of a calendar, and of the art of writing; while at the latest of them they were certainly a numerous people, skilled in architecture, and equal to the construction of gigantic monuments. The history of the Jews could pretend to no such antiquity as that of the Egyptians, or even as that of the Chinese. There was a general assent among critics in fixing the building of the Temple to the year before Christ 1015—a date which would make it 2,446 years later than the construction of the oldest of the Pyramids. Reckoning backwards, the Exodus preceded the building of the Temple by 480 years, and the bondage in Egypt was given as having lasted 430 years. There were other races of man which, from their conspicuous position, must have made a very early advancement, although probably not equalling that of the Egyptians. The valleys of the Tigris and Euphrates, from their climate, fertility of soil, and facility of investigation, with the genius of their inhabitants, were formed by nature to be the seat of a very early civilization, and we have abundant evidence of such a civilization having sprung up, rivaling that of Egypt in extent, and greatly surpassing it in power. Its perishable monuments, however, do not furnish us with the same satisfactory evidence of antiquity as do the enduring monuments of Egypt.

Mr. Crawford's conclusions, recapitulated, were that man, though the latest creation of the class of beings to which he is most nearly allied, is yet of vast antiquity, whilst the time elapsed since he acquired the art of making a durable record forms but a small fraction of the period. In the early portion of the period he was without speech, ignorant of every art, and, like the lower animals, chiefly guided by instinct. This, according to Mr. Crawford, is to be inferred from the fact that, where material evidence of man's presence exists, whether in caves or "drifts," he is already found in possession of implements of stone, implying a considerable step in advance. But over the greater part of the earth, auspicious locality and genius of race were not so combined as to enable man to reach the point of skill necessary to production of the enduring record. Some races have never approached it.

Sir John Lubbock thought Mr. Crawford somewhat underrated the quantity of human remains which had been found under circumstances which implied their great antiquity. It was quite true, no doubt, that in the drift beds, from which so many specimens of human workmanship had been obtained, no undeniable traces of human bones had yet occurred; but it must be remembered that many traces of human skeletons had been found, and that it was only on account of the extreme difficulty, in every case, of feeling quite certain that they belong to those beds in which they had occurred, that archaeologists and ethnologists had not felt justified in putting them forward as indubitable traces of human remains. There were very many cases on record of caves in which human bones had been found under circumstances which implied that they belonged to the same antiquity as the weapons which were found associated with them. They found as many remains of bones in such localities as they could expect to find, and he would even venture to go further than that, and to say that they found more than they might naturally have expected to find in caves which had also been used as the dwelling-places of man. Of course, it was natural that, under any circumstances, men were not buried in caves during the time these were occupied as places of habitation; but any difficulty they might have on that head was removed when they found that the Esquimaux, who lived under such very similar conditions, and with animals identical with those that were living with our earliest predecessors in the west of Europe, paid very little attention to the remains of their dead, allowing them to lie about neglected in the neighbourhood of their dwellings, and also that there were many races of men who were actually in the habit of burying their dead in the houses which they occupied when alive, so that the tomb was not only figuratively, but was literally "the house of the dead." Among many races, such as the Esquimaux, when a man died, his body was laid in the house which he had occupied, and it was shut up; and there were traces of the same thing in

other parts of the world. It was, therefore, partly to be accounted for in this way that so many traces of human bones had been got in caves which had evidently been inhabited. Upon that point he could not help thinking that Mr. Crawford would find that he need not explain or apologise in any way for any supposed absence or rarity of human remains in those caves which had latterly been examined with so much care.

Mr. Cyril Graham called attention to the fact that the chronology followed by Mr. Crawford was that of only one person. There were several eminent Egyptologists who followed a different system, and there was great reason to believe that the Pyramids, which the writer of the paper spoke of as having been built so very long ago, had been built within a much more modern period.

Dr. Hunt said there were some little difficulties in the paper which he should like Mr. Crawford to explain. First, there was that with regard to the innate incapacity of the Australians. Mr. Crawford went on to speak of the people who were once without speech and had only instinct—and he called these Men. Well, it was rather a difficulty if they were once without speech, and with only instinct, why he called such beings men. Mr. Crawford had said that the Australians had the innate incapacity to accept civilization, and thus argued from that absolute original distinction. With regard to the other subject—that of Egypt: Bunsen was the first advocate for the unity of man, and he said it was utterly impossible to explain it in fewer than twenty thousand years.

In replying, Mr. Crawford said that, as to the unity of the human race, of course he did not believe in that. His friend believed in the theory of special selection, and he hoped to be able to hear Sir John describe his theory of the human species, to explain how he discovered the missing link, how a monkey became a man, and how all the different races of men had undergone the change they had now done. He would like to see a single particle of evidence to show that a black man became white, or a white man became black, or how a black woman could be compared to the women he saw before him. He did not quite understand what his friend Dr. Hunt had said about speech. He had made remarks upon the difference between speech and instinct. Dr. Hunt having explained that he understood Mr. Crawford to have stated that there were men without speech, and with only instinct, whereupon he (Dr. Hunt) had asked how these creatures could be classed as men, Mr. Crawford replied that Dr. Hunt had only misconceived what he had said. He said that there was capacity for speech, but that they could not speak, because they had never learned. In the same way they could not use gunpowder or steam-engines, because they knew nothing about them.

In his second paper, Mr. Crawford adduced facts which, he argued, at once disposed of the hypothesis of climate being the cause of colour in the human complexion. In the course of an animated discussion that followed between Dr. Hunt and the reader of the paper, the latter said he recognised sixty distinct creations of men, and the former spoke of the structure of the hair as most important in a question of race, saying that dark colour of hair and eyes, combined with curliness of hair, was always a mark of mental inferiority, and he challenged exception to this generalization.

The third paper showed that in many parts of India there existed rude tribes, differing widely from the great body of the civilized inhabitants. People in that state of society were found only in districts more or less inaccessible, and by their comparative sterility holding out little temptation to conquest and occupation. He accounted for the existing circumstances by supposing detached growth of numerous distinct civilizations; which would remain for a long time unknown to each other, as were the Mexican and the Peruvian in America. All this most probably happened long before there was an Aryan invasion, or a religion of Bramah. The state of India at such a time would be a parallel to that of America on its discovery; the wild and savage tribes would be numerous; and the civilized few in number. Proportions to its extent, it would have as many small tribes, speaking as many distinct languages, as America itself.

On a subsequent day a paper was read by Sir John Lubbock, "On the Origin of Civilization, and the Early Condition of Man." It began by alluding to the different opinions which have always been held as to whether man constitutes

one or many species, and to the two very different views which there are also as to the primitive condition of the first men, or first beings worthy to be so called. Many writers, Sir John Lubbock said, have considered that man was at first a mere savage, and that our history has on the whole been a steady progress towards civilization, though at times, and at some times for centuries, the race has been stationary, or even has retrograded. Other authors of no less eminence have taken a diametrically opposite view. According to them, man was from the commencement pretty much what he is at present. If possible, even more ignorant of the arts and sciences now, but with mental qualities not much inferior to our own. Savages they consider to be the degenerate descendants of far superior ancestors. Of the recent supporters of this theory, amongst the most eminent was the late Archbishop of Dublin, who enunciated his opinions in these words:—"We have no reason to believe that any community ever did, or ever can emerge, unassisted by external helps, from a state of utter barbarism, into anything that can be called civilization. Man has not emerged from the savage state; the progress of any community in civilization, by its own internal means, must always have begun from a condition removed from that of complete barbarism, out of which it does not appear that men ever did or can raise themselves." The paper proceeded with an examination of the reasons that led Dr. Whately to his conclusion. In the course of this it was shown how short a period is a century in the history of the human race, and that if, taking the ordinary chronology, in 6,000 years a given race has only progressed from a state of utter savagery to the condition of the Australian, we could not expect to find much change in one more century; for, many a fishing village, even on our own coast, is in very nearly the same condition as it was 127 years ago. Civilized races, according to the views advocated by Sir John Lubbock, are the descendants of races risen from a state of barbarism. Barbarians, on the contrary, argue his opponents, are the descendants of civilized races, and have sunk to their present condition. But, according to Sir John Lubbock, Archbishop Whately admits that the civilized races are still rising, while the savages are now stationary, and seems to regard this as an argument in support of the proposition that the difference between the two is due not to the progress of the one set of races, but to the degradation of those whom he himself maintains to be stationary. The delusion, Sir John says, is natural, and like that which every one must have sometimes experienced in looking out of a train in motion, when the woods and fields seem to be flying from us, whereas we know that in reality we are moving and they are stationary. Having considered the arguments brought forward by Whately, Sir John proceeded to state facts on the other side. First, he endeavoured to show that there are indications of progress even among savages; second, that among the most civilized nations there are traces of original barbarism. He adduced evidence in favour of our assuming that if Australia, New Zealand, or South America had ever been peopled by a race of herdsmen and agriculturists, the fauna and flora of these countries would almost inevitably have given evidence of the fact, and differed much from the condition in which they were discovered. Further, we might assert that no weapons or instruments of metal have ever been found in any country inhabited by savages wholly ignorant of metallurgy. A still stronger case, said Sir John, is afforded by pottery. Pottery is not easily destroyed: when known at all it is always abundant; and it possesses two qualities there,—namely, that of being easy to break, and yet difficult to destroy, which render it very valuable in an archaeological point of view. Moreover, it is in most cases associated with burials. It is therefore a very significant fact that no fragment of pottery has ever been found in Australia, New Zealand, or the Polynesian Islands. It seems to me extremely improbable that an art so easy and so useful should ever have been lost by any race of men. Moreover, this argument applies to several other arts and instruments. I will mention only two, though several others might be brought forward. The art of spinning and the use of the bow are quite unknown to many races of savages, and yet would hardly be likely to have been abandoned when once known. The absence of architectural remains in these countries is another argument. Archbishop Whately, indeed, claims this as being in his favour, but the absence of monuments in a country is surely indication of

barbarism and not of civilization. The mental condition of savages seems also to me to speak strongly against the "degrading" theory. I have elsewhere pointed out that, according to the almost universal testimony of all writers on savages—merchants, philosophers, naval men, and missionaries alike—there are many races of men who are altogether destitute of a religion. The cases are perhaps less numerous than they are asserted to be, but many of them rest on doubtful evidence. Yet I feel it difficult to believe that any people which had once possessed a religion would ever have entirely lost it. Religion appeals so strongly to the hopes and fears of men—it takes so deep a hold on most minds—it is so great consolation in times of sorrow and of sickness—that I can hardly think any nation would ever abandon it altogether. Where, therefore, we find a race which is now ignorant of religion, I cannot but assume that it has always been so. Sir John then mentioned a few cases in which some improvement appeared to have taken place, including that of the inhabitants of the Andaman Islands, who have recently introduced outriggers; of the Bachapins, who, when visited by Burchell, had just commenced working iron; and of the Wajiji negroes, who have recently learned to make brass. The rude substitutes for writing found among various tribes, Sir John said, must also in many cases be regarded as of native origin. In the case of the system of letters invented by Mohammed Doda, a negro of the Vet country, in West Africa, the idea was no doubt borrowed from the missionaries, although it was worked out independently. In other cases, however, this could not be thought, he maintained. Take the case of the Mexicans. Even if we suppose that they are descended from a primitively civilized race, and had gradually and completely lost both the use and tradition of letters—to Sir John's mind a most improbable hypothesis—still we must look on their system of picture-writing as being of American origin. Even if a system of writing by letters could ever be altogether lost—which he doubted—it certainly could not be abandoned for that of picture-writing, which is inferior in every point of view. Although, therefore, we have no historical proof that the civilisation of America was indigenous, we have in its very character evidence, perhaps, more satisfactory than any historical statements would be. After a reference to systems of figures and account-keeping amongst savage races, the paper proceeded to certain considerations that seemed to show that even the most civilized races were once in a state of barbarism. Not only throughout Europe, not only in Italy and Greece, Sir John said, but even in the so-called cradle of civilization itself—in Palestine and Syria and in India—the traces of the stone age have been discovered. It may, indeed, be said, that these were only the fragments of those stone knives, &c., which we know were used in religious ceremonies long after metal was in general use for secular purposes. But why were stone knives used by the Egyptian and Jewish priests? Just because they had been at one time in general use, and there was a feeling of respect or reluctance to use the new substance in religious ceremonies.

After having adduced a great amount of other evidence, and after remarking on one of the illustrations as showing that similar ideas in distant countries owe their origin, not "to an era before the dispersion of the human race," but to the original identity of the human mind, Sir John wound up thus:—"While I do not believe that similar customs in different nations are 'inherited from a common source,' or are necessarily primitive, I certainly do see in them an argument for the unity of the human race, which, however, be it remarked in parenthesis, is not necessarily the same thing as the descent from a single pair. In conclusion, then, sir, while I do not mean for a moment to deny that there are cases in which nations have retrograded, I regard these as exceptional instances. The facts and arguments which I have here very briefly indicated might have been supported by many other illustrations which I could not bring before you without unduly extending a communication already somewhat too long. They, however, I think, afford strong grounds for the following conclusions:—namely, that existing savages are not the descendants of civilized ancestors; that the primitive condition of man was one of utter barbarism; that from this condition several races have independently raised themselves. These views follow, I think, from strictly scientific considerations. We shall not,

however, be the less inclined to adopt them on account of the cheering prospects which they hold out for the future. If the past history of man has been one of deterioration, we have but a groundless hope of future improvement; but, on the other hand, if the past has been one of progress, we may fairly hope that the future will be so too; that the blessings of civilization will not only be extended to other countries and other nations, but that even in our own land they will be rendered more general and more equable, so that we shall not see before us always, as now, multitudes of our own fellow-countrymen living the life of savages in our very midst, neither possessing the rough advantages and real, though coarse, pleasures of savage life, nor yet availing themselves of the far higher and more noble opportunities which lie within the reach of civilized man.

The chairman, Sir Roderick Murchison, expressed his adhesion to the views of the author of the paper, and his conviction that there had been progression throughout the works of Nature.

Professor Busk said there was a previous question, which should be settled before they could enter into the substance of this paper, namely, what was meant by "civilization." The word might be explained in several ways. In one sense it might be regarded as the obtaining of a command over the powers of nature, and the invention and application of useful arts; but in another and much higher sense, "civilization" meant the cultivation of moral qualities and of intellectual pursuits. Now, when they regarded mankind from this last point of view, he thought the results would be very different from those which should be arrived at if they considered civilization simply in the broad sense of the mere application of useful arts for purposes of ordinary life. In the higher sense of the word, they had at the present time in the world perhaps three, but at all events two, distinct kinds of civilization. They had the Chinese in the westward parts of Asia, the origin of which was lost in remote antiquity; they had, secondly, a civilization in western Europe, and probably throughout Hindostan, though that might, perhaps, be a distinct centre, but at any rate it diverged at a very remote period from European civilization. But the one to which he was particularly desirous of drawing attention was the civilization of Europe, which was drawn entirely from the Greeks—for all modern inquiry, even in the form of physical inquiry, was to be traced to the ancient civilization of Greece. He thought that in one sense—that was the intellectual sense—the moderns had not advanced one single degree beyond the civilization of ancient Greece: there had been no progress whatever in that respect. Of course, there had been a great acquirement of physical knowledge, and an abundant application of that knowledge to the useful arts. The condition of mankind had been very much improved in consequence; but the real essential civilization of the human mind had not advanced, he supposed, in Western Europe from the time of Aristotle and Plato to the present. They reasoned in the same way as we do; they had almost the same moral sentiments—and the higher among them, those of Socrates, for instance, were equal to ours. There had been no advance in civilization in that direction, so far as he (Dr. Busk) could see from the period of these great men, and probably for some time before it. The origin of this Greek civilization was as yet a great mystery; but he thought he might say, expressing himself widely, that all the civilization in the world with which they were acquainted, leaving out the Chinese, was due to one common source, whatever that source was, although it was lost, like that of the Chinese, in the remotest antiquity. They had no evidence of nations which had been debased, from their geographical position and circumstances, from coming within the sphere of this Greek civilization. They had no instance of any nations having become civilized except as they had come into contact with it since. The whole civilization—or so-called civilization, which was merely the invention of industrial arts among savage nations, with the exception of a trifling influence of that kind—the whole of their advance was due to their contact with the European mind; he thought no one could deny that. He fully concurred with Sir J. Lubbock in the assertion that these savage nations were not degenerated from any former condition of civilization of any kind; but at the same time he was hardly prepared to admit that there was any evidence to show that savage nations had the power of advancing themselves by their own

unaided intellect. They had a striking instance to the contrary in the case of the African Continent, or rather that part of it south of the Great Desert. That part of Africa, of course, was quite cut off from the rest of the world, as well in modern as in ancient times. Those Ethiopian races had existed in Africa in vast multitudes, in some of the most fertile countries in the world, with every possible advantage of metals and minerals, and with abundance of animals which they might tame, and which other races than themselves had tamed. He referred to the African elephant; the negro had never domesticated it, though it was perfectly capable of domestication. The negro was so stationary a creature that he had never from the beginning of time invented an alphabet, or built a ship, or domesticated a single animal; he was as great a savage as he had been in the early dawn of his country. He had never been brought sufficiently in contact with European civilization; but, even if he were, it seemed doubtful whether he would ever advance to be more than a mere copyist; but that he would never originate ideas, either moral or intellectual.

Sir Walter Elliot was understood to ask Sir John Lubbock whether it was not the case that no race of men had ever been discovered who were not possessed of highly artificial language. It was almost impossible to conceive that savages gradually emerging from utter barbarism should be able to form a structure of grammar such as was to be found among them. There were instances of races falling from a high civilization to a lower. He mentioned, in detail, several Indian races as an illustration of this. He also related as a curious fact that an instrument like the boomerang of Australia was represented on some of the Egyptian monuments, and had evidently been in use among that people 3,000 years ago.

The Rev. H. B. Tristram wished to suggest to Sir John Lubbock whether his statements and facts were not compatible with some other conclusion than that at which he had arrived. He agreed with Sir John in the emphatic statement which he had put forth of the original identity of the human mind; but at the same time he would suggest whether many races which had not yet risen might not still rise to a higher place in the scale of civilization. While on the Gold Coast and the Slave Coast even the commonest arts of life had been lost, and lost from the earliest time of which the Portuguese voyagers gave us any account of the Guinea Coast, yet in the interior of the country south of the Sahara, in the centre of Senegambia, many of those arts were found, such as melting barley, weaving and dyeing, and smelting iron. These arts certainly told of a civilization which put the negro a little above the position in which Professor Bask would place him. But granting that the negro had as yet shown no aptitude for or power of invention, and that he had never risen without our help, was there not a time when the civilization of the Greek race was far behind that of the Egyptian race? Did not history seem to say that there was some sudden start at some period? First, the Chinese civilization, then the Assyrian, then the Egyptian, then the Greek civilization, of which we are the successors, which had arisen at different periods, in different nations, perhaps independent of each other; but ever since these civilizations arrived at a certain height, Dr. Bask tells us, they have not advanced. Perhaps they did not: certainly the Chinese and the Assyrians did not advance, and the Egyptians were stationary for many ages. May not these other races have their turn to advance, if they have a sufficient draft on the bank of time, and produce, too, their Socrates and Platos? Then he thought Sir John Lubbock had hardly given sufficient allowance to one very probable way in which the islands in those distant regions were peopled. If the northern parts of Europe were peopled with outcasts from civilization—if they were peopled with shipwrecked crews cast ashore in boats—was it not most probable that these individuals could not possibly, from the force of circumstances, on their first arrival preserve their arts; and then the very first terms of language that they would lose would surely be the abstract terms. While they would preserve the names of any particular tree, the abstract idea of a tree would be the very first that they would lose. He (Mr. Tristram) was submitting this on the hypothesis that there had been degradation as directly opposed to Sir John Lubbock; he was submitting that it was true that Sir John's facts might be reconciled with the hypothesis of de-

gradation, which he himself believed in most firmly. He never could see anything in the state of these savages which might not be easily accounted for by their isolation; and the difficulty of the unity of language seemed to him to arise from the fact, that as they lost their knowledge of the arts, they lost all terms of speech which represented those arts that they had forgotten. He did not see it was impossible to reconcile Sir John's facts with the fact of all barbarism being a degradation from a previous civilization—not such a civilization as we have at present, but such a civilization as existed at present in Arabia, Armenia, and in the Plateau of Northern Asia.

Dr. Hunt entirely disagreed with Professor Bask respecting his opinion that there had been no advance in the civilization of the people of Western Europe during the last two thousand years. Two thousand years ago there were a small people who had arrived at a very high state of intellectual culture and civilization, but it was no less true that that was confined to a very small portion of Europe, and that since that period it had extended throughout the whole area of the Continent. They saw then a centre from which civilization radiated, but there were no doubt other centres at this time from which a higher civilization was again radiating, and possibly Dundee was one of these centres. With regard to his opinion that no savage race had advanced, that was also to some extent the opinion of the author of the paper. He had told them that there were several races who had raised themselves, but it was only a question of degree, and he understood Sir John Lubbock to mean that these savage races had raised themselves only to a certain position. He thought that, up to this time, there had been no real scientific satisfactory reply to the questions. Whatly he had propounded. He said they never knew of any savages civilizing themselves, and that, therefore, civilization was the original state of man. Now he (Dr. Hunt) was very much surprised that, after the conclusive and exhaustive, satisfactory and final, answer to the question, and the facts there brought forward, that there was any member of the Association who would still advance the opinion which they had heard from Mr. Tristram. Sir John Lubbock seemed to have brought forward all the evidence in such a clear manner as to leave no mistake on the minds of those who were open to conviction, that the original state of man was not certainly that which was depicted by those who believed it to be a state of civilization. With regard to the unity of language of which Mr. Tristram spoke, the progress of scientific inquiry showed that there were great diversities which could not be reconciled by any theory of unity. Mr. Tristram had told them that they must wait with regard to the civilization of the negro and other savage races, but that was not science. They had to found science on facts which they at present knew. They were not called upon, before bringing forward a scientific theory, to say what might take place in the future. All they could do was to trace the history of the races in the past, and see according to that what were the theories to be propounded. With regard to the original unity of the human mind, to which Sir John Lubbock had alluded, did Sir John mean an original unity in the shape and the form and the size of the brain or the skull? If he did, then he (Dr. Hunt) must entirely differ from him; but if he meant an original unity of all animal life, then he for one had no objection to that expression; or if he meant to say the original unity of all organic nature, he should not raise the slightest objection to the words; but he should be very glad to know exactly what was meant by Sir John Lubbock with regard to the words, "the original unity of the human mind." With regard to the conclusions to which Sir John Lubbock had come, he entirely agreed with the first and second. As to the third, that several races had raised themselves, perhaps Sir John would kindly mention any race which had done so. He (Dr. Hunt) did not know at this moment of any race who had raised themselves since we first knew them, with the exception of the races of Europe. The whole races of mankind appeared to him to have derived their progress and their advancement in civilization from the European races.

Sir John Lubbock, in reply, said he thought the remarks which had fallen from Mr. Tristram and Dr. Hunt showed the necessity there was for his reference to the opinions of Archbishop Whately, which had been called in question by Mr. Crawford. In answer to remarks about

religion, he would only repeat that many travellers had met with savage races who had no knowledge of religion. Dr. Hunt had asked him for some cases of nations who had raised themselves. He thought many might be given, but he would merely mention the Chinese, Mexicans, and Egyptians as three races who appeared to him to have raised themselves to a certain amount of what Professor Bask would still permit him to call civilization, independently of any assistance from one another.

The discussion then terminated.

Connected with the subjects of the papers and discussions that have occupied so much of our space, was the announcement made by Sir Roderick Murchison, of "The International Congress of Anthropology and Prehistoric Archaeology for 1867." The decision as to a meeting in England had been made, on the 29th August last, at the meeting in Paris, over which M. Lartet presided. In making the announcement, Sir Roderick referred to some local manifestation of feeling as to the tendency, supposed, of one of the papers read in the session.*

MONUMENTAL.

We learn that the execution of the proposed statue of Mr. Peabody is now resolved upon. At a meeting of the general committee on Saturday, the amount reported was over 3,000*l.*, when it was decided by the unanimous vote of the meeting to entrust the work to Mr. Story, the American sculptor. Mr. Peabody will give sittings in Rome, and it is hoped that the statue, which is to be of bronze, may be ready within eighteen months. The Corporation of London have been memorialized to grant a site near the Royal Exchange. The subscription list will be closed this month. The treasurer is Sir Benjamin S. Phillips, alderman; and the honorary secretary Mr. Charles Reed, F.S.A.

The Birmingham town council have resolved "That the Free Libraries Committee be instructed to consider if accommodation can be afforded in the Gallery of Art for the temporary keeping of the statue of H.R.H. the late Prince Consort, and to report to the council."

It has been resolved to erect a memorial of the late Lord Feversham, at Helmsley, and a design, in the form of a market cross, with a suitable inscription, has been accepted, the architects being Messrs. Banks & Barry, of Westminster. The memorial is to be placed in the market-place, and already about 600*l.* have been subscribed towards the necessary expenditure.

A Brockett Memorial has been erected in St. Edmund's Cemetery, Gateshead. The committee selected the design of Mr. Pearson, marble and stone works, of the Red Barns, in this town, and the work was entrusted to him. The monument is a square Gothic one. The inscription is "In grateful remembrance of Wm. Henry Brockett J.P., Mayor of Gateshead, 1839-40."

A mausoleum, erected to the memory of the late Duke de Morny, in the cemetery of Père la Chaise, is now terminated. This monument stands on the western summit of the eminence which overlooks Paris, not far from the tombs of Casimir Delavigne and Honoré de Balzac.

OPENING OF PRESTON TOWN HALL AND PARKS.

THE Duke of Cambridge has inaugurated the new Town Hall and two public parks, and the Mayor next day opened Moor Park. Both occasions were celebrated by holiday ceremonial.

The new Town Hall has been about five years in building. We gave a view of it in the *Builder* of 30th August, 1862, p. 620. The architect was Mr. Scott. The building occupies the site of the previous Town Hall, at the top of Fishergate and the higher end of the market-place. The architecture is Gothic of the early part of the fourteenth century. The ground-floor contains an exchange-room, 50 ft. by 40 ft. Over the exchange-room there is a great hall for the holding of public meetings, &c. All the windows are filled in with stained quarry glass. The entire cost of the Town Hall will be about 70,000*l.*

The new parks, opened by the Duke of Cam-

* In making this summary we have derived assistance from the *Dundee Advertiser*, whose reports of the entire meeting fully deserved the encomiums they have received.

bridge, are situated on the south-western side of the town. One of them is called Avenham Park and the other Miller Park. The former has long in the main part of it been a recreation ground, but until lately has not been laid out to any particular extent. The latter is quite a new park, the land for the greater part of it having been given on certain conditions to the town by the late Mr. Alderman T. Miller, of Preston. Both parks have been laid out according to designs by Mr. Miller, landscape-gardener. At the higher end of Miller Park there is a balustrade of stone, and in the centre of the ground a fountain. Moor Park is 100 acres in extent. It is situated on the northern side of the town, and is a new one.

CAMBERWELL.

THE land on which Christ Church stands being required by the South Metropolitan Gas Company, the site and building have been purchased under the powers of an Act of Parliament for the sum of 6,000*l*. A new site has been obtained in the Old Kent-road, near the "Half-way House," being the house and grounds lately occupied as a ladies' school, and known as Claremont House, but which was formerly the residence of the notorious "Dick Turpin."

The foundation-stone of the new church was laid last week, and the building, which is now in active progress, will be ready for use by Midsummer next. It will be a brick structure, with dressings of yellow and blue stone, and in style a free adaptation of Early French Gothic. The chancel will be to the road, which places the building as nearly east and west as the exigencies of the site will permit.

The plan consists of a wide nave and south aisle, containing a gallery for about four-fifths of its length, but set back from the nave-arch about 7 ft., and, stopping short of the east end of the aisle about 9 ft. The gallery is reached by a Portland-stone staircase of semicircular plan, and the building containing this also serves as a means of exit for the sittings under the gallery. The main entrance is by a large porch at the east end of the south aisle in the corner formed by it and the vestry, with organ-chamber over, which in its turn fills the south-east angle formed by the chancel and aisle. There will also be a large doorway at the western end of the north nave-wall, near which the font will be placed. There will be no clearestory-lights: the nave will be lighted by a large west window and four large three-light windows in the north wall. The present contract does not include the tower, to raise the funds for which, however, an effort is now being made: it will be erected over the vestry and organ-loft.

The present contract is taken by Messrs. Dove, at the sum of 4,750*l*., which will be increased by another 1,000*l*, if the tower is erected before the completion of the present contract, and of this there is every probability. Mr. Bassett Keeling is the architect.

The spire of what is known as Camberwell New Church, one of Mr. Scott's earlier works, is now surrounded by scaffolding, with a view to necessary extensive repairs, rendered necessary by decay of the stone.

THE MAGNESIAN CEMENT.

We have had experiments made with the cement alluded to in *Galignani* as having been invented by a M. Sorel. The ingredients are oxide of magnesia and chloride of magnesium, and the "cement" is therefore an oxychloride of magnesia. That it has cementative power to some extent appears to be no fact, but the experiments are not very encouraging. Time, at all events, will be necessary to enable us to say what power the cement may ultimately display, but it certainly does not show much haste in setting and hardening thoroughly. Other cements are far superior in this respect. A good deal of gravelly sand, however, may be mixed with it into a somewhat cementative mass. How the ingredients can ever be made to compete with those of other cements in cheapness we cannot see. Oxide of magnesia is no means a cheap material: neither is chloride of magnesium. Oxychloride of zinc displays more cementive power than oxychloride of magnesia.

HOLBORN VIADUCT AND LONDON THOROUGHFARES.

AFTER being under the ban of public opinion for half a century, Middle-row has disappeared, and the viaduct looms up in the distance, giving evidence of an earlier completion than the public had recently been led to expect. When finished, people will wonder how the hill had remained so long a standing reproach to the public spirit of the City, and the constant source of serious accidents. The new streets in connexion with it are hardly of less importance than itself, and, when completed, will necessarily suggest others: for instance, the one from Hatton-garden to Smithfield will hardly be allowed to end at Charter House-square; it certainly ought to be continued not only into Aldersgate-street, but through Bridgewater-gardens to Bunhill-row, and thence between the Artillery-ground and Bunhill-fields burial-ground to the City-road. This would not only be in itself a desirable new thoroughfare between Smithfield and the north-eastern parts of the town, but it would be an important sanitary improvement for one of the most crowded and dirty neighbourhoods in London already pointed out by you,—namely, the large block within Old-street, the Barbican, Aldersgate-street, and Bunhill-row.

There is, however, in streets a difficulty of great importance which the completion of the viaduct will rather increase than diminish, because the traffic will most likely be considerably promoted by the opening up of wide and convenient streets of easy grade converging at the Old Bailey, having an aggregate width of some 200 ft., the said traffic going east and west by Newgate-street, which when widened will only be 50 ft.; and, still worse, Cheapside in some parts is less than 40 ft., with very little prospect of being widened. I am aware that Mr. Haywood projected a new street through Christ's Hospital eastwardly to Whitechapel, but there does not seem much prospect of an early commencement of this undertaking; and, even if made, I have some doubts about the extent of diversion of traffic which it would cause, being mindful of other experiments in this way. On the other hand, considering the value of property and the nature of business in Cheapside, it seems hopeless to expect any relief from an increased width of that street; and as Gresham-street was hopelessly botched from its commencement we are left with one expedient only, that is, a new street, or streets, as near Cheapside as possible. I would propose a street commencing on the north side of St. Vedast's Church, Foster-lane, and running as nearly straight as possible to Prince's-street, crossing the Old Jewry at St. Olave's Church, and passing in rear of Grocers' Hall. The access from St. Martin's-le-Grand would be rather difficult, as the Post-office encroaches on a direct continuation of Newgate-street; still, with the sanction of the authorities, a practicable street might be laid out without interfering with the integrity of that building. And here I cannot help adverting to its entire inadequacy to the enormously increased business now forced upon that branch of the public service. The style of architecture chosen is ill adapted to the irregular form of the site, as, including porticoes, nearly or quite one-third of the space is lost. A two-story classical building for strictly business purposes, not half large enough for the wants of the Department, is not the best way of utilising land worth probably half a million per acre. Two or three portions of the service are lodged in neighbouring streets, to the great inconvenience of the public, and a large space on the opposite side of the street is now being purchased for an extension; but it seems to me that, with the traffic of such a street between them, this is nearly as bad as the present method of having them in different streets in the vicinity. My idea would be to buy all the property within King Edward-street, Ball and Mouth-street, St. Martin's-le-Grand, and Newgate-street, and there to raise a lofty business-like block of buildings with an interior court, the whole of sufficient capacity for double the present business. This would, of course, be very costly, but the sale of the old site would partly recoup the expense, and in the long run the most costly would really turn out the most economical, as nothing can well exceed the extravagance of our perpetual makeshift patch-work way of doing such things.

When the Newgate meat-market is removed to Smithfield, which, I fancy, may take place some time next year, I look forward to an agitation for a new street from Cheapside through the

market site, Warwick-square, between the Court House and Newgate, to Farringdon-street, which, if accomplished, would with the one I have proposed settle the question of streets in that vicinity for half a century at least. J. W.

A correspondent writes,—Some years since there was a plan noticed in the *Builder* for uniting Tottenham-court-road with St. Martin's-lane by a new street.

Now that the North Western and Charing Cross Underground Railway (which company was to have made the new street) is given up, would it not be as well to call the attention of the Board of Works to the desirability of making the new street? It would be an immense improvement to the W.C. district, and could be made at a moderate expense.

YALE COLLEGE MEMORIAL CHAPEL, NEW HAVEN, CONNECTICUT, U.S.

IN accordance with the request of the Alumni of Yale College, expressed at the commemoration in July, 1865, a committee then appointed have considered various plans suggested for a memorial of their brethren who fell in the recent civil war. After consulting with a committee appointed by the corporation of the college for the construction of a new chapel, they reached the conclusion that the desire could be best accomplished by connecting this memorial with the chapel which the college had for some years past proposed to erect. Designs were submitted to the committee by several leading architects of New York, each presenting some attractive features, and from these the design presented by Messrs. Vaux, Withers, & Co., of which we give a view and plan, has been selected. Permission has been obtained to devote to the memorial chapel a gift from Mr. Joseph Battell of 30,000 dollars, which now amounts to about 36,000 dollars; but, in addition to this generous contribution, the sum of 160,000 dollars will be required in order to carry out the design selected, and this sum the committee are now seeking to raise.

The purpose of the chapel, that it should be a memorial of the graduates of Yale College who fell in the service of the country during the late rebellion, necessarily gave the key-note to the design as a work of art.

Two lofty halls, or ante-chapels, are provided, opening through archways in the side-walls of the tower entrance, and only separated from it by ornamental iron screens. These two ante-chapels, with the principal vestibule between them, will thus present the effect of one apartment devoted to memorial purposes. The windows being 20 ft. from the floor, there will be ample wall-space beneath them for mural tablets.

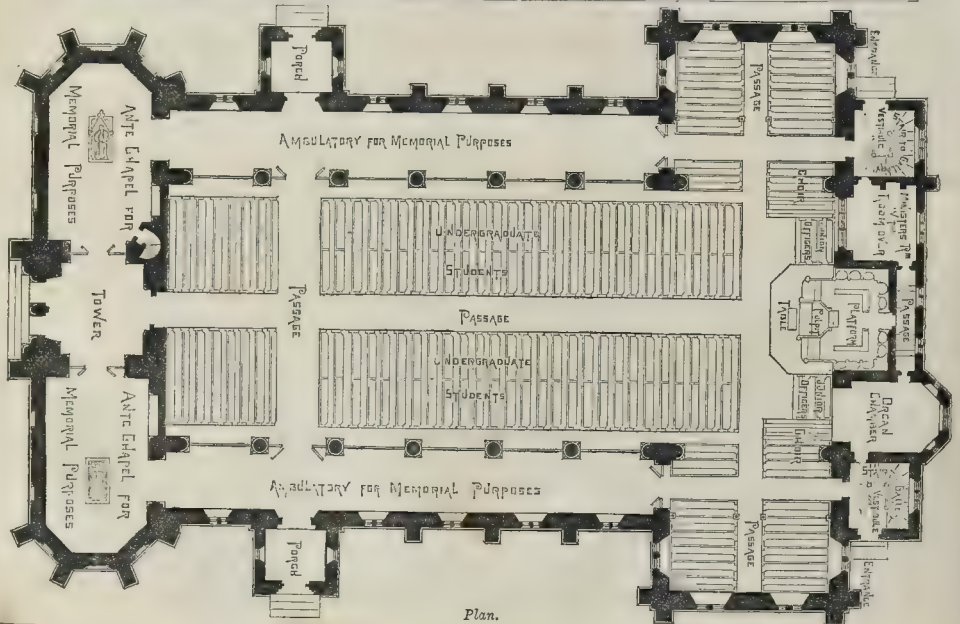
This general arrangement is adopted, say the architects, in order that every one on entering the main building from the principal entrance may at once be made aware of the particular intention of the design, while yet no portion of the area thus set apart will be used as a common passage. Each of the ante-chapels is extended in the form of an aisle or ambulatory, parallel with the chapel proper, from which it is separated only by arches filled to the springing line with light iron screens. The chapel proper, with its aisles, will be lighted mainly by twelve large clearestory windows, as shown in the general view, the small ambulatory windows being introduced rather with a view to their being filled with memorial glass, than to their serving any important purpose in the general system of lighting.

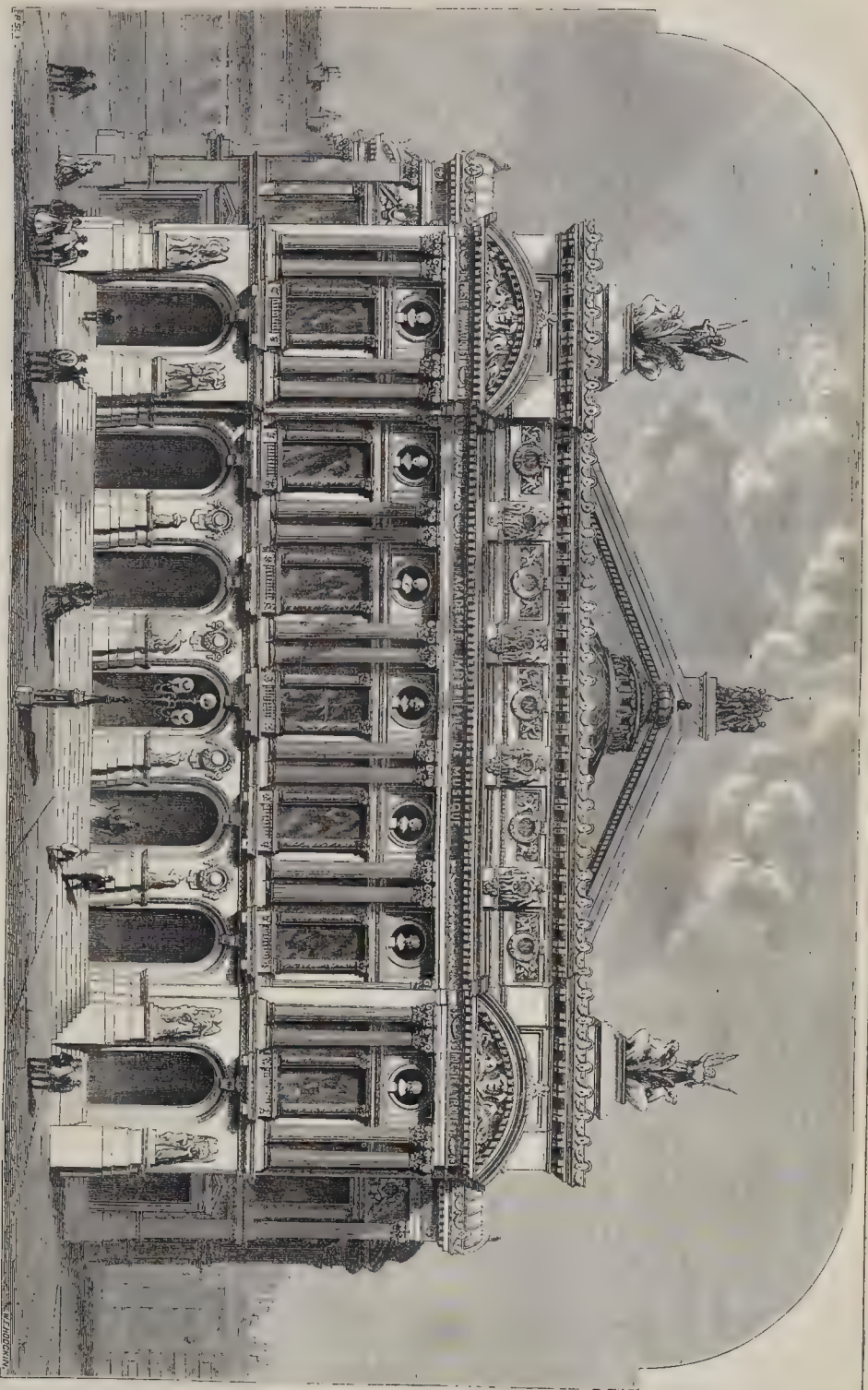
The whole number of sittings provided by the plan is 1,100, of which 960 are on the ground floor, and 140 in the transept galleries.

The principal front of the exterior design includes the two monumental ante-chapels and the tower; and this part of the composition is depended on to embody the memorial idea, the bronzes or marbles in the panels being of a less personal character than the mementos in the interior. The exterior architectural effect of the chapel proper is intended to be simple, and will depend mainly on the clearestory, the transept gables, and a broad stretch of roof.

It will thus be seen, that although the expression of the memorial idea predominates both in the interior and exterior of the design, the portion of the building intended to be used for religious services occupies the central position, and has an individual character.

YALE COLLEGE MEMORIAL CHAPEL, CONNECTICUT.—MESSRS. VAUX, WITHERS, & CO. ARCHITECTS.





FACADE OF THE NEW OPERA HOUSE, PARIS.—M. GARNIER, ARCHITECT.

THE NEW OPERA HOUSE, PARIS.

THE immense pile the Parisians call *Le Nouvel Opéra*, and the *Académie Impériale de Musique*, vies with the Great Exposition in attracting the attention of Parisians and strangers. This new wonder of Paris is progressing steadily towards completion, and has now attained a stage that gives tangible assurance of the stupendous effect of the whole. Situated in the centre of an open Place, presenting its four façades to full view, in one of the best neighbourhoods in Paris, close to the junction of the Boulevards des Capucines, and the Boulevards des Italiens, well set back from both, and easily accessible from three spacious thoroughfares besides these, the position of the Opera-house is satisfactory. The façade looking upon the boulevards is sufficiently completed to admit of the removal of the scaffolding, though the rest of the edifice is in parts still encased in it. Besides scaffolding, the structure is further covered up with the wonderful glazed screens that are used in Paris to protect buildings from the weather, or shield the workmen when in course of execution. Over and above the boarding with which English builders are content to protect the public and their workmen, rises, to the full height of the structure, a huge timber-work screen, pierced with large glazed openings for the purpose of admitting plenty of light. Behind this glazed screen is the scaffolding, the various stages of which form light sheltered galleries, in which the sculptured decorations and other advanced operations can be conveniently carried on, at any height, in most weathers.

To give a rough idea of the form of the new Opera-house, we may liken it to an Italian palace, full of spacious suites of apartments, corridors, loggias, staircases, *salons*, *foyers*, vestibules, &c., built close up against a Greek temple, to which comparison only holds good as far as the general effect as seen from a distance, for there is much more in the building than can be suggested by it. The palace, or palace-looking portion of the structure, has an inscription, in the centre of the frieze in gilt Roman capitals upon it, which describes it as the *Académie Impériale de Musique*; the raised part, covered by a huge pediment, as in a Greek temple, is that occupied by the theatre. At the point of junction where the *Académie* abuts upon the theatre, there is, on both façades, a pavilion two stories high, with spacious and handsome circular carriage-drive approaches to them. These pavilions, it is whispered, are for the use of the Emperor and Empress. All that is seen of the theatre from the streets around is the huge pediment standing up above all the other roofs of the building, for it is built on as a centre by a façade of angular-fronted houses having tier over tier of windows in them, assigned for the use of the *personnel*—*employés*, chorists, *figurantes*,—and for the transactions of various departments of the administration, and residences of the officers. The Academy has a richly-ornamented frieze and attic story, and a roof of pavilion-like construction. The style in which the whole is designed is French Classic Renaissance, of a most enriched kind, covered with carvings of great boldness and profusion, and ennobled as to material by a free use of marbles, and bronzes in juxtaposition with the sculptured mass of the cream-coloured stone of the fabric. The façade of which we give a view is that which is seen from the boulevards. It consists of two open loggias, one over the other. A slightly advanced wing flanks the centre on either side, and returns as the commencement of the façades that form the second and third frontages. The first open loggia, or that on the ground-floor, is approached by a flight of steps extending along its entire length. There are five semicircular-headed arches here, besides one in either wing, and another in each return, making nine in all. Between each of these openings is a pedestal, with a group of sculpture upon it. Balconies project between every two columns of the upper loggia. Marble pillars enrich the openings on this story. Over each opening are circular piercings, or openings, in which busts are placed. Mozart occupies the central place, or post of honour, unsupported by Spontin, Meyerbeer, Auber, Halévy, and Mendelssohn; and the busts of other musical celebrities are ranged all round the building in the same circles. On this façade is the inscription, "*Académie Impériale de Musique*;" and on one wing is inscribed "*Chorégraphie*," and on the other "*Poésie Lyrique*." A bronze cresting runs from the

pediment of one wing to that of the other. Over the handsome frieze, which is principally formed of boys, boldly carved, supporting crowned shields bearing the gilded letter N, is a second cresting, which is eccentrically formed of gilded masks. At the summit of each angle, making a pyramidal finish to each wing, is a group of sculpture. We may here note that in some of the recent public works the Napoleonic initial is intertwined with that of the Empress, but in this case the imperial N is alone used.

Within the unfinished parts of the structure a marvellous sight presents itself in the multiplicity of the iron pillars, girders, tie-rods, &c., most of them fixed in their places, and others in course of being raised by steam-engines. Those who saw the interior of the domes of our International Exhibition of 1862 while in progress would be immediately reminded of them when gazing upon this labyrinthine construction. At present there is not a bit of woodwork to be seen, except the forest of balk-timber scaffolding: it is a vast so-called fire-proof shell full of iron spider-webs. A tall massive iron column rises from the ground to the roof at the interval of the boxes all round the interior of the house, rising from the *parterre* to the amphitheatre. From these pillars depart girders to carry the floors of the *stalles de balcon*, *loges*, *boîtes*, and corridors. This arrangement is carried out in tier above tier. Two immense lattice-girders cross the body of the house, high in the air, from the proscenium to the back of the auditorium, to carry the roof and the fireproof back arching of which the ceiling and roof are composed. We noticed very substantial pedestals by the side of the proscenium, which appear likely to obstruct the view from several seats, as well as a general massiveness in the ironwork, which, when the construction is lined with wood, as must be the case in the boxes and elsewhere, would be of consequence in a smaller house. It remains, however, to be seen whether the extent of the structure will altogether obviate this possibility.

The groups of sculpture shown in the view surmounting the wings are but temporary models out in wood and brilliantly coloured. The gilding is at present confined to the bronze cresting, the inscriptions on the frieze, and the imperial Napoleonic initial letters on the shields on the attic story.

The *coup d'œil* will, doubtless, be magnificent. The art-work for the interior will, of course, be placed in competent hands; for, as the existing theatres boast of sculpture, frescoes, and paintings by Klagmann, Guichard, Sechan, Distier, Desplœchin, Duret, Ferri, Lescorne, and this is intended to be the finest in the world, the sister arts must be represented in it by the first talent of the day.* Another year must elapse before the structure can be finished. Considerable impatience having been betrayed by the Parisians, those concerned removed the screen-work of one front, and revealed the yet incomplete façade we have illustrated, as an assurance that the work is not standing still.

ART EDUCATION.

A MEETING has been held at Oxford in the Music-room, Holywell, under the presidency of Dr. Acland, to consider what steps should be taken to render the School of Art for the Working Classes, established in the Taylor-buildings, more attractive to those for whom the school is specially instituted. There was a numerous attendance of those who have always taken a practical interest in the school, and there were many present who have not hitherto identified themselves with the movement.

The Chairman said the object in view was essentially the cultivation of the mind of the working-classes, and that was the subject he would ask them to consider upon the present occasion. He need scarcely tell them that the skilled workman always commanded the higher rate of wages; and, as a School of Art was essentially one in which men were taught to be skilled, they would readily see the importance of the objects in view. Besides, Oxford was a city so closely connected with art that it possessed advantages not to be obtained in any other place in the kingdom; and therefore he invited the working-classes to attend the opening of the Art School for the ensuing season. There were

* A list of the artists to whom the decorations are entrusted has been published.

three kinds of art: the purely mechanical, the imitative, and the ideal, or works of fancy. No person was a great artist who did not possess all those parts, who could not copy anything he pleased, and who had not that power of idealization by which he could give expression to them. Every artist had those powers to a certain degree. It might be said that every carpenter's apprentice had within him the mechanical and imitative parts, and hoped by practice and attention to improve upon them; and, if that were so, every man was an artist in his own nature; but the object to be obtained was proficiency in art, which did not rest either upon mechanism or imitation, and if the British workman wished to excel, he would train his mind to the higher branches of art, or otherwise he would be left behind. Let them, if they would, look at the thing in a commercial and purely financial light, affecting as it did the mass of the nation in that respect. Let them consider what descriptions of art it was that affected the artisans of the country? It was that kind of artisans now before him. They might not become either Raffaello or Michelangelo, but, if they were not, they might study so far as to make themselves good skilled mechanical artisans, and then, in future life, their master would, if he thought they were worth anything, know how to make the distinction between one class of workmen and another.

Several speakers besides the chairman addressed the meeting, and appropriate resolutions were passed.

THE BIRMINGHAM AND MIDLAND INSTITUTE.

THE winter session of this Institute has been opened. The President for this year is Mr. Commissioner Hill, Q.C., for a quarter of a century recorder of the borough.

The learned President, at the commencement of his address, cited a few sentences from a speech delivered by the late Prince Consort in laying the foundation-stone of the building twelve years ago. The illustrious Prince on that occasion said,—

"This work I do not look upon as a simple act of worldly wisdom on the part of this great town and locality, but as one of the first public acknowledgments of a principle which is daily forcing its way among us, and is destined to play a great and important part in the future development of this nation and the world in general,—I mean the introduction of science and art as the unconscious regulators of productive industry."

The learned President said that much as had been done in the direction defined by the Prince Consort, he was persuaded they felt acutely that much still remained to be done; but effected it assuredly would be, unless he formed a false estimate of his fellow townsmen. The continued prosperity of the town, he said, could only be retained by an uninterrupted series of victories. In no place on the face of the globe was so rapid a succession of trades necessary for the full employment of the population. Staple trades, with the exception of gun-making, there were none, or next to none. Numerous manufactures, however, started into existence, prospered for a time and died out again at the caprice of fashion. What was better, because of more permanent benefit, discoveries in science were speedily applied here to the arts of life. In conclusion, the president expressed his conviction that the removal of every obstacle to the permanent welfare of the town, and the promotion of whatever tended to its advancement, must concurrently foster the love of knowledge in the rising generation.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE Liverpool Architectural Society held their first meeting of the session on the 2nd inst., at the Royal Institution, Mr. T. J. Kilpin in the chair. In his opening address the president alluded to the subject of labourers' dwellings, and said that nowhere had it received such anxious consideration as it had done in Liverpool. The talent, experience, and practical energy of the borough engineer had been called into requisition, and some excellent plans had since been tendered. There were upwards of seventy of these designs; but the difficult problem still remained unsolved of how to square an inevitable expenditure with adequate remuneration. With all their talent they were unable to accomplish their difficult task. Then

a revision and relaxation of the laws now regulating the erection of buildings for the working classes would become a matter of imperative necessity. He spoke with deference and with due consideration when he expressed an opinion [in which we are not disposed to agree] that important reductions might be made in the thickness of the external and internal walls, and in the scantlings of the timber. He would also venture to suggest that the distance and open spaces now required to be left between the blocks of buildings might in some instances be reduced, and this would also tend to the reduction of cost.

THE WEST HAM (STRATFORD) TOWN HALL COMPETITION.

The West Ham Local Board have awarded the first premium of 100*l.* to the plans marked "Chris," the joint design of Mr. Lewis Angell and Mr. John Giles, of Craven-street. The second premium of 50*l.* is awarded to Mr. G. A. Wilson, of Leadenhall-street, for design marked "Adam," and the third premium of 25*l.* to Mr. H. S. Legg, of Bedford-row, for the design marked "Industria."

The sum is not to exceed 20,000*l.* That sum includes the site and cost of the building.

PREMIUMS, WINCHESTER DRAINAGE.

At the last monthly meeting of the local Board, the General Purposes Committee brought up a report containing the following paragraph:—

"Mr. Newman, the surveyor to the local Board, having been instructed by the committee, presented the following report upon the merits of the different plans for the drainage of the city:—

"Gentlemen,—I beg to say that I have very carefully considered the relative merits of all the schemes for draining the city and the disposal of the sewage, and consider that awards should be made as under:—

1st Premium, to No. 7; 2nd ditto, No. 3; 3rd ditto, No. 11. H. NEWMAN.

Your committee having, in their last report, presented to the special meeting of the Board on the 17th of September last, dealt with the question of awarding premiums to the plans then before them, viz., Nos. 1, 5, 7, and 11; and having again fully considered the matter with reference to the plans originally sent in to the Board; and having referred to the report of the surveyor, Mr. Newman, which was presented to the Board on the 4th of April last, and which embraced the whole of the plans in competition; and after consultation with Mr. Newman as to the relative merits of the same, have determined finally to recommend to the Board that plan No. 3 be awarded the second premium of 100*l.*, and that plan No. 11 be awarded the third premium of 50*l.*, and they trust that a satisfactory conclusion of the preliminary matter will be thus attained. They also recommend that the Finance Committee be authorized to sign cheques for the amount of premiums, and the clerk be instructed to write to the authors of schemes Nos. 3 and 11 to forward their plans to the Board."

No. 3, "Esto Porpetua," Mr. C. W. Whitaker, C.E., Southern Thames Embankment Works, London; No. 11, "Economy," Mr. W. Russ, C.E., 35, Gresham-street, London.

ACCIDENTS.

At Clapton an accident has occurred on the works of the main sewer in the new road from the Priory Estate, to the Lea-bridge-road. It appears that the soil was sandy, the sewer was about 25 ft. below the surface, and the sides gave way, and two poor fellows were buried in the debris, in which position they remained for upwards of three hours. Animation was restored, but the leg of one of them has been twisted in a peculiar manner by the falling earth.

A fatal fall from the tower of a new church at Stockwell has occurred. The workman killed was engaged in serving up the cement for pointing the brickwork of the tower, and his foot slipped, so that he fell a depth of some 70 or 80 ft. His skull was terribly fractured.

At the Prince of Wales's-road, Norwich, a gentleman narrowly escaped serious injury the other day from the careless way in which the pavement was left after the removal of some scaffold-poles, used for building purposes. The flags were carelessly put down, no regard being paid to their projecting a considerable distance above the level of the pavement; and persons hurrying to and from the railway station could not escape stumbling and falling. The gentleman above alluded to was precipitated with great force upon his head.

Near Blackburn a serious explosion has occurred at Messrs. Hodgkinson, Swain, & Collin's mill, Livesey. A number of large pipes, called economisers, were connected with two boilers, to supply them with condensed water. These pipes were fixed in the chimney flue, in order that the spent heat from the boiler might be made serviceable. The water on entering these pipes was about 110 degrees, and on leaving them it was raised from 250 to 270 degrees. The boiler shed was about 35 yards long and 20 yards wide, and was used for the purpose of storing cotton. It was covered with a slated roof, the joists being supported by iron pillars. Immediately adjoining is the shed, and on the opposite side of the shed is a row of houses. The explosion occurred in these pipes, through some yet unexplained cause. The roof of the shed was blown off, and the outside wall entirely demolished. The pipes were broken into fragments, and large portions of them, and also the boiler-valves, were thrown 30 or 40 yards into the air. All the glass in several alleys has been removed, and a great many of the looms are broken with the bricks, stones, and piping thrown upon them. The damage is roughly estimated at 5,000*l.* The pipes in question were put in by Mr. Ellison, of Oldham, about eight weeks ago, and at present no opinion can be given as to how the accident occurred.

At Pimlico, on Tuesday morning, a frightful accident (similar to the late Blackfriars-bridge accident) occurred at Messrs. Fabbriotti's Carara Marble Wharf, Grosvenor Wharf, Pimlico, which unfortunately has resulted in the death of two men. They were at work on a "traveller," shifting a block of marble of an immense weight, when the framework suddenly gave way, and the traveller with the unfortunate men were precipitated to the ground, a depth of about 28 ft. Shortly after they were extricated both died.

THE STAGE.

New Theatre Royal, Leeds.—The new theatre, to which we have before alluded, has been opened. The front is lofty, and is Italian in style. There are three doors in it, and they are sheltered from the weather by a permanent awning. The floor of the vestibule or crush-room is laid with encaustic tiles. The walls are coloured to harmonize with them, and stencil ornaments relieve the surface. Over the marble fireplace a large mirror is suspended; by the sides of the chimney-piece are a couple of niches, coloured blue, containing statues representing Tragedy and Comedy, holding lamps in their hands. Several pieces of classical statuary are also placed in niches on the stairs. A broad flight of stone steps, ornamented by a gilt balustrade, leads to the upper saloon. The statuary has been supplied by Signor Bruciani. On this saloon landing are retiring-rooms, fitted up with velvet-covered seats, and having lavatories supplied with hot and cold water, and other conveniences; and near them are separate coffee-rooms and refreshment-rooms, most comfortably furnished with small marble tables, chandeliers, &c., in the French style. The boxes are reached by a central door leading from the upper saloon. This part of the house is lighted by three Chinese prismatic lanterns and gas brackets. In front of the boxes, and separated from them by an iron balustrade, is the dress circle. It is fitted with *fauveaux*. There are twelve private boxes, lower and upper, approached by separate entrances, and fitted with chairs. The entire range of boxes will accommodate 280 persons. In the pit the seats are stuffed and fitted with backs. By an arrangement of the orchestra, the front of the pit can be turned into pit stalls, having a separate entrance, on extraordinary occasions. The pit will hold 1,100 persons without inconvenience. The gallery will seat 1,150 persons, and, like the pit, it can be divided into higher and lower priced seats. There are three separate exits from the pit, and a similar number from the gallery. The decorations are a reproduction of the designs which embellish the theatre in the Palace of Versailles. The proscenium is white and gold. In the centre of the arch is a bust of Shakspeare, and over this are the arms of Leeds. On the ceiling above is an oval panel, bearing the monogram, in gilt letters, of the proprietor, "J. C." A diapered cover runs round the ceiling. A large circle, coloured blue, and studded with stars, is formed in the centre by a framework of conventional foliage, and the four spandrels

at the corners are filled in with richly-decorated pendants and scroll work. The large sunlight in the centre of the ceiling is enclosed in a basket of prismatic glass. A shaft above the sunlight carries off the heated and impure air. The fronts of both boxes and gallery are enriched by scroll work, elaborately ornamented in gold and colours. The stage was laid down by Mr. Richard Haby. The machinery can be worked on one side; and, from the height and depth of the stage, everything can be taken up or down quite out of the way. The width of the proscenium is 25 ft., the height 28 ft., and the depth from the front to the back of the stage, 55 ft. The scenery is entirely new. Mr. James Gates has painted an act drop, and the principal scenes of the opening pieces; Mr. Chas. Smithers is the painter of a new curtain. There are upwards of twenty dressing-rooms, in every one of which hot and cold water has been laid on; and everything has been done that can conduce to the comfort and convenience of the performers and others employed in the house. The architects are Messrs. Moore & Son, of Sunderland. The builders are Messrs. Nicholson & Son, of Leeds. The decorations have been executed by Mr. Jackson; the arch of the proscenium, with the bust of Shakspeare and the arms of Leeds, and the whole of the designs in *carton pierre*, by Mr. Alfred Walker; the upholstery, including the fittings-up of the private boxes, is by Messrs. Roberts & Wouldhave; the iron-work by Mr. Tennant; the plumbers' work in the lavatories, the hot and cold water apparatus, and all the gas-fittings, including the central sun-light, by Mr. Lindley; the slating by Messrs. Watson & Wormald; and the plastering by Mr. Mountain, of Leeds. The entire cost of the building is estimated at from 15,000*l.* to 20,000*l.*

Bristol.—The new theatre here, will be opened on the 15th inst. The auditorium is identical in size with that of the Queen's Theatre in London, the same architect superintending both; but the stage and surroundings of the Bristol theatre are much larger.

A New Theatre for East London.—A new theatre, to be in future known as "The East London," is to be opened this week. It is situated in the Whitechapel-road, and occupies the site of the Effingham Theatre. To make room for the new theatre the old Effingham and some adjoining houses have been swept away, and a building has been erected in their stead, capable, it is estimated, of accommodating 4,000 persons. It possesses a large stage. There are two tiers of boxes. Those nearest the stage are fitted up for the accommodation of private parties. The centre of the first row of boxes is to be the dress-circle. The centre portion of the second tier is the amphitheatre, and behind that the gallery. The architect was Mr. Hudson, and the builders were Messrs. Palmer & Sons.

RAILWAY MATTERS.

The large depot of the Great Western Railway Company, beneath the site of the Smithfield Market, has been opened for goods. It is intended to supply the place of the warehouses at the Bull and Mouth, which are shortly to be pulled down. The rails are not yet laid down which are to connect the depot with the Great Western system, so that the yard will as yet be merely used as a receiving station for goods to be transported by the company's wagons to Paddington. This will ultimately form the largest and most important goods station of the company. The road into the depot is a spiral one, occupying the centre of the old Smithfield Market, and descending at a gradient of one in twenty-five. At the end of the descent are three large arches, of skew brickwork, which carry the road above, and through these is the passage to the yard, where temporary platforms and offices have been erected for the receiving and delivery of merchandise.

The traffic receipts of the railways in the United Kingdom for the week ending September 20th, 1867, upon a mileage of 12,537, amount to 815,181*l.*, being equal to 65*l.* per mile. For the corresponding week of last year the receipts were 769,692*l.*, the number of miles open 12,364, or 61*l.* 15*s.* per mile. A comparison of the two weeks shows an increase in the aggregate receipts of 51,365*l.*, and in the number of miles open of 173. On the lines having termini in the metropolis, the increase has been on the London and Brighton, 1,780*l.*; Great Northern, 4,177*l.*; Metropolitan, 4,250*l.*; London, Chatham, and

Dover, 2,899; South Eastern, 3,769; Midland, 5,975; North London, 891; Great Eastern, 732; London and South Western, 2,187; Great Western, 2,965; and London and North Western, 4,141. On the principal lines in England and Wales there has been an increase on the Lancashire and Yorkshire of 3,207; on the Manchester, Sheffield, and Lincolnshire of 1,724; on the North Eastern of 8,242; and in Scotland the North British and Edinburgh and Glasgow shows an increase of 847; on the Glasgow and South Western of 1,052; and on the Caledonian of 1,319.

The largest railway contract ever made by a single person, in the United States, is said to have been made recently by the Hon. Oakes Ames, of Massachusetts. It is reported that he has contracted to build the mountain section of the Pacific Railway, some 600 miles in length, for 17,000,000 dollars.

SANITARY MATTERS.

Sidmouth.—The drainage works in connexion with the sewer outlet have been completed and successfully brought into operation. The junction of the old sewers with the new outlet had just been effected, and all ready for putting the sewer into use, when heavy rains and high tides combined to test the utility of the sewer, which is said to have been completely up to the occasion, and prevented the usual swamping and flooding of houses. The only thing regretted is, that the pipes were not 2 ft. 6 in. in diameter, instead of 2 ft. 3 in. Mr. Phillips, who planned the works, has since submitted a plan and report for carrying out the Western Town drainage, which is also urgently needed.

Chippenham.—A company is being established to supply this town with water from the Locksweil Spring. Pure water is much needed here, as the water supply is very deficient. **Leamington.**—The steps taken by the local Board, in obedience to the order of the Court of Chancery, to cleanse the bed of the river Leam, from below their sewage outfall to its confluence with the Avon, has revealed that the deodorising process fails to render the town sewage sufficiently innocuous to permit it to be discharged into the river with impunity. The lime process is the one adopted, and the works are said to be as perfect as it is possible to make them. Now that the water of the Leam is diverted, however, into a temporary channel, that in the natural bed of the river appears perfectly black, loaded with offensive matter, and emits a horrible stench. It is only about five years since this part of the river was straightened and widened, so that the whole of the existing sewage deposit has taken place since then. It is not probable that the cleansing of the Leam, which will supply evidence that will strengthen the case of the plaintiffs in the Chancery suits against the local Board, will satisfy the Court, and in all probability steps will have to be taken to entirely remove the sewage out of the river.

THE PUBLIC HEALTH.

THE annual mortality of the ten large cities and boroughs in England for the quarter just ended, compared with the corresponding quarter of last year, was as follows:—

	1867.	1866.
Quarter ending September 28.	Quarter ending September 28.	Quarter ending September 28.
London	213	222
Liverpool	285	50
Manchester	315	60
Birmingham	289	193
Leeds	283	309
Sheffield	233	240
Bristol	192	207
Newcastle-on-Tyne	292	316
Edinburgh	284	283
Glasgow	282	253

The high death-rate in Liverpool for the summer quarter of 1866 was owing to cholera. London and Bristol have been remarkably healthy this summer. But in all the other places the public health has been unsatisfactory. Infantile mortality from diarrhoea and scarlatina was excessively great. In Newcastle-on-Tyne, scarlatina has been very fatal for five consecutive quarters, a circumstance unparalleled in any of the large cities and boroughs since the death returns were established. So fatally prevalent has scarlatina been in the borough of Newcastle-on-Tyne in the above-named period, that the annual mortality over 1,000 was raised to 31.6, 36.7, 37.0, 27.3, and

29.5 for the five successive quarters, ending September 28, 1867, being an uninterrupted prevalence of that dreadful and exceedingly fatal epidemic for no less than fifteen months!

Manchester has lately decided to have a medical officer of health; but so nearly was the project being negated by the Town Council of that city, that on a division the numbers were found to be equal, immediately on which the mayor gave his casting vote in favour of the proposition.

The Town Council of Birmingham have been memorialised in two petitions from the inhabitants of that borough to appoint an officer of health. To the second memorial were attached the signatures of eighteen borough magistrates, the leading members of the medical profession, and principal householders and tradespeople of the town. The petition was also signed by many of the merchants and manufacturers, and a large number of other eminent and influential mercantile houses within the borough.

The prayer of the memorialists is now under the consideration of the Town Council.

It may be as well to observe that Birmingham is the only great town in England which is deprived of the excellent sanitary advantage of an officer of health.

THOMAS L. PLANT, F.M.S.

SCARCITY OF HOME-GROWN FRUITS.

SIR,—In the notice you kindly gave (p. 703, ante) of my proposal to plant the waste lands of the Government and the sides of railways now unoccupied, with fruit-trees, you raise an objection (solely, I am pleased to see) on the possible obstructions of the view from the railway-carriages. Certainly, if standard pear and apple trees were grown continuously this would be a valid objection, and not the only one; but standards (high orchard trees) need only be planted where there is plenty of room, and where the view would not be intercepted. I propose, in cases such as you anticipate, dwarf trees, such as pyramids and bushes, which at no season of the year could possibly interfere with the view, which in the spring would be attractive for the bloom, and in summer and autumn for the fruit.

My calculations for profit would, no doubt, remain much the same; for where one large tree is grown, six to twelve small bushes would flourish; and the price of 3s. a bushel for apples might be doubled, or even quadrupled, for choice winter apples and pears.

My remedial suggestions have now been for four years before the public. I cannot learn whether they have yet been even partially adopted and acted on in England; but in France I have reason to believe they will shortly be properly tested.

C. ROACH SMITH.

"QUANTITIES."

SIR,—Allow me to ask one or two further questions on the subject of quantities.

1. Does not the employer, in some shape or other, pay under the present system the charges of both surveyors, i.e., the one appointed on his behalf, and also the one nominated by the builders; the cost being added to the contract?

2. Is it right that this should be the case? and, if so, should there not be clear understanding on the point?

3. In case of the abandonment of the work after the quantities have been taken out, in consequence of the amount proving too high, should the employer pay all the charges of the surveyors?

4. Is the architect liable in case the amount has exceeded the limit of his instructions? and, if so, is any margin, calculable on a per-centage, to be allowed in regards such excess? (For instance,—given the instructions to have 1,000, and the lowest tender proving 1,100, or 2,000.)

5. Is it not presumable that the surveyors would know as well or better than the architect, previously to the quantities being taken out that the tenders would prove in excess? and, if so, should not the responsibility be shared by them, and to what extent?

The above are points of practical importance to employers, architects, and surveyors, and it would be desirable to ventilate them.

AN ARCHITECT.

CLOYNE NEW ROMAN CATHOLIC CATHEDRAL.

SIR,—An announcement has been very generally made through the Press that the designing of the new Catholic Cathedral for the diocese of Cloyne, about to be erected at a large cost and on a proportionally large scale in the city of Queenstown, Ireland, has been entrusted to Messrs. Pugin & Ashlin. As many members of the profession are aware that it was originally intended there should be a competition for the important work, we think it necessary to inform them, and those interested in the question of architectural competitions, how it has occurred that Messrs. Pugin & Ashlin have now secured the work without the test of a competition. Early in this year we received a circular from the Rev. Dr. Rice, the Secretary of the Building Committee, inviting a competition for the purpose of receiving further instructions. We accordingly visited Queenstown in a few days, and saw the Right Rev. Dr. Keane, the bishop of the diocese, and the very Rev. Dr. Rice. We expressed our satisfaction with the general fairness of the conditions of the competition proposed by the Committee, but as one of these conditions was that the successful competitor should give security that his design could be executed for the stipulated sum of 25,000*l.*, we thought that, on the other hand, the other competing architects should have some guarantee that the Committee would not, as has too frequently occurred, select a design, the execution of which would ultimately far exceed the proposed outlay. Furthermore, being aware that Messrs. Pugin & Ashlin had powerful family connections and other influences over the general committee, we considered that a perfectly impartial committee of selection should be formed in the way to which we shall hereafter refer. We mentioned all this in conversation to the Bishop and Dr. Rice, and they highly approved of our proposal. The Bishop said, moreover, that what we advised would ensure not only fair play for the competing architects, but would secure the committee from being involved in a scheme which would far exceed their resources; and he mentioned a case of the kind which occurred some time ago in the City of Cork. Finally, the Bishop and Dr. Rice suggested that we should put our terms in writing, and invite Messrs. Pugin & Ashlin to join us in requesting their adoption on the part of the Committee. The Bishop said further, that if Messrs. Pugin & Ashlin refused to join us in asking such reasonable conditions it would produce a powerful impression on him, and also on the committee in their regard, but in such case he might say for certain that the request of two out of the three proposed competitors would be quite sufficient to secure the adoption by the committee of the conditions we proposed. We accordingly drew up the conditions of competition, a copy of which we enclose, and having signed them ourselves, forwarded them to Messrs. Pugin & Ashlin, requesting their signature. This, however, they declined to append; and, as the Bishop and Dr. Rice advised, we forwarded the conditions to the committee, requesting their adoption. The committee declined to adopt them, but drew up a new set of conditions, substantially the same as the first, except that it was provided that each of the unsuccessful competitors should be paid 200*l.* instead of 75*l.*, as originally provided. After mature consideration, we decided, under the circumstances mentioned above, that our safest course was to adhere to our original conditions, and to ask Messrs. Pugin & Ashlin again to join us in requesting their adoption by the committee. Messrs. Pugin & Ashlin again declined, adding that they had addressed their reasons for so acting several months previously to the committee. We then once more requested the committee to adopt our conditions, urging that we saw no other course by which fair play in judging of the merits of the designs could be ensured. The committee had no objection to that point, but had the committee had passed a resolution that fair

* The following are the principal conditions suggested:—

1. That all the plans and specifications shall remain in the hands of the bishop and administrator of Queenstown parish, till the expiration of twelve calendar months after the actual commencement of the building, and that they are not to be returned to the architects on any pretext whatever till the expiration of the time named.

2. That the architects' securities required by the resolution, No. 1, be obtained in the following manner:—The architects whose competition plans, and specification, are deemed by the Committee of Selection first in order of merit, shall furnish all supplemental drawings and specifications that may be necessary to enable builders to prepare tenders. Such supplemental drawings and specifications not to introduce any alterations or deviations from the original plans, but to be merely illustrative of them.

3. A sub-committee of selection to be appointed to consist of the Bishop of Cloyne and the administrator of Queenstown parish, three gentlemen not belonging to the architectural profession (one to be named by each competitor); and two architects of eminence to be elected by the five foregoing members. That the successful competitor shall be the gentleman whose plans shall, in opinion of the foregoing sub-committee of selection, guarantee the most beautiful, commodious, and cheapest building.

4. That the plans and specifications so prepared be advertised for tenders from competent builders, and if no respectable builders (with two solvent and approved securities for the amount of 5,000*l.*) will undertake to build the cathedral according to the said plans and specification for the sum of 25,000*l.*, the said plans and specifications are to be entirely rejected, and the architect of them to be dismissed from all further share in the competition, or in the erection of the cathedral, and is to receive no compensation whatever, and is to have no share of the sum of 150*l.*, mentioned in the fifth resolution of the committee meeting of the 20th January, 1867.

5. That in the event of the plans considered first in order of merit being rejected as above described, the architect of the second plan in order of merit shall be directed to proceed as mentioned in condition four; and in the event of such second plan being rejected for the same cause as the first, the plan considered third in order of merit shall be advertised for tenders in the same way as the two others; and if it be found impossible to have the cathedral built according to it for 25,000*l.*, the said plan and its architect shall be rejected without compensation as in the two preceding cases.

play should be shown; the fact, however, of their refusing to accede to conditions which the bishop and Dr. Rice (and we think all impartial people) consider fair and reasonable, joined with the persistent refusal of Messrs. Pugin & Ashlin to associate themselves with us in our endeavours on behalf of fair play, left us far from satisfied that a simple resolution on the part of the committee was a sufficient guarantee that justice would be done in the matter. In reply to our second application, the committee, through their hon. secretary, invited us either to accept their conditions or to decline them. In reply we expressed our unwillingness to decline so important a competition, and repeated our hope that the committee would after all adopt our terms. With this the correspondence ended, for the newspapers very shortly announced that Messrs. Pugin & Ashlin were appointed architects of the new cathedral. From this simple statement of facts, we think our professional brethren, and those who take an interest in such subjects, will be enabled to appreciate the exact value of the chances of fair play that existed in the Cloyne Cathedral competition as proposed by the committee.

J. J. McCARTHY, R.H.A., M.I.A.
GEORGE GOLDIE, M.R.I.B.A.

CONCRETE HOUSES AND THE BUILDING ACT.

SIR,—I observe the Camberwell district surveyor has come somehow to the conclusion that a wall which is mechanically homogeneous cannot be even "said to be properly bonded," and so opposes the erection of cottage walls of concrete, notwithstanding the convincing proofs which ancient and modern buildings afford of the strength, solidity, and prolonged duration of that economical and invaluable material.

Are we then to prefer the letter of the Building Act confined narrowly to what the above surveyor says, "strictly technical meaning," which, although his own point at issue, he unfortunately abstains from defining, to a comprehensive and liberal interpretation of its spirit?

If the former, as some advances are now being made on old "rule-of-thumb" notions, it appears reasonable that the Act should be modified to suit the exigencies of the age, without necessitating perpetual appeals to the central Board whenever "strict technical meaning" (as of bond, which may be considered closer and more effectual in concrete than in brickwork) is vaguely cited on fantastic or minute questions of degree, that admit neither of unbending uniformity nor of rigid regulation by martlets in building or in law.

The line drawn where rubble (permitted) and concrete (prohibited) walling meet must be fine indeed. The plain meaning of bond is the mode of connecting bodies.

E. L. TAYLOR.

We have received a letter from Mr. Tall, saying he is the builder alluded to by the district surveyor of Camberwell. His opinion as to the force of the Act (he being the party concerned) would, of course, go for little. We have already expressed our own distinctly. He says, in the course of his letter:—

"Of the six sets of apparatus now being made by me one is for a large London firm, to build a 2,000 ft. house, under direction of a well-known architect. The tracings supplied me to make moulds are herewith inclosed. In conclusion, allow me to contrast the conduct of the Metropolitan Board with that of the Emperor of the French. The Board has spent the whole time in consideration, while the Emperor has housed 144 poor families in concrete houses. If, after a few more years' consideration, the Board are of opinion that the Act is against concrete, I am confident it would only be so much the worse for the Act."

PRESERVATION OF STONE.

SIR,—In your number of the 28th ult. there is a report of a paper on "The Decay of Stone," read by Mr. John Spiller, of Woolwich, at the meeting of the British Association for the Advancement of Science recently held at Dundee. After describing his process for preserving stone, he lays claim to the invention of another and new process for effecting the same object, viz. by using baryta, as a means for neutralising the effect of the sulphurous and sulphuric acids in the atmosphere upon dolomite and limestones used in public buildings.

As one of the five persons in competition with Mr. Spiller, when the experiments were tried upon the Houses of Parliament in 1866, I beg to say that I was the first person who suggested the use of baryta for the purposes mentioned by Mr. Spiller, which can be proved by reference to the report of my examination before the Commissioners. Hence Mr. Spiller can scarcely bring forward his (?) invention as a novelty.

JAMES ROSE.

WOLVERHAMPTON.

New Infectious Wards have been erected at the Union Workhouse for the accommodation of two classes of patients. The building consists of two males' and two females' wards, each 30 ft. by 20 ft., and 12 ft. high, providing accommodation for seven beds in each ward, with an allowance of 1,030 cubic feet for each bed. A separate stone staircase is provided for each pair of wards, and on the ground-floor is a kitchen, with nurses' room above.

The wards are lighted and ventilated by sash windows on each side, and also by air-bricks in the lower and upper parts of the walls, covered with perforated zinc, and each having a sliding shutter. In each ward is fixed one of Galton's patent ventilating warm-air grates, provided by Messrs. Kennard, of Upper Thames-street,

London. Proper lavatories, baths, and w.-c. are attached to each ward, and on the outside are four airing-yards, having the access to each arranged so that no communication takes place betwixt the different classes of patients.

The whole of the works have been carried out by Mr. S. Thompson, builder, at an expense of 780*l.*, from the plans and under the superintendence of Mr. J. R. Veall, architect.

Exhibitions.—An ecclesiastical exhibition or collection of vestments used in the service of the Church according to Roman Catholic observances, and by some clergymen in the Established Church, has been opened at the School of Art in Darlington-street. The exhibition is restricted chiefly to the lecture-room of the school. The declared purpose is to extend the practice of ritualism, and to furnish purchasers the means of worship, public and private, according to ritualistic views. Copes, and stoles, and chasubles abound in almost every variety of colour, design, and arrangement of material and workmanship. Many of the contributions have been sent by the sisterhood of St. Thomas-the-Martyr, Oxford; others from "Sister Katherine M. Household, St. Mary's Priory, Ash Grove, Hackney;" others from "The School of Embroiderie, St. Margaret's, East Grinstead;" and others from different vestment-makers at Norwich, Birmingham, Manchester, and London. The amount of bad art included was astounding. An exhibition of local manufactures, models, curiosities, paintings, &c., has been opened in the lecture-room of the Athenaeum, Queen-street, in aid of Causeway Lake New Church Building and Mission Funds. The number of articles sent for exhibition was large, and the tables much crowded together.

METROPOLITAN BOARD OF WORKS.

At the usual weekly meeting of this Board, the following among other subjects came under notice.

Encroachments on Wandsworth Common.

A deputation from the Wandsworth Common Preservation Society waited on the Board, and drew attention to some building encroachments being made on Wandsworth Common. The deputation requested the Board to assist them in resisting these encroachments on the common, and preserving it to the public.

The request of the deputation was embodied in a memorial, and that document was referred to one of the committees for inquiry and consideration.

Southern Main Drainage Outfall.

Mr. Lowman Taylor drew attention to reports which he had heard had been circulated to the effect that there had been some serious mud deposits at the southern outfall of the main drainage. He was given to understand that the expense of removing the accumulations would be enormous.

Mr. Bazalgette, the engineer, was understood to say that one section of the works referred to was made in 1861, and another in 1867. No doubt some considerable deposit had taken place between the years 1861 and 1867. The works of the Board were not opened till 1864. The question, therefore, was how much of the accumulation took place between 1864 and now. There had always been a tendency to mud accumulations at the site of these works, particularly at Barking, but he had no hesitation in saying that the accounts which had been published were very much exaggerated. The water stood high in some places there had been an increase of mud and sand, and in others there had been a decrease. The whole subject was, however, under consideration, and nothing would be left undone to get at the truth of the matter.

Park-lane Improvement.

The Works and General Purposes Committee submitted a plan for forming a paved footway 8 ft. wide, and making good the roadway on the additional site to be added to Park-lane, at an estimated cost of about 3,000*l.*, and recommending that the engineer be instructed to prepare plans and specifications, and that advertisements be issued inviting tenders for the execution of the works, which was approved.

CHURCH-BUILDING NEWS.

Milborne Port.—The chief stone of the enlargement of the parish church has been laid. The increased length of the nave will be 25 ft. The aisle will be 74 ft. long, and 12 ft. in width. The new work, which is on the north side, will have five windows, and three windows corresponding to it will be opened on the south. The old roof under the tower is panelled and bossed. The old Norman pillars will remain untouched. The designs of the enlargement are by Mr. Henry Hall, of London. The windows are copies from an original window on the south side of the church. The works, under Mr. Alfred Reynolds, builder, are in active progress.

Faversham.—A reredos in the parish church has been commenced. It will be of Caen stone, with three centre canopies and three arches on either side for inscriptions, the whole being inlaid with marble. The columns of the arches

will also be of marble, while at the summit between and outside the canopies four figures will be placed. The cost will be 380*l.* The architect is Mr. Scott; and the sculptor Mr. J. B. Phillips, of Chelsea.

Ipswich.—Mr. F. Barnes, architect, having been employed to examine St. John's Church, California, Ipswich, has suggested certain repairs and strengthening of the walls, as well as increase of accommodation, and his report has been formally received by the vestry. Mr. Barnes, however, was requested to revise his report, to ascertain what amount would be required to put the church into substantial repair, and to extend the west end so as to provide fifty additional sittings.

Drinkstone.—The parish church of All Saints, Drinkstone, near Bury St. Edmund's, has been re-opened, after twelve months spent in the work of restoration, under the superintendence of Mr. Edward Hakewill, architect. Amongst the most interesting features of the building are, first, the preaching-stone, which was discovered under the pew flooring, and which consists of a Purbeck marble slab raised 16 in. above the pavement on sides of carved stone. This has been simply restored to its supposed original use, a carved oak standard having been placed upon it, from which the Bishop preached the opening sermon. Secondly, the rood-screen, which for many years supported a gallery in front of the tower, but has now been replaced in its original position. The font is the oldest portion of the building, and consists of an octagon of Purbeck marble on eight circular pillars surrounding a central shaft, all of the same material. Many fragments of old stained glass of the fourteenth century were found in different parts of the church. These have been re-arranged by Mr. Hakewill, and replaced in accordance with their supposed original position at his own expense. The work lately undertaken has consisted of a new roof over the nave and aisles, of new rafters, a pavement of blue and red tiles, open benches, all of oak, and for the most part carved. The new east window, by Messrs. Lavers & Barnard, is given in memory of the father of the present rector, the late Rev. William Horne, of Barming, Kent. It is hoped that the remaining portions of the work, consisting chiefly of the tower and recasting of the bells, will shortly be taken in hand.

Lynn.—All Saints' Church, South Lynn, has been re-opened for divine service, having been closed a short time for the purpose of completing the restoration of the chancel. The works have been performed by Mr. W. Brown, builder, Lynn, from the designs of Mr. E. Christian, architect to the commissioners, the amount of the contract with them being over 400*l.* The restoration is of a simple character, and included scarcely any attempt at ornament, the principal works being the repainting and replastering of the chancel walls, opening out of sedilia, removal of a plaster of Paris reredos, construction of a timber wall Minton's tiles, &c. Some improvement has been made in the seating, and the view of the chancel has been opened out by setting back the pulpit and removing altogether the great square reading-desk or pew, and substituting for it two small desks, one against each pillar of the chancel arch. The organ chamber is built in the angle formed by the north side of the chancel and the east side of the north transept.

Lincoln.—The Dean and Chapter of the cathedral have undertaken the restoration of the beautiful woodwork of the choir, which is unrivalled both for variety of design and for accuracy of workmanship. One portion on the south side is completed, and the change effected by the removal of the high pew-fronts that have been added to the old stalls and benches makes one anxious to see the improvement carried out through the whole choir. The work has been done by Messrs. Rattee & Kett, of Cambridge. The tessellated Roman pavement, discovered some years since in the cloister, and which had been almost destroyed by damp, is being removed to a place of greater safety, and the hideous red brick shed which covered it is about to be pulled down.

Shortlands.—The foundation-stone of a new church at Shortlands, near Bromley, Kent, dedicated to St. Mary, has been laid by Miss Wilkinsons. The land has been given, and the building will be erected, at the sole cost of the Wilkinsons family. The style of architecture is Gothic of the thirteenth century, and the church will comprise a nave, side aisle, transepts, chancel, and

organ-chamber, together with a lofty tower and spire at the north-west angle. The material employed is Kentish rag stone, with dressings of ash stone. The roof is framed with open timbers, covered with boarding, and the seatings accommodate 400. The design has been prepared by Mr. Whitehead, architect, under whose superintendence the works are being carried out. Messrs. Dove, Brothers, are the builders.

Books Received.

Index to Foreign Scientific Periodicals contained in the Patent Office Library. Vol. I. June—December, 1866. Printed and published by order of the Commissioners of Patents. This is a most useful publication, and, indeed, it is the only way for the British public to obtain direct access to foreign serials connected with science and art, manufactures, agriculture, and commerce. The subscriber to this twopenny fortnightly periodical, for example, has only to consult the Index and he will there find, translated into English, the titles of papers connected with subjects in which he may be interested, together with the authors' names, and of course the title of the foreign periodical containing the paper. He can then obtain access to the periodical itself at the Patent Office Library. Facility of access such as this to foreign stores of science and art is of vital importance to us as a nation, and the public ought extensively to take advantage of it: the knowledge sought for is diffused through so many channels, and hidden under languages so various, as to be difficult of access even to the rich and learned, whilst, but for this Index, it is entirely beyond the reach of the mass of the people, and especially of the operative class, to whom it would be of the greatest benefit.

VARIORUM.

"A SKETCH of the History of French Railways; with Suggestions in favour of thorough railway Reform at Home." By Samuel Haughey. Dublin: Webb, printers, Great Brunswick-street. The author of this pamphlet urges that railways ought to be public property, and the rates laid and upheld at the public cost; rates of fares to be only sufficient to pay the expenses of working the traffic. It may not be advisable, he admits, for the Government to undertake the working of the traffic; but, at all events, he thinks,—

The real question for the State seems to be the policy of placing railways as nearly in the position of roads and bridges as can possibly be done with due regard to the safety of the traffic, so that the country at large may reap full benefit of rapid and cheap intercourse; and this may be thoroughly and satisfactorily attained by any of measures perpetuating the systems of toll bridges, turnpike roads, by the abolition of which Ireland has given a fine example; and it seems probable that she will soon take the lead on the railway question."

"The Second Report of the Quekett Microscopical Club and list of members (July, 1867), is published in the form of a pamphlet. Various useful papers appear to have been read at the meetings of this new club last year.—"Report on the Drainage of Gibraltar." By Edward Roberts, C.E. Published by the Sanitary Commissioners of Gibraltar (Garrison Library Printing Establishment). This report accompanied plans and estimates for a new system of drainage and a supply of water for drinking, prepared by the direction of the Right Hon. the Secretary of State for War, for the consideration of the local Sanitary Commissioners. Mr. Roberts's estimate is 26,000*l*. It appears that the principal supply of water comes from crevices or fissures in the rock, which receive the water during the rainy season, and are instantly pouring it out in the form of springs along the foot of the Northern escarpment—one of these alone during the whole of last year yielded an average quantity of 144,000 gallons a day; and even now, although there has been during winter but half the usual rainfall, it is yielding daily from 60,000 to 70,000 gallons. From various attendant circumstances, although the water is slightly brackish, it is held to be of the origin. Works are now being carried on in the view of tracing it to a higher level where it will necessarily be free from contamination.—"Manchester New Town Hall," the title of a Letter to the Mayor and Corporation, in which Mr. J. King, jun., makes another attempt to induce them to enlarge and improve the site (now heater-shaped) on which it is pro-

posed to erect the New Town Hall. The long delay that has already occurred doubtless indisposes many to consider any proposition that would have the effect of again postponing action. It occurs to us to suggest that a valuable improvement might be made without going so far as Mr. King, by taking in an angular plot on the Lloyd-street side. The fact that more than one very good design was put out of consideration by the failure of the designer to provide the requisite rooms on the right floor, shows that the accommodation required is not easily obtainable on the area already provided. Setting back the front of the New Hall behind the line of Cross-street, as shown in Mr. King's plan, does not seem to us desirable.—"Report on the Drainage of the Borough of Belfast. J. J. Montgomery, Engineer." Belfast: Baird, Arthur-street. The plan reported on by Mr. Montgomery to the local authorities has been in the main approved of by Mr. Bazalgette, whose separate report is here also given. It is proposed to irrigate the slob-lands adjacent to the town, as well as others on the shore, and Mr. Bazalgette suggests sewage reservoirs nearer the town than Mr. Montgomery has done, with the view of meeting this desideratum as regards the nearest slob-lands, and also the discharge of sewage at the fitting time of tide. The cost of Mr. Montgomery's plan for high and low level intercepting sewege, and outfall and reservoir arrangements, is estimated at 150,000*l*. By this plan an uninterrupted flow of the sewage would be obtained at all points, instead of the present intermittent flow, which causes deposit, and districts drained which cannot now be drained from want of outfall. The harbour and streams would also be purified, and the sewage sent out to sea until it could be utilized.—"The Timber Merchant's Pocket Companion." By Charles Gane, Wisbeach.—This is merely a small doubled card, convenient for the pocket, and useful as a table, containing calculations of prices per Petersburg standard.

Miscellaneous.

FALL OF A TUNNEL.—A portion of the roof of the Summit Tunnel of the Lancashire and Yorkshire Railway has fallen. Fortunately the occurrence was discovered in time to prevent any accident.

LONDON ASSOCIATION OF FOREMEN ENGINEERS.—The members of this institution held their first monthly meeting of the present session at the George Hotel, Aldermanbury, City, on Saturday evening.

WINTERING AT LUXOR.—People who are thinking of paying a visit this winter to Egypt may be interested in the following letter from Lady Duff Gordon, dated Cairo, the 10th ult. :—

"Judging from the number of people who have asked me to find them lodgings at Luxor (Ancient Thebes), I think many of your readers, invalid or antiquaries, will be glad to know that an hotel will be opened there this winter by one Shmoudah, a respectable Coptic Christian. It is a handsome house, built in the European style, and surrounded by a pretty garden, full of shady trees,—a very pleasant thing in Egypt. He offers board and lodging at 10*s*. a day each, including a pint of common wine."

PROPOSED ROMAN CATHOLIC CATHEDRAL.—It is stated in the daily papers that a site has been obtained for the erection of a Roman Catholic cathedral as a memorial of the late Cardinal Wiseman. "It is close to the Victoria Railway Station, not far from Westminster Abbey, and bordering on that new quarter which is springing into existence round Buckingham Palace. The whole architectural profession will be called upon, it is thought, to compete for the designs; but it is just possible that the competition will be restricted to Roman Catholic architects alone."

NEW ST. THOMAS'S HOSPITAL.—The foundations for the new hospital adjoining the Thames at Stangate are approaching completion. An enormous mass of concrete has been put in behind the embankment-wall, over the whole site, and on the greater part of this the brick-footings and counter-arches have been built. Some of the concrete that we saw thrown in near the bridge would have been the better for a little more stone in it. The enormous size of the intended establishment is now apparent. When it is completed, Westminster Bridge and its surroundings will be a remarkable piece of London,—a sight worth looking at. The regret we expressed at the time that the hospital should be placed here is, nevertheless, in no way lessened.

CLARK & HUNT'S REGISTERED SECURE SASH FASTENER.—This sash-fastener puts a difficulty in the way of the sash being opened from outside, and serves at the same time the double purpose of sash-fastener and window-wedge, as, when screwed firmly down it prevents the sashes from rattling. It seems to deserve recommendation, and the prices are not high.

A LABOUR EXCHANGE AT SAN FRANCISCO.—A leading citizen of San Francisco has offered, upon certain conditions, to give 50,000 dollars for the foundation of a "Labour Exchange," an institution "for the protection of labour and the advancement of industry; a place where every one who seeks employment can find it without fee or reward, and where the minutest information and statistics respecting every branch of industry shall be collected and imparted gratuitously."

BIRMINGHAM LUNATIC ASYLUM.—This asylum needs enlargement. More than 100,000*l*. have been already spent upon the building and the land attached to it, and the committee now ask for leave to spend 10,000*l*. in addition. When the asylum was built provision was made for 300 patients. This number has been extended to 631; and it is proposed to raise the total to 810,—the whole of whom, it is estimated, will be paupers belonging to the parishes within the borough. It would appear from this demand for additional space that the increase of lunatics is proportionally much larger than the increase of population.

THE DRY EARTH SYSTEM.—The Rev. Henry Moule has received from the Indian Government a substantial recognition with reference to his system of dry earth sewage. A letter to him from the India Office says:—"I am directed by Sir Stafford Northcote to forward for your information copies of reports which have now been received from the Government of India, on the successful and general adoption of your dry earth sewage system in India. In consideration of the very satisfactory character of these reports, and on the recommendation of the Government of India, the Secretary of State for India in Council has much pleasure in authorizing the payment to you of the sum of 500*l*."

THE RAILWAY LINES IN BATTERSEA.—The last completing link of the system of high-level lines in Battersea, which has been in course of development since 1864, to improve the access to the Victoria Station, was inspected during last week by Major Rich, R.E., on behalf of the Board of Trade, who submitted the various heavy bridges and other works on the main line of the London, Brighton, and South-Coast Railway to severe tests, nine of the heaviest class of locomotives and tenders being employed for the purpose, giving a moving load of 430 tons. The works, which have been carried out under the superintendence of Sir Charles Fox & Sons, as engineers to the company, are of a heavy character. The contractors for the brickwork, &c., were Messrs. William & John Pickering, and Mr. James Haywood, of Derby, was the contractor for the iron-work.

DISCOVERIES IN ROMSEY ABBEY.—In connexion with the work of restoration some interesting discoveries have been made. The ancient entrance, known as the Nuns' Doorway, but which has long served as a window, has been restored to its original purpose, and in opening the chancel arches some curious Norman paintings were found upon the column near the vestry door. In removing one of the screens of these arches, two stone lamps of curious form were discovered. The Vicar of Romsey, in writing to the local papers, says that it is certain these lamps are of very ancient date, inasmuch as the rubble-work in which they were embedded was built against some of the very earliest painting upon the stonework of the piers, and from this he presumes they were made and last used in the twelfth century. One of the lamps resembles a rather large brick, with a thick handle like half a ring on one edge. The other lamp consists of four cylindrical cavities in a lozenge form. In these are fragments of charred wicks, and a carbonised substance that burns with a brilliant flame—evidently tallow, says the vicar, seven hundred years old. It has been suggested by some that these curious lamps were used in the night processions of the nuns. Others think they were made and used by the stone-cutters who carved the Norman capitals and mouldings of the abbey church, when Henry de Blois, brother of King Stephen, was Bishop of Winchester and the first Henry began his reign.

DAMAGING DRINKING FOUNTAINS.—A "drunken and dissolute" scoundrel, who, with the true public-house spirit, looks maliciously on the progress of temperate habits amongst the people, has been very properly sentenced to a month's imprisonment with hard labour for wrenching off some iron ornaments from a fountain in the Southwark Bridge-road. It is to be hoped the police in other districts will be more on the alert than they have been in securing the punishment of such fellows.

THE PROPOSED CONVALESCENT HOSPITAL AGAIN. A gentleman well known in the commercial circles has, says the *Sunday Gazette*, recently invested in the names of trustees the princely sum of £250,000, for the purpose of founding a Convalescent Hospital in the metropolis. The plans for the building have been entrusted to Mr. Dale, of New Inn. Is the gentleman who is known in commercial circles the same of whom we spoke some time ago, and whose intention was erroneously attributed to the Queen?

WARD NEW CORN EXCHANGE. This new exchange has been opened for business. The exchange is about 75 ft. long by 42 ft. broad. It is lofty, with a circular roof, a portion of which is glass. Gas-burners depend from the roof, but do not come low enough to light the place properly without an extravagant consumption of gas. At the rear of the exchange is the new cattle market, now nearly completed, which opens into Church-street, opposite the Congregational Chapel. It is hoped that some means will be found to make the exchange serviceable for meetings and lectures: the town-hall is not adapted to these purposes.

THE STATE OF OUR INDIAN RAILWAYS.—The remarks in our Journal a few weeks ago as to the defective construction of railway-works in India are justified and confirmed by last week's news. Two large bridges over an unopened portion of the Great Indian Peninsula Railway between Kundwah and Hurdah have given way. A crack has been discovered in the largest viaduct at Thall Ghant, and three other viaducts over the same ghaut are in such a dangerous state that passengers have to leave the trains and walk across. Seventeen other bridges over unopened portions of the Nagpore Extension of the Great Indian Peninsula Railway have been condemned by the company's engineer. A fatal accident, we may here observe, has occurred on the Great Indian Peninsula line by a collision, in which Mr. E. L. Howard, a barrister, the guard of a train, and a native foreman have been killed.

THE SOCIETY OF ENGINEERS.—A visit to the Thames Embankment works and the Blackfriars Bridge works was made on Friday last week by a considerable number of the members of this Society, to whom the contractors afforded every facility. The party had opportunities of inspecting almost every class of engineering work. At the first meeting of the members for the session, held on Monday evening last, Mr. W. H. Le Feuvre, the president, alluded to the incorporation of the Society by registration under the Companies Act, 1862, and stated that the matter would be fully considered at a special meeting of the council, to be held at the offices of the Society on Friday. A paper was read by Mr. Ewing Matheson, on "The Quality of Iron as at present used." A discussion took place on Mr. J. Pendred's paper, on "Water-tube Boilers," read on the 6th of May last.

THE IRON TRADE.—Ryland's "Circular" for Saturday last says:—"The general agitation evident in the metal trades has resulted in a rise, materially aided by the reduction of production both in copper and tin at home. From similar causes—the increase of home demand, the reduction in production, and the shortness of stock—iron, both pig and manufactured, is susceptible of a like rise, which may now be expected in a partial, although, at present, but slight degree. The position of continental finance tends to check both production and competition in that quarter. Everywhere in the United States the makers of iron are succumbing to the tyranny of our last export, trades-unionism; which has accompanied the emigration of workmen, so delusively brought about and encouraged to their own ruin by ironmasters seeking to bolster up a falsely-based trade by protection, and hoping, by drawing from us our discontented workmen, to embarrass our means of supply, and enhance the wages paid here to a non-remunerative point so far as masters were concerned."

ADVERTISING ARCHITECTS.—A correspondent sends us the advertisement of an undercutting architect in Leeds, but no good would be done by reprinting it.

PRICE OF LAND IN PARIS.—The *Moniteur* gives the following as the price of land for building in several of the new streets of Paris:—Place du Théâtre Français, equal to 48l. the square metre; Rue Turbigo and Réaumur, 34l. 16s.; Rue Lafitte and St. Georges, 33l.; Chausée d'Antin and Rue Olivier, 28l.; Rue Lafayette, 42l.; Rue Taibout, 40l.; Rue de Rennes (continued), near Mont Parnesse, 6l.

THE BUILDING TRADE AT BARNSELY.—A meeting of the masters and operative masons of Barnsley, at the request of the latter, has just been held with a view to a settlement of the long pending strike. The men accepted the proposition of the masters, and on these terms work has been resumed. The strike commenced on the 1st of May last, since which time large contracts have been held in abeyance. The men have of course lost some thousands of pounds in wages.

COWPER'S SUMMER-HOUSE AT OLNEY.—With reference to the remarks on the desirability of maintaining this relic of the poet, and which originally appeared in our pages, Mr. W. H. Collingridge (of the *City Press*) deprecates a "restoration," and suggests the erection of a hall as a memorial. We asked for no "restoration," in the modern sense of the word, but that the summer-house should be put into a proper state of repair, to resist time and the elements, and this we ask still.

CHESTER CATHEDRAL.—This church is now closed, except in the Lady Chapel, to allow of extensive alterations and repairs which the dean and chapter are making in preparation for special evening services. Amongst other important works begun, that of hanging five new bells in the central tower must be included: the bells are from the foundry of Messrs. Warner. It is to be hoped that the new dean will before long see his way to begin the repairs which are much needed to preserve the fabric of the cathedral.

KING ALFRED'S REMAINS.—The ancient parish church of St. Bartholomew, Hyde-street, Winchester, is shortly to be rebuilt, and made a suitable resting-place for King Alfred's remains, and also for those of his queen, Alswitha, which since the period of their discovery by Mr. John Mellor have reposed in two plain chests in the little vestry of the church, sent to the excavator by the rector and the Dean of Winchester. Two new gilt mortuary chests, with gilt crowns and suitable inscriptions, have been designed by Mr. T. Butterworth, to receive the bones and relics, and are to be set up over the new chancel and choir, which will henceforth be called King Alfred's Aisle.

MARYPORT.—The report of Mr. Hawkshaw on increased harbour accommodation at Maryport has been made to the local trustees. The surveying and boring operations of Mr. Brunel have been confined to the south side. It is said that Mr. Hawkshaw's scheme provides a five-acre dock and four-acre basin on the south side, with 5 ft. greater depth on the sill than the Elizabeth dock. The cost is estimated at 80,000l., but Mr. Hawkshaw advises the trustees to apply for borrowing powers to the amount of 100,000l.—The Carlisle, Cocker-mouth, and Maryport dock trustees have resolved to grant permission to the trustees of the town and harbour of Maryport to lay pipes for the conveyance of water from the Goat to Maryport, along the high road between Cocker-mouth and that town.

TENDERS

For gasfittings at St. Matthew's Church, New Kent-road. Mr. Jarvis, architect:—
Basingham £190 0 0
Lawnson 180 14 0
Cumyn, Ching, & Co. 179 0 0
Stevens & Son 173 15 0
South 158 0 0
Bugs 183 10 0

For erecting a villa residence at Reymer, Sussex, for Mr. W. J. Smith. Messrs. Gouly & Gibbins, architects:—
Hall £1,105 0 0
Lockyer 1,048 10 0
Simms & Marten 988 12 6
Nightingale (accepted) 675 0 0

For resecting St. Matthias Church, Poplar. Mr. W. H. Fenton, architect:—
Crabb & Vaughan (accepted) £247 0 0

For six houses at Hove, for Messrs. Tooth & Co.:—
Simms & Marten £3,577 0 0
Nightingale 9,467 0 0
Cheeseman & Co. 9,300 0 0
Bawyer 8,998 0 0
Bland 8,845 0 0
Longhurst 8,890 0 0
Hazel 8,460 0 0
Chappell 8,185 0 0
Hall 8,050 0 0

For erecting a public-house at North-road, Brighton. Messrs. Gouly & Gibbins, architects:—
Hall £287 0 0
Lockyer (accepted) 567 0 0

For houses and shops at Clapham, after deducting the old materials. Mr. R. P. Nolley, architect:—
Newman & Mann £8,815 0 0
Hart 8,600 0 0
Turner & Son 8,575 0 0
Coles & Son 8,370 0 0
MacLaughlan 8,368 0 0
Browne & Robinson 8,215 0 0
Adamson & Son 8,080 0 0
Webb & Son 7,737 0 0
Myers & Sons 7,768 0 0

For manager's house and stabling at the Forest Vale Iron Works, Cinderford, Gloucestershire, for Mr. James Russell. Mr. E. J. Reynolds, architect:—
Baker & Heaven (accepted) £521 0 0

For building a house in Maple-road, Penge, for Mr. Bigwood:—
Brooks £430 0 0
Eustace 450 0 0
Larmerton 410 0 0
Croaker 380 0 0

For a new Wesleyan chapel, at Buckley, Flintshire, North Wales:—
Lloyd £223 0 0
Williams 766 0 0
Hamblin 730 0 0
Foulkes 600 0 0

For erecting house and premises, London Bridge, for Mr. Toby. Mr. H. Currey, architect. Quantities supplied by Messrs. Stradwick & Co.:—
Bryley £3,324 0 0
Coleman 2,989 0 0
Newman & Mann 2,896 0 0
Hart 2,890 0 0
Downs (accepted) 2,787 0 0

For building four cottages at Ventnor, Isle of Wight, for Mr. John Webber. Mr. Augustus F. Livesey, architect. Quantities supplied:—
Ingram & Son £278 0 0
Tharlie 577 3 0
Moses & Wallder 575 0 0
Newham 548 0 0
Beavis & Son (accepted) 530 0 0

TO CORRESPONDENTS.

Inquirer (very doubtful).—H. J. (next week).—W. C. T. (ditto).—J. B. T. A.—E. J. R.—B. R.—R. K.—C. J. A.—S. & Co.—O. T.—J. B. M. W.—T. M. & Sons.—G. G. & J. J. MoC.—J. T.—Sir C. P.—H. E.—T. G. N.—W. T.—J. F. S.—H. B. S.—G. G. & W. R. H.—W. R. H. M.

Errors.—Amongst names of competitors, Manchester Town-hall for "H. S. Smith," read "J. T. Smith."
We are told that the estimated income of the Hop Exchange building is 5000l. per annum, not 3,000l. There is cellar-room for 30,000 barrels of ale.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication. None.—The responsibility of signed articles and papers read at public meetings, rests, of course, with the author.

[ADVERTISEMENTS.]

BUENOS AYRES GOVERNMENT CERTIFICATE.—TRANSLATION.—We, the undersigned, at the request of Messrs. Jas. O. Thompson & Co. certify that the IRON SAFES of Messrs. CHUBB & SONS, London, of which these gentlemen are agents, were exposed for several hours to the fire that took place in the offices of the National Government on the evening of the 26th inst.; that in our presence they were easily opened with their respective keys; that the moneys and important documents they contained were found in perfect order; and that these safes are now in use in the National Treasury Office.—(Signed) J. M. DRAGO (Treasurer of the National Government), JOSE TOMA ROJO, JUAN M. ALVAREZ. A true copy—A. M. BELL.—Buenos Ayres, July 31, 1867.

CHURCH, TURRET, and STABLE CLOCKS. J. W. BENSON, having erected steam-power and improved machinery for clock-making, at the manufactory, Ludgate-hill, will be glad to furnish to clergymen, architects, and committees Estimates and Specifications of every description of Horological Machine, especially cathedrals and public clocks, chiming tunes on any number of bells. A descriptive pamphlet on Church Clocks post free for one stamp. Watch and Clock Maker by Warrant of Appointment to H.R.H. the Prince of Wales, and maker of the great clock for the Exhibition, 1862, 25, Old Bond-street, and 33 & 34, Ludgate-hill, E.C. Established 1749.

The Builder.

VOL. XXV.—No. 1289.

*Bristol and Clifton.
Elmdale House,
on the Downs.*

THE growth of Bristol within the last eight or ten years is something to wonder at, and the change that is now being made in the city itself is equally marvellous. Hundreds of houses faced with stone, many of them costly, and of considerable size, have been built, and are being built, in Clifton; and we hear at the present moment, of a fresh undertaking, which includes the erection of 300 houses on property at Redland, extending far on the road to Horfield. The corporation are about to spend nearly 200,000*l.* in forming new roads; let us hope under good advice,

and that the improvements are to be all carried on with relation to each other, and so as to produce the most satisfactory whole. They are also straightening their river, and making a new look, at the cost of 150,000*l.*; the rock and earth removed being hoisted to the Downs, and used there to fill up some large quarries, whereby they hope to gain several acres of available recreation-ground.

Elmdale House, of which we give illustrations,* faces the Downs, and has been built by Mr. Alderman Proctor, for his residence, Messrs. George and Henry Godwin being the architects. For a house making no pretensions to be a mansion, it is noticeable for the size of the rooms, and the amount of accommodation afforded. The hall, of some size, is open from bottom to top, with galleries on the different floors leading to the rooms around it, and is lighted by a large flat skylight, containing coloured glass. The dining-room, with ante-room, has a length of 61 ft. by 18 ft., and the drawing-rooms are of the same dimensions, affording the opportunity for a fair walk in foul weather. The billiard-room, including the bow (as in the case of the other rooms), is 31 ft. by 23 ft. 6 in., and is connected with the dining-room by double folding doors. A tube all round the billiard-room, under the ceiling, one side of it being formed by a perforated enrichment in the cornice, and which communicates with the outer air by valves under control, assists the ventilation. A pipe from the outer air opens in the hearth of each fireplace with a grating that can be closed or opened at pleasure, the object of course being to supply the fire with air without creating draughts in the room. We are scarcely prepared, however, to recommend the indiscriminate introduction of this arrangement. It needs intelligent regulation. The dining-room, it will be seen on the plan, is "served" from the conservatory, where there

is a lift from the kitchen department. The whole of the exposed woodwork throughout the house, except the staircase, which is of oak polished, is of picked pine varnished. This part of the work is very creditable to the joiners employed. There is no cast-work in the cornices, with the exception alluded to in the billiard-room, and the walls are hung with lining paper merely coloured in distemper and bordered. The height of the ground-story, we should mention, is 14 ft. On the first-floor the height is 13 ft. Here there are a library and various chambers, all of large size. To meet the views of the owner, who maintains that a screen in a large room answers all purposes, there are no dressing-rooms. There is a second-story of chambers, including the bath-room, with boiler; and a staircase leads up to a flat on the roof, whence is obtained a view rarely surpassed.

The house externally is of stone, dug on the spot, with Bath stone dressings. A previous quarry on the site, by the way, necessitated some rather heavy work in the foundations at one corner of the building.

The front we have illustrated next the Downs faces North-West. For comfort's sake (the circumstances of the ground permitting) the entrance porch is placed on the other face, south-east; and on this side are the lodge, the stables, and the glass-houses.

We can scarcely refuse to let the owner say a few words on two or three points. Mr. Proctor thus writes:—

"We find the situation of the house and arrangement of windows and hall very favourable for ventilation. During the cold weather we were enabled to keep the house comfortably warm, and still obtain all that agreeable freshness which nothing but plenty of air will give. In the summer we could so regulate the change of air, and light, as to have it agreeably cool. The supply of air to the fire answers well, except in windy weather, when we close the gratings on the windward side of the house. The ventilation in the billiard-room also answers well. The advantages of placing the house south-east and north-west as regards light, ventilation, and enjoyment of prospect from the windows, forces itself upon us daily, particularly as the rooms open by folding-doors and run through to these points."

"Our prevailing wind and rain are from the south-west, and I attribute a great deal of the comfort we enjoy to our not having any opening on that side. I would venture to suggest that you recommend the building of houses with large rooms, if the occupants wish to be comfortable; and, if cost is an object, save money by omitting decoration; have large plain rooms rather than small rooms highly decorated. We find that, by placing large paintings upon the walls, a few large pieces of furniture in the rooms, with the advantage of the well-proportioned doors and windows you have given us, we obtain that homely comfortable feeling we all enjoy, but which we were afraid we should not find in rooms so large."

Mr. Proctor has covered the walls with a very considerable collection of agreeable modern paintings and drawings, including Etty's "Joan of Arc," and works by Müller, Woolmer, Hopkins, Bright, Hill, Syer, Wolf, Pyne, Hulme, S. Tovey, Meadows, Shayer, Anthony, E. Barnes, Cooke, Nieumann, Ward, "Jock" Wilson, Wells, Dawson, and others.

Close by the house the Gathrie memorial chapel, recently completed from the designs of Mr. Hansom, in connexion with Clifton College, forms a very agreeable feature. It is decorated in style, and has a polygonal apse. The college altogether forms now an important pile. It seems regrettable that the style adopted in one of the masters' houses recently erected, a large rectangular building, with overhanging roof, should be such, whatever may be its merits, as should entirely separate it from the establishment to which it belongs. A handsome Congregational chapel, Mr. Hansom being the architect, has been erected near the college. A Baptist chapel in the White Ladies-road is another noticeable building in the neighbourhood.

Getting away down Park-street, soon it is to be hoped to be rendered a less steep descent, a hoarding will be seen in College-green, behind which Mr. Street is shortly to begin to complete the cathedral, for which some thousands of pounds will be required. Some difference of opinion exists on the subject, but the work will doubtless go on. College-green Hotel, lofty and

large (five stories besides attics), is approaching completion. It was designed by Mr. Hawtin, is all of stone, Italian in style, and in parts a little weak in character. On the other side of College-green, adjoining the mayor's chapel, there is a shop-front at the establishment late Mr. Charles Taylor's, and now belonging to Messrs. Peters & Co., which deserves a word of praise. It includes piers of granite, with well-carved white marble capitals, and brown stone arches. The credit of the design belongs to Messrs. Foster & Wood, and Mr. Broad was the builder. Mr. Broad, an old resident of Bristol who worked under the writer many a year ago, is also the builder of a handsome pile of stone-fronted offices and shops in Nicholas-street; Mr. Ponton being the architect. This front includes tiers of semi-circular arches, and some very good carving in the shape of heads and ornamental dragons in spandrels. Close by, at the corner of High-street, Mr. Pointing, the chemist and something more, has rebuilt his house in North of Italy style, probably under the direction of the last-mentioned architect. Here, too, there is some very well executed carving, including a series of large heads in circular frames over the windows of the one-pair story, inscribed Apollo, Esculapius, Celsus, Minerva, and so on. The appearance of the front is very good, but it is none the better for a row of eight Medieval lions along the top of it, holding shields, the effect of which from some points of view is bizarre. Minerva plays a prominent part in the pediment of a new building in Corn-street, now in progress, under Mr. Gingsell, architect, for the Liverpool, London, and Globe Insurance Company. The group, of which Minerva forms the centre, is intended to symbolise the wisdom of insuring against fire and the damage of death; and, so far as can at present be seen over the scaffolding, seems very creditable, in point of execution, to Mr. Colley, the sculptor. The front, which is very elaborate, and promises to be an ornament to the too-narrow street, includes life-size figures of the Seasons, and much other carving. In this building we get back to classical forms and mouldings.

We must hasten on. At the fine church of St. Mary Redcliff, Mr. Godwin, architect, considerable progress has been made with the restoration of the tower, commenced in the spring. The lower part of the structure was found to be in an actually dangerous state. Many tons of stone have been used below ground to strengthen and support it. The organ here—always a good instrument—has been greatly enlarged and improved by Mr. Vowles, and has been set up in the chancel, part on each side, the works communicating by means of a tunnel. When the old Georgian case in the gallery is removed, the great west window will be exposed to view. This is about to be filled with stained glass, at the cost of Mr. Sholto Vere Hare. Messrs. Hardman, we believe, will have the opportunity it affords of showing their skill. It is a fine chance and should be made the most of. In the south transept, a window, executed by Messrs. Clayton & Bell, and a very charming work, has been quite recently set up. It tells the story of Lazarus, in accordance with a pre-arranged scheme for filling the various windows that are at present glazed with plain glass, and was produced, if we mistake not, at the cost of the vicar, the Rev. H. G. Randall. It is simply inscribed, as a thanksgiving offering for great mercies. The same artists have another window in hand for the church, the Sacrifice of Isaac; and Messrs. Heaton, Butler, & Bayne are at work on glass for the west window of the south aisle, illustrating the Life of Moses; the gift of Mr. Cruger Miles.

When we add that amongst many other works a new post-office is being built in Small-street, that the Assize Courts are to be re-constructed,

* See p. 705.

that there is to be a new hotel in Broad-street, that a new hospital is about to be erected at Stapleton, and that on Monday evening last a new Theatre was opened and the architect shown upon the stage, we shall surely have made good our preliminary assertion, that wonderful activity prevails in Bristol.

FRESH AIR.

Most people are advocates, in theory, at all events, for fresh air; but few care to think where the difference lies between the smoke-laden atmosphere of a large town and the pure air of the open heath or breezy downs. Much of the exhilaration produced by changing the air of London for, say, that of Salisbury Plain, is undoubtedly due to the difference of scenery and to the sense of freedom from the cares and troubles of this life; but there is something more than this, and an impression has been gaining ground for the last few years, that the quantity of ozone contained in the atmosphere exercises a very important influence on the healthiness of a district. This theory has not only been denied, but the very existence of ozone in the atmosphere has been doubted. The literature of the subject is already very large, and amongst the most important contributions we must assuredly place those of the discoverer Professor Schönbein, of Basle. Putting aside the more elaborate researches, we propose to gather up into a small compass the arguments in favour of the existence of ozone, as stated by Professor Schönbein himself. The subject is well worthy of attention from a sanitary point of view.

When oxygen gas is submitted to a series of electric discharges, it undergoes a remarkable modification, and a peculiar smell is noticed. Amongst the new properties acquired by the gas is the power of liberating iodine from its compounds, a property which is manifested by mixing a soluble iodide with starch-paste, and exposing it to the air which has been thus acted upon. A deep blue colour immediately appears, caused by the combination of the liberated iodine with the starch. Ozone may be produced by other methods, but it is not necessary to mention them. This new power possessed by the oxygen is said to be due to ozone, the ordinary "ozone test" being nothing more than a slip of paper moistened with iodide of potassium and starch.

So far all are agreed, and no one denies that oxygen does undergo some modification when submitted to a series of electrical discharges. Further, it is admitted on all hands that the atmosphere is always more or less highly charged with electricity. Since, then, an electric discharge cannot take place through air without a portion of the oxygen in the path of the spark being converted into ozone,—a fact which is rendered abundantly clear when an ordinary electrical machine is set to work,—it follows that ozone must be formed in the atmosphere by the ordinary operations of nature. It should be remembered that electrical action may still be going on without the palpable evidence furnished by a thunder-storm.

When the ozone test is used for demonstrating the presence of that body in the atmosphere, the opponents of the theory refuse to admit the evidence, saying that similar appearances are produced by other substances which may be, and sometimes undoubtedly are, present in the atmosphere. Besides ozone, chlorine, bromine, and hyponitric acid, have the property of displacing iodine from its compounds, leaving it free to form the well-known blue colour with starch. The occurrence of chlorine and bromine in the atmosphere is very improbable; but with regard to hyponitric acid, Professor Schönbein admits that, during the electrical discharge, the oxygen and nitrogen of the air sometimes combine to form hyponitric acid; and, although the quantity produced in the atmosphere is in all probability very small, it may still be sufficient to liberate the iodine in the test paper. "According to my experiments," says the Professor, "the addition of a very small quantity of hyponitric acid (N_2O_2) is sufficient to communicate to water the property of producing the characteristic blue colour; but, chemically, pure dilute nitric acid has not this effect. It might, therefore, very well happen that rain-water collected during a severe thunder-storm should possess this property, thus indicating the presence of free hyponitric acid in atmospheric air. No

chemist has, perhaps, made more observations on this subject than myself, but I have never met with any rain-water capable of burning starch paste blue, or which indicated an acid reaction with litmus paper, although I have frequently observed that rain-water, when treated with dilute sulphuric acid, does communicate a blue colour to starch." This effect is probably due to nitrous acid, set free from the nitrite of ammonia which most rain-water contains. The presence of nitrite and nitrate of ammonia in the atmosphere is explained in the following manner:—Amongst the products of the decay of organic matter on the surface of the earth is carbonate of ammonia, which, being a very volatile salt, evaporates into the atmosphere. When this body comes into contact with the hyponitric acid assumed to be formed by the discharge of the atmospheric electricity, it becomes converted into nitrate and nitrite of ammonia, which salts, in consequence of their solubility in water, are conveyed to the earth by the first shower of rain. The Professor's argument, then, runs thus:—Hyponitric acid has the power of liberating iodine from its combinations, and this acid is formed in the atmosphere by electrical discharges; but it never (or, at all events, very rarely) occurs in a free state, being instantly seized upon by the ammonia always present in excess, and formed into nitrate and nitrite of ammonia, neither of which is capable of setting iodine free.

There is, however, another test for ozone depending upon the property possessed by that body of converting the colourless protoxide of thallium into the brown tetroxide. Hyponitric acid does not produce this effect, since it becomes decomposed, as we have already seen in the case of ammonia, into nitrate and nitrite of thallium. It is true that this brown compound might be sulphide of thallium, due to the sulphuretted hydrogen contained in the atmosphere; but Professor Schönbein has observed that the colouring takes place when a slip of acetate of lead-paper (the ordinary test for sulphuretted hydrogen) remained perfectly white. In the course of his experiments he discovered that tetroxide of thallium assumed a blue tinge when moistened with tincture of guaiacum, so that we have an infallible means of ascertaining whether the brown compound formed when thallium papers are exposed to the air be really the tetroxide of that metal or not. Professor Schönbein finds that it is. The thallium test is not nearly so sensitive as the iodide of potassium and starch test. An exposure of twenty-four hours, or even more, is necessary to obtain the brown colour on thallium papers. The shortest time ever observed was on the 6th of January of the present year during a heavy snow-storm, when an exposure of six hours was sufficient. So great was the quantity of ozone that the starch papers were discoloured in the short space of half an hour.

So much, then, for the evidence in favour of the existence of ozone, which has been maintained for some years through evil report and good report by Professor Schönbein. Assuming that the facts already stated are sufficient to prove that ozone is something more than a figment of the laboratory, we proceed to consider the part it plays in the grand scheme of nature. During the decay of animal and vegetable matters large quantities of mephitic gases are generated, the chemical composition of which is not well understood. We do know, however, that they are destroyed and rendered innocuous by powerful oxidizing agents, such as the hypochlorites and the permanganates. The well-known "Condy's Fluid" derives its disinfecting properties from the presence of the latter salts. According to Professor Schönbein's experiments, artificially produced ozone has precisely the same action on fetid exhalations, and it is, therefore, not a far-fetched hypothesis that ozone is nature's own disinfectant. After a severe thunder-storm, the remark is often made that "the thunder has cleared the air," and there is probably more in this than people are aware of. That the air is purer and fresher after a thunder-storm few persons will deny; but much of this is due to the rain which generally accompanies such phenomena. This freshening of the atmosphere occurs, indeed, after most storms of rain, whether accompanied by thunder or not. M. de la Rive, an eminent physicist of Geneva, has recently put forward the opinion that the increased transparency of the atmosphere after rain is due to the removal of the foreign matters and germs or spores which are perpetually floating in the air, ready to settle

and germinate wherever they find a fitting soil. Professor Pasteur's beautiful researches leave little room for doubting that minute fungi really do exist in the atmosphere. To return, however, to our subject. We have already referred to the well-known fact that ozone is generated during the electrical discharge; and we should therefore expect to find it largely developed during a thunder-storm. May we not attribute to this a large proportion of the freshening effect experienced on such an occasion? As to the precise manner in which ozone acts we know very little with certainty. The following view of the case, as we believe, has not yet attracted attention. Some years ago a theory was started that infectious diseases were propagated by extremely minute corpuscles or organized bodies which floated in the atmosphere and communicated the disease to persons who breathed them. Attempts have been made to obtain these infusoria, or whatever they may be, by suspending large glass globes, moistened with water, in the small-pox and fever wards of hospitals. About two months ago, M. Poulet read a paper before the French Academy of Sciences, in which he showed that infusoria existed in the breath of persons suffering from whooping-cough. He describes two species of monads, or bacteriums, as they are called by some authors, as present in the liquid obtained by condensing the breath of a child attacked by whooping-cough. The infusoria were seen by the aid of a powerful microscope in very large numbers.

It has been shown by Professor Schönbein that comparatively large animals,—such as mice,—are killed by breathing air containing an insignificant quantity of ozone, perhaps in consequence of the rapid inflammation of their tissues. A former pupil of the Professor's, Herr Scharr, of Berne, noticed, whilst making some experiments with permanganates and hypochlorites, that infusoria were immediately killed when immersed in even very dilute solutions of these salts; and he concludes that this effect was due to the rapid oxidation and consequent destruction of the albuminoid substances in the bodies of these organisms. Assuming the theory of the propagation of diseases noticed above to be true, we may, without pushing speculation beyond reasonable limits, state that the comparative absence of epidemic diseases during those periods when the atmosphere contains a large quantity of ozone is due to the destructive action of that substance upon the germs by which such diseases are propagated. We do not wish to be understood as stating that it is absolutely the true explanation of so-called healthy and unhealthy seasons. It is simply an hypothesis, and is not incompatible with the present state of our knowledge of this very important subject.

The great difficulty at the present moment in the way of further investigations is the absence of any method of determining the per-centage of ozone present in the atmosphere. The iodized starch paper hitherto used is certainly a good and very sensitive ozonoscope, but we require an ozonometer. For purposes of comparison, our present test is as useless as are the indications of the oat-beard and hair hygrometers compared with those of the wet bulb hygrometer. In extreme cases the quantity of ozone contained in the atmosphere does not, in all probability, exceed one-millionth part. It is obvious that an apparatus of extraordinary delicacy will be necessary for measuring even this,—the largest proportion of ozone with which we have to deal. If science ever supplies the requisite method,—and we see no reason to doubt that it will, sooner or later be forthcoming,—it will, in all probability, be a volumetric process, in which a substance, having a powerful affinity for ozone, will be either coloured or discoloured by its oxidation.

HOUSES OF THE WORKING CLASSES AND THE NEW REFORM ACT.—Mr. W. E. Hickson writes:—"I thank you for your little notice of my 'Tracts for Inquirers' in the *Builder* of the 5th inst.; but let me urge you not to think lightly of those provisions of the new Reform Act which abolish compounding, disfranchise owners, and substitute the personal rating of temporary occupiers of the lowest class. As affecting the burden of the poor-rates in all districts, and the improvement of the dwellings of the working classes, in which you have always taken an interest, these provisions of the new Act must work as a natural calamity; and the *Builder* might do great service in taking up the subject."

STATISTIC CONGRESS IN FLORENCE.

THE International Statistic Congress—the sixth held since the first assemblage for such interests, in Brussels, in 1853,—concluded its proceedings in the Italian Senate-hall, on the 5th of October. The number of deputies from different countries gathered in Florence for this occasion is reported as 463, of whom ten represented England. Many were the preparations made by the Florentine authorities to show honour to their guests. A “committee of reception,” presided over by the Duke Casigliano, was formed with the express object of rendering such attentions and escorting them to visit all the *mirabilia* of this city; another committee, alike aristocratic in composition, charged itself with the ordering of a banquet, illumination, and musical performances, at the Pagliano Theatre, the largest among such buildings here; and the municipality, we are assured, voted 30,000 francs for the expenses of that entertainment. All the leading journals reported the discussions more or less fully; and if tokens of interest on the part of the public, as well as in the minor journalism here so redundant, were wanting, this might be ascribed to the absorbing interest in political questions now uppermost in the Italian mind.

The hall where the Italian senate assembles, in the Uffizi buildings, was a most animated scene during these scientific sessions, owing to the large number present, the variety of subjects discussed, and the warm expressions of approval in which the public, as well as the members of the Congress, took part. Not, indeed, that that public was at any time in great force; for we were surprised to observe how few availed themselves of the facility of obtaining tickets (given most courteously, for the entire course), and how slight the sprinkling of auditors in the strangers' gallery, where, strange to say, the attendance of ladies, in their separate compartment, was generally larger than that of the other sex. The modern and brilliant decoration, paintings, gilt carving, &c., with which that hall of Medici origin was fitted up when first destined to the uses of the senate, did not indeed seem appropriate to the gravity of these assemblies, reminding rather of courts and theatres than of things in the sphere of abstract science. It was to be regretted also, that the gallery assigned for male auditors is so high-placed as to allow of such close attention to the speakers as is requisite for the full apprehension of long discourses illustrated by statistic details. In this case it was better to read than to hear.

At ten a.m. on Sunday, 29th September, was held the inaugural meeting, under the presidency of the Minister of Agriculture and Commerce, Baron de Blasius, who opened with a not very long but appropriate and well-composed speech, bearing chiefly on the condition of Italy as a field for statistic illustration, and the favourable dispositions of her government for encouraging and promoting whatever tends to national benefit or scientific progress. After this the office of president was confirmed in the person of the same minister, and the members of the Junta (*Giunta Superiore di Statistica*) were aggregated as vice-presidents, together with all the delegates of foreign governments; as secretaries, the four gentlemen who had acted in that capacity at the previous private meetings of representatives, together with four others of different countries, one being English, of the name Brown. The assembly then dispersed, and the rest of the proceedings for this day, not public, were the formation of the sections and what the Italian journals designate as *soirée* (seats); thus distributed—1. Theory and technicality of statistics; 2. topography; 3. agricultural statistics; 4. communal statistics; 5. monetary and banking statistics, circulation and trustees; 6. moral and juridic statistics; 7. medical and military statistics. On the afternoon of this Sunday, all the members, both of this and the other Congress, that of the Italian Chambers of Commerce, whose sessions had opened on the same afternoon, under the presidency of the same minister, were entertained by the municipality in the palace (ex-ducal) of the Cascine, where refreshments were served, and two military bands kept up concert during the social meeting, the beautiful parks of Florence being throughout this fine evening more gaily frequented by the *beau monde* on foot and in carriages, even than usual in the hours of promenade on festivals. On Monday, at ten a.m., was the first public assembly of the Statistic Congress for transacting general business, despatched this morning in about an

hour and a half, the minister opening with another well-turned discourse; the most animated passage in the debate referring to the question as to the language for future discussions, one deputy (an Italian) proposing the exclusive use of French; others, the language of each nationality, with translations from all idioms except French and Italian, by the secretaries; but such discussions were over-ruled by the minister-president through the simple announcement that this matter had been already settled by the sections; the choice of language to be *ad libitum*, with the system of compendious translations, save from two idioms, as on one side proposed. It would be beyond our limits here to attempt any abstract of the discussions and reports that occupied every day for the rest of this busy week; the daily arrangement for the sections to meet from nine to twelve, and the general public assemblies to be held from half-past twelve to four p.m.; in the last instance, from nine to one p.m.; in the evenings all being invited to spend their time, at pleasure, in the halls on the ground-floor of the Uffizi, connected with the senate-houses, and now serving for a sort of political club. The subjects in debate, and those topics dwelt on in the several memoirs read aloud, went through the general range of statistical science with such collation of relevant facts as did credit to the zeal and research of those engaged, in some cases exciting discussion, carried on with the warmth and gesticulation inseparable from Italian oratory, but not always contributing to make the point at issue more intelligible to auditors. The extreme difference of intonation and delivery on the part of English and German speakers, contrasted with the Italian, was a source of difficulty to the hearers in the galleries; and we had cause to regret the deficiency of our own countrymen in the mode of delivering what itself was well worthy of being listened to. The last public meeting, adjourned, instead of breaking up as announced at one, till two p.m., came to a close at half-past three, winding up with a speech from the ministerial president (suitable as was all that he said) and general vote of thanks, this sitting being in some respects the most interesting, as the topics brought forward were more various than on other days.

In reference to the statistics of art galleries and museums, it was proposed that not only public collections, but the works of sterling value in studios and private keeping should be brought into the sphere of official report. On this took place a discussion of some warmth, participated in by men of note. For the juridic reference it was proposed that not only crime itself, but the moral dispositions of convicts before death should be contemplated. There was also long and able speaking on the hygienic question and the statistics of cattle, the proper limitation for inquiries relating to such interests, &c. It was determined, on the proposal made in a section by M. Quelet, to found a permanent committee, or section, of Italian statistics. Shortly before the breaking up, was mooted the question of the next international assemblage and its locality: Russia, Sweden, Holland, Switzerland, the countries severally proposed. The Dutch deputy, in the name of his Government, invited the Congress to meet at the Hague; the Swiss deputy made earnest recommendation of his own land, though speaking but in private capacity; and Mr. Lockhart (English) so far anticipated a much desired future as to propose Rome—the elect capital of Italy!

On the evening of that day, the members were entertained at dinner, in the Pitti Palace, by the King, who had invited them, in a few gracious words, on occasion of a general reception, when all had been presented to his Majesty. The English minister sat at the right hand, the Minister of Commerce at the left of the royal host. But the grandest entertainment was the banquet at the theatre, with admission by paid tickets, the Baron de Blasius, as usual, taking the lead in the speeches that ensued after good cheer, and proposing health “to this Congress and its future, and to the continual development of its scientific conquests,” the Swiss delegate (M. Pioda), “to the Sovereign of this great and beautiful country,” the French delegate (Chev. Legoyt), “to the Minister, De Blasius, who had so ably discharged his task,” the Austrian delegate (Baron von Czornig), who had acted as vice-president at the public meetings, and delivered himself in three languages with equal readiness, “to Florence, the capital of

Italy, and her worthy magisterial representatives;” lastly, the distinguished writer invited all to drink—not their wine, but their coffee—“to the Solidarity of Nations,” proceeding, in a brief but excellent speech—perhaps the best of the occasion—to congratulate on the intellectual fraternity, the common bond uniting peoples for mutual benefit, secured through such means as science and culture are now rendering more and more efficient, so that the countrymen of Goethe, Shakspeare, Thorwaldsen, Canova, Pascal, Galileo, are becoming in a true sense brethren.

Beyond comparison, the most picturesque of these scientific entertainments was the reception, on the night of the 3rd, at the ancient Pretorio, alias Palace of the Podesta, whose Gothic halls and corridors were illuminated, whilst all those representatives of different nations were mingling in converse under their vaults, and in the largest of the fine old building's apartments was given a supper, served at a late hour; ladies being invited by the authorities to this really memorable *fête*, and musical bands performing in the *cortile*, one of the most majestic specimens of Medieval civic architecture in Italy. It may be imagined how striking and fairy-like was the effect of this gaiety and lustre, thrown from lamps and tapers, in the interior of that grand, gloomy-looking pile, reminding one of things so different, of conditions of society no doubt more stirring and romantic, but assuredly by many degrees less favourable to human happiness than those in which scientific International Congresses prove possible.

PHYSICAL EDUCATION.

A VERY excellent reason exists for that suspicious dislike of the dead languages which is evinced by some of those who most loudly counsel their fellow countrymen to be guided by their advice. To these teachers the fable of the fox who had lost his tail is inapplicable, or at least it should be written for their use in an entirely new version. It should be the *Manx* cat and the household cats, or the ape among the monkeys. The fable holds in respect to the counsel given—namely, that others should dispense with an ornament not possessed by the lecturer; but the discrepancy lies here, that it is not an ornament lost by that disinterested friend, since it is something in which he is not only deficient, but with the use and value of which he has no acquaintance whatever. The true reason, then, is further to seek, and it may possibly be found to be this, that the man who offers a programme for the future that is perfectly satisfactory to himself, inasmuch as it is the child of his own imagination, has a sort of half-uneasy fear of the ghost of the buried past. In other words, he would rather not have his own new theories contrasted with the experience of those two thousand years of human history of which we find certain relics in the pages of Greek and Latin authors.

The clear perception of the manner in which history ever reproduces itself is rarely attained. The man busily occupied with the present is apt to forget his boyish recollections of the past. The man steeped in the learning of the academy shrinks from the loud din and personal squabbles of the politics of the day. Or, if, as in the case of so illustrious an exception as De Tocqueville, a writer brings a profound knowledge of history to illumine his all but prophetic insight into the course of the present and the future, his disciples are but few and rare. The daily journals, which more and more assume the position of the instructors of the public, make it a rule to handle no topics of more than twenty-four hours' growth. There is but little time for a colloquy with the ancients at the disposal of the reader of the morning's news.

It thus comes to pass that we are not unapt to take for granted propositions that are not only unproved, but actually disproved by history. We speak of progress where there really exist decadence and decay. Attention is at this moment directed to one of these subjects, a matter in which the English of the nineteenth century are very far inferior to the Greeks of the Alexandrine age,—inferior not only to the Greeks as Aristotle laboured that they should become, or as Plato dreamed of them in his Utopia; but as they actually were. Nor is this comparison to be made with men of different blood and different climate alone. We can trace at inferiority, not so marked because not so general, but sufficiently marked, in the education of the English gentle-

man of to-day, as compared with that of the English gentleman of the time of tournaments and chivalry.

The portion of education to which we refer, is that which is strictly physical. It is the purpose, intelligent, systematic training of the bodily powers. At the time when the human intelligence was at its acme, and in the race which subdued the world, the exercises of the palestra were as incumbent on a youth who hoped for distinction, as were the wisest lessons of philosophy. The great annual games of Greece were not mere assemblages for the purpose of gambling on the speed of horses, or for the exhibition of the most costly toilets. They formed an essential part of the physical education of the Grecian youth. It was not then, any more than now, given to many to excel in very different branches of study. And those branches, moreover, were far fewer, and some of them far more limited, than is the case at the present time. But if chemistry was unknown, if metallurgy was in its infancy, if mathematics were confined to geometry, if astronomy was awaiting the discoveries of Galileo, and if the boldest reach of the navigator was confined to the circumnavigation of Africa, we must not forget that politics was a science, even if some sought to make it a trade, and that the physical welfare of the race was directly cared for by the institutions of legislators, and by the solemn order of the public games.

As Europe emerged from the flood of barbarian invasion, and down to the time when the increasing use of gunpowder tended to equalize the advantages of strength and of skill, and finally to induce the abandonment of defensive armour, the physical education of noble youth received even an undue share of attention. To ride, to use weapons of all kinds, to inure the body to toil, was the object of youthful study and competition. In the chase and in the tournament was to be found the school of the soldier: careful training in many exercises, for the express purpose of developing bodily strength and skill, was not confined to the aspirant for knighthood. The English statute-book bore witness to the anxiety of our rulers that the yeomanry should maintain that familiarity with the bow which told with such terrible force in our French wars; and in the times of the Stuart kings, when the jack-boot, the squire of the arquebuse, was displacing the jointed plate-armour that had replaced the older mail covering of the legs, the aim of the publication of the "Book of Sports" must not be held to be merely or even mainly polemical. The idea of the primary duty of attention to the physical training of all classes of the nation was only densely obscured by the increasing smoke of gunpowder, and forgotten in the search for gold and the effort to make the most of the maxim that time is money.

This it came to pass that the manly out-door exercises which toughened the muscles of our forefathers were more and more regarded as mere amusements. Sour-faced men spoke of them as sinful; sharp-faced men spoke of them as waste of time. The best batsman on the cricket-ground was warned of the end of the idle apprentice. Books and work were extolled at the expense of healthful play. Heavy impositions, useless repetitions framed for the purpose of strengthening the memory (as if memory were a special faculty of the mind, and not a phase of the action of many very distinct faculties), keeping in from the play-ground or the cricket-field, were prevalent in our public schools. At the beginning of the present century physical education had probably sunk to its lowest ebb amongst ourselves, and the peaked bookworm, whom a wise and comprehensive discipline might have developed into a noble man, was held up as the pattern by the teachers of the good-boy school.

The change which we are now witnessing in this respect appears to have sprung from the manly instincts of the nation rather than from the wisdom of its teachers or the forethought of its legislators. Sports, never quite extinct, are becoming more carefully organised. Such an annual contest as the Oxford and Cambridge boat-race has far more of the mettle of the Olympic games than is to be met with at Epsom or at Ascot. An increasing interest in Alpine adventure is apparent. Men whose opinions on education are known and valued advocate something far beyond the mere constitutional walk necessary to the maintenance in working order of that ill-used machine, the brain of the hard-reading student. In that great military academy which exacts from the cardi-

dates for admission a standard of mathematical proficiency, and of acquaintance with language, either living or dead, and with physical and classificatory science, of an order that claims the very respectful attention of the Oxford first-class man and of the Cambridge wrangler, the utmost care is given to the exercises of the perfectly-appointed gymnasium. Dangerous and idle use of this portion of the machinery of education is rendered impossible, at the same time that proper and beneficial use of it is made obligatory. The result is the supply for the services of our engineer and artillery corps of a set of men who, in accomplishment of mind and of body, as well as in discipline and in the habits of gentlemen, are, if not *facile principes*, at least second to none in the world. More and more through our larger schools the gymnasium is becoming recognised as a place, not of idle amusement, but of essential importance to complete education.

With this great improvement of the day arise, as usual among us, the clash and conflict of opinion. Much of this would be avoided if men would only devote to the real study of a case on which, very likely, they feel not only strongly, but properly, the time which they consume in shouting out their own crude opinions. The man who is perfectly aware of all that is known on a subject is never vociferous, never violent, never over-bearing. It is the totally or the partially ignorant man who is intolerant, the imperfectly-convinced man who insists on his convictions with the most acrimony. When a child first acquires a new idea it hastens to communicate it to its fellows. *Monsieur Jourdain's* wonder and delight at learning "*tout ce qui n'est pas vers est prose*" is instantly communicated to *Nicolas*, in the absence of a fitter pupil. Take a subject on which actual knowledge is unattainable, and it is just the one on which controversy is most fierce. What ever exceeded the fury of the *homotousian* and the *homotousian* quarrel? Thus it is very natural that men who, manly sportsmen it may be themselves, are personally unaware of what well-ordered and systematic training can actually effect, should clamour for the open air and unchecked exercise of rowing, or of other less regulated sports, as the proper substitutes for the gymnasium. No less natural is it for those who have become aware of the ill-effects of exercises carried to excess, such as rowing, for instance, when pursued as a passion, and not regulated by an experienced trainer, to discredit our returning attention to our too-long neglected physical education. Common sense and daily observation, experience that may be acquired in a few years no less than the testimony of history, our duty to posterity no less than our regard to our own completeness of life, all point to the extreme importance of the provident and well-counselled development of the body, no less than of the mind, by appropriate and effective training.

In a national point of view, physical education will, perhaps, hereafter, as it was formerly the case, be regarded as possessing claims on the attention of the legislator, even prior to those of moral and of intellectual tuition. Morals are, to a certain extent, conventional. The code differs amid different races. Science is subject to that change which is a condition of healthy growth. But so many inches round the chest, and such a girth of the arm, are facts independent of theory. A stalwart and able population has a double value in a political sense: it constitutes the hope of the future no less than the safety of the present. In it we look for the fathers of future men and women, as well as for the defenders of our coasts. Nor must it be lost sight of that the equalising effect of gunpowder has reached its limit, and that with every improvement now introduced in its application, the advantage of the able-bodied soldier, able in skill as well as in celerity and in endurance over his weaker competitor, becomes more apparent. The soldier is no longer mere food for powder. The statistics of the battles of the century, if their accuracy may be relied on, show that it takes as many or more rifle-bullets to kill a soldier as was the case with the heavier balls of Brown Bess. Sadova was gained by the marching powers of the Prussian troops as much as by the needle-gun. To say nothing of accuracy of aim, a subject which attracts, and deservedly attracts so much attention in our rifle-grounds, aptness for rapid manoeuvre and for sustained fatigue, is an element of the utmost military importance. Drill is much simplified. With the Snider rifle the old manual is at an end. The endless routine of "Shoulder arms!

Ground arms! Port, ho! Charge bayonets!" is superseded by a simpler set of movements. The less the soldier is embarrassed with a cumbrous manipulation of his arms the more he is at liberty for a complete and improving gymnastic training. The more fatal and deadly become our projectiles, and the means of discharging them, the higher must we rank the value, and the more carefully must we study the education, of the soldier. The finer, the healthier, the more skilful, and the more enduring are our soldiers, the higher will be the physical status of our whole nation. The art of war has done much to brutalise the private soldier: it is now needful to raise him in the scale. The improvement in destructive, no less than that in constructive, machinery must ultimately serve to the elevation of the human race.

Gymnastic training holds the middle ground between neglect and the useless severity of the pipe-clay and pig-tail school. It neither leaves the man a clod, nor stiffens him into a machine. The gymnastic teacher looks askance at the time-honoured stock that still maintains its place in the British uniform, with scarcely less disfavour than at the heavy iron-shod boots which have devoured the calf of the rustic. The man who can go with ease through all the feats of the vaulting-room, the bars, and the trapezium, will be the one most ready to scale a precipice or to afford prompt aid in any emergency. He is equi-distant between the bumpkin and the mere drill-sergeant, and is worth more than the pair of them put together. Propriety of dress, not smartness alone, but fitness for the greatest amount of service with the least fatigue, is yet far from being attained, either in the army or out of it. How many questions on this score are still open! how many are yet openly set at naught! Which is the best boot? which the best great-coat? which the best hat? No reply has as yet been given to these questions by one consent. The well-known defect in the gait of our heavy-booted country swains, the destruction of the calf of the leg, and the slouching and fatiguing walk that are characteristic of the ploughman and the wagoner, are constantly recurring proofs of the need of some guidance more correct than an instinctive sense of comfort. The long-stirrupped, rupture-threatening seat still maintained by our cavalry is even a more inexcusable error in exactly the opposite direction. The completion of the gymnastic code, and the subordination of dress, of drill, and of seat, to the requirements of the gymnastic trainer, are matters of no trifling importance to the country, and improvements which we no longer despair of seeing carried into effect.

May we offer a word of advice to our professional brethren in this matter? It is this. In every design, for school, or college, or public building, in which provision is in any way to be made for the home or the education of youth, let them never lose sight of the necessity for a commodious gymnasium. Not a damp patch of ground, garnished with one or two poles and swings, such as we could point out within the walls of a building that assumes for itself a high rank among our educational establishments. A lofty, light, water-tight roof, a floor boarded throughout, and padded under the bars and poles, with a distinct portion of the building set apart for spectators, should be considered as essential a part of a scholastic building as either class-room or theatre. Great comfort and perfect adaptability can be attained at small expense, but not without proper forethought. Let those who are in want of precedent to guide them, pay a visit to the noble gymnasium at the Royal Military Academy at Woolwich. Let us add one other caution. The gymnasium, when provided, is intended for education, not, as in the instance of the open yard above referred to, for rough and bearish larking. Such a use of its facilities involves danger to limb or even to life, and should be strictly and carefully prohibited. The eye of the principal, and the invariable presence of a fully-qualified attendant, are requisite to make the gymnasium the scene of a noble branch of education, not the mere resort of mountebanks and of roughs.

ART-UNION OF LONDON AND THE MANSION HOUSE. — The Right Hon. the Lord Mayor (Gabriel) has invited the Council of the Art-Union of London to a dinner at the Mansion House on Friday, the 25th instant, and will have a large party to meet them. This will be the last state dinner of the present mayoralty.

THE WROXSTER EXCAVATIONS.

THE excavations at Wroxeter, which had been discontinued during the harvest time, were again commenced about a fortnight ago. A spacious room has been discovered and laid open, 34 ft. long by 32 ft. wide, having in its centre a square bed of stone, similar to the one found in the apartment called the enameller's shop, and which probably sustained a central pillar which supported the roof. A good many curious things have been found, especially in what has been a *tablinum*. As usual, plenty of hair-pins and cocks' legs have been collected. But the greatest rarity brought to light was a small clear red cornelian stone, six-eighths of an inch in length, and of an oval shape. It had probably been set in some metal, and used as a seal or signet-ring. It was deeply cut or engraved so as to represent in the centre a large goblet or vase, on each side of which, perched upon a round stand, was a parrot well characterised by the hooked beak: from the mouth of each issues a stream of liquid flowing into the bowl. Before this remarkable work of Roman art could be placed in the proper museum-case, it was shown to a party of 'gentlemen,' one of whom, it is supposed, must have slyly made off with it, as it can nowhere be found. An impression in wax had fortunately been taken, so that the article can at any time be identified. It is to be hoped the thief will now see the uselessness of retaining such a relic, which he dare not show to any one in respectable society, and that he will therefore and it back to the museum before the police get hold of him and it.

STRATFORD TOWNHALL COMPETITION.

A CORRESPONDENT writes as follows.—"The account in the local papers of the meeting of the Board to decide on the designs, shows that the author of the selected design marked 'Civis,' was known to several members of the Board to be their own surveyor, Mr. Lewis Angell, F.R.I.B.A. Before competing, I applied through a friend to one of the most influential members of the Board to know whether they had any particular architect in view, and was assured that they had no preference for any one architect, but that it would be fair and straightforward. One of the clauses in the conditions says,—'Any competitor communicating his motto, directly or indirectly, to any member of the Board, will be disqualified from receiving a premium.' Now, I think, could the members of the Board have known that the plans marked 'Civis,' belonged to their surveyor unless the above condition had been infringed, whereby Mr. Angell is 'disqualified from receiving a premium'? I have no doubt that the selected plan is the best, as the author would have opportunities of knowing exactly the requirements of the locality which no stranger could possibly possess. But why the Board should advertise for designs when they had a fellow of the Institute of Architects at hand, with a suitable design, passes my comprehension."

The Board have acted most injudiciously, if not unfairly. With an architect acting as their advisor, if they considered that he was in a position to carry out the work, with his other duties, they might very properly have placed the matter at once in his hands; but having appealed to the profession at large, they should not have allowed their surveyor to compete. His position would necessarily give him advantages, and his selection, they might be sure, would bring down, as it has done, a cry of unpopularity that no explanation could wipe away. As of the local papers writes,—

"If such a building is really essential for the best interests of the parish, the ratepayers have no cause to regret the selection. On the contrary, it must be some consolation to know that the choice has fallen upon the surveyor to the Board, inasmuch as had any other plan been accepted, a sum of 500*l.* or 600*l.* would have been paid as remuneration for superintending the erection of the building; and the Board will hardly award this to their surveyor, in addition to his present handsome salary, for the duty could only be performed in the Board's time."

Whether or not this belief weighed at all with the Board in making the selection we do not know. If so, they will doubtless be disappointed. Mr. Giles, at any rate, is not an officer of the Board. We make no question as to the superiority or otherwise of the selected design, as an elevation has considerable merit: the plan (which we have not seen); our objection rests solely on

the ground we have stated. The proceedings of the Board before selecting the designs ought to be instructive. Some of the members were anxious that an architect should be called in to assist in the selection, and the clinching circumstance that led to the rejection of a motion to that effect was the fact set forth that even if an impartial professional man were appointed to the task, there would be the same abuse of the referee and questioning of the decision as if the Board had acted for themselves. The question whether, spite of this unseemly and unwise conduct, the decision in the former case would not nevertheless be the better one, was not raised. Every member of the profession, indeed every person anxious for the right conduct of competitions, is interested in putting a stop to the proceedings pointed to in this discussion, or the result will be that no architect with any regard to his own dignity will accept the office of referee, should any committee still think it desirable to invite him so to act.

THE LATE MR. CHARLES FOWLER, ARCHITECT.

WE heard with great regret of the death of this gentleman, on the 26th of September, at his residence, Western House, Great Marlow, Bucks. Mr. Fowler was in his 76th year: he was born at Cullumpton, Devon, where his family had been settled for several generations. At the age of fifteen he was bound apprentice for seven years, as the manner then was, to Mr. John Powning, at Exeter, architect and builder, as he styled himself (he held, we believe, the appointment of surveyor to the Dean and Chapter of the Cathedral). During this long apprenticeship Mr. Fowler, no doubt, acquired that thorough knowledge of all the practical details of his profession for which he was remarkable. Soon after the expiration of his articles, in 1814, he came to London, and entered the office of Mr. David Laing, who was then engaged in the building of the new Custom House and numerous other works. Here he became acquainted with Mr. Tite and Mr. Bellamy, who were fellow-students, and whose friendship he retained to the end of his life. He appears to have remained with Mr. Laing between three and four years, after which he commenced practice on his own account. His first work of importance was the building for the Courts of Bankruptcy in Basinghall-street, completed in 1821. In 1822, he sent designs in competition for the proposed new London Bridge, for which he obtained the first premium out of fifty-two competitors; but he was not allowed to carry out his design. He also made designs for bridges at Kingston, Littlehampton, &c.; but the only one he carried out was that at Totness, over the river Dart. The following list of buildings designed and executed by Mr. Fowler is taken from the inscription on a silver trowel formerly in his possession, and used in laying the several foundation-stones:—

Totness Bridge, 1826; Hungerford Market, 1831; Exeter Lower Market, 1835; Charnmouth Church, 1835; Honiton Church, 1835; Brickleigh Church, 1838; Devon Lunatic Asylum, 1842; London Fever Hospital, 1845; Wax-chandlers' Hall, 1852.

To these may be added Covent Garden Market and St. John's Church, Paddington; small markets at Gravesend and Tavistock; extensive works at Powderham Castle, for the Earl of Devon; several country seats of minor importance, &c., &c. The work to which, perhaps, more than any other, Mr. Fowler owed his professional reputation, particularly abroad, was Hungerford Market, now removed; the peculiarities of the site and the different levels to be accommodated afforded great opportunity for the designer's skill, both in the arrangement and architectural treatment. Those who only knew the building in its subsequent altered form would be unable to realise the striking effect produced by the original arrangement.

In the earlier part of his professional career Mr. Fowler frequently engaged in public competition, and several of his most important works were obtained in this manner. In conjunction with his friend, the late Mr. Sievier, the sculptor, he submitted a design for the Nelson monument in Trafalgar-square, to which the second premium was awarded.

Mr. Fowler was one of the founders of the Institute of British Architects, and for many years filled the office of honorary secretary, and

subsequently that of vice-president. He was also a member of several other learned societies.

Mr. Fowler commenced his professional life in Red Lion-square. From thence he removed to Great Ormond-street; and subsequently, for nearly twenty-five years, he resided in Gordon-square. In 1852 he was induced by failing health to retire into the country, and soon afterwards he withdrew from professional practice. He continued, however, to take an active interest in professional matters, and never relinquished the use of his pencil and drawing-board, amusing himself with working out different architectural ideas, which occupied his mind to the last.

His son, Mr. Charles Fowler, an accomplished member of the profession, is district surveyor of St. Giles's-in-the-Fields and St. George's, Bloomsbury.

EARLY CONSTITUTION OF THE "OFFICE OF WORKS."

THE Committee of Professional Practice appointed by the Council of the Institute of Architects, recently considered as to the remuneration paid by the Commissioners of Works and Public Buildings to the architects employed by them, and have now printed some "Rough Memoranda on Professional Practice," extracted from reports on the Board of Works, 1813—1828. The commencement of their minute shows the early constitution of the Board of Works, and is interesting.

"Our attention," they say, "was first directed to the Report from the Commission of Inquiry into the conduct of business in the Office of Works, ordered by the House of Commons to be printed the 3rd June, 1813. This Report of the Commissioners states the mode in which the business of the Board was conducted from the 12th October, 1705, to Lady-day, 1715, passing on to the constitution of the Office of Works in 1742, within which period (p. 6) 'Sir Christopher Wren held the office of Surveyor to the Board of Works, and Sir John Vanbrugh that of Comptroller.' In 1718 Mr. W. Benson (who was not of the profession), whose history is so much involved in mystery, 'was appointed to the office of Surveyor' with 'power to appoint a deputy, and he appointed Mr. Colin Campbell,' whom the Commission 'believe to have been an architect of eminence.' From 1718 (p. 7) the office of Surveyor-General ceased to be held by a professional person, 'and a Deputy Surveyor, receiving 180*l.* per annum salary, as such,' is one of the officers enumerated in the list. Soon after the commencement of the reign of George III., two architects, with a salary of 300*l.* each, were added to the establishment, and the offices of Surveyor of the Royal Gardens and of the Private Roads ceased to be held by professional persons; and in the eighth year of the reign of George III. a new set of regulations was established, and the Board consisted of the Surveyor-General, Comptroller-General, Master Mason, Master Carpenter, and two Architects, and in addition there were six Clerks of the Works, having the power of appointing labourers in trust. It appears that in 1783 the Surveyor-General had possessed, in right of office, two extensive houses and premises in Scotland Yard, another at Hampton Court, and another at Kensington. Sir W. Chambers (p. 8) seems to have been the active member of the Board, and had the special superintendence of the works at Somerset Place (House) (p. 9), and he was allowed only 2½ per cent. by deduction from the tradesmen's bills, for his trouble and expense in superintending the works at Somerset Place, and in keeping and making up the general accounts of the same; but that, on a representation to the Treasury of his loss by this service, he was allowed to charge in addition 2½ per cent. on the expenditure. Sir W. Chambers had also a house, which belonged to him as Comptroller, worth 150*l.* per annum. On the occasion of the new works, and considerable repairs executed at the public prisons subsequently to the riots of 1780, the Clerks of the Works, immediately superintending these services, were allowed, under the authority of the Treasury, 2½ per cent. on the amount of the bills for their trouble in making plans, in attending the execution of the work, and in measuring and making up the bills for the same, agreeably to the prices of the Office of Works, but that it was directed that this per-centage should be deducted from the bills so settled, and not be charged over and above the same; for the public was not to be put to any additional expense;—a most clumsy device to

conceal the true state of the case; for if the tradesmen had to bear this additional charge upon the fair trade profits, they would add it to the prices charged, and thus the public would have to pay the value of the services of their office, despite the transparent attempt to keep them in ignorance of the fact. The Commissioners quote a return of salaries received as follows:—

The Surveyor-General, Mr. Keen (p. 9), received clear per annum 687*l.* 16*s.* 4*d.*; the Surveyor of Private Roads, Mr. Fane, per annum, 730*l.* 11*s.*; and the Paymaster, Mr. Selwyn, per annum, 1,017*l.* 11*s.* 7*d.* The Paymaster's advantages arose from a salary of 3*d.* in the pound on all payments made by him.

The Act of 22nd of George III., chap. 82 (p. 9), suppressed the principal offices of this department, and directed (p. 10) that all H. M. buildings, which had been under the management of the Board of Works, should thenceforth be under the direction of some one person appointed by H. M. Surveyor or Comptroller of H. M. Works (the said Surveyor or Comptroller being *bona fide* by profession an architect or builder), with such officers or clerks under him as His Majesty might from time to time direct and appoint.

It appears that the Clerks of the Works were to be allowed a convenient habitation or apartment at the place of their appointment, in which they were constantly to reside, and they measured the works and rendered their accounts to the Surveyor, Examiner, and Inspector.

Mr. Wyatt was at the head of the department (p. 24) at the time this report was made (1813) (p. 14), had a salary of 510*l.* per annum, and an allowance of 10*l.* for stationery. He was architect to the Ordnance at a salary of 280*l.* per annum; Surveyor to Somerset-place at 200*l.* per annum; with allowance of commission on extra works of 5 per cent. (p. 97). He had been much employed in superintending as an architect some very important works carried on under special votes of Parliament, and he had extensive practice as an architect. On the occasion of Lord Nelson's funeral he charged for his attendance, and for all new works at Somerset-place, and for the works carried on under votes of Parliament, he received a commission of 5 per cent. He had, in virtue of his office, the appointment of labourers in trust, of the constant labourers, gate-keepers on the king's road, the office-keeper, messenger, and tradesmen. Mr. Wyatt occupied an apartment in Windsor Castle attached to his situation of Surveyor-General of the former Board of Works, and it seems to have belonged to the Surveyor-General as far back as Sir Christopher Wren's time.

Mr. Wyatt admitted that there were no peculiar duties to be executed by the Surveyor at Windsor, but added that his attendance was more required where the king resided, in order to give his Majesty information respecting the works carried on in other places. It was, perhaps, for this reason, that residences were assigned to the Surveyor-General at Hampton Court and Kensington,—these places having been formerly the residences of King William III. and George I. He was at no expense for taking measurements of works (p. 99), or making out accounts of same, and only gave so much of his own time as was necessary. With respect to the Clerks of the Works, as they were then called,—but which at the present day would more properly be called resident architects,—it is stated that, with the exception of the Clerk of the Works for Windsor, they were all educated for the higher branches of their profession, carrying on practice, having salaries varying from 250*l.* to 1,000*l.* per annum, and all having official residences within their respective departments, as directed by the instructions, and they seem to have been allowed from 2 to 2½ per cent. on occasions of any large expenditure on new works carried on in their departments. They had to measure the work and make out the accounts.

The Commission (p. 45) suggested a reconstruction of the Board, to consist of a Superintendent, who should also be the Public Accountant for the department (and not necessarily an architect), and two Architects, a resident and assistant Clerk, and six Clerks of the Works. The Architects to be men of eminence, with a salary of 500*l.* per annum. And when employed under the orders of the Treasury in carrying on any extra works in places or districts, not within the Office of Works, an allowance of 2½ per cent. on the tradesmen's bills. In the case of the Houses of Parliament, or Speaker's House, no extra

allowance to be made to the Architects. One of these officers to be always in attendance to make up the Board. The Clerks of the Works (or resident Surveyors) were to have salaries varying from 300*l.* to 200*l.*

The salaries and advantages of the clerks of works, ought to depend on the quantity of business under their care, and on the different situations in which they may be placed (p. 47). We propose, consequently, that the clerk of the works having the care of Hampton Court, and the Richmond and Kew departments, should have a salary of 300*l.* per annum, with a residence at Hampton Court. The clerk of the works for the Queen's Palaces, 250*l.* per annum, and a residence at the Queen's Palaces, and the mews; and 200*l.* to the clerk of the works for the Whitehall and Westminster departments, according to the arrangements before mentioned, and 50*l.* per annum additional unless residence can be provided for them; and to the remaining clerk of the works, who is to have the care of the Tower, the Rolls-buildings, and the prisons, 200*l.* per annum, and 50*l.* per annum, or a residence, if Somerset House be put under his care; and we propose that an allowance of 5*l.* per annum be made to each of these six officers for stationery. The appointment of these officers should rest with His Majesty, as is the case at present.

The duties (p. 48), now executed by the clerks of the works are, as we have before shown, rather those of surveyors, but whilst professional men, of the qualifications and respectability, however now held, are not to be responsible in the department, we understand the employment in consideration of the salaries and advantages hitherto annexed to it, we would not propose any further alteration in this part of the establishment, neither do we see any objection to their carrying on private business, if in the opinion of the superintendent, such employment does not interfere with their official duties. The propriety of this arrangement must, however, depend entirely upon the competency of the labourers in trust, to execute those duties which it was intended by the instructions should be executed by the clerks of the works. We think, therefore, that as the clerks of the works are to be responsible for the labourers in trust, they should have the appointment of them, and let to the appointment of the Board, as appears to have been the practice under the former constitution of the department, and subject also to their being suspended or removed by the same authority. They should have residences in their respective districts or places, which they should occupy during the absence of the superintendent, and constant attendance should be required of them during the usual hours of work, unless their respective principals, the clerks of the works, should give them leave of absence, but notice of this leave should be communicated to the office.

THE COMMISSION OF MONUMENTS AT LIÈGE.

THREE years ago a commission of monuments was appointed to the charge of certain of the public buildings in Liège. During the interval that has elapsed the members of this commission have unfortunately deemed themselves competent to deal with the renovation of some of the most celebrated and important structures, including the world-famed church of St. Jacques. The arabesque treatment of the vaulted roofs of this structure is one of the most delicate wonders Mediæval times have left us; nevertheless, they have not hesitated to deal with it as though it were in truth as common as they have contrived to make it. The groining of the nave, aisles, transepts, choir, chapels, and the interfection of the nave and transepts, is arranged to form different designs. The mighty ribs rising out of the stately piers and reed-like columns, and spreading out like so many stems, divide each compartment into angular sub-divisions, all of which are studded with bosses and medallions and term with arabesque conceptions rendered in the most harmonious colouring. All the central angular panels of the nave roof are filled with medallions, surrounded by light feathery foliage mixed with flowers; and the prominent ribs are picked out in bands of colour, yellow, red, and blue, with a black and white zig-zag border, alternating with yellow, blue, and green, finished with the same zig-zag border. In the centre of each rib is a long length of yellow, and the arrangement we have mentioned occurs in each case between these broad bands of gorgeous colour and the four bosses on the points of intersection. The bosses are carved and coloured. They represent frequently the heads of men, occasionally those of women, sometimes full-length figures of saints, and there are instances of birds. The heads are treated in the most fanciful fashion, the wreaths of foliage with which some are surrounded proceeding from their mouths, others being crowned, helmeted, turbaned, capped, and hatted. A circle of gold surrounds both medallions and bosses, save in rare instances. In like manner the choir is treated, except that angels playing musical instruments are freely introduced into a set of bosses terminating the ribs that vault downwards from a crowning boss, representing the Majesty, and that each panel is filled with flowers and foliage, to the exclusion

of medallions. Each roof is marked by a similar slight variety in the design. All of them, with the spandrels of the arches of the nave, are treated with the same spirit, and the colouring is of the same tone throughout. Under the auspices of the Commission a trial piece of repainting of the ribs in the most staring and astounding of bright colours was approved, and the whole of the vast spider-web work of ribs is now painted from end to end in the same fashion. "Heureusement," sighed our guide, "*le fond de n'est pas touché*." The graceful flowing and intertwining arabesque work on the panels is left untouched. But the effect of the contrast of the prodigiously lavish use of yellow ochre and other staring colours upon the ribs against this ancient, subdued, and beautiful background is intensely offensive and disastrous. "*Tout le monde les blâme*," acquiesced our guide, in answer to our expostulations. It is difficult to understand why the ribs should have required so thorough a re-painting, when the panels are sufficiently good to remain. We can only conclude that the Commission was unaware that it was possible to renew any decayed or effaced portion of the work, to correspond with the ancient part, without wiping out good and bad together. Some years must now elapse before anything like harmony of tone can again prevail. And the disparity is never likely to be quite overcome, for as the ribs mellow down with age, the same lapse of time will not be useful by the already ripe colouring on the panels.

A second want of feeling is exhibited in the renewal of the tracery of some of the windows. The ancient mullions and flamboyant tracery have been removed, leaving the ancient arch mouldings and jambs *in situ*; and new tracery of an offensive whiteness inserted beneath the ancient time-stained mouldings. Removed thus from all association of idea with the form of the window openings or with the colour or identity of the stone of the whole of the exterior, the new tracery has the most meaningless, marring, and intrusive effect.* St. Jacques, we perceive, retains possession of its ancient stalls. A large organ in a Renaissance case occupies the whole of the gallery at the west end.

In the cathedral the choir has new tiers behind tiers of stalls, screen, and altar-rail of light oak of early Mediæval design, untouched with colour. We have no fault to find with this except that they impress the beholder more with a sense of the lavish expenditure of money on colour than with any artistic excellence.

Perhaps the crowning display of want of wisdom is the travesty of noble work, executed at St. Martin's on-the-Hill. In the choir of this edifice we find an absurd attempt to copy the wondrous roof of St. Jacques. The fan-groining ribs and bosses are there, but very much depressed in their arched forms. The whole is painted, recently, in the gaudy yellow ochre and other colours in imitation of the original, and has a most theatrical aspect.

There is really need for a judicious renovation of a part of this structure that affords one of its chief sources of attraction to strangers. The view from the top of the tower is magnificent and not to have seen it is not to have seen Liège. But the ascent, instead of being made safe and commodious, is as perilous as it can be. The adventurous being who sets out on this aerial tour, after paying the franc charge for the opportunity, leaves the ground for a short distance by means of an ordinary and tolerably proper stone turret-staircase, which, however, soon stops short, and the rest of the ascent is made by a series of shaly step-ladders through the different floors of the bell-tower. The rickety oak steps and the loose handrails are indeed dangerous companions, and the platforms by which every step-ladder is reached, as one after the other is climbed, are pit-falls. Not unaccustomed to climbing ladders and walking-planks at great elevations, we owe there is good cause for fear here, and that a heart we commended the prudence of a fellow climber who declined to complete the ascent and turned back half-way up. Arrived at the summit, by dint of grip and scramble and dexterous selection of strong points and avoidance of weak places, the stranger steps upon the gutters at the top of the tower, and makes the tour of the four sides round the parapets. Here his only protection from wind, and

* If the mullions and tracery were decayed, doubtless they should have been renewed; but that they should have been replaced by step-work of the colour and kind of the mouldings with due regard to the integrity of the office, not by earless-pitfalls.

giddiness, or any kind of mortal sickness, or the indefinable longing to take a header from high places, that is almost irresistible in some temperaments, is a low parapet about a foot high! Below lies the city, once boasting sixteen gates, the cathedral, the castle, the palace, the council-house, the famous monastery, and a convent, all blocked together by the busy streets, and watered by the Rivers Meuse and Ourthe, which are spanned by bridges, and seem to tie the intersected parts of the city together. And beyond the great mass of roofs and house-tops, between them and the girdle of mountains in the distance, lies a landscape as lovely, as full of hills and dales, waterfalls and streams, as our own famous Highlands. We point out to the Commission a remunerative investment for their money, as well as an attraction to the edifice, in the provision of a safe and easy mode to ascend this tower. This would be more to the purpose than daubing with yellow ochre one of the most delicate pieces of arabesque colouring bequeathed us.

FROM MELBOURNE.

The New General Post-office.—After about nine years, during which it has been in course of erection, the new General Post-office has arrived at completion, and been appropriated to the purposes for which it was designed. The fittings are all of South Wales cedar, and cost something like 6,000*l*. The building is heated in cold weather by hot-water pipes, supplied by Messrs. Bobardt & Co., and the floors will be covered with coco-nut matting. The lighting arrangements are on Dempster & Co.'s patent. Perhaps the most faulty of the internal arrangements in the whole building are the sanitary. Baths for the mail guards and delivery who travel all night by coach in rain, heat, or dust, ought to have been provided. The lavatories are also very circumscribed. The large clock shown at the Intercolonial Exhibition will be placed at the north end of the Elizabeth-street arcade, in juxtaposition with the postal boxes, and about 30,000 persons visited the building the first day of its opening. The general contractor for the work has been Mr. Samuel Messis. The entire cost will be nearly 40,000*l*. After the public had retired, a few friends met Mr. Messis to congratulate him upon the completion of the work. Not the slightest accident had occurred in the erection.

St. Jude's Church, Carlton.—The foundation-stone of this church was laid by the Bishop of Melbourne, in October, 1866; and that portion of the building now erected was opened for public worship in March last. The site of the church is the most elevated in Carlton. It is but half an acre in extent. The style of the architecture of the church, the first of its kind in Melbourne, is the Pointed Gothic of Italy, or Lombardic, and the material is brick. The general structure consists of Hawthorn bricks, relieved with red and white quoins, arches, tracery, and other ornaments. Freestone is sparingly used for springers, drips, &c., and the roof is covered with slate of different tints and forms. The chancel measures 23 ft. by 12 ft.; the vestry, 12 ft. square. The nave, when completed, will measure 80 ft. in length, its width is 17 ft., and the highest point from floor to ceiling 44 ft. The tower, serving also as an entrance porch, is 135 ft. high to the top of the roof. The windows are glazed with cathedral glass, and ordered with stained glass. The chancel window is ornamented with the emblems of Faith, Hope, and Charity. The artists were Messrs. Argusson, Urie, & Lyon. The reading-desk is surmounted by a displayed eagle, designed and carved in cedar by its donor, Mr. Felix Perleick, wood-carver. Another friend, Mr. C. C. Towster, an amateur sculptor, designed and executed in marble stone, and presented, the baptismal font. A bell has also been presented to the church by Mr. Lee. Messrs. Reed & Barnes are the architects, and Mr. John Pigdon, of Carlton, the builder. *The Australian News*, to which we are indebted for these particulars, gives a vivid view of the exterior of the church. This paper is profusely illustrated. The last number which has reached us contains, besides numerous engravings, a very large one, showing a series of panoramic views of Melbourne itself, which really merits the name of a great city, with its numerous public edifices, and its long & spacious streets.

PROVINCIAL NEWS.

Taunton.—The inmates of Huish's Almshouses in Hammet-street have shifted their quarters to the new almshouses in Magdalene-street. Messrs. Giles & Robinson were the architects, and Mr. John Spiller was the builder.

Birmingham.—The estimate of Messrs. J. Cresswell & Sons has been accepted for the erection of the new Birmingham and Midland Bank. The work has already been commenced, under the superintendence of Mr. Edward Holmes. The site is opposite the Exchange buildings, in Stephenson-place, immediately adjacent to the Central Railway-station, and occupies the central position of New-street. The two principal fronts will be erected in Portland stone (being its first introduction as a building stone in Birmingham). The columns and bases of the portico will be of polished granite.

Gloucester.—The Children's Hospital, at Kingsholm, near this city, has been formally opened. The building has been erected at a cost of upwards of 3,000*l*. Mr. Jacques, of Gloucester, is the architect. The entrance is approached by a broad gravel road from the highway. On the left are the cloisters, 150 ft. in length, connecting the Hospital with St. Lucy's Home. The sick-wards are reached by a broad staircase, open to the roof, and furnished with a lift, for raising invalids, and for other purposes. On the first landing there are two wards,—one for boys, containing seven beds; and another for girls, with eight beds. The walls are decorated with coloured Scriptural pictures. Each ward has a nurse's room adjoining, and several rooms for attendant nurses. At the end of the landing is a small chapel, with a stained-glass window, the centre of which represents the Crucifixion, with the figure of St. John on the right, and the Virgin Mary on the left. At the top of the house is another ward,—called the infection ward,—furnished with seven beds for boys. There is a nurse's room adjoining, with a small dispensary. There is to be accommodation for twenty-three beds. There are several linen-closets, a bath-room, and two servants' bed-rooms. On the ground-floor is the servants' hall, leading to the cooking-kitchen, which is fitted with a gas-stove, and every convenience. Adjoining this is the laundry, with scullery, wash-house (underneath which is a large tank, holding 10,000 gallons of soft water), and back kitchen. At the north wing is the convalescence-room, decorated with appropriate texts of Scripture, and other offices. There are several outbuildings, including the mortuary, the gift of a lady, over the door of which is inscribed "The angels do always behold the face of My Father which is in Heaven."

Hereford.—The improvements at the Infirmary within the house have been begun, in accordance with the recommendations of Dr. Bristowe, the inspector from London, for its complete ventilation and improvement. A large number of men are employed, with the view of limiting the inconvenience it occasions to the shortest possible time. The contracts for extending the staircases at each end of the building to the top, with large glass lanterns over each; for building up two tiers of new water-closets in the back angles of the Infirmary, and removing the present ones from the wards; for making two large wards back and front; for re-arranging the wards, and including all collateral expenses, amount to 887*l*. 15*s*. This sum completely exhausts all the funds at the disposal of the committee. The estimated cost of putting in gas, with all the fittings, burners, and lamps complete, is 110*l*.

NEW CHURCH NEAR LUTON, BEDFORDSHIRE.

A new ecclesiastical district is being formed near Luton, in Bedfordshire; and sites have been given, and a church and parsonage are being built upon them by Mr. John S. Crawley, of Stockwood, near Luton. The church is substantial, and contains a nave, chancel, chancel aisles, vestry, south porch, and warming crypt. The nave is 58 ft. long and 26 ft. wide; the chancel 36 ft. by 20 ft.; and the chancel aisles 20 ft. by 10 ft., opening to the chancel by a double arcade on each side, supported upon polished marble pillars.

The walls generally are 3 ft. thick, that of the west front, which is surmounted by a double bell-cote, being 4 ft. thick, and are faced inside and outside with cream-coloured bricks, relieved

with bands of red Mansfield stone. All the door, window, and arch dressings are of free-stone. The roofs are open-framed with pitch pine timber: they are boarded with pitch pine above the rafters, and covered with felt and green Pembrokeshire slates, finished with red Mansfield stone ridge tiles. The roofs are intended to show the raw timber, without either staining or varnishing. All the seats are in pitch pine, unstained, but varnished. A carved oak screen divides the chancel from the nave; and the chancel contains stalls arranged choir-wise, a double sedilia, piscina, and credence.

The east wall will be decorated with a reredos of enamelled tiles, with a carved stone brattish-ing over. The works, which have now progressed to the level of the window-heads, are being carried out from the designs and under the superintendence of Mr. Thos. Nicholson, diocesan architect, Hereford.

ST. GEORGE'S CHURCH, TUFNELL PARK, HOLLOWAY.

This church, which is peculiar in plan, was consecrated on the 28th ult. The building is arranged as a large circle, 85 ft. 6 in. diameter, with eight 10-in. iron columns supporting arches 31 ft. in height, and octagonal clearestory above, which central octagon is no less than 54 ft. 8 in. diameter; the total height of it from floor to ceiling being about 50 ft. East of the circle, the plan runs out into chapel-like projections or aisles to the chancel, which is 36 ft. long and 25 ft. wide, with circular end. The total length from west to east of the church is 120 ft. internally. The accommodation is for 1,040 adults on the ground floor. The building is of Kentish rag, and Bath stone dressings: it is intended some day to erect a lofty tower and spire. Up to the present time the church has cost, including heating, gasfittings, &c., about 6,000*l*. The architect is Mr. George Truefitt. Messrs. Carter were the builders.

ST. ALBAN'S CLOCK TOWER.

TRAVELLERS in England have all seen and remember the famous clock tower of St. Alban's, in Hertfordshire. What an old-world, useless thing it was in our grandfather's time, who was wont to tell strange stories about it to the Hugh Little Johns of modern Verulamium. Not unlike old Barbican in London, "moth-eaten fort," time and neglect had eaten deeply into it; and St. Alban's clock tower had become a neglected nuisance; the peaceful bell-hung fortification of the wars of York and Lancaster, sunk to a patched Batty-Langleyed, bricklayered, old trunk, sad sight to the eyes of antiquaries, who look with true Medieval eyes on its many associations. This year of 1867 has happily seen its restoration under the watchful eye of Mr. Scott.

Our object in prefacing these stray remarks is to call public attention to the appropriate use to which the clock tower of St. Alban's is now put. The warden of the tower can send messages further far and infinitely quicker,—

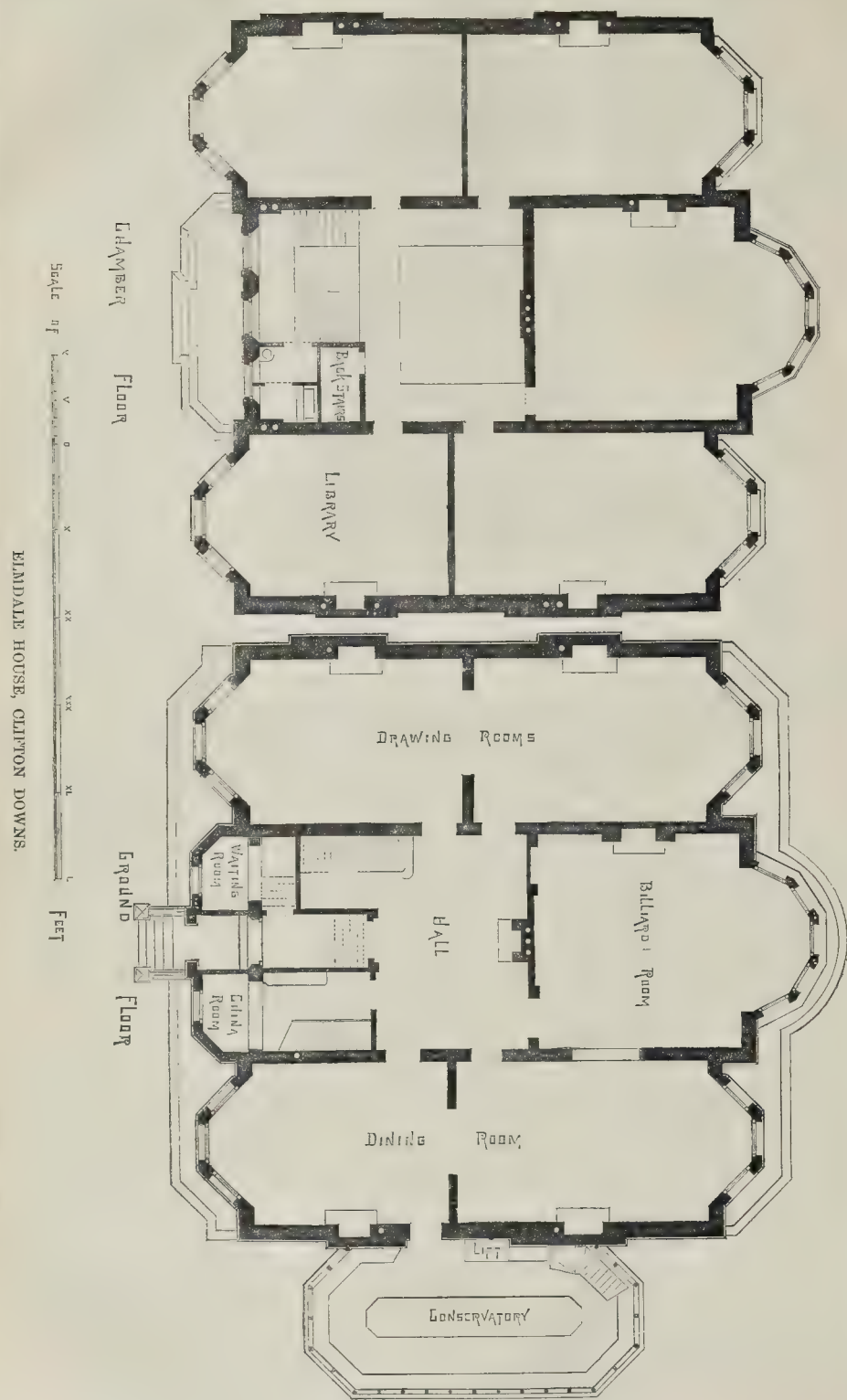
"Speed the soft intercourse of soul with soul,
And wait a sigh from Indus to the Pole,"—

than the blazing bale-fires and far-reaching beacon-lights could cover in Tudor and Stuart times. The restored clock-tower of St. Alban's is now a magnetic-telegraph station to and from all parts of the civilised world. Few old cities or towns in England have done so well with its "past" history as St. Alban's has done in this instance. Thanks, in many ways, to the memory of the Abbey's late rector, the Rev. Dr. Nicholson, who knew St. Alban's Abbey by heart from foundation-stone to crowning-stone, and worked to preserve and continue the memory of monuments that often need memorials to tell unborn ages why they were erected. Good time is now kept in St. Alban's; so that the apprentices of the sainted town have no reason to complain with the apprentices of London and Bow Bells. The threat of the young Cockneys, some four centuries ago, to the clerk of Bow Bells, was alarming enough:

"Clark of the Bow Bell, with the yellow lockes,
For thy late ringing thy head shall have knockes."

Significant enough. The clerk replied in rhyme:

"Children of Cheaps, hold you all still,
For you shall have the Bow Bell rung at your will."





[See p. 737, ante.]

ELMDALE HOUSE, CLIFTON DOWNS, BRISTOL.—MESSRS. GEO. & HENRY GODWIN, ARCHITECTS.

ESLY DEL.

THE OPERATIVE FLINT-GLASS MAKERS AND THE QUESTION OF EDUCATION.

A CONFERENCE of the Flint-Glass Makers' Society of Great Britain and Ireland is held every three years, and at the last of these, which was held in Edinburgh within the last few months, the delegates took into consideration the question of the better education of boys learning the trade. The subject was introduced by Mr. John Cartwright, of Oldswinford, near Stourbridge. Since then a circular to the employers has been issued, urging their co-operation. In this circular the operatives propose:—

"1st Suggestion: To establish schools in the various districts solely connected with the trade, to be open on Mondays and Saturdays, or such other times as may suit the working hours of the districts. These schools may be taught by employers, by the better educated operatives, or by their nominees. One-third of the expenses to be borne by employers, and the other two-thirds by the Flint Glass Makers' Society. Boys to pay a small sum weekly to form a fund from which to give prizes annually, in tools, books, &c., to such of them who have attended most regularly and made most progress during the year. Boys to find their own books, slates, &c. 2nd Suggestion: To employ, to attend a national, or other public school, when off work, on Mondays or Fridays, and to obtain the services of a trained or other approved schoolmaster: to have school open for our boys and apprentices half-days on Saturdays."

They suggest that a fine should be inflicted on boys for neglecting to comply with any regulations which masters and workers may agree to; and, after about two or three years from the time of making such provision for their better education, no boy should be advanced to make foot work who could not read, write a legible hand, and pass a simple examination in arithmetic.

"In issuing this to our employers [they add], we are aware that we are only taking the initiative in a direction which many of you have already intimated a wish for, and that without your hearty co-operation, any effort of ours to improve the intellectual condition of the boys and apprentices will, to a very great extent, prove abortive. We, therefore, the more earnestly ask you to give a serious and candid consideration to our contents."

We believe the masters have the subject now under consideration. From replies already received from individual manufacturers, it appears that the proposals of the men are regarded in a friendly light, and it is hoped will lead to some practical issue.

NORTHERN ARCHITECTURAL ASSOCIATION.

THE quarterly meeting of the Northern Architectural Association was held, at the 10th inst., at the Old Castle, Newcastle-on-Tyne, Mr. John Green in the chair. The following officers for the ensuing year were elected:—President, Mr. John Green; vice-president, Mr. Matthew Thompson; hon. treasurer, Mr. E. J. Johnson; hon. secretary, Mr. T. Oliver; hon. solicitor, Mr. G. W. Hodge; council, Mr. Greener, Mr. A. M. Dunn, Mr. John Johnston, Mr. J. Clarkin, and Mr. Wm. Passey. Mr. Pearson was elected an associate. The meeting discussed the conditions of the Durham Union Workhouse Extension Competition.

FIRES IN SCOTLAND.

THERE has been a series of fires in Scotland, all accidental, so far as is known, within the last few days.

On Wednesday in last week the most serious of these fires, so far as regarded loss of life, occurred in the Canongate, Edinburgh. This is one of the best known streets in the "Old Town," and is flanked with exceedingly lofty houses,—the palaces of bygone times,—separated by narrow, dismal alleys. These houses, now occupied in flats, with a common staircase, each contain a sufficient number of families to people a small hamlet. The shop on the ground-floor of one of them was occupied by a maker of fireworks. A rocket he was engaged in making exploded in the ramming, causing further explosions, which set fire to the premises. A great volume of flame stopped egress by the common stone staircase, and at the same time sent suffocating fumes into the many rooms above. The occupants of the rooms at the time were mostly women and young children, the men being at work and the elder children at school. The women rushed to the windows, screaming frantically, and a most painful scene occurred. Five persons were killed, and a still larger number were burned or otherwise injured. Fortunately prompt help was given, and the consequences would have been far more calamitous.

On the night of the following day a tan-yard took fire at the bottom of North Gray's Close, on the north side of the High-street, midway between the North Bridge and Leith Wynd. This place is surrounded by numerous closes, the

crowded and unwholesome dwellings of a host of poor people. The whole of these adjoining buildings were placed in the most imminent peril by the fire. Crowding upon each other in pestilential confusion, and towering in all directions to most unwieldy heights, it seemed all but hopeless, with this fierce naked fire rising up in the midst of them, to prevent a general and most disastrous conflagration. The tan-yard buildings were destroyed, but happily the fire did not extend to any of the surrounding closes.

On Thursday morning, at an early hour, a fire broke out in Dalhousie Castle, on the banks of the South Esk, near Dalkeith, and eight or nine miles from Edinburgh. The fire originated in an upper-story room, called the sky-parlour. After the fire had been so far subdued as to allow investigation to be made, it was found that the third and attic stories of the main portion of the building were a total wreck; that the sky-parlour and the room below it were totally destroyed; and that the roof of the staircase had given way. The fire, happily, was kept out of the east wing; but in consequence of the great quantity of water poured upon that part of the building, it was percolating to the ground-floor, while in the middle section of the castle, the second and drawing room floors were drenched. The library and other rooms in the west wing were uninjured. In the east wing a great quantity of water percolated from floor to floor. The damage to the castle, which is covered by insurance in the Scottish Union, has been estimated at about 3,500*l*.

At Dundee a great fire took place on the night of Tuesday in last week, by which two ship-building-yards were ravaged, timber and buildings burnt, and two ships on the stocks, and nearly finished, were entirely destroyed. The property destroyed in the yard containing these vessels is thus estimated: the whaling ship, 13,000*l*; composite ship, 7,000*l*; general loss, 15,000*l*; total loss, 35,000*l*. In the other yard it is calculated that three or four thousand pounds will clear the loss.

In the Canongate fire, at Edinburgh, the want of fire-escapes was lamentable. No such thing as a fire-escape seems to be in use. Ladders and ropes, and even sheets, were used for lowering those in peril, but no fire-escape. The Lord Provost, in allusion to this extraordinary want, said, at a meeting of the Justice of Peace Court, that "it was felt that more lives might have been saved had the city been furnished with a fire-escape: it would be the duty of the town-council to procure one as soon as possible. They would also take measures immediately for looking into the system of selling and preparing fireworks in the city." They have much need to do, as well as to establish stricter police regulations for the management of fires. The want of proper organization was manifest. Great complaints were made by the inhabitants of North Gray's-close and adjoining closes, of thefts committed while the fire was going on. Houses were entered by bands of roughs, pretending to help to rescue furniture, and in many cases it was not seen again. Some houses left by their inmates with locked doors, on going out to watch the progress of the fire, were broken into and the contents removed. Great quantities of furniture were destroyed.

STEAM ROAD-ROLLERS.

It is to be hoped that ere long no macadamised road will be left in the rough state for poor horses to flatten with feet and wheels. A new steam road-roller, made by Messrs. Richard Moreland & Son, has been tried in Hyde Park, in the presence of Sir J. Thwaites, Mr. Bazelgette, Mr. Pollard, and various other gentlemen connected with the Metropolitan Board of Works. The trial was conducted under the direction of Mr. Mann, the superintendent of the park and park roads. The road had been specially prepared with metal, sand, and water. A very few passages of the roller speedily reduced the road to a smooth surface. The operations of the machine met with general approbation. The new roller, however, has not been constructed for metropolitan use, we are sorry to say, but for the government and municipality of Bombay. It is designed in accordance with a recent patent of Mr. D. Thomson, and consists, externally, of a square wrought-iron casing of great strength and rigidity, which is nearly balanced on a large central roller, with the engine on one side and

the boiler on the other. On the boiler side are two leading wheels, which take only a small portion of the load, and serve for steering. The boiler is vertical, on the Field principle, and the engine works direct on the large roller, by means of two pitch chains, without any intervention of gearing. The dimensions are:—Diameter of roller, 7 ft. 6 in.; length, 6 ft.; length of external casing, 13 ft. 6 in.; width, 8 ft.; height above roadway, 8 ft.; diameter of steering-wheels, 3 ft. 6 in.; width, 1 ft. 2 in. The machine was shown turning at right-angles into roads, and is quite manageable even in a crowded street. When at work it is not turned round at the end of its course, but goes backwards and forwards with equal facility. The vertical boiler is said to be a great source of safety. The diameter of the boiler is 4 ft. 3 in.; height, 10 ft. 6 in.; two cylinders, 11 in. diameter, 1 ft. 6 in. stroke. The pressure of steam is 100 lb. per square inch, and the gross weight 25½ tons—21½ tons on roller, and 4 tons on steering-wheels.

THE QUANTITATIVE THEORY; OR, THE DOCTRINE OF DEFINITE PROPORTIONAL RELATION WITH REFERENCE TO THE HARMONIES OF SOUND AND COLOUR.

SIR,—In my work, "The Science of Moderation; or, The Quantitative Theory of the Good and the Beautiful," portions of which have appeared from time to time in the columns of the *Builder*, I attempted to prove that all things exist in, and that all harmony in nature is fundamentally resolvable into, definite proportional relation. That there is but one scale of ratio, or of the relation of one quantity to a second, of which 2:0 represents the extremes and 1:1 the mean; but one scale of gradation from 1 to 0, 1 and 0 being the extremes or limits.

And not only this, but that the principle involved in the monochord appertains to all phenomena fluctuating between limits or extremes, the compass of variation being the unit holding the same relative position to each species that that does to the variety of musical notes. Also that there are certain points of agreement in the greater fitness of things, and to sense, in the variations of phenomena within the tenor half of their respective scales; and in the universality of the law of quantitative compensation in external nature and in sense, which may be thus generally expressed,—that any temporary persistence of phenomena to one extreme of their scales of variation necessitates, at some time or other, an equivalent reaction in the opposite direction, in order to re-establish that balance, or mean state, which is eternally maintained in nature directly or indirectly. This principle of compensation producing harmony both of colour and sound has long since forced itself upon the attention of musicians, painters, and scientific men. An eminent musical composer once said to me, "Music is a system of balance;" and painters know that good colour is also a system of balance. I have also shown that the same principle of compensation, of balance, holds in the planetary system, not only by surmise, but by the testimony of celebrated astronomers; and I might trace it in meteorology, politics, &c. There is, therefore, not merely an analogy, as often noticed and discoursed upon, between the harmonies of music and colour, but a certain fundamental identity; nevertheless, there may be certain specialities in the organization of each sense which prevents absolute identity in both systems of harmony, but I hope to be able to show by some curious experiments, at no very distant date, other points of conformity than those I have already mentioned.

Consider for a moment the logical conclusions which the adoption of the popular theory of the correlation of forces lead to. If all the powers of nature be only modifications of force, sound and colour have the same fundamental form, and all the differences in notes and colours are only proportional. The correlation theory, therefore, is resolvable into a more fundamental theory still—the quantitative. For force is only a form of sense underlying others more complex; but quantity is a more general form, and the only firm basis of the human understanding. If, however, force be considered as a nounmenon, which appears to me to be the error of modern physicists, it would be homogeneous and could only be recognised in proportional relativity, and find exact expression in measure and number. Professor Baines recently, in an able article in

Macmillan's, on "The Theory of the Correlation of Forces in reference to Mental Phenomena," inevitably passes into a quantitative estimate of functional power such as I had previously formulated from the more abstract and general point of view of the quantitative theory. I feel, however, how difficult it is to express oneself concisely concerning these *outpost* subjects of the understanding; but as I have thought them over with much labour, I trust there will be a reader or two who will not throw them aside without pondering them a little while. I believe metrology will be the great science of the future, and hope you will favour me with space on another occasion for a more elaborate investigation of the theory of colours.

W. CAVE THOMAS.

CLAM SHELL FOR FOUNTAIN.

THE "clam" shell your correspondent refers to is the shell of the so-called "Giant clam" (*Tridacna gigas*) of the West Indies. There is an enormous specimen in the Church of St. Sulpice, Paris, used as a holy-water stoup. A pair of small specimens may be purchased for 5s. or 4s., but the larger ones vary greatly in price. A single shell will sometimes weigh two or three hundredweight.

They are often brought to this country by sailors and others, as curiosities, or to be sold to dealers. Iamrach, of St. George-street, E., is the man who usually buys them to sell again; or, after him, they may probably be bought of Cutter, of Great Russell-street.

W. G. S.

THE BELLS AND CHIMES OF THE ROYAL EXCHANGE.

PUBLIC attention having lately been called to the subject, I offer a brief account of the bells and chimes in the tower of the Royal Exchange.

I may first observe that, in one of my former communications on bells and chimes, is the following remark:—"If in any case the number of bells can be increased to fifteen, or more, so much the better." Allow me now to give an example. If you have a peal of twelve bells tuned to the diatonic scale, in the key of C major, by adding three extra bells, F sharp, its octave, and B flat, you can modulate to or set tunes in two other keys, namely, G and F major. Moreover, certain passages can be played in A, E, and D minor.

Now, the bells of the Royal Exchange, fifteen in number, were cast by Messrs. Taylor, of Loughborough, and are tuned according to the above example, the note of the largest bell, which weighs 34 cwt., being C. The chime machinery, constructed by the late Mr. Dent, has a metallic cylinder with movable pins: so that if the force of the action were perfectly equal and regular—assuming, of course, the intonation of the bells to be accurate—a variety of pleasing melodies might be neatly performed.

The tunes at present set on the cylinder are "God save the Queen," "Auld Lang Syne," "The Roast Beef of Old England," and "The Hundredth Psalm." The clock now chimes the quarters, and strikes the hours, as usual. But the tune-chimes are silent, the machinery being imperfect.

THOMAS WALLSLEY.

COFFEE-HOUSES AND OUR SUNDAY.

Is there no one possessing wealth, and at the same time a sufficiency of selfish practicality and desire for his pecuniary advantage, who can perceive that there is a large scope for action in opening coffee-houses for the people, where, while temperance may be greatly promoted, instruction of progressive character may be obtained?

Coffee-houses, until the last four or five years, were comfortable and rational resorts, and always filled with the temperately inclined and useful knowledge seekers. They should now be even more attractive and more in number. Without doubt they would always be thronged with customers, instead of being uncupied of them as we now see. What an immorality and vile anomaly are presented to us by the fact that many thousands of single persons leading compelled solitary lives, and possessed of tolerable incomes, down to the very poor in means, have no other resource after church or chapel service, or spiritual soul

culture, is ended, at about 8 p.m., than to go either to their dens, or lodgings, and to bed, or else to a gin and beer palace. Yes, a palace wherein ruin to body and soul is drawn in under the guise of a false social enjoyment. And this is progression in England and in London in 1867, or is it not more truly a very terrible retrogression?

A very large majority of our single men and women, who are compelled to lead isolated lives because they are removed from their friends by death or distance, are forced into intemperance; for most of the coffee-houses are closed at nine or half-past nine on ordinary days, while on Sundays, when they should be open all day long, they are (with but a very few exceptions) all closed against the seekers of temperance refreshments and rational enlightenment. They are now dirty disorderly places, where tea, coffee, &c., are sold utterly unfit to drink, having only one or two newspapers and no serial publications. Their customers have also no opportunity to study books that would elevate their minds.

It is a disgrace to any country, and especially to one so advanced as England is (or was), that tens of thousands should be unable to procure temperate liquid refreshments, and have no place to sit in and acquire useful, truthful knowledge, and this is the case in London.

SCINTILLA.

PUNISHMENT FOR DEFACING MONUMENTS.

A PARAGRAPH in the "Miscellanea" of your issue of September 14th, headed, "Defacing a Monument," leads me to suppose that the public are ignorant of the existence of a very stringent law enacted to punish those who injure monuments exposed to public view, whether in churchyards or elsewhere. The statute to which I refer is the 24th & 25th of Victoria, cap. 97., sec. 39., and the primary cause of its enactment was the wanton destruction of the Portland vase. The penalty is imprisonment and whipping. A reference to the Act will show that it is very effective, and if only put into force would give ample protection to our ancient monuments. The only case on record of a trial under this Act was a Crown prosecution* of a man named Gleeson, for injuring ancient sculptures at Clonmacnoise, in Ireland. The trial took place on July 11th, 1864, at the King's County Assizes, when the accused party escaped by the disagreement of the jury.

JAMES GRAVES.

THE HERTFORD UNION WORKHOUSE.

MR. HENSHAW, whose tender was the lowest, offered, when security was required of him, to deposit 500l. in good bonds. The guardians at first required sureties to the amount of 2,000l., but ultimately said they would be contented with 1,000l. in bonds. This, however, Mr. Henshaw refused to give, and has thrown up the work. The tender of Mr. H. Norris, at 7,847l., has since been accepted by the guardians. Mr. Norris is engaged at this moment, amongst other things, on the enlargement and repair of Wareide Church, in the same county, under the direction of Messrs. Godwin.

ANOTHER COMPETITION, LUTON.

SIR,—Your condemnation of the injustice which is so often practised on architects and builders in competition matters must be a sufficient excuse for troubling you with this letter. Some months since, the Local Board of Luton advertised for plans for a Corn-exchange and other buildings, and received, in answer to their advertisements, a number of elaborate designs. As to their choice in the selection they made is not for me to comment upon, but I know that some of the best drawings were laid aside, in consequence of the outlay, which, in their judgment, exceeded the amount limited in the conditions. Why was the work not given to the author of the first premiated design? Had he no friends at Luton? Whether he had or not, the committee seemed to think it desirable to get the four architects whose designs were selected to again rack their brains in another competition. In this second contest it was clearly stated that any design exceeding 2,000l. would be excluded. What is the result? A set of drawings were selected; tenders advertised for; eight received, and opened,—the lowest, 2,189l.; the next, 2,495l.; the highest, 2,720l. Is the lowest tender accepted? No, and has he no friends at Luton? And what about the other tenders? Are their estimates too high? or do the worthy members of the Local Board wish to show their impartiality by siding to the contracting competitors the

* The prosecution was undertaken at the instance of the Kilkeny and South-East of Ireland Archaeological Society.

same honour they bestowed on the architectural ones,—namely, a second competition? Let their reasons be what they may, they are now advertising for fresh tenders based in every way upon the same drawings, but with the additional bait that the quantities are furnished by their own architects. Now, I must say, as a practical man, and one who takes the careful into the matter, that the building would be cheap at 2,500l., although this sum would not include extras, which are inevitable to carry out the works according to the design.

Now, Sir, I think you will agree with me that two great acts of injustice have been committed on architects and builders,—the first in resorting to a second competition, and in selecting a design that will cost more than the amount stipulated in the conditions; and, secondly, in rejecting the whole of the tenders, and re-advertising for fresh estimates to be furnished from the same drawings on which the rejected tenders were based.

W. P.

PRESERVATION OF STONE.

SIR,—I have no wish to carry on a public discussion with Mr. Jesse Rust, but it seems necessary for me to reply to the challenge which that gentleman offered (in his letter to you last week), when questioning the novelty, and hinting at the origin, of a chemical method of preserving stone which formed part of my communication read at the recent meeting of the British Association.

Until now I was not aware that Mr. Rust had employed baryta in the composition applied by him to the decayed stones of the Houses of Parliament; but since he makes a statement to this effect, and refers to the published report of our examination before the Royal Commissioners, I assume that he carried out the process described by him on the 22nd June, 1861, and used this substance in conjunction with fluosilicic acid. Mr. Rust is evidently under the impression that he alone of all the six competitors was using baryta. I can assure him, however, that it was used in different forms of combination by half our number. Speaking for myself, I employed baryta in slight excess to separate the small quantity of sulphuric acid invariably present in the samples of superphosphate I had in use between the dates of April, 1861, and May, 1864. This fact was stated in the official specification handed in by me at the time of completing my work at the Westminster Palace (2nd May, 1864).

With respect to the acid selected for hardening the stone, Mr. Rust is but one of a large number of advocates who rely upon the indurating properties of fluosilicic acid, and he was not even the first to inform the Commissioners on this point. On the 8th June, 1861, Mr. Crookes, Dr. Bernays, and Mr. Field severally gave evidence of the use of fluosilicic acid, both alone and in conjunction with various bases; and other parties, representing "The Fluosilicic Company," have even been admitted to take part with us in the competition.

These facts will, I trust, be deemed a sufficient answer to the accusation brought against me. In the meanwhile, I beg to assure Mr. Rust that I have as yet no permission to make trial, upon the Houses of Parliament, of the improved method of proceeding which seems to have caused him so much alarm.

JOHN SPILLER.

CONCRETE HOUSES AND THE BUILDING ACT.

SIR,—I have read the paragraph on concrete for cottage walls in your last number, but having been from town for the last few weeks, I have not seen the previous remarks on the subject. The question seems one to be solved by quiet argument rather than by passion. Reference is made to ancient practice. The Romans in their walls never used concrete without courses of brick bond, at heights of 3 ft. or 4 ft., and strengthened the quoins also with brick or stone construction. The Mediaeval builders also used tiers of bond in their walls of less thickness. But it is to be observed that the concrete of the Romans and Mediaevalists was used in walls of from 5 ft. to 10 ft. thickness, and even then with some precautions to strengthen the mass.

The unbecoming use of terms such as "strictly technical meaning," and "rule-of-thumb notions," are unworthy of a calm reasoner. It is invidious to endeavour to force an officer to be responsible for experiments in construction: the Board of Works is the only proper authority to grant the permission, leaving the responsibility to the experimenter.

A DISTRICT SURVEYOR.

INFANT MORTALITY.

In the "Health" Section, at Belfast, Professor Redfern read a paper from Mrs. Bailes, "On defective alimentation as a cause of infant mortality." The paper stated that the writer intended to confine her remarks to one view of the question only,—that which related to defective alimentation as a source of the excessive disease and mortality prevalent amongst infants. It was a sad, and yet an encouraging reflection, that while the cause just referred to was the most prolific in bringing about such a high rate of infant death, at the same time it was perhaps in a greater degree preventable than many other causes of disease and death that consign thousands of children annually to the grave. Poverty of condition was not so great an enemy to the health and life of the infant poor as the ignorance of those upon whom these little ones are depending for succour and care. The more simple the food the better if it contain a proper amount of nutriment; but the children of the labouring classes, as a rule, partake of the same kind of food as their parents. Thus milk, which ought to be a plentiful article at the poor man's table, was really scarce one, and little milk is purchased daily is consumed in rendering

opaque the tea or coffee of the adult members of the family, instead of being employed for the purpose of enriching the infant's food, which, by some strange inconsistency of arrangement, was either composed of "bread-pastry" or of the most heterogeneous and otherwise unsuitable ingredients. Thus convulsions and other disorders followed, which too often terminated fatally, and when death takes place it is ascribed to "teething," or to "what is much the same thing," "natural causes." The fact that the want of maternal milk forms a prominent cause of infant death is a reproach to the mothers of England. If this commodity, the most precious of all nature's gifts, were scarce in the land the case would be different; but it is not so, for with very rare exceptions, every infant is provided with its own natural nutriment during the early period of its existence, and to withhold it is to do a child most grievous, perhaps irreparable, wrong. The writer suggested some inquiry respecting a new kind of food for infants which has been introduced to the notice of the public under the sanction of Professor Liebig's name, and with respect to which great difference of opinion existed, for it had been condemned by the Academy of Medicine at Paris.

METROPOLITAN BOARD OF WORKS.

At the usual weekly meeting, Mr. Hows introduced a deputation from the inhabitants of Packington-street, City-road, and its immediate neighbourhood, for the purpose of presenting a memorial in favour of a direct route for vehicle traffic from Essex (formerly Lower) road, and proceeding along Packington-street, Shepherdess-walk, Bath-street, Bunhill-row, and Moor-lane, into the centre of the great termini and of the Metropolitan, Great Northern, Midland, Great Western, London, Chatham, and Dover railways, Moorgate-street, Cripplegate, and the immediate widening of Shepherdess-walk, at the cost of the Metropolitan Board of Works as a part of a great metropolitan improvement.

The memorial stated that at present there were from 30,000 to 40,000 who went from the Islington district every day to the City.

The subject gave rise to a short discussion, and the memorial was referred to the Works and General Purposes Committee for consideration and report.

A report was read from the Works and General Purposes Committee recommending that the salary of the superintending architect be increased from 1,000l. to 1,200l. per annum, and that the resolution of the Board of the 4th of March, 1864, in relation to the salary of the superintending architect, be varied accordingly. The report was adopted.

The Solicitor to the Board drew attention to certain advertisements by the Gas-light and Coke Company, to the effect that they intended to apply to Parliament in the next Session for an Act to alter or repeal and consolidate all their former Acts, and to confer further powers on the company, to define, fix, and regulate their capital, and the necessary powers to manufacture, store, and sell gas at Barking Creek. He further read an advertisement from the *Gazette* respecting the Metropolitan Gas Companies' amalgamation; and said that Messrs. Baxter, Rose, Norton, & Co., had given notice that it was intended to apply to Parliament next Session for the necessary Act or Acts to amalgamate into one, two, three, or four companies the metropolitan gas companies, and to vest in those new companies the necessary powers, as now possessed, to purchase or hire ships, coal-mines, &c., in order to procure coals at a cheaper rate for the manufacture of gas, and to repeal or alter the Metropolitan Gas Act of 1860. The subject was referred to the Works and General Purposes Committee.

CASES UNDER METROPOLITAN BUILDINGS ACT.

Railway Exemptions.—Mr. Steward was summoned by the District Surveyor of Central Lambeth and part of Battersea, before Mr. Elliot, at the Lambeth Police Court, for having erected a building enclosed with wood, contrary to the 1st Schedule of the Act, on land belonging to the London and South-Western Railway Company, at Nine Elms.

Mr. Taylor, for the District Surveyor, contended that (the facts being admitted) the exemption clauses would not apply, inasmuch as the building in question was but 16 ft. from the nearest building. That the other clause was conjunctive, requiring the building both to belong to and to be used for the purposes of the railway. That even though the railway company might be the owners of the land, the building was not an annual tenement (as the ground), the building was not used for the purposes of the railway, but for the business of Mr. Steward as a hay salesman. That the building did not belong to the railway company, as in the agreement there was a provision for terminating the tenancy by three months' notice, upon which, if the company declined to purchase the office, Mr. Steward should be required to remove it at his own cost. The company would not have agreed to purchase what was already their own.

Mr. Crombie, of the Law-clerk's Office of the London and South-Western Railway, for Mr. Steward, argued

first, that Mr. Steward was not the builder, as when he stated to the district surveyor that he was building the office in question, he meant he was employing some one to build; that this was not a building, as it was not at all substantial or worthy of the name of a building; that it was constructed away from the spot and completed, leaving a space for the fire-places on one side, and then brought to the spot; it was consequently moveable, and of a temporary nature; that being 78 ft. from the ground or building of an adjacent owner, and 28 ft. from a public way, it came within the exemption; that the railway company were the owners, as when the building was once erected it became a fixture and a part of the freehold; that it was used for the purposes of the railway, being for the receipt and despatch of hay, &c., by the railway; and that they had terminated the agreement and bought the office from Mr. Steward.

Mr. Elliot determined that the building did not belong to the railway company, they having demised the land to Mr. Steward with a covenant to build; that it was not used for the purposes of the railway, being for Mr. Steward's business as a hay salesman; but Mr. Steward being the builder, the summons as against him must be dismissed—a summons must be taken out against the builder, upon which he would make an order. As to the company having purchased the building, he thought that would have to be settled with the Board of Works.

A Circus.—On Wednesday, the 9th, the District Surveyor of Camberwell, took out two summonses against Mr. John Barrington, the owner, and the builder, Mr. Circus, erected at Peckham. The one summons was for not having given him the two days' notice required previously to commencing the works; the other for having the enclosure of wood and the height of canvas. It was urged by the defendant that, as the erection complained of was simply a large gallery for 1,600 people, lined at the back with wood, and sheltered at the top by a covering of canvas, it was not more than a large tent; and therefore, he considered it was exempt from the operation of the Building Act. After having heard the case, the magistrate decided that the Circus was a building, and fined the defendant 10l. penalty, remarking that if the defendant was dissatisfied, he could appeal to a superior court. No order was made upon the summons for irregular construction, as it was ascertained by the surveyor that the defendant had applied previously to the Metropolitan Board for their approval of the plan and construction of the building, and that they were about to consider it.

CHURCH-BUILDING NEWS.

Leicester.—The foundation-stone of St. Luke's Church, Humberstone-road, has been laid. The ground-plan consists of a nave, with six arches on either side, forming side aisles, with apsidal chancel and aisles, the organ being placed in the north one; there being also a vestry, heating apparatus, and other conveniences. On account of the nature of the site and the number of sittings to be provided, the general form of the building is somewhat peculiar, and the tower is made to project to the west. The style is Late Pointed, and the materials to be used are brick and native stones of various colours, formed into bands, both on the exterior and interior faces. The west and principal front will comprise a central entrance, with a three-light window over, and high pointed gable. At each end of the north aisle there will be a three-light window, and at the end of the south aisle the tower is to be placed, in which are to be south and west doorways, a bell-chamber (access to which will be obtained by circular turret stairs in the south-west angle), a bell-chamber surmounted by four pinnacles, and a spire, which, to the top of the frame from the ground, will be about 130 ft. The south side will be simple, divided into six bays, with windows of two and three lights alternately. No windows could be obtained on the north side. The roof is to be open-timbered, and the whole interior will present a simple appearance, and provide upwards of 800 sittings. The architects are Messrs. Bellamy & Hardy, of Lincoln. The contractor is Mr. John Firn, of Leicester; and the works are being superintended by Mr. Samuel Davies.

Slingsby.—The chief stone of a new church has been laid on the site of the ancient church of All Saints. The new church will be in the Perpendicular style, and will be built upon the site of the old structure. Appleton stone will be used in the building of the church, and the old stone will be made available as far as possible. The dressings, mouldings, arches, &c., will be of Whithy stone. The roofs throughout will be covered with lead. The tower will be set at the west end of the church, and it will contain the three bells which were in the tower of the former edifice. On the north side of the nave will be placed the porch. The roof will be low pitched and open timbered, and the sittings in the nave are to be of oak, with carved ends, whilst the chancel will be fitted up with stalls, having finials at each end. The floor throughout the church will be paved with coloured tiles, and those used for the floor of the sanctuary will be of a superior description. The east and west windows will be Perpendicular in style, and have five lights each. The chancel, nave, and east story will have eight two-light windows on each side, filled with cathedral glass. On the north

side of the chancel will be placed the vestry, and provision is to be made for warming the church by means of a hot-air apparatus. It is intended to have an organ in the new church. The new church will seat between 300 and 400 persons. The structure will cost in the erection about 4,500l., the greater portion of the expense being borne by the Hon. Admiral Howard. The dimensions, as finally fixed, will be as follows:—Chancel 31 ft. by 18 ft., with south aisle 19 ft. by 8 ft., and north aisle, 19 ft. by 11½ ft., having eastward of it (occupying N.E. angle) a vestry, 11½ ft. by 10 ft., beneath which the heating apparatus will be arranged, and from which the hot-air flues will radiate. The nave will be 39 ft. by 19 ft., the north aisle, 39 ft. by 10½ ft., and the south aisle, 39 ft. by 7 ft. The chancel will have the five-lighted eastern window filled with Perpendicular tracery of two orders. The south window of the chancel will be appropriated to memorial glass for the late rector, the Rev. William Walker. The western window it is intended also to fill with coloured glass, in memory of the late patron, the Earl of Carlisle. The new church is the same length as the old one, but is wider towards the north.

Parkgate (Dorsetshire).—The chief stone of a new church, to be known as Christ's Church, has been laid. It will be in the Early English style of architecture, and will accommodate upwards of 600 persons—all free. The dimensions will be 106 ft. by 40 ft.; the height from the floor to the eaves 30 ft., and to the ridge of the roof 50 ft. The walling inside and out will be of random rubble; the roofs will be open, plastered between rafters; and there will be a wood block flooring. There will be the usual nave and chancel, with a north aisle and north chancel aisle and vestry, and both the chancel and the aisles will be paved with Minton's tiles. The ground work will be laid for a tower, which, for want of funds, will not be erected until some future occasion, but there will be a bell-turret. The cost of the new building, exclusive of the land, which has been given by Mr. G. S. Foljame, will be 3,000l., of which 2,000l. have been subscribed, leaving 1,000l. yet to be provided. Messrs. Chadwick & Thirlwall, of Masbro', are the contractors and builders; the architect being Mr. W. White, of London; and the clerk of works Mr. M. Macklin.

Sheffield.—The corner-stone of the new church of St. Silas, in Hanover-square, the gift of Mr. H. Wilson, for the ecclesiastical district of Gilcar, has been laid. The plan of the church consists of a nave, 27 ft. wide and 80 ft. long, having north and south aisles, with a chancel 27 ft. wide and 33 ft. long, on the right side of which is the organ-chamber and vestry, and on the other side an aisle for the children, having a separate entrance from the Hanover-square side. Entrances are provided from Hanover-street and Hanover-square. The interior of the church will be lighted by clearatories, carried on arcades with simple circular piers, having capitals enriched with conventional foliage of varied design. The benches are open-framed ones, stained and varnished. The whole of the roofs are boarded, the nave being supported by principals carried by stone corbels. The chancel is coved and divided into panels. There is a large window at the west end. The tower is at the junction of Hanover-street and Broomhall-street, and will form a feature in the approach from Broomhall-park. It rises for some height with little ornamentation, save its projecting buttresses. Two of the belfry-windows are placed on each of its sides, and enriched by shafts, whose carved capitals are connected by a cornice of similar design round the tower. The whole is surmounted by a parapet, with foliated cornices, terminating in eight pinnacles, the total height being about 96 ft. The style is of the Early Geometric period. The heating will be by means of Mr. Johnson Smith's Gill-stove. The contractors for the work are Messrs. Badger & Holmes, Messrs. Blackmoor & Mitchell-Withers, of Sheffield and Rotherham, are the architects, and Mr. Mellors the clerk of the works.

Bristol.—The district church of St. Silas, newly erected in St. Philip's-march, has been consecrated by the Bishop of Gloucester and Bristol. The site was purchased, facing the Flood and nearly opposite Avon-street, for 850l. The church is 120 ft. long and 40 ft. wide, and is built of Pennant stone, with freestone dressings. The style is Early Gothic, the church consisting of a nave and circular chancel, which forms an apse. The roof is open timbered, of stained red deal, the trusses of the roof resting on carved corbels. The frames of the windows

are of freestone, and the rough stone is relieved with four freestone bands, which run round the entire building. There is a porch on the north side, and also a vestry, while over the western entrance is a large gallery for the children. Over the vestry is also a small gallery for the choir and organ. The church contains 780 sittings, 551 free. The total cost, including the land, has been between 5,000*l.* and 6,000*l.* The church was erected from the designs of Messrs. Pope & Bindon, and the work was carried out by the following Bristol tradesmen:—Mr. J. Thorne, mason; Mr. G. Humphries, carpenter; Mr. Bevan, plasterer; Mr. Williams and Mr. Leaman, smiths; Mr. W. Tuckey, plumber; Messrs. Hale & Sons, gas-fitters; Messrs. Gay, glaziers.

Wallington.—Holy Trinity Church has been consecrated. The church is situated not far from the Carshalton Railway Station, from whence it is conspicuous by its white stone spire and square flint tower. This church is the gift of Mr. Nathaniel Bridges, the lord of the manor of Wallington. He commenced the work alone, and had intended to complete it without aid from any source; but, whilst the building was in course of erection, he received the unsolicited aid of Mr. Joseph Lawrence and another friend interested in the parish, which enabled him so much the sooner to bring the work to maturity. The edifice comprises a nave and two side aisles, a tower (open to the flooring of the belfry), the chancel, and robing-room. The walls are of flint, and the windows and doors are dressed with stone. The spire is also of stone. The roof is open, with plaster between the timbers. The seats are low open benches of varnished wood, the pulpit and reading-desk corresponding. The paving is of black and red diamond-shaped tiles. There is no stained glass in the windows at present. The aisles are separated from the nave by stone arches, supported on columns with carved capitals. The tower contains a bell, which has been presented by Sir Brook Bridges, bart., and is intended to be only the first of a fine peal.

Llanbryn-mair.—The chief-stone of a new church has been laid here by Lady Williams Wynn. The site of the church, which was presented by Sir Watkin Wynn, in addition to a donation, is about half an acre in extent, and is situated eastward of the village on a gentle eminence. The walls at present erected define the extent of the edifice to be 80 ft. 6 in. by 27 ft., and comprise a nave, chancel with apsidal end, and vestry on north front. The principal entrance is at the west end, which portion of the edifice has been treated as the principal feature of the erection, and will be approached by a flight of steps on to a terrace from the road. It consists of buttresses, which flank the springers of the entrance archway, the inner ring of which is constructed of moulded Cefn stone, the outer arch being formed of Talerddig stone, the intermediate vousoirs being of slate from the Machynlleth quarries, which will form a contrast with the general walling. The bell turret rises to a height of 50 ft., on the western front. Accommodation is provided for 230 persons. The interior will consist of open seats, the whole of which are to be free and unappropriated. The nave roof is formed of open timber work, and plastered between the rafters, the aisles being paved with encaustic tiles, and the edifice is intended to be heated by hot air. The roof will be covered with slate from the Aberllefenny Quarries, Machynlleth, surmounted by Peake's terra-metallic crest. The cost of the church will be about 900*l.*, Mr. John Harrison, of Montgomery, being the contractor; and Mr. David Walker, of Liverpool, is the architect, from whose designs, and under whose superintendence the works are being carried out.

Sparkbrook.—Christ Church, Sparkbrook, has been consecrated by the Bishop of Worcester, in whose diocese the edifice is situated. The church has been erected from the designs of Messrs. Medland, Maberly, & Medland, of London and Gloucester. It consists of nave, with north and south aisles; tower placed at the south-west angle; chancel, with vestry and organ-chamber; and a porch to the north aisle. The style is Decorated, and the material Hampstead stone with Bath stone dressings. The roof timbers are wrought and stained, and the sittings are of deal stained and polished; those in the chancel of oak, and the chancel is paved with encaustic tiles. The building has been fitted with warming apparatus by Messrs. Haden & Son, of Trowbridge. The dimensions of the church are as follows:—Nave, with north and south aisles, 103 ft. by

58 ft., divided into seven bays; chancel, 28 ft. by 20 ft.; organ-chamber, 12 ft. by 10 ft.; height of nave to apex of roof, 50 ft.; and height of tower and spire to top of vane, 150 ft. The edifice will accommodate 890 persons, and a third of the sittings will be free. The works have been carried out at a cost of 8,000*l.*, under the superintendence of the architects, by Messrs. Briggs & Son, of Birmingham. The carving was done by Messrs. Purdy & Allen. The tower has been constructed specially for a peal of six bells, which, with the organ, for which a chamber is provided, have yet to be supplied. Land has been purchased for schools.

Stratford.—The first stone of the new church, to be dedicated to St. Andrew, at Barking-road, Plaistow, has been laid by the Bishop of Rochester. The locality, a few years ago a rural village, has now a large commercial and manufacturing population. The works connected with the church, parsonage, and schools, which it is proposed to erect, have commenced, and more than 8,000*l.* have been promised or paid in aid of the object; but a sum of not less than 7,000*l.* is still required finally to complete the undertaking.

Newbury.—The parish church has been reopened. The edifice consists of a chancel and nave, with aisles to both, and a tower at the west end. The chancel was restored about two years ago. The present restoration embraces the heightening and completion of the tower with its pinnacles, the clearing away of the cumbrous galleries and high pews, and the substitution for these of new oak and open sittings. The nave-roof has been entirely restored and decorated, and the aisle-roofs are new, but copied from the old ones, which had gone to decay. The whole of the stone-work, both externally and internally, has been cleaned and restored, a new chancel-arch built, and the north and south chancel-aisles, hitherto walled off from the nave-aisles, have been opened out with new arches. A new vestry has also been constructed at the east end of the north chancel-aisle. On removing the old pavement, &c., it was found that the true bases of the piers were far under the then level of the floors, and it was decided to excavate and lower the floor to the former level, and thus restore the original proportions of the church. When the old plaster, also, was stripped from the walls, they proved to be built of a rough ashlar of freestone; this has been gone over with the tool, and repaired where necessary, and now remains in sight, instead of being again covered with plaster. The nave-roof has been entirely restored. The three standard-glass windows at the west end of the church constitute a chief feature in the work. The great west window under the tower consists of ten lights and tracery. The subject chosen is that of the Last Day. The whole of this window is designed, drawn, and painted in the style of the fifteenth century, to harmonise with the work of the window. The glass itself is of the uneven varied character of the old glass used by the Medieval artists. The west window of the north aisle is a somewhat peculiar specimen of the same style of architecture as the west window, viz., the Perpendicular or fifteenth century. The subjects chosen for illustration have been the six corporal works of mercy. The window has been executed in the same manner as the west window of the nave. The west window of the south aisle is very similar in style to that of the north. The subjects are five scenes from our Lord's life on earth, intimately connected with the priesthood. All these windows have been executed by Messrs. John Hardman & Co., of Birmingham and London. The whole of the windows in the church have been entirely reglazed, those on the south side having shaded glass, and all showing green borders. Messrs. Wheeler, of Reading, were the general contractors, putting into the hands of the following tradesmen of the town the several branches of work, namely, woodwork, Messrs. Adey & Son; ironwork and heating apparatus, Messrs. Plenty & Son; plumber's and decorator's work, Messrs. Boyer; gasfitter, Mr. Long; carving, Mr. Turrill. The ornamental ironwork was done by Mr. Filmer, of Guildford. The restoration was carried out under the superintendence of Mr. Walker, as clerk of the works, by Mr. H. Woodyer, of Guildford, architect. Messrs. Wheeler have been represented throughout the undertaking by Mr. J. Gibbs, their foreman. No accident has befallen any of the stone-masons or other artisans employed in restoring the building. Messrs. Bevington & Sons, organ-builders, have removed the old organ, refitting

the valuable part of the old pipes, and erected in its stead a new organ, with modern improvements and extended compass.

Llanfair Caedmon, Welshpool.—The chief corner-stone of a new church has been laid here. It will consist of nave and chancel, north aisle, vestry, and south porch, and afford accommodation for 430 persons. The old roof will be refixed over the nave and chancel. Local blue stone is being used for the walling, and Sheloke for the dressings. To cover the expenses connected with the church upwards of 2,000*l.* will be required. It is proposed, when sufficient funds are forthcoming, to carry up the west tower, of which little more than the base now exists, and add a stone tower. The extra cost of the tower and spire is estimated at 1,000*l.* The style of the church will be Early Decorated. The architect is Mr. E. Haycock, jun., of Shrewsbury; and the contractor, Mr. Lloyd, of Welshpool.

DISSENTING CHURCH-BUILDING NEWS.

Sittingbourne.—The foundation-stone of a new Wesleyan chapel, at Key-street, near Sittingbourne, has been laid. The building is to seat 150 persons. There is to be a school-room beneath, 40 ft. long and 22 ft. wide in the clear, and the body of the chapel will be of the same dimensions. Mr. W. J. Beaumont, of Milton, is the builder, and Mr. Stephens, of Maidstone, the architect.

Whitby.—The foundation-stone of a new Congregational church has been laid by Mr. S. Morley, of London, the most liberal contributor to the building fund. The edifice will be built on the West Cliff. It is to be a Gothic edifice, with spire, and will cost about 4,000*l.*, of which about 2,400*l.* have been promised. The architect is Mr. Pritchett, of Darlington, and the builder, Mr. Robert Robinson, of Whitby. It will seat about 950 persons. The old chapel, in Silver-street, will be adapted for lectures and other similar purposes.

Blyth (near Newcastle-upon-Tyne).—The foundation-stone of a Wesleyan chapel has been laid at Blyth, by the Rev. E. Haworth, of Gateshead. The edifice will occupy a position facing the main road from Blyth to the railway-station in Waterloo, and having the river on the east side and the lake on the north. The Classical style has been adopted, and the building will be 65 ft. long by 51 ft. wide, with a central projection of 9 ft. at either end. The south front shows a large central door on the lower part, with a window on each side to light the lobby. Above these is a strongly marked cornice across the central projection, and over this a moulded stone pedestal with four columns of the composite order engaged on the wall, carrying the moulded stone cornice, which again is surmounted by a pediment and circular window. Between the columns are three windows with circular heads. In the east front there will be six windows, the upper ones corresponding with those of the south front. The walls are to be built of red brick, the dressings being of stone, and to ensure stability the main walls are all to be carried down to the rock. Internally the ground-floor is to be divided into three groups of pews, the metal pillars carrying the galleries marking the lines of the passages between them. The side-pews will occupy the whole length of the chapel, the centre group finishing against a cross aisle, on the north side of which is placed the enclosed communion space. The gallery will contain three pews in depth at the sides, and ten pews at the south end. In the north projection over the minister's vestry the organ will be placed, and in front the seats for the orchestra. The total accommodation is for 800 adults, and there will be 250 free sittings. The whole of the internal woodwork will be varnished, and the chapel will be lighted by sun-light in the ceiling, and by brackets under the galleries. The contract for the whole of the works has been let to Mr. Wm. Middleton, of Blyth; and Mr. F. A. N. Haswell, of North Shields, is the architect, from whose design, and under whose superintendence, the works will be carried out.

Small Heath (Birmingham).—The chief stone of a Congregational Chapel for Small Heath has been laid by the Mayor of Birmingham (Mr. Thomas Avery). The chapel will be Gothic in style, and from the designs of Mr. W. P. Positon, architect, Reading. Blue brick, with stone dressings, will form the material of the structure, the internal measurement of which will be 40 ft. by 70 ft.; height, 35 ft. 6 in. The roof will be

open, and the internal fittings of deal, stained and varnished. It is proposed to erect a gallery at the extreme end of the building, with access by a staircase at the side. The chapel, with gallery, will accommodate 600 persons. Mr. Jones is the builder.

Lancaster.—The foundation stone of a Wesleyan chapel has been laid at Lancaster. The style of architecture adopted is the Decorated. The chapel will seat 230 adults, and behind the pulpit provision is made by sliding doors to accommodate part of the congregation in the school-room if necessary. The building is detached, and will be enclosed in the front by iron palisades. The situation is about the centre of the village, and fronts the main street. The cost of the building, including site, will be about 1,000. The architect is Mr. John Smith, of Medomsley; contractor for mason work, Mr. John Rutherford, Hexham; for slating, Messrs. Nicholson, Leadgate; plastering, not let; joiner, Mr. Routledge, Consett; plumbing, Mr. Smith, Consett.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Bath.—The spire of the church on the South Parade has been completed. The cross, with a large part of the tower, has been added during the present year. This spire takes the lead of all the Bath spires in height. St. Michael's is 152 ft.; the Abbey follows suit with 170 ft.; while in order come St. Matthew's (Widcombe), St. James's (including lantern and dome), Bathwick St. Mary, and St. Saviour's, with 155 ft., 150 ft., 150 ft., and 120 ft. respectively. The spire of the Roman Catholic Church, however, is 222 ft., and so it has a superiority of 40 ft. over St. Michael's, standing as it does upon the same level. The cross was placed in its position by Mr. Horridge, the clerk of the works. Mr. Hansom, of Clifton, was the architect, and his design is now complete. The whole edifice has cost, we understand, 15,000. The spire is in accordance with the whole erection, being in the Decorated style. When the chapel was opened four years ago, 60 ft. of the tower had been erected, sufficient to clear the roof of the nave. Above this is the belfry, with turrets at the angles, which changes from its form below, that of a square, to that of an octagon. Around this is a pierced parapet, and four crocketed pinnacles terminating the angle turrets. 40 ft. above the height which it has retained for three years and a half commences the spire, which is therefrom 122 ft. high. The material is Bath stone, that having been used in the erection of the church. Messrs. Bladwell & Ambrose were the contractors.

Haverstock-hill.—A Dominican church has been opened at the Dominican Priory, Haverstock-hill. The church, which is an unpretending building, is only intended for temporary use during the erection of the new church which was commenced some time since, and which will, it is estimated, cost 50,000. When the new church—which is to be a Gothic building capable of containing some 5,000 or 6,000 persons—is opened, the temporary one will be used as the priory library. Among the subscribers to the new church, the walls of which are just appearing above ground, was a lady, who refused to have her name mentioned, but who is a donor of 9,000.

SCHOOL-BUILDING NEWS.

Newnham.—The new National Schools here have been opened. The schools were designed by Messrs. Medland & Maberly, of Gloucester, and built by Mr. James Coleman, of Chaxhill.

Thropton (Newcastle-upon-Tyne).—The old school having fallen into a dilapidated state, it was resolved to build a new one. The plans and specifications were furnished by Mr. T. Arkle, Shaftoe. The present building is erected at the east end of the village. The school, with a house adjacent for the master and mistress, is of rock stone. It is 33 ft. long and 18 ft. broad, and is capable of holding upwards of eighty scholars.

Pownhope.—The chief stone of a National School has been laid here. The school buildings to be erected, to which will be added a house for the master, will be built with stone of the district, random ranged, with freestone dressings, and the roofs will be covered with green Penn-broke slates. The architecture employed will

be Gothic, somewhat eclectic in treatment. The plan comprises a school-room, 52 ft. long by 18 ft. wide, with separate entrance for the boys and girls; a class-room, 16 ft. by 14 ft.; a sitting-room, kitchen, scullery, pantry, three bed-rooms, and requisite conveniences. The site, which is dry and elevated, with a southerly aspect, will be enclosed with a wall and gates next the road, and with fences on the other sides. The design has been prepared by Mr. T. Nicholson, the diocesan architect; and the buildings will be erected by Mr. Ford, of Pownhope, under the architect's superintendence.

Newcastle-upon-Tyne.—The foundation stone of the Brumel wing of the Ragged and Industrial Schools has been laid. The extension will consist of a large boys' school-room, with class-room, store-room, and work-rooms on the ground floor, and a large boys' dormitory and reading-room above. In addition to the extensions, very considerable alterations are being made, and proposed to be made. The dining-room has been enlarged by the removal of the printing-office to another part of the building; and the school-rooms for boys and girls will be thrown into one, to be used in future for a girls' school only. New class-rooms for the girls and lavatories are also provided. Alterations are projected in the administrative department, and in the sick ward. The new wing will correspond in its style of building with the existing premises. Care has been taken to make it dry, warm, cleanly, and well ventilated. A layer of slates set in cement is carried all round the foundation, to prevent the damp from rising; and the walls of the school-room, class-room, dormitory, and reading-room, are built in the inside of buff-colored glazed bricks, to a height of 5 ft. from the floor, and above this height they will be faced with Parian cement, so that no paint, whitewash, or other absorbent material will appear to view, and the whole of the walls can be washed down more frequently. The ventilation will be self-acting, with additional resources when required; it is designed on the "through and through" principle, with openings opposite, and the windows are also arranged on the same plan. There will be a large cubic quantity of air to each person, and abundance of light. The warming is entirely by open fireplaces, which also assist in ventilating the rooms. New latrines are provided for the boys, and will be thoroughly ventilated on the same principle as the rooms and dormitories. Increased accommodation will be provided for between fifty and sixty inmates, and about 100 day scholars in addition. The drawings have been made by Mr. Thomas Oliver, under whose superintendence the works are now being carried out. Mr. Henry Andrews is the clerk of the works; and Mr. William Gibson, of the Red Barnes, is the sole contractor. The total cost, it is expected, will not exceed 2,000.

Books Received.

The Gymnasium and its Fittings. By E. G. RAVENSTEIN and JOHN HULLEY. London: Triibner & Co.

This pamphlet gives a description of gymnastic apparatus, illustrated with 35 woodcuts and 143 figures on 14 plates; so that any carpenter employed may be able to construct all that is required; and, indeed some of the apparatus might readily be put together by any one with a mechanical turn without even the help of a carpenter. The intention is to guide clubs and others in the construction of gymnasia, both open-air and covered. Mr. Ravenstein is president of the German Gymnastic Society of London, of which we have before spoken, and Mr. Hulley is a Liverpool gymnasiarch.

Miscellaneous.

"RAMBLES ON RAILWAYS."—Under this title Sir Caspar Roney is about to publish the results of a long experience in that line, including some curious facts in connexion with mountain-railways, especially that of Mount Cenis. The work also includes details relative to railways in various quarters of the globe, and to tunnels, curves, and roadways, constructed in the most ancient as well as in modern times; together with observations on the respective arrangements made between the railways and the Post-office.

THE LOUVRE AND M. FOULD.—The Paris correspondent of the *Morning Post*, speaking of M. Fould, says,—"It was under his direction and inspection that the new Louvre was built, that magnificent architectural triumph which faces the old Tuileries. When the gorgeous building was completed, the Minister of State ordered a banquet in honour of the completion of a great national work. Who was invited? The workmen who had taken part in the construction of the elaborately decorated blocks and pavilions. I remember M. Fould saying,—"You must come and dine at my table, and you will be surrounded by dozens of masons, and shake the hard horny hands that built the building." I mention this little fact as an illustration of M. Fould's thorough appreciation of the democracy of Imperialism."

MUSEUM OF THE ARCHIVES OF FRANCE.—This new museum, the opening of which was announced a few weeks since, presents a very interesting collection of documents and objects illustrative of the history of France. The museum occupies six rooms in the Hôtel des Archives, formerly the residence of the Prince de Soubise, in the Rue de Paradis, not far from the Place de la Bastille. The courtyard, the grand staircase, and other parts of the hotel are remarkable in an architectural point of view. The museum is on the first floor, and the first salle, which is the largest of the six, contains a large number of rare charters, diplomas, and other documents of the Merovingian and Carolingian periods, written on papyrus or parchment; charters of the fourteenth century; and registers, cartularies, and illuminated manuscripts of the thirteenth, fourteenth, and fifteenth centuries.

CO-OPERATIVE CLUBS AND CHEAP FOOD.—A co-operative club, without the paraphernalia of stores or offices, is being established in the north of London by a Mr. Heine, the object of which is to contract with tradespeople for the trade of the association at certain reduced prices for ready money. In this way, butchers, bakers, grocers, bootmakers, &c., are glad to provide the members with goods at much reduced prices for ready money. For example, suppose the 4 lb. loaf to be at 9d., as it now is, or even dearer, a club member will be charged 8d., and the baker will pay 3d. out of this to the club for its patronage. This farthing goes to pay expenses, and any surplus will be devoted otherwise to the benefit of the members. The entrance fee is 2s. 6d., which is the only other outlay. A clerk or workman may thus save a good few pounds in the year off his small income. It is to be hoped the plan will be extended. We some time since noticed the establishment of a club of this kind in which Mr. William Howitt, the author, took an interest, but we do not know whether this be the same or a new one.

OPENING OF ANOTHER TOMULUS ON THE YORKSHIRE WOLDS.—The Rev. Canon Greenwell, of Durham, and other pre-historic inquirers, have made an examination on the Mid-Wold range of East Yorkshire. The tumulus contained about twenty-four burials, but had been previously disturbed. The mound was 56 ft. diameter, and 6 ft. high. The burials presented an extraordinary line of bodies, buried in a great measure on a stone pavement, and, although laid in all possible positions, yet forming a line of interments running S.E. by N.W., nearly cropping out on the N.W. end. Pottery, implements, and flints were found. Among them were a stone pounder, hammer, or rubber, extensively "used" at one end; a square (cube) flint, all rubbed on the edges; a long piercing implement of flint, twelve "thumb" flints, two flint arrow-heads of the leaf shape; enormous quantities of potsherds of a peculiar plain black ware; part of a cinerary urn and portions of a drinking-cup; two handles of small urns; a great number of flint flakes and chippings, and several rounded stones, rubbed flat on one surface; one extraordinary stone utensil or implement, most like a cobbler's lapstone, rubbed very smooth, and over 1 ft. long, and a great quantity of animals' bones, broken for the extraction of marrow, and among them the teeth of the ox and the red deer in great numbers. A sickle-shaped bone implement, made from a very long tusk of the boar, was also found. The skulls were dolichocephalic, or long-headed, and of a smallish person, supposed to be of the earliest date. Ten feet S.E. of the centre was a hole in the chalk, 2½ ft. diameter and 2 ft. deep, but this contained nothing but soil.

DECAYING MARBLE.—Many buildings were constructed in Chicago a few years since of "Athens" marble, which is already crumbling, and has to be painted.

COTTAGE PLANS.—The premium, a silver cup, offered at the Working Men's Flower Show held at Darlington in the 25th ult., "For the best plan of a single cottage, the cost of which would not exceed 100*l*," has been awarded to Messrs. Dean & Yeoman, of York. Seven designs were sent in.

COST OF HERBERT MEMORIALS.—The total cost of the public memorial raised to Lord Herbert has been rather over 8,000*l*.—namely, 5,888*l*. 17*s*. 1*d*., for the Convalescent Seaside Home, just opened at Bournemouth; 2,021*l*. 18*s*. 10*d*., for the statue of "Sidney Herbert," by Baron Marchetti, erected in the market-place at Salisbury; and the remainder for printing and incidental expenses.

DECORATION OF THE LEEDS EXHIBITION BUILDING.—The Executive Committee have placed the entire designs for decoration of the building in the hands of Professor Lewis, of University College, London, who is now engaged in carrying out the scheme originally proposed by Mr. J. B. Waring, chief commissioner. Promises of contributions continue to come in, and there seems every reason to expect that the Leeds Exhibition will be a great event.

SOUTHWARK NEW PARK.—The People's Park for Southwark, situated partly in the parish of Bermondsey and the remaining portion in that of Rotherhithe, is rapidly approaching completion. The principal entrances are three in number, viz., one on the north side, one on the west side, and one on the south. There are also three minor entrances. The lodges at the principal entrances are designed in a decorative style. A large number of gardeners and labourers are employed in laying out the flower-beds and walks, and in transplanting young trees, evergreens, and flowering shrubs. Three drinking-fountains are to be erected within the enclosure, and an ornamental fountain in the centre of the grass-plot, and which will be placed amidst a grove of trees and shrubs. The walks are gravelled and completed, and it is expected that the park will be opened to the public on or about Christmas.

THE FALL OF A CHIMNEY IN NEWCASTLE.—At the adjourned inquest, Mr. Bryson, town surveyor, was examined. He said the bricks and other materials had been removed from the foundation, and he had found that the foundation had not given way in the slightest. The ground upon which the concrete was laid had not subsided, nor had the concrete itself. He thought, therefore, that the fall had been caused by the equinoctial gale which blew at the time. He thought the chimney was not sufficiently strong, being weakened by the construction of the boiler-flue leading into it. Mr. Maling was going to re-build the chimney, and had arranged to submit the plan to witness for his approval. The jury found "that the said Robert Turner Moore was killed by reason of the bricks and other materials of the chimney falling upon him, and that the said chimney fell in consequence of the violence of the wind; and that it was not sufficiently strong in its construction, by reason of the weakness of the flue near its base leading to the boiler."

STEAM BOILERS.—A mode of preventing incrustation consists in forming an interior case for the boiler by means of small curved plates, arranged like tiles on a roof, and thus leaving a thin layer of water between them and the boiler. This thin layer heats rapidly, and a circulation of the fluid is produced, which prevents deposit, except in powder, on the plates. Heat is thus economised, and danger of explosion lessened. Nothing, however, can be more conducive to the prevention of steam-boiler explosions than a reliable means of ascertaining the level of the water. Many contrivances have been devised for this purpose. A simple one is coming into use in the United States. It consists in surrounding a short tube, which issues in a horizontal direction from the boiler, just beneath the proper water level, with a jacket containing water. So long as the tube is filled, as it should be, with water, and not with steam or foam, water remains between the jacket and tube; but when there is no water in the pipe, the water in the jacket evaporates, forming steam, which blows a steam whistle, and even, if desirable, opens a safety-valve.

ARCHITECTURAL ASSOCIATION.—The *Conversazione* with which the session is usually opened will take place on the 25th instant, when the president of the year will deliver an address.

ORIGIN OF NAMES.—Sir: After reading the article on Names in the *Builder*, I venture to send you two instances of peculiar changes of name through marriage. One is that of Hogsflesh (some corrupt it to Hoffesh) to Bacon; a case, however, which was mentioned to me so long since that I should have difficulty in verifying it; and the second is that of Mew to Cat, mentioned to me by a Brighton solicitor while staying at the Bugle Inn, Newport, Isle of Wight, kept by Mr. Mew. I was told that Mr. Charles Cat, of Brighton, married Miss Emily Mew, to whom, I believe, Mr. Frederick Mew, architect, is related. This you will be able to verify yourself. My own name, Male, is peculiar; but I know of no corresponding name of Female. I may add that the name of one of the foremen, for many years, at Betts's Patent Brandy Establishment, was Tipple.—DURLEY MALE.

PROPOSED WORKING MEN'S INTERNATIONAL EXHIBITION.—A crowded public meeting has been held in the Vestry-hall, St. Pancras, for the purpose of considering the best means of promoting a Working Men's International Exhibition in London. The chair was taken by the Hon. Auberon Herbert. Mr. Ward (secretary) read the report of the committee by whom the details of the scheme have been planned. A resolution in favour of the report having been moved, Mr. Patterson, of the Working Men's Club and Institute Union, asserted that the report as read differed from that which was agreed to at the meeting of the committee. He expressed his dissatisfaction at the constitution of the Provisional Committee, and moved as an amendment that the arrangements for the Exhibition be undertaken by a honorary council; that the Hon. Auberon Herbert, Mr. Hamilton Hoare, Mr. Hodgson Pratt, and several working men whom he named, be members; that the committee be half composed of guarantors; and that the surplus money be devoted to the founding of a permanent Exhibition in which working men would receive awards for their skill, and recognition for their individual merit. After a stormy discussion the amendment was all but unanimously carried.

THE VICTORIA HOTEL, BRADFORD.—A new hotel has been erected adjoining the station of the Lancashire and Yorkshire Railway, at Bradford. The edifice is of stone, six stories high, and designed in the simplest style of Italian architecture. The principal front is flanked by lofty pavilions rising to a height of 105 ft., and terminated by conical roofs, decorated with wrought-iron work. The entrance portico, and also the large bay windows facing the station-yard, are flanked with polished red granite shafts and carved capitals, while other carved decorations are sparingly introduced into the design. Internally, a spacious entrance-hall and broad corridor, the latter laid with Maw's encaustic tiles, give access to the various reception-rooms, some of which are of stately proportions. The arrangement of the interior is simple. A long corridor runs from end to end of the building, on each of the six stories, access being gained to the rooms on the left and right. The coffee-room is 70 ft. by 30 ft., exclusive of a large bay window. The commercial-room is 36 ft. by 20 ft.; the billiard-room, 36 ft. by 31 ft.; and the smoke-room, 31 ft. by 24 ft. Numerous private sitting-rooms, also sets of rooms arranged en suite, are planned on the ground and first floors, and the hotel is capable of making up 100 beds. The principal staircase is 21 ft. by 15 ft. It is painted in imitation of marble, as also is the principal corridor. The arrangements for the service of the hotel, including the luggage host and dinner host, waiters'-room, and bar, &c., are on the newest principle, and communication through the hotel is kept up by means of electric bells. Separate staircases are provided for the servants. The corridors and staircases throughout are fire-proof, and the decorations have been carried out by Mr. Briggs. The contractors for the masonry and brickwork are Messrs. J. & W. Beaudin; Mr. Dixon is the plasterer; and Mr. Walsh, plumber. The cooking apparatus has been fitted up by Messrs. Jeakes & Co., of London. The estimated cost, exclusive of the furnishing, is 22,500*l*. The building has been erected from the designs and under the superintendence of Messrs. Lockwood & Mawson, architects.

BEQUEST OF 80,000*l*. FOR A CHURCH OF ENGLAND COLLEGE IN DEVONSHIRE.—The late Admiral Benedictus Marwood Kelly, who died at Saltwood House, near Bath, September 26th, and was buried at Kelly, Devon, October 8th, 1867, has bequeathed nearly the whole of his property, which will probably realise little short of 80,000*l*., to trustees in trust, to apply the dividends to the education and maintenance of boys, sons of members of the Church of England. The trustees are to provide a school-house in Devonshire, at some point west of a line drawn north and south through the parish church of North Tawton, under special restrictions as to the amount to be expended on building. The institution is to be called "The Kelly College."

ENLARGEMENT OF HASLAND CHURCH, DEVONSHIRE.—About twelve months ago, this church was found to be too small for the congregation, and its enlargement was deemed necessary. A plan, drawn by Mr. Robinson, of Chesterfield, architect, was accepted; and its enlargement soon afterwards commenced, and its completion lately took place. Two stained glass windows have been placed in the church. The east window is by Messrs. Warrington, of London, the subject being Christ's charge to Peter to feed his sheep. The west window is by Messrs. Heaton, Butler, & Bayne, of London. A new aisle has been added, and the church has been benefited by sittings for about 150 persons. Messrs. Hoole & Handby, builders, did the work of enlargement. The cost amounted to over 700*l*.

A PUBLIC PARK FOR CHESTER.—The Marquis of Westminster has, during the past three years, been converting a tract of land on the banks of the Dee, at Chester, into a park and pleasure-ground. It was anticipated by the public that his lordship intended the park for the use of the citizens, and their expectations have just been realized by the offer of the park as a free gift to the citizens. The council have accepted his lordship's munificent offer, and a committee has been appointed to consider the best means of maintaining the park. A residence has been provided in the grounds for the park-keeper, and the marquis, it was announced, would charge a portion of his property in Chester with the annual sum of 100*l*., to be applied by the corporation in payment of the salary of the keeper and other expenses of the park.

ZINC PAINT.—An improved metallic zinc paint has been invented by Messrs. Webster, Deane, & Rumble, of Birmingham. They propose to take spelter and melt it in a suitable furnace, and raise it to about 800° Fahr.; they then cover the molten metal with a flux or borax mixed with caustic of soda or chloride of ammonia, or other suitable flux, to prevent the action of the atmosphere upon the surface of the molten zinc; they then add thereto about 7 or 8 per cent. (or more or less) of finely-divided iron wire or scrap, agitating the whole with an iron rod until the whole of the iron or scrap particles are taken up by the zinc; they then add sufficient antimony to cause the metal to run freely from the surface. When the metal thus prepared has cooled down, it is next pulverised and ground, when it may be mixed with any oleaginous matter or varnish, and the metallic zinc paint results. When the paint is intended to be used for coating ships' bottoms or for marine purposes, they add thereto 14 per cent., or thereabout, of vermilion or sulphide of mercury.

TENDERS

For stabling at Southside House, Holloway. Mr. J. W. Dennison, architect:—

Mann £687 0 0

Crabb & Vaughan (accepted) 659 0 0

For three houses and a Baptist chapel at South Kensington. Messrs. C. G. Searle & Son, architects:—

Houses.	Chapel.
Foxley £2,580 0 0	... £7,550 0 0
Palman & Fotheringham 4,488 0 0	... 4,718 0 0
Gammson & Sons 5,481 0 0	... 6,359 0 0
Sims & Marten 6,178 0 0	... 6,662 0 0
Hedgock 6,276 0 0	... 6,465 0 0
Colls & Son 6,290 0 0	... 6,427 0 0
Perry & Co. 6,270 0 0	... 6,325 0 0
Dove Brothers 6,220 0 0	... 6,273 0 0
Ennor 6,184 0 0	... 6,310 0 0
Higgs 5,183 0 0	... 6,235 0 0

For alteration and addition to 13*1*/₂, Old Kent-road, for Mr. T. Coultery:—

Linsall £282 0 0

Randall 364 0 0

Whitlock (accepted) 344 0 0

Netting hill and Doyewater Proprietary School.—Mr. William Bro's tender for erecting the New School Hall.—Mr. John Crawley, architect—has been accepted, 1,830*l*.

The Builder.

VOL. XXV.—No. 1290.

The Road to India.



If it be true that charity begins at home, it cannot be unnatural to suppose that other virtues may follow her example. On this showing, patriotism must take precedence of philanthropy, and the more venerable moral attributes will move in narrower circles than the junior graces. It may be objected to this view that we come at last to selfishness, pure and simple. The reply to this criticism may be, that an enlightened selfishness, if not in itself an actual virtue, would very well fill the place of less intelligent good intentions. And, apart from the ethics of the case, there can be little doubt that in all those great enterprises

which are proposed with the object of at once altering the face of the world, and turning a stream of wealth into the pockets of their projectors and supporters, the paying character of the scheme is of primary importance, not only to those directly interested in its success, but to the public at large.

If the charity which begins at home be the same excellent grace of which it was once said that it "thinketh no evil," we trust that this Christian virtue will rule the minds of those Englishmen who are interested in our obtaining the shortest road to India. Our French neighbours, and our Italian friends, look with a lively interest to our need in this respect, but as yet these nations are not altogether as unanimous as could be wished. Three grand ideas have been struck out to facilitate this communication. There seems to be no reason why they should not, if each by itself be practicable, be carried out as integral portions of the same great scheme. We might, indeed, raise the number of these engineering marvels to four, although it is not only the Indian, but the entire Continental traffic that demands, in order to effect a great engineering triumph, an outlay that has yet to be commenced. We allude to such a well-arranged steam ferry over the English Channel as shall receive the carriages at Dover or at Folkestone, and land them on the opposite coast, without troubling the traveller to alight; while the size and build of the ferry-boat shall, after the example of the *Great Eastern*, be such as to preserve a majestic calm amid the chopping seas of the passage. There can be little doubt that a well-considered improvement of the steam transit across the Channel, if it received the assent and support of all the railway companies interested in the route, would be one of the best undertakings in which a portion of the idle capital of the country could be advantageously employed.

When once landed on the Continent, two objects command the attention of the engineer who seeks the best route to the far East. The first is, to go as far as possible on the Continent before taking ship in the Mediterranean; the

second is, to make the best possible connexion between that sea and the Indian Ocean.

Up to the present time Marseilles has been the natural port of embarkation for the Oriental traveller. Large sums have been expended on the improvement of the harbour, and on the embellishment of the town; and the obstacles to a longer land route which were presented by the physical barrier of the Alps, and by the political condition of Italy, were such as to lead the owners of the lines of land and of sea carriage which meet at Marseilles to anticipate a longer permanence for that city as the Eastern port of Europe than they are altogether likely to be able to maintain.

With Italy as she existed before 1860, the position of Marseilles was secure. So long as France adhered to the policy from which none of her rulers but the present one ever departed, no Italian port was likely to be put in a position to rival the great French harbour. The influence of Austria was directed to support Trieste, and Trieste, as an Oriental point of departure, was not a formidable rival to Marseilles. While the Austrian rulers of the northern and eastern divisions of Italy knew how to discourage any projected line of through communication which would be likely to injure Trieste, the Papal provinces presented a natural barrier to a north and south Italian line of traffic of a yet more formidable character. And in Southern Italy, while King Ferdinand well knew what would be effected for the physical welfare of his states by railway communication, while he assured the English engineer, whom he induced to undertake the charge of the most important line projected in his dominions, that he would not rest until he could enter a railway carriage at Brindisi and step out of it in Paris, that timid and vacillating sovereign dreaded the political, more than he desired the commercial, effects of such a thorough communication. He therefore granted a concession for the line, and constantly expressed his anxiety for its completion, while his ministers so constantly threw new obstacles in the way of its execution that no real progress was made. Thus a company held the concession and occupied the field, while their contract was constantly infringed by some new edict of the Government, and the ground, as far as works of any magnitude were concerned, remained unbroken.

With the movement of the French troops into Italy, King Francis II., following so far as his more than limited capacity would enable him to do, the wily policy of his father, sought to serve his person and his crown by large concessions to commercial enterprise. Naples was forthwith to be threaded by three main trunk lines of railway, and the pathless districts of Calabria were to be intersected with serviceable roads. French capital, or, at least, French speculation, came in at the summons, but not in time to restore the tottering throne of the Bourbon king by the spade and pickaxe of the "navy." It was too late. During the changeful and stormy times which followed the death of King Ferdinand II., the concession of the great line from Naples to Brindisi was given, and broken, and bought and sold, and tampered with and rendered worthless, after a fashion probably without precedent in Europe. With an English *concessionnaire* actually on the ground, a parallel, or even for much of the route; an identical, line was promised to a French speculator by Francis II.; then to Rothschild, then to an Italian speculator, for whom the State was to find the money, by Garibaldi; then to Rothschild again by the sub-Alpine ministry. Then the Chambers, thinking the affair too good to be shared by any but Italians, out-voted the ministerial contract, and made over the concession to Bastogi, who, for that purpose, abandoned a political for a commercial position. Then Bastogi came to grief, and a scene of scandal, of tears, and of recrimination not readily to be forgotten, took place in the

Chamber of Deputies. The subsequent steps, after a great line through a populous district, where the people were ready to sell their very coats to hasten its completion, had been thus discredited and rendered all but impossible by the bad faith of the successive Bourbon, dictatorial, and Italian Governments, are less known in this country. Through them all, however, it would seem that the great natural importance of the line has so far enabled it to struggle, that we are told that a practicable line of railway is now actually existing between Susa, at the foot of the Alps, and the noble harbour of Brindisi, the ancient Brundisium, the eastern port of Italy in the time of Horace, a harbour of which the mouth is yet partially closed by a bar caused by and covering the sunken fleet of Pompey the Great.

While a through line of railway, more or less in practicable working order, is thus provided from the Alps to the most eastern port of Italy, the French and the Italian Governments have carried on a most honourable and fruitful rivalry in boring through the barrier of the Alps. The long tunnel, at the summit of the Mont Cenis pass, bids fair to be completed in the year 1871, and in the meantime an English engineer, Mr. Fell, has constructed, on a new system, a railway over that summit itself. The advantage of the route thus obtainable, taking to the water at Brindisi instead of at Marseilles, is 77 miles out of 2,536. This actual saving in measured distance is rendered more important by the fact that the Brindisi route, while 451 miles longer by land than that by Marseilles, is no less than 728 miles shorter by sea, being a saving of very nearly one-half of the voyage from Marseilles to Alexandria. A rough estimate of the relative speed of sea and land transit indicates a possible saving of more than 48 hours by the adoption of the Italian route. The advocates of this route are content with indicating a gain of 43 hours on the completion of the tunnel through the Alps, of 39 hours on the opening of the summit railway, and of 35 hours according to existing arrangements. Of this precious time nearly 18 hours are now lost by the studious misfits of the French railways. The night mail from London has to wait for more than thirteen hours at Paris before a train is allowed to carry its bags and passengers towards the Italian frontier; and in the route from Mâcon to St. Michel occur further vexatious delays, besides that careful misfitting of the second and third class carriages which tends to force passengers to take the more costly railway ticket, as involving less expense than the extra hotel charges which they will otherwise be called on to support.

It is not to be supposed that this unfair and unwise opposition on the part of the French Railway Companies will continue. If they do their worst, there is still a gain of nearly twenty-four hours to be secured by the use of the Italian line. Public attention will be fixed on the subject; every traveller vexed by the purposed waste of time, will join in the complaint, and it is difficult to know what reply can be made to representations from this side of the Channel as to the inconvenience wantonly, and without result, thus thrown in the way of a most important stream of British traffic. More than all this, it should be borne in mind that we are by no means dependent on French railway companies for taking us to an Italian port. The same disposition to take the most rapid route that has led us to encounter the trouble and expense of a double shipment and unshipment of passengers and of mails, and the use of a foreign land route in place of a sea route in our own steamers,—and to make Marseilles, rather than Southampton, our port of departure for Alexandria,—will infallibly lead us to choose Brindisi in lieu of Marseilles. The Alps are pierced for the locomotive in other passes besides the Mont Cenis, and any persistence in the attempt to

keep us to the passage through the Gulf of Lyons, instead of starting from the heel of the boot, will infallibly lead us, as a matter of self-defence, to send our Indian mail by a route less liable to what can only be termed imposition.

With the Alps pierced, the Italian coast line in working order, and the port of Brindisi freed from the bar caused by the sunken vessels of Pompey the Great, no serious obstacle will remain to oppose our making the best speed towards the best Mediterranean port. Of the excellence of the service attained by our steam-vessels in the Mediterranean itself it is needless to speak. The next point that attracts the attention of the engineer is the transit through Egypt. It is here that we are called on to be careful that our own prejudices (call them patriotic if we will, and even admitting them to be not without foundation), do not actually cause us to stand in our own light.

The power to sail in the same steamer from Brindisi to Bombay would be a boon to the Indian traveller of even more importance than the facility to travel in the same carriage from Calais to Brindisi. This is what the enterprising M. de Lesseps offers to our hopes. We were about to write the well-known enterprise; but the fact is that, famous as it undoubtedly is, it is anything but well known or well understood among Englishmen. It is extraordinary to note what a change as to the reliable character of information takes place when once the watershed of the Alps or of the Pyrenees is passed. Reports suffer sadly in the robust character of a truthful health if they have to climb those eminences. And travellers who have gone by those routes, and who have used their own eyes and ears in Spain, Portugal, Italy, or Greece, have come to the conclusion that the latter organs are comparatively of little value in those countries. Eye-sight alone, and that the eye-sight of your own eyes, or of eyes well known to you to see straight, can be relied on for information as to doings on the shores of the Mediterranean.

It is for this reason that the actual condition and prospects of the Suez Canal form so much of a mystery in London. It is quite true that the disavowal with which, as we cannot disguise, the enterprise has been regarded in this country is based on two assumptions which seem at first sight to be mutually destructive. One is that the canal cannot be made and maintained; and the other is that it is unsafe and impolitic to entrust the keeping of the gate of India to our French neighbours. We speak with all reserve on the subject, from the feeling that nothing short of a prolonged residence on the site of the great work in question would enable us to speak with certainty as to the prospects of the undertaking. We remember that Mr. Stephenson's opinion was unfavourable to the success of the undertaking, and, so far as our own personal experience enables us to speak, we share Mr. Stephenson's opinion. How a traffic can be found to pay interest on outlay, and maintenance both of canal and approaches, we are at a loss to understand. And a recent appeal to the capitalists of London to come into the scheme at the very moment when the difficulties are said to be surmounted, and when it only remains to reap the golden fruit of the undertaking, is in itself a puzzling circumstance.

So far as we feel justified in expressing an opinion, it is to the effect that the Suez Canal is a most noble and important undertaking, but one that is entirely out of the limits of commercial enterprise. To the sovereign of a country like Egypt it might present no insuperable obstacles, and the immense contingent advantages that his country would derive from its completion might justify not only an enormous outlay, but an annual charge upon the revenues of the State. To a private company no such collateral advantage can offer itself; and therefore it would seem to be only by such expedients as large territorial purchases, or as disposal, under one form or another, of the resources of the State, that disastrous failure can be avoided. To such *imposition à la turca* established in Egypt, we think that England has cause for grave and solid objection. A broad line from the Mediterranean to the Red Sea, under the shadow of the French flag, is not desirable for the insular lords of India. Nor can there be any doubt in the minds of those accustomed to the sort of *legèrdomain* that seems invariably to take place when any "fusion" of private interest and political action is attempted, that it would be preferable, as far as England is concerned, for the French Government itself openly to be the proprietors of such an international

work, rather than that a company, formed under political auspices and "inspiration," should be the ostensible owners of the route. Difficulties which in the former case would be either removed by diplomatic means, or afford a just ground of direct international complaint, would in the latter become permanently insoluble when their origin was lost in the relations of the *concessionnaires* and the protecting Government. That an Egyptian canal should exist, would be most desirable for this country. Failing this, a French canal, belonging not to French speculators, but to France, might, if possible, be of almost equal value to Great Britain in any case except that of actual war with France. But the attempt to construct and to maintain such a canal by private enterprise, having regard to the questions of the remunerative employment of capital, of the side issues or subsidiary sources of profit which the proprietors would hardly fail to seek, of the political complications likely thus to arise, and of the want of guarantee for the due maintenance of the canal if once completed, is one which we need much more detailed and reliable information than has yet reached this country to enable us to regard without grave and serious apprehension.

THE LAST BLUE-BOOK ON PUBLIC HEALTH.

The last blue-book on the public health, or the ninth report of the medical officer of the Privy Council, gives some very satisfactory information. Perhaps the most so is the result of an official inquiry concerning the improvement made in the health of the inhabitants of twenty-five towns in which sanitary structural works are in operation. Hitherto the advocates of sanitary improvement have not had many fully established facts to advance in favour of the results of structural works; for lapse of time was necessary for them to accrue; and the largest proportion of our re-modelled towns do not date their improvement from a period sufficiently distant to have admitted an inquiry into the results to have been made before the present time. In 1865, Mr. Simon submitted to the Lords of the Council that it would not be then premature to commence an investigation of the kind, and, with their approval, Dr. Buchanan commenced the tour of inspection. The report, now concluded, places beyond dispute the fact, that towns, after systematic drainage and water supply, immediately become places of abode in which people are less liable to die prematurely through disease, than they were formerly. The twenty-five towns examined contain an aggregate population of more than 600,000 people. Some of them show more startling differences in the death-rates before and after the completion of their sanitary works than others, which circumstance should show us that the two items of town improvement we have mentioned, town-drainage, and water supply, are not all that constitute sanitary perfection in the condition and management of towns; and that some cases evidently require more provision for the public health to be made than is necessary in all. In Cardiff nearly a third part of the mortality from which the town suffered before the commencement of the sanitary works has now ceased; while, in others, the improvement has not been so very remarkable. In Newport the reduction on the former mortality, exclusive of infantine epidemics, is about 32 per cent. Croydon, Macclesfield, and Salisbury can boast a reduction of 20 per cent. Merthyr-Tydfil can show a death-rate from typhoid fever and diarrhoea reduced from 33 to 15 since the improved removal of nuisances, abatement of over-crowding, and pure water supply; as well as a death-rate from cholera reduced in 1866 to 20, whereas it stood at 84 in 1854, and was 267 in 1848. Brynmawr, after paving, draining, supplying with water, and constant attention to removal of nuisances, has abated 15 per cent. of its former general mortality, and reduced its death-rate by typhoid fever and diarrhoea one-half. In Ely and Banbury the last-mentioned diseases have been likewise deprived of half their death-dealing power. Dover, Leicester, Cheltenham, Bristol, Carlisle, Warwick, Rugby, Penrith, Stratford, Alnwick, Worthing, Morpeth, and Ashby have all reduced their death-rates since the completion of their sanitary works. But, as we have said before, some of these towns do not appear to have been benefited to the extent that the

greater decrease in the death-rates of others that have employed the same means would lead us to expect. Before entering into the particulars of these cases we must, however, point out a very important and unexpected piece of information that has come out of the present investigation.

Dr. Buchanan finds that the death-rate from consumption is materially affected by sanitary works. This fearful scourge of our climate, it would appear, is open to influences over which we can exercise a large amount of control. In those cases where the drying of the subsoil of the site of the town has been effected by the new measures a decrease from a third to a half of the whole mortality from this cause has taken place; in other words, there appears to be a connexion between phthisis and subsoil waters, and a fluctuation, as between cause and effect, in the number of deaths by consumption according to the amount of dryness produced by drainage in the soil. Such towns as have had special arrangements made for the drying of their subsoil, such as Salisbury, have most conspicuously improved, and those that have large sewers and deep storm overfalls stand next on the list. The cases where the least improvement under this heading has taken place are those where the soil was already dry, as at Penzance and Brynmawr, or where the drainage consisted of impervious pipes laid down in channels in which no drainage of water could occur, as at Penrith and Alnwick. Dr. Buchanan is somewhat puzzled, however, over four exceptions. Carlisle and Chelmsford, where the ground-water has been removed to a greater extent than in some places where a large decrease in the number of deaths has been made, keep up their rate in spite of favourable conditions; and Worthing and Rugby have lowered theirs without much drying having been achieved. The solution he suggests for this variation is, in his own words, "that the nature of the change in climatic conditions, produced by drying the subsoil of a locality, is not everywhere the same (the environs of Chelmsford, for example, still get flooded through the action of a mill-dam), and that different degrees of effect may hence be produced on consumption." Here, then, we are brought face to face with an inkling of a fact bearing upon the grand subject of the improvement of the condition of mankind. If we are able to add phthisis to the list of diseases that are preventable or capable of amelioration by structural works we have surely been armed with another weapon to use against the destroyer.

We now turn to consider the reason why the decrease in the death-rate has not been equally marked in the case of every town that has incurred the expense of sanitary works. It must be allowed that the very worst cases are those most susceptible of improvement; therefore we cannot be surprised that places that were in the filthiest condition have benefited the most by thorough cleansing and a proper water-supply. Cardiff, Newport, and Merthyr-Tydfil must be ranked in this category. But, contrasting with the excessive fall here, and six other cases, and the more moderate decrease in eleven instances, there are three or four towns that have made but the slightest improvement, and one shows a small increase in the rate of mortality since the execution of the sanitary works it now possesses. Penrith, Worthing, Penzance, and Ottery St. Mary, are the towns that have partaken in the least degree of the expected benefit, and Chelmsford is the puzzling case in which no improvement appears in the statistics. This town has suffered from diphtheria to an extent of 65 per 10,000 of its population in 1858-62. And in Dover we have another instance of outbreak of diphtheria after works of drainage and water supply were completed, although the great reduction in deaths from other causes does not make this appear to be a case of general increase. It is noticeable that different items in the sanitary works have especial results. The removal of excreta and house-slop tells principally upon typhoid fever. At Rugby, Carlisle, Worthing, and Chelmsford, the sewage is received into pumping works at the outfall, in such a manner as to retain much of the sewer gases in the pipes, and the result is, the atmosphere being charged with the gases arising from decomposing organic matters, there is no considerable reduction in typhoid. At Worthing, this tendency had, it will be remembered, very serious consequences in 1865; and it will be seen that Chelmsford may owe its want of improvement of the public health to this cause.

We quote the doctor's view upon this subject:—

In Chelmsford, again, there had been no decrease of typhoid fever. Here, too, the sewage is delivered into a tank by an outfall sewer, which enters some 6 ft. below ground. The opening can be covered by a sluice, or it may get covered by the rise of the sewage in the well when the engine is not at work, or the quantity of liquid is in excess of its pumping power. There is, indeed, a storm-overflow into the river, to prevent the sewage backing up beyond a certain point; but it is a fact that in certain conjunctions cessars do occasionally get flooded by the sewage, in spite of this overflow, and still more must there then be a tendency of sewer gas to escape from the pipes; and though this is provided for by some down-spuels being left untrapped, it is at critical times left for a very easily-occurring stoppage in a rain-water pipe to determine whether or not sewer gases shall be forced up through the inch or two of water that is provided to exclude them in the ordinary sink and closet.

Sewer gases, we may be sure, must be disease-dealing agents of the greatest power for evil, wherever they occur; and it is extraordinary that any system of sewerage should be adopted that is likely to entail the possibility of their escape into dwelling-houses. Those who assent to the execution of such schemes are merely shifting their ill-favoured load from one shoulder to another, instead of getting rid of it. Excreta in the form of gas is as fatal as in any other guise; and Chelmsford only shows us the soundness of the conclusion that the health of the inhabitants of a town requires that all the excremental produce of the population should be promptly and efficiently removed, so that the air and water should be uncontaminated by it.

Dr. Buchanan finds that measles are in many instances influenced by structural works and the removal of pre-existing organic impurity in the air. He says:—

"In the towns where there was most room for improvement, in this respect, and where most improvement has been actually made, measles has commonly been reduced, and the towns where it has remained stationary, or has increased in amount, are those which either had less foulness of atmosphere to begin with, or have made less radical improvement of it. But there are several exceptions to this general statement. The introduction of better drinking-water has not perceptibly affected the prevalence of measles; but some correction appears probable between reduction of measles and diminished density of population."

Overcrowding appears, too, to have exercised a deleterious influence in favour of whooping-cough and scarlatina. Only those towns that have improved the lodgment of the people present any notable decrease in either of these diseases. Diarrhoea, on the contrary, does not appear to be affected by the condition of lodgment, nor by dampness of subsoil, but more especially by purification of air and water. But the crowning glory of sanitary measures are what we may almost call their defeat of cholera. In the twenty-five towns under examination cholera has shown its fearful face but in the following instances in 1866:—Merthyr, where the town is still undrained, though there is good water; Cardiff (15) per 10,000, whereas 208 in the same number died in 1849; Newport (12 per 10,000); Bristol (1½ deaths per 10,000 only, against 82 in 1848-9); Dover (42-3rds in 10,000); and Croydon (2 per 10,000). Merthyr, Cardiff, and Newport are all recent cases of amendment, and, therefore, may be allowed not to be already in possession of the full benefit of their new works. Nevertheless, the worse case, Merthyr, must be considered a triumph when we consider its great general improvement and compare its last cholera rate, which was 20 per 10,000, with that of 1849, when 267 out of the same number fell victims.

The report goes fully into the cholera question. Indeed, when we hear of sanitary conferences at Constantinople and Weimar, we must own the subject of the public health is, at last, widely taken up. At Weimar, Mr. Simon met at Easter the leading epidemiologists of Germany, who had proposed an international medical conference with the object of consulting the interests of the public health, in considering the best defences against cholera, and the sort of investigation likely to lead to a knowledge of the right principles upon which to act. Though England and Germany are undoubtedly the two best authorities upon the cholera question, it so happens that each has worked the subject in different directions; and though Mr. Simon was able to impart the very important sanitary experiences of England, which included the results of Dr. Buchanan's examination of the twenty-five towns, the continental observers, who were chiefly German, placed before the conference information as startling in the form of facts of great importance in branches of the study that had been scarcely cultivated in our country, and

are, therefore, valuable accessions to our experience. There were three different departments discussed by the continental authorities, the caprices of cholera, chemical disinfection, and the cholera fungus. By the term caprices of cholera is conveyed a theory that the occurrence of the pestilence is due to certain states of the local soil. A geological map of Thuringia was shown, in which the sites of the epidemics of 1866 were marked, and, curiously, it was clear that they were almost exclusively on one geological foundation. And some smaller maps showing Bautzen, Zwickau, Altenburg, Apolda, Würzburg, &c., showed boundaries of epidemics agreeing as distinctly with the geological formation. Observers from St. Petersburg, Lübeck, and Peshu, adduced facts bearing upon the character of "time caprices," which they connected with temporary variations in the thickness of superficial porous soil, and its penetration by air, or occupation by "ground-water."

In the department of chemical disinfection there was some conflicting testimony. Mr. Simon laid before the conference Dr. Budd's account of the successful disinfection of Bristol from cholera by Mr. David Davies, the medical officer there. This was met by a statement of an equally assiduous disinfecting of Leipzig with exactly an opposite result.

"In Leipzig, Professor Victor Carns, as a volunteer for his town, had been all that Mr. Davies was in Bristol: the town was divided into 100 disinfection districts, each with an officer who visited daily for disinfection with sulphate of iron every house in his district; over these district officers were four young chemists, constantly inspecting under Dr. Carns's instructions to see that all disinfection was satisfactory; and Professor Carns himself, besides superintending all this work, personally, every day, visited all houses which had cholera in them; disinfection had never before been tried in Leipzig, yet never had Leipzig suffered so severely from cholera."

But there were more failures than this. In Stettin there was an equally free use of lime and chloride of lime, and yet the epidemic, when these disinfectants were used, was severer than it had been in the thirteen previous devastations by cholera. Carbolic acid was used so profusely in Erfurt, that the drinking-water tasted of it; nevertheless, cholera was three times more fatal than it had ever been before. In the last-mentioned case, however, it is easy to see that if the water tasted of carbolic acid applied to the cesspools, there must be connexions between the two that would account for any amount and obstinacy of cholera.

The cholera fungus is a more strictly medical branch of the subject, but as a knowledge of its existence and consequences also shows the immense importance of efficient drainage and other structural works, we will give a slight outline of it. Dr. Thomé, Professor Klob, and two leading mycologists of Germany, Professors Hallier, of Jena, and De Bary, of Halle, were associated in this investigation as a committee. They found in cholera evacuations and in the intestinal mucus of the dead from cholera, exceedingly minute and definite organic structures, which they identified as zoo-glæa. These organisms consist of fine granules, which divide and subdivide, and form beaded threads, which interlace themselves into masses in the mucus. What they would develop into has not yet been determined, though some wonderful experiments have been made; but what they have developed from is not quite so hidden a mystery. Professor Hallier states that the fungus, which in the bowels of the human subject performs so fatal a part, cannot be of European origin, as it requires a high temperature for its fructification, and conjectures that originally it may have been a blight of rice. But he does not throw out this clue till the granules found in cholera patients have been generally cultivated, the seeds sown on a solution of sugar, on paste, and on muscular tissue, and a growth observed exactly like that originally found in the intestinal canal. The idea, however, that choleric disturbances are the result of an active cryptogamic vegetation, is not altogether new; nor is the supposition that rice is the habitat of the death-dealing fungi, now made for the first time. Dr. Tylor, in 1833, descended on *Facts establishing the deleterious properties of rice as an article of food*; and several of our own microscopic observers announced their detection of a fungic growth in the stools of choleraic patients twenty years ago. Their discovery was not considered of much value, but now that the learned German professors have shown the vitality of the seeds, with what ease they reproduce themselves, and the consequent importance of a prompt and thorough removal of all excremental matter

by efficient drainage, it is to be hoped we shall be able to turn it to some advantage. Hallier tried the possibility of producing the fungus on rice. He planted some rice in a situation, as regards heat and moisture, as nearly identical with an Asiatic rice-field as could be contrived, and watered it with the stools and vomits in which he had found the fungus. On examining his little rice-plants he found the epidermis of each perforated by fungus threads in great numbers, and though not able to identify the parasite with the cyst-bearing plant, ascertained that it was of the same type. The epithelium of the intestine is destroyed by the operations of the cholera fungus in like manner. This train of investigations carries more weight when we call to mind that the English physicians in India first called upon to treat Asiatic cholera named it "rice disease," and recognised some connexion between it and a diseased condition of the rice-plant.

Dr. Thudicum enriches the report with thirty nine coloured diagrams illustrating a series of observations he made as to the effect of temperature upon choleraic cases; and Mr. Radcliffe gives a map showing the distribution of cholera in London and its environs from June 27th to July 21st, 1866. Smaller maps stamped with direful black patches of different degrees of density show the comparative extent to which certain districts were affected; and another diagram represents the deaths from cholera and diarrhoea in each week of the six months from June to December, 1866, with the meteorological phenomena registered at Greenwich in the corresponding weeks. Thus it will be seen cholera has been attacked from geological, botanical, chemical, meteorological, and sanitary engineering points of view by able minds within the last few months; and the present blue-book gives records of all that has been ascertained.

Concerning the working of the New Sanitary Act, 1866, the reporter is content with the exception of its insufficiently stringent bearing upon water companies, who at present may bring death into thousands of houses without incurring a penalty greater than a fine of 200*l*. The engineer of the East London Water Company owns to having distributed a most improper water without having passed it through the ordinary filtering beds; and Mr. Radcliffe brings very forcible evidence that the outbreak of cholera in the district watered by this company was occasioned by this most culpable negligence. It is urged that such distribution of polluted water should be punishable with greater severity than it is at present. Altogether, this is certainly a valuable blue-book.

LONDON ORPHAN ASYLUM COMPETITION.

THE managers of this important charity have obtained a large piece of land close to the Watford Station on the London and North-Western Railway, and are about to erect buildings on it to accommodate 400 boys and 200 girls, with facilities for extension when needed. It consists of about 36 acres, 20 for the institution and 16 for protection, so to speak, on which latter houses will probably be built. A limited competition having been decided on, designs have been sent in by Messrs. Belcher, G. S. Clarke, John Collier, Henry Dawson, F. R. Peck, E. C. Robins, Thomas Henry Watson, and F. Williams,—eight architects, who have sent nine sets of drawings. The grounds on which Mr. F. Williams was invited to the competition are not obvious, as he is evidently a tyro, and has sent a design which may at once be put on one side. The Committee offer three premiums, 250*l*., 150*l*., and 100*l*., and their desire is, of course, understood to be to employ the author of the design selected as No. 1 to carry it into execution as architect, or with such modifications as may be found desirable. The sum named for expenditure is 65,000*l*. The designs are commodiously exhibited in a large room in Old Jewry; all the competitors have adopted Gothic as the style (one, Mr. Collier, sending an alternative design in a modern dwelling-house style), and we may add, that the majority of the designs are set forth with most creditable artistic skill.

Competitors were informed, if we understand rightly, that each fifty boys were to have an establishment of their own,—day-room, matron's room, offices, dormitories, and so forth. School-rooms, large dining-room, swimming-bath, the

administrative department, chapel, and infirmary were amongst the other chief requirements, and the way in which these are provided by the several competitors, the amount of light and air given, the modes of approach, means of supervision, &c., when judged of by the various officers of the establishment, will of course materially influence the selection. Beyond convenience and commodiousness, however, the committee must see that they obtain a building which shall be worthy of the charity and fitly mark its nobleness.

Mr. Dawson has produced what seems a very good plan: all the rooms are well open to air and sun. His eight homes for boys have the living-room on the ground-floor, the schools, &c., above, and are for the most part but two stories in height. The covered ways leading from part to part are under the first-floor. The infirmary is made a great feature, and would seem to prepare for a larger amount of illness than would be creditable to the managers of the Institution. Great care seems to have been bestowed in planning it. The elevations are less satisfactory than the plans, and are suggestive of the railway station. The cost of the design as it stands is estimated, we believe, at 78,000*l.*, to be reduced to 68,000*l.* if confined to the requirements made by the committee.

Mr. Watson's design presents a more important pile of buildings externally, with an estimate of 65,850*l.*, the adoption of a third story aiding to cheapen. The dining-hall is made a very handsome feature, and is placed in the centre of the main block building. The boys are housed in a quadrangle (we should prefer one side down or all the corners open), to the left of the dining-hall; and the girls have a building, with two wings, on the other side of it, so that the separation is complete. The chapel and the infirmary are placed in front of the girls' block, for sake, with reference to the latter, of aspect. The approach to the girls' department from the carriage entrance is not very obvious. Mr. Watson places the boys' living-rooms on the first-floor, nor are we certain that there is any great reason against this arrangement; though the majority seem to think the ground-floor the better position for them.—Mr. Peck places six of his boys' homes on the ground-floor and two above. He gives handsome elevations, including a lofty campanile, of red brick and freestone dressings, with tastefully adorned chapel, and estimates the cost at only 55,000*l.* The cause of its less cost as compared with some of the other designs, which have many cubic feet of building less, is not immediately obvious.

Mr. Robins has adopted the pavilion system, and with much skill, each home for girls as well as boys radiating from a connecting corridor. Whatever advantage this arrangement might have upon the boys' side, it would probably be found less workable for the girls, where the same amount of separation is not desired. The elevations look business-like; and the cost is put down at 71,000*l.* The design deserves full consideration, and will doubtless have it. The living-rooms are on the ground-floor.—Mr. G. S. Clarke, by showing where other buildings are to be erected within the quadrangle in the event of greater accommodation being required, has rendered his plan unattractive. Indeed, without these the ground seems to us too closely covered. A number of small courts in a building of this character, and in the country, are scarcely defensible. The elevations are artistic and effective, if we except the centre portion, which has too much the character of modern German Gothic, with thin buttresses and pinnacles running up the face of it, to please us quite. The cost as the design stands, the designer says, would be more than the committee name, 65,000*l.*; but, if the building be reduced to their requirements, it could be done for the money.—Messrs. Belcher give some handsome elevations, partly faced with stone, and name 67,500*l.* as the cost of the building they would like to erect.—Mr. Collier, in his design, follows more the old almshouse type than the other competitors have done, and puts down for it 62,000*l.* His alternative design, three stories in height, and very monotonous, he estimates at 57,000*l.*

The committee, we are told, have already given long consideration to the drawings, and have amongst them an architect, Mr. Geo. Pownall. There is every reason, therefore, to expect, remembering, too, the importance they must attach to obtaining the best possible building for their purpose, that justice will be done to the competitors.

SCOTLAND YARD.

How shall we designate, how shall we describe them? Scots, Scotsmen, Scottishmen, Scotchmen, Caledonians, North Britons? Call them what we will, Sandies or Sawneys, the Scots have left visible and enduring memorials of their settlement in London. See what Gibbs, "fæe the far north" has given us in the noble church of St. Martin-in-the-fields by Charing-cross. See what the brothers Adam (born beyond the Tweed) have left us in the bold Adelphi of the Strand. See the wonders James Watt has wrought for us, both on land and water, in his noble application of steam to countless uses. See what John Rennie—a sturdy Scot—has done for the Thames in London by a bridge worthy of Sesostris or the Cæsars. See what John Rennie's sons (Caledonians to the back bone), have done for London in Middlesex and London in Surrey, by making them part and parcel of the same city land. A Scot, James Walker, made the noble bridge that spans the Thames between Pimlico and Vauxhall.

Our population returns reveal a curious and instructive fact, that in this London—the metropolis of Great Britain and Ireland—there are more resident and *vagrant Irish* than resident and *wandering Scots*. St. Andrew is comparatively well to do in London, not so St. Patrick. The thistle takes root in English soil where the shamrock will not grow.

Who has not heard of Scotland Yard? Thieves and rogues and vagabonds within the city and metropolitan districts know Scotland-yard equally well with the exterior of Wren's St. Paul's, and the exterior (not the interior) of Soane's Bank of England.

When the York and Lancaster "long jars" were raging, Scotland-yard and much of Whitehall were waste places between the parish of St. Martin-in-the-Fields, and the Thorney Island of the city of Westminster. When King James VII. of Scotland became King James I. of England and Scotland, Whitehall rose into importance, and the Banqueting House, under Inigo, into a classic celebrity, which it still maintains. The royal palace at Westminster was deserted by the house of Stuart for Whitehall, as Whitehall has given way in its turn for St. James's and "our Palace at Pimlico."

Scotland-yard has been for centuries a London locality of interest to architects and masons, and, indeed, with all who have aught to do with the profession or trade of building. It was in Scotland-yard that the surveyors, comptrollers, and paymasters of the works to the crown, had their offices. Here in Scotland-yard, *alias* Whitehall, long before the days of Lord Duncannon, of Lord Morpeth, and Lord Llanover, Inigo Jones and Sir Christopher Wren were to be seen "*on business*," touching estimates, alterations, travelling expenses, and salaries in arrears.

Hither from Borrow-street, Oxford-street, Sir William Chambers was often to be seen, talking influential officials into good humour with their cheque-books concerning Inigo's chapel for "the Infants," and the wants of the Commissioners of Wine Duties, the Auditors of Imprests, and the Commissioners of Stamps and Taxes. Here Mr. Pennethorne, Chambers's worthy "continuator," may be found forestalling the unvoiced estimates of '68 and '69, by puzzling first Mr. Gladstone and then Mr. Disraeli. Hither Sir Charles Barry was often to be found on tiptoe about his "Victoria Tower," or dreadfully downcast about the perishable nature of Nottingham stone.

I once heard, years ago (the memory of it is still fresh upon me), a Highland roll-call, called over in a loud guttural voice fit to be heard at Glencoe or the Pass of Killiecrankie. It was on the Surrey side of Vauxhall Bridge, and Cockneys stood and stared, and gaped at the Campbell-Argyll sergeant who summoned,—Duncan Macpherson, 1; Duncan Macpherson, 2; Duncan Macpherson, 3; Donald Macpherson, 1; Donald Macpherson, 2; Donald Macpherson, 3; Donald Macpherson, 4; Dugald Macpherson, 1; Dugald Macpherson, 2; Dugald Macpherson, 3; Dugald Macpherson, 4," varied at this point by a call for MacGregors sufficient to compose a clan for Rob Roy himself. A friend, who was by my side, suggested what a humorous roll-call a list of names of men of colour would make—ten Greens, fifteen Blacks, twenty Browns, and five-and-twenty Whites. A hue and cry for the Smiths and the Smythes, another friend remarked, would be an amusing, though a puzzling call to hear from a Cockney's tongue.

Two illustrious Englishmen,—one a Londoner by birth, the other a Staffordshire man—paid Scotland a visit. Ben Jonson went on foot there as far as Edinburgh and Ben Lomond; and Samuel Johnson, a century and a half later, visited Edinburgh and the Hebrides with a thorough Cockney Scot, James Boswell, of Auchinleck, in Ayrshire, esquire. That Ben and Sam were well pleased with their reception, we have enduring testimony in the "Heads of Conversation," jotted by Drummond, and the "Tour" and "Life" published by Boswell.

Among the Scotsmen in London, late in the last century, was William Burns, a brother of Scotland's poet. He was *ten* days in his passage from Shields to London. He wrought as a saddler in the Strand, possibly in the same house in the Strand in which the late Mr. Archibald Hastie carried on a saddler's business, and collected merry men and true Scots around Burns's punch-bowl filled with reeking and beading whisky to the very brim.

A true child of Scotland—a Caledonian to the back-bone—is, when settled in London, all eagerness to get other Scotsmen about him. Thus Allan Cunningham, when he had settled as a mason (and something more), in the studio and "shops" of Sir Francis Chantrey, actively worked to bring other Scottish lads from the banks of his native Nith to the banks of his adopted Thames. Thus he tempted to London, and with a certainty of work and good pay, four or five sturdy Scots, rejoicing in the Northern names of Affleck, Dunbar, Sandilands, and, of course, a Cunningham,—and excellent masons they turned out, to the full satisfaction of a Derbyshire man, with a smack of a Yorkshire Riding about him—Francis Chantrey.

I may be pardoned for mentioning here, that an elder brother of Allan's served assiduously long and died in the service of the Rennies (the engineers), and that he lies buried in the churchyard of St. John's, Waterloo-road, beneath a monument erected to his memory by his brother Allan.

"Cannie Scotland" has not supplied (strange to say) its fair share to the corporation of the City of London. We can call to mind only three Scots who have filled the office of lord mayor, and been right honourables and privy councillors for a year. Let us name them:—Sir James Shaw, Sir Peter Laurie, and Sir John Pirie. It was good Sir James Shaw who brought two of the sons of Robert Burns (the poet was then dead) from the shadow of the Mid Steeple in Dumfries to the cloisters and school of Christ's Hospital in London. I do not remember, when I was a Bluecoat-boy, a period extending from 1825 to 1831, that there was a sample of a Scot to be found in the school. Had there been one, the boy, whether a *red* or *black* Douglas, would have found Christ's Hospital, off Newgate-street, a little too hot for his Caledonian "bluid."

London possesses (and will take care to keep) two noble memorials of Scotland and the Scots,—the Stone of the coronation-chair in Westminster Abbey, and the punch-bowl of Robert Burns, now one of the curiosities of the British Museum. The Coronation Stone (the Koh-i-Noor of Scotland) was a theft committed by King Edward of the Plantagenets; the bowl was a bequest to the Museum by "a Paisley body."—I mean, a member of Parliament for Paisley.

That the finest sight a Scotsman sees,—

"The Caledonians armed with want and cold,"—is the high-road to London, we have the authority for asserting of no less a person than Samuel Johnson. Scots, when once in London, are unwilling to return. The "gaeing back agen" is not grateful to a Scot, and yet, strange to say, the epitaph on Lord Belhaven, who died in 1639, records the astounding fact that "he returned to his country." In the year 1639 the country Lord Belhaven returned to was rampant with troubles, civil and religious; nor was London, indeed, at that time, in a much more pacific condition.

We have no evidence whatever that any of our Scottish kings had ever set foot in London before the death of Queen Elizabeth in 1603. It is, however, within the range of probability that King James I. (the poet-king) saw it on his way to his prison in Windsor Castle. The march into England of King James IV. was marked at Flodden. Mary, Queen of Scots, was never farther south than fatal Fotheringay. Sir William Wallace saw London at the cost

* Waller's Panegyric on Oliver Cromwell.

of his head, and Robert Bruce may have seen it, as the young "Pretender" is known to have seen it, concealed in Essex-street, in the Strand, with a ready escape to the Thames. But it is idle to indulge in mere conjecture.

My father's father—John Cunningham—made his way from Dumfriesshire to London to see what was to be seen there—

"To go to London's but a walk,"—

and from thence, on foot (out of pure love for antiquities), he sought the mystic circles of Stonehenge. The wonders of that riddle in gigantic stones, as related by him, had an influence on the mind of the boy-mason his son. To see Stonehenge was one of my father's desires; but there were no railways to Old or New Sarum when he was dreaming of Druid temples. It was but natural that a young man—and a poetic one—should long to see Stonehenge, and invest its silent rough-hewn blocks with fancies founded on the wildest of uncontrolled imaginations.

Mr. John Hill Burton has lately given us a very interesting work called "The Scot Abroad." To our thinking, however, the Scot "Abroad," is more at home than he is among his own heathery hills. Then Francisque Michel has given us "Les Écossais en France, les Français en Écosse." Who has not read "Munro, his Expedition with that worthy Scots' Regiment," &c. of which Sir Walter has made such excellent use in his "Legend of Montrose?"

There was living within the sound of Bow bells—some sixteen years since—a fine, large-hearted Scot, of the name of Mac—. He was a favourite with Londoners, pure and mixed, and was much in company, for he talked duently and well, and sang a Scottish song with feeling and humour. He was to have been one of a dinner-party to which Douglas Jerrold and others of less wit were asked, but had the misfortune to arrive after the removal of the fish. He was in a heat, and evidently disturbed in mind. Ten tongues at least addressed him—"What is the matter?" "Where have you been?" "You have lost some of the best fish that ever was served up in my time at the Toy at Hampton Court." "Ay, friend," was the reply; "I have just seen such a head-rendering sight." Cries of "What was it?—what was it?" "Why, just this and nae less; a party of decent folk were a' stoppit on the other side of the bridge, because they had nae enow of money to pay the toll. Sad sight, man; and, indeed!" "By George," cried Jerrold, "how many were there of them?" "Sax or seven at the least," was the answer. A laugh all round was not to be stopped. "Why, Mac, rather than have suffered what you suffered and are suffering, I would have paid for the men myself." Mac here took out a handful of silver, "Eh, man, it never occurred to me; it never crossed any head." The laugh was renewed and hardly ended by the time Mac made the discovery of what his "freens" the lads were "laughing at."

When King James I. settled in Whitehall, in London, the Court and the City, from Charing Cross to Cheapside Cross, swarmed with Edinburgh "gentry." There were Murrays and Montgomeries, Alexanders and Primroses, Maitlands and Drummonds, Ramsays and Heriots, and Macs by the dozen. What Scotland-yard would not hold, St. Martin's-in-the-Fields, the Savoy, St. Mary-le-Strand, and St. Margaret's, Westminster, found ready shelter for. Any one who has taken the trouble of examining the rate-books and church-books of the parishes close to Scotland-yard, in London, will find (he must carry more than a little learning with him) that the Scots who followed King James to London, at Queen Elizabeth's death, were soon "well to do" about the Strand and Whitehall. The Scottish thistle took root rapidly, and Scottish masons found full employment, and often at their own prices.*

P. O.

* Among the Medæval inscriptions in Melrose Abbey, in Scotland, is a rhyming one on a master mason, John Mordo, or Morow. He wrought at Melrose. Here it is—in lines corresponding to the rhyme—not as the letter-cut of—say A.D. 1500—chose to cut it:—

"John Morow, sumtym callit was I,
And born in Farrae certainly;
And had in keepin' at mason werk
Of Santandros ye hie kyrk;
Of Glasco, Melrose, and Pa-lay,
Of Nyddysyth and of Galsway,
I pray to God and Mari bairn,
And sweet Sancte John to keep this haly kyrk
his sauth."

The secretary of the Scottish Society of Antiquaries (Dr. John Alexander Smith) believes that the name of our worthy mason was Morow. What does Mr. David Laing say to the suggestion?

THE SMOKE NUISANCE.*

THE smoke that is suffered to escape from the chimneys of manufactories is not only the cause of great discomfort and annoyance to the inhabitants of towns, by soiling the clothing and furniture, and by destroying the beauty and fertility of gardens and the verdure of the country; but it is also considered to be very deleterious to health, both from the mechanical and chemical impurities arising from the soot and the gases which are inhaled by the organs of respiration.

As by the Sanitary Act of last session every town and place has the power to abate this nuisance, it may not be out of place shortly to review the whole smoke question.

It is now more than twenty-four years since the first active steps were taken by the Legislature on this subject, a Select Committee having been appointed by the House of Commons "to inquire into the means and the expediency of preventing the nuisance of smoke arising from fires or furnaces." After having sat for upwards of a month and examined more than thirty witnesses, consisting of chemists, engineers, manufacturers, patentees, and others, the Committee came to the conclusion that, "Smoke, which is the result of imperfect combustion, may in all cases be much diminished, if not prevented."

But, although it was recommended that a Bill should be brought into Parliament at an early period of the ensuing session to prevent the production of smoke, the recommendation was not carried out, and the matter remained in abeyance until 1847, when a clause was introduced into the Towns Improvement Act (10 & 11 Vict., cap. 34).

Before proceeding further to review the various enactments now in force, it may be well to define what smoke is, and how it can be prevented.

The black vapour that escapes from a chimney in the form of smoke is caused by the imperfect combustion of the fuel supplied to the furnace, and consists of fine particles of soot, or lamp-black.

On a charge of coal being thrown into a furnace, the incandescent fuel remaining of the previous charge ignites the fresh supply, and causes combustion, the products of which are: first, steam, formed of hydrogen and oxygen gases; second, carbonic acid, formed of carbon and oxygen; third, carbonic oxide, consisting of carbonic acid deprived of a great part of its oxygen by passing over the incandescent coal; and fourth, smoke, formed from the hydrogen and carbon of the coal which, not taking a proper quantity of oxygen supplied to it, passes away unconsumed.

The vapour that arises from the chimney-top consists principally of the first of these products, steam, which is invisible and incombustible; it receives the dark coloring generally known as smoke from the last, or the carbon, which on being separated from the hydrogen, from the want of a proper supply of oxygen, loses its gaseous character, and returns to its natural state of a black pulverulent and finely-divided body, and as such becomes visible, assuming the form of soot or blacks.

Where oxygen is supplied in proper proportions no smoke is generated, the gases are converted into flame, and the carbon is consumed, the result being an absence of any visible escape from the chimney, and a great increase of temperature in the furnace.

It is quite possible to consume smoke—that is, to prevent any visible escape of black vapour from the chimney—yet at the same time to allow, both of the escape of a gas which is extremely injurious to the atmosphere, and of great waste of heat, or of the effects of combustion. Thus the celebrated James Watt thought that if he could render the products of combustion from furnaces invisible, he had accomplished the purpose of burning those products. His contrivance consisted in allowing a stratum of air to enter the furnace through or among the coals, and in making the smoke pass over incandescent coal. The air which thus passes up through the bars becomes carbonic acid gas, from the combination of the carbon on the bars, and this vitiated atmosphere is incapable of burning the gases which occupy the space above the fuel; and, by allow-

ing the smoke to pass over the incandescent coal, the carbon gets half burnt, and forms carbonic oxide, which passes off in an invisible form, but is extremely noxious and more injurious to the atmosphere and health of towns than the soot or blacks. Two or three inhalations of carbonic oxide are sufficient completely to destroy life. The flame which may occasionally be seen issuing from low chimneys, such as the funnels of steam-boats, is due to carbonic oxide, which, escaping at a sufficiently high temperature, immediately on coming in contact with the atmosphere takes up sufficient oxygen, and bursts into flame. If this oxygen had been supplied at the furnace, the heat arising from this flame would have been utilised in the fires of the boiler.

From this it will be seen that the term "consumption of smoke" is a misnomer, the object being not to consume, but to prevent smoke being generated. And the aim of all successful patents is to provide a due supply of atmospheric air to mix with the gases to enable the necessary combination to take place, and cause the greatest effect from the combustion of the coal.

The chief difference in the several patents is not so much one of principle as of the method of supplying this atmospheric air in proper proportions and at a right temperature. A great deal depends in the prevention of smoke on the management of the fire, and many patents which have been brought out have failed to effect their object owing to inattention on the part of the fireman. To obviate this difficulty is the object of Jukes's and other similar patents, by means of which the fuel is supplied to the furnace by machinery; the grate being also made to revolve, is thus kept constantly supplied with an even layer of fuel. Being self-feeding, it requires no skill on the part of the fireman, who has merely to fill a large hopper with coals two or three times a day. The result of the application of these patents has been, so far as it goes, successful; but the very regularity of the action is at times a disadvantage, by preventing the stoker, in case of emergency, from urging his fire. It also requires that the furnace should be very large, and that there should be a surplus of boiler room. It could be adapted but to few existing furnaces, and the expense is such as to make its adoption a matter of serious consideration.

Where ordinary care is used by the fireman, a very simple plan is effective. The method recommended by Mr. Charles Wye Williams, to whom the arbitrators awarded the prize of 500*l.*, given by the Steam Coal Collieries Association, appears to be the most effectual. It consists in the admission of atmospheric air at the bridge of the furnace by means of numerous small apertures, with the object of diffusing it in streams and jets amongst the gases, on the same principle as the Argand gas-burner, the mixture of the air and the gases of combustion being made to take place in the furnace. The mode of firing recommended by Mr. Williams consists in applying the fresh fuel alternately at opposite sides of the furnace, so as to leave one side bright, whilst the other is black. It is obvious that the cost of applying this principle must be very small.

At Leicester and other towns where smoke prevention has been successfully carried out, a very effective apparatus is much in use, which has also the advantage of economy in fuel and smallness of cost, the price of the apparatus and fixing varying, according to the size of the furnace, from 7*l.* to 10*l.*

Objection is often made by those in charge of the fires that the admission of air otherwise than through the bars of the grate, has the effect of cooling the fire down, and consequently diminishing the supply of steam from the boiler. To meet this objection, several patents have been brought out to supply the air to the furnace at a very high temperature; but a little consideration will show this to be a mistake. The apertures by which air can be admitted can only be of a limited size, and bear a certain proportion to the furnace. By raising the temperature of the air, it expands, occupies a much greater space, and can therefore only pass through the apertures provided for its admission in diminished quantities. If the supply of air be admitted at the bridge, and the current has first to pass through the ash-pit, it becomes sufficiently heated to prevent any deleterious effects, and at the same time the temperature is not raised so high as to interfere with its free admission.

Where a furnace has not been constructed with the special view to the prevention of smoke, this object may be accomplished, to a very great

* Report and Minutes of Evidence of the Select Committee on Smoke Prevention. Combustion of Coal. Weale's Rudimentary Series. Smoke-burning made Easy. Tracts on Steam, by R. Armstrong.

extent, by a careful stoker, by the admission of a moderate supply of air by opening the furnace door a few inches for a few minutes after each firing. This may lessen the production of steam, but it will prevent the loss of fuel from smoke passing up the chimney.

It appears, therefore, that the emission of smoke from chimneys may be prevented, the chief requisites being:—

1. A sufficiency of boiler accommodation to allow of easy firing, so that the fire need never be overloaded with coal or forced in its work.

2. A chimney having sufficient height and sectional area to provide a good draught, without which it is impossible that the temperature of the furnace can be raised sufficiently high to effect complete combustion.

3. The admission of atmospheric air in sufficient quantities to allow of the complete combustion of the fuel, an extra supply of air being admitted to every fresh charge of coal.

4. Due care and attention on the part of the stoker in the management of his fire, by having his fuel properly prepared before commencing to charge, by charging his fire quickly, evenly, and regularly all over; by keeping a uniform depth of coal, and not allowing any part of the bars to be uncovered; by not covering more than half or two-thirds of the grate with fresh fuel at once, and as the draught is strongest at the back near the bridge, placing the fuel thickest at the back, and allowing it to diminish gradually towards the front; and, lastly, by doing as little stoking and stirring as possible.

By an observance of the above simple regulations, the prevention of smoke from the chimneys of manufactories may be effected within certain limits, the cost of the necessary apparatus not being such as to render it an obstacle to its application; and the economic value of the coal and the evaporative power of the boiler may be at the same time increased. The saving in fuel has been variously estimated from 10 to 40 per cent.; Dr. Ure, in his examination before the Parliamentary committee, putting it at the former rate, and Professor Rankine, at the recent meeting at Dundee, stating it to be as high as the latter.

The law relating to the subject is included in the Towns Improvement Act, 10 & 11 Vict., cap. 34, sect. 108, by which it is enacted that every furnace constructed after the passing of the Act, within the limits of the Act, for working engines by steam, or in any mill, factory, dye-house, bakehouse, brewery, gasworks, or any manufactory whatsoever, shall be so constructed as to consume the smoke arising from the combustibles used in the furnace. Every existing furnace used for any of these purposes not so constructed must, within two years after the application of the Act to the district, be so altered in its construction as to consume its own smoke. In case of failure to make the necessary alterations in the furnace, or for using the same negligently, a penalty of 40s. is incurred, one month's notice in writing having first been given. This clause was incorporated in the Local Government Act, 1855, thus extending its provisions to all towns where that Act has been adopted, an additional clause being added giving local Boards the discretion of excepting from the operations of the Act certain processes, such as coking, making bricks, the smelting and manufacture of iron or glass, &c.; and giving justices the power to excuse people who have used the best known means for preventing the nuisance. The interpretation of this last clause has been settled in the case of *Cooper v. Woolly*, which was an appeal from the conviction of Birmingham magistrates heard in the Court of Exchequer in January last. The appellant carried on the trade of annealing brass for wire-drawing, and for this purpose had a furnace. It appeared that the smoke emitted from the furnace might have been much diminished by the admission of cold air, but it also appeared that if air were so admitted the even temperature necessary for the manufacture could not be maintained. The conviction was quashed, the Court holding the words "as far as possible" to mean as far as possible consistently with the carrying on of the trade.

The Sanitary Act of last year (29 & 30 Vict., cap. 90, sect. 19) defined the word nuisance, under the Nuisance Removal Act, as including any fireplace or furnace which does not as far as practicable consume the smoke, and used within the district of a nuisance authority, such authority being by the 18th & 19th Vict., c. 121, and the 23rd & 24th Vict., c. 77, either a Board of Health, Improvement Commissioners, or Board of Guardians; but any inhabitant who

is aggrieved may lay a complaint before the justices, who can, however, dismiss the same if they are satisfied that the fireplace is constructed in such a manner as to consume its smoke, and that such fireplace has been carefully attended to by the person having charge of it.

The negligent stoking of furnaces is one of the great difficulties to be contended with. Magistrates are not inclined to convict a master when he has done all in his power to put his furnace in a proper form, but where his efforts have been frustrated by the negligence of his servants. The total absence of smoke also is an impossibility; an escape must take place when the fuel is first ignited, and on certain other occasions. To meet both these cases a certain amount of discretion is necessary on the part of the authorities. The rules laid down by the Board of Health at Leicester seem entirely to meet the case, and their effectiveness is proved by the very successful result of the operation of the law as carried out in that town, from the entire absence of any annoyance arising from the smoke nuisance, and the greatly improved appearance of the town since active measures have been taken. The limits allowed by the Board are one hour for lighting, and in subsequent hours ten minutes out of the sixty is allowed. In case of any excess of that time, the stokers are summoned before the Board of Health, and, in the first case, cautioned; in the second default they are taken before the magistrates, and fined. If the stoker can show that the fault arises from the construction of the furnace, the Board direct proceedings to be taken against the master; the operation of the law thus being made to bear upon the person actually guilty.

In conclusion, then, it may be stated, that wherever a town suffers from the annoyance arising from smoke and blacks; and wherever the chimney of a manufactory, whether situated in a town or elsewhere, may be seen constantly sending forth streams of black vapour, the fault is with the authorities of the place, and not with either science or the legislature.

W. H. W.

CONDITION OF GLASGOW.

GLASGOW ARCHITECTURAL SOCIETY.

AFTER the annual supper of this Society, held at the close of the General Meeting on the 21st inst., Mr. John Honeyman, jun., president, in giving the toast, "The Glasgow Architectural Society," made an interesting address, though we cannot agree with him in what he said as to the proposed demolition and improvements in the city, to which we look hopefully. We give a portion of his address, with which we more fully coincide. There is a subject, he said, which demands, I think, a larger share of our attention than it has hitherto received, and that is the practical application of the knowledge which hygienic science has placed at our disposal. Of late years, thanks to the labours of such men as my friend here, Dr. Gardner, and to such publications as the *Builder*, and others, an immense flood of light has been thrown on sanitary matters, and the thousand subtle agents which affect the health of town populations especially, are noted and understood, and their influence duly appreciated—while the valuable reports of the Registrars, and an accumulation of statistics, prove how greatly the death-rate of a city is affected by the introduction of improved sanitary arrangements. It is satisfactory to think that not only are these things more perfectly understood, but a conviction of their importance has greatly spread among every class of the community. That is indeed satisfactory, and a token for good. What is unsatisfactory and disgraceful is, that, notwithstanding our knowledge and our convictions, so little is done. During the last thirty years, I make bold to say, that in our dwellings, for example, we have not introduced a single sanitary improvement worth mentioning; and in many classes of property—and these by no means the lowest—the state of matters is infinitely worse now than it was at that remote period in the history of sanitary science. This is hard to believe, and I may not pause to pursue the subject. I speak as to wise men, who can investigate it for themselves. I cannot, however, resist offering one illustration. Let us compare, for instance, an old and a new tenement of flats of four and five rooms and kitchen. There are some very good specimens of the former at the east end of West Regent-street. In these, access to the flats is by a close going

right through the building, and perfectly open at both ends. At the back, on the ground floor, a paved balcony leads right and left to the staircases. Only one "house" enters from each landing, and only two houses are approached by each staircase. In each house the water-closet has a good sized window to the exterior; the staircases are entirely of stone, and have no doors at the foot. In short, the hall doors are as nearly as possible independent entrances from the external air, and every apartment is lighted and ventilated directly from the exterior. Now, contrast with this a tenement of houses of the same number of apartments not yet occupied which I visited last week. The entrance to the upper floors is by a close such as we are all so familiar with, having a swing door at the front; this leads to a dingy contracted staircase, lighted by windows 6 ft. high by 3 ft. wide. Two houses enter from each landing; and, as the tenement is four stories high above the basement, the staircase is the common entrance for six families. The water-closets are entirely without light or air, except what they get through a sheet of perforated zinc from the dingy staircase already mentioned. I did not venture into these, but tried to get an idea of their size by groping for the walls with my umbrella. A continuation of the stair below the street floor gives access to a wretched little back court, the chief feature in which is the ash-pit, where all the refuse of these eight families may be allowed to ferment and rot for months together. Such, gentlemen, is a tenement hardly finished, yet in one of the most salubrious and pleasant situations in the outskirts of our city; and I leave it to my learned friend or any other man to estimate the value of its arrangements in a sanitary point of view as compared with those of the tenement first described which was built before my day.

Since visiting this building, I have seen one of the same class in one of the finest situations on Hillhead, where eight houses enter within the one swing door, and the eight W.C.s are lighted and ventilated from the staircase alone, and the said staircase has not even small windows: it has none but a skylight, which is closed and fixed. If we descend still lower in the class of dwellings, we find the change for the worse not so marked, but we fail to detect much change for the better. The houses of two apartments and of single apartments are almost all as bad as possible, whether old or new. Before passing from this subject I must refer to a mistake which is often made by the public in supposing that we architects have anything to do with the present state of this lowest class of house property. Whatever may be the case hereafter, I may say that, in times past, the builders of such houses have considered the services of an architect quite unnecessary, and it is the exception when even tenements of a superior description are put up under the supervision of an architect. But, gentlemen, other sanitary delinquencies crowd upon us. What, for example, have we done in the way of ventilating our common sewers,—a matter of the very greatest importance to the general health of the community. Indeed, I think this is by far the most important sanitary measure which can engage the attention of our authorities,—the effectual trapping of house-drains, and the complete ventilation of sewers. It is now nine years since I insisted on the importance of this in a paper read before this society. About that time, as now, many schemes for purifying the river and for utilising the sewage were propounded, and there was a general agreement that "something must be done." I ventured to assert that the purification of the river, however desirable, was of very secondary importance compared with the efficient drainage of the city and the thorough ventilation of this now. I must not, however, attempt to illustrate this subject at present. This has been very admirably done in a recent number of the *Builder*, in an article entitled "What there is still to do in Glasgow," which I strongly recommend to the attention of any who have not seen it. The writer of that article adverts to many other defects in our sanitary arrangements,—such, for example, as the disgraceful state of our streets in regard to scavenging—worse certainly than in any city I have visited—the filthy and dilapidated condition of footpaths, our system of accumulating refuse in ashpits, the condition of the river—that standing reproach—and other things of less consequence. Now, gentlemen, we have been alive to the existence of these evils for years—our knowledge of their operation and effects has been

come more and more precise and complete, but we have been contented year after year to speak about them and to do nothing, absolutely nothing. They are all (except the purification of the river) capable of being soon disposed of, without even great expenditure, and I think it well becomes us, the members of this society, to lend all our influence towards this desirable consummation. We cannot, I am sure, direct our efforts to a more important end, or one which will more conduce to the health and so to the happiness of our fellow-citizens. We are professedly a body of men who know more about these matters than other people; but while our proper function is this our collective capacity is educational; we are bound in our individual capacities to do our best to carry into effect those measures of practical sanitary reform which are eliminated by our own and contemporary discussions and researches.

Professor Gairdner, in the course of a speech made afterwards, said that he concurred in the remarks which had been offered by the chairman with reference to the purification of the river. He believed that the architect had ten thousand times more to do with improving the health of Glasgow than the engineers who would improve the state of the river, and he did not hesitate to repeat what he had said at another society meeting, although he by no means approved of having a dirty river, that the injury to the health of the inhabitants by the river was excessively small, scarcely anything at all, while that from imperfectly constructed houses stared them broadly in the face. Although no doubt the business of an architect must always have a great relation to the ornamental, they also looked to them to give the public good, comfortable, well-ventilated houses. He believed in what the chairman had said, that it was not architects who were to blame for the present state of matters. The public had got it into their heads that they did not require an architect to build houses, and the consequence was, they were always being built upon the same bad models. The most modern buildings in Glasgow were, as a rule, just as bad in construction as the old houses in the centre of the city which were now wanted to be taken down. There were common stairs in Garnet-hill quite as bad, in a sanitary point of view, as those in the centre of the city, although not so dangerous, on account of their not being so overcrowded.

THE WILTS ARCHEOLOGICAL SOCIETY'S CONGRESS AT HUNGERFORD.

The members of the Wiltshire Archaeological and Natural History Society held their annual congress at Hungerford a few weeks since, and examined the objects of interest to be met with in that town, and also in the villages dotted here and there at that end of the county of Wilt, Hungerford itself standing partly in Wilt and partly in Berke.

At the general meeting it was stated in the report for the past year, that the total number of names on the books of the society was 331, and the finance report exhibited a balance of 260*l.* in favour of the society. After the president, Sir John Awdry, had delivered an address, Mr. W. L. Barker read a paper "On Hungerford." Dinner was afterwards served in a marquee, at the Bear Hotel. In the evening there was a conversation in the town-hall, and Mr. H. Godwin, of Newbury, read "Notes on a recent Visit to Wroxeter, the ancient City of Uricinium." This was followed by an essay on the "Ancient Earthwork Enclosures on the Downs, supposed to be Cattle-pens," by Mr. Smith.

The next day the members made an excursion to some churches and other buildings in the neighbourhood. The party first visited Chilton, where they examined the church. They then went to Littlecott House, Ramsbury Church, and the old Manor House, erected in brick, from Inigo Jones's designs. This house belongs to Sir Robert Burdett, son of the celebrated Sir Francis Burdett, and resident in Paris: for nine years he has never lived here himself nor allowed any one to tenant it. At Ramsbury Church there is a tablet bearing the names of members of the Burdett family, but the party were astonished to find that although Sir Francis Burdett and his wife were buried there (on the same day), nothing is visible recording that memorable fact, and they were informed by a parishioner that through some family differences, Miss Burdett Courts is prevented from erecting in the chancel a memorial of her deceased parents.

Leaving Ramsbury, the party went to Crowood, where they were hospitably entertained by Major Seymour. They next went to the village of Aldbourne, which Mr. Black said remains just as the Romans left it. The church was visited.

The party then returned to Hungerford, and had luncheon at the Bear Hotel, after which the journey was resumed with a visit to Upper Upton, which was so decidedly up, with the wind in their faces, that it was no easy task to reach this summit of the Downs. Here the party examined the ancient house of large proportions, built from the ruins of the hunting-seat of John O'Gaunt, where encaustic tiles and other relics have of late years been found. Member Fort was to be included in the excursion, but darkness was approaching, and the members returned direct to Hungerford.

ST. GILES'S CHURCH, EDINBURGH.

A MOVEMENT has been set on foot by Lord Provost Chambers, for the restoration of the choir of St. Giles's Church, the tower of which forms one of the most picturesque and marked features of the old town. This tower, or that of St. Nicholas, at Newcastle, gave the hint to Sir Christopher Wren for the tower of St. Dunstan's, but the latter falls far short of either of them in effectiveness. Opinions differ as to whether St. Nicholas's or St. Giles's bears off the palm: while the former is lighter, and probably more graceful, the latter is more picturesque, both as to position and outline. The chapel attached to King's College, Aberdeen, has a similar but much inferior tower, and the same feature of an open crown is supposed to have surmounted the towers of the Abbey Church of Haddington and the steeple church of Dundee. Illustrations of all of these buildings will be found in "Billings' Baronial and Ecclesiastical Antiquities of Scotland."

A church is said to have existed on the site occupied by St. Giles's, so early as the ninth century, but the present building dates from the fourteenth. It contains the full complement of nave, transepts, choir, and aisles, and is of considerable extent, measuring 206 ft. from east to west, and the transepts 129 ft. from north to south.

In 1446, St. Giles's was constituted a collegiate church, by virtue of a charter of James III., with a regular staff of officiating priests, and it contained no less than thirty-six altars. At the time of the Reformation, this church was despoiled, but it did not suffer to the same extent as many similar edifices throughout Scotland; but the brass screens and other metal details were sold by the civil authorities along with many valuable articles of church furniture.

The edifice was thereafter divided, by solid walls, into four separate churches, and parts of it appropriated as a court of justice, a grammar-school, and an office for the city clerk. Charles I., while endeavouring to establish Episcopacy in Scotland, ordained St. Giles's to be the cathedral of the diocese of Edinburgh, with a chapter of a bishop, dean, and twelve prebends; but it does not appear that active steps were ever taken to convert the interior into a cathedral, and it still remains divided into three churches, occupying respectively the nave, south transept, and choir, the north transept serving as a vestibule. As might be expected, the interior presents the usual concomitants of heavy galleries, blocking up the aisles, high pews, and other evil features. The gault, bare, plastered walls of the north transept are relieved by a few marble tablets of questionable design; and in the south transept is an altar-tomb to the memory of the Regent Murray in the Elizabethan style, which has recently been restored under the superintendence of Mr. Cousins, the city architect. Many other monuments and brasses are said to have existed, but they have disappeared.

Up till 1817 the exterior of the building was not interfered with, except by the erection of numerous small shops between the buttresses. These shops were called the Luckinbooths, and were occupied principally by jewellers and book-sellers. After the destruction by fire of the "Parliament Close," which stood immediately to the north of the church, and the erection of the present "Parliament-square" in its stead, the luckinbooths were removed, and considerable alterations (they were called improvements in those days) were effected

upon the exterior, which amounted to a total destruction of every ancient feature excepting the tower, which fortunately remains untouched. The course adopted by the architect, Mr. Burn, was to encase the whole walls in smooth-rubbed freestone, and to re-design the doorways, parapets, pinnacles, and, in short, every detail, the result being simply abominable. An amusing anecdote is told illustrative of the *modus operandi* of restorers fifty years ago. One of the workmen employed on the great east window was overheard exclaiming to one of his colleagues, "Odds, man, I've got this mullion out doon nice and sma', and if I cut off ony mair the hail window 'ill fa' tae bits."

A partial restoration is better than none at all; but a satisfactory result will never be attained till the whole edifice is re-converted into one church. Were this resolved upon, and the restoration entrusted to competent hands, with a sufficiency of funds at command, St. Giles's might be made the finest church in Scotland; but there are other impediments to this desired-for result besides the primary one of expense: the charge could not be made a collegiate one without the sanction of the General Assembly of the Church of Scotland, and it is very problematical if that reverend body would sanction such an innovation.

We trust that in the restoration of the choir the exterior will meet with attention as well as the interior; indeed, the one depends upon the other, for the effect can never be good either without or within so long as the present meagre tracery remains in the windows.

SURROUNDINGS OF ST. PAUL'S CATHEDRAL.

IN the heart of the City, at the confluence of five of its busiest thoroughfares, there is a wide, expansive area, bound in by an ancient and heavy railing of iron, which, while it obstructs the free intercourse of traffic, disfigures the majestic fane that it was designed to adorn.

On the north side, which, as it leads to the principal entrance and to the chapter-house opposite thereto, may be called the Via Sacra, a bar interdicts the passage of carriages, and the width of the driveway from Fleet-street, on the east end, is but 15 ft., increasing to 22 ft. in the average, but closing in again at the grand portal and circular steps to only 7 ft., and that inclusive of two stone blocks. The rest of this causeway, along which are ranged many first-rate shops and business houses for an extent of about 250 yards to the opening of Chesepide, is in actuality a Strada Clausa, except for pedestrians, or for the access of wains so far only as the central barrier, to return east or west by the way they entered.

On the south side the traffic road is wider, in some parts, towards Cannon-street, being of ample breadth; but at the east end it is cribbed and restricted in the most absurd way by the convolutions of the massive iron railing, which absolutely detracts from the building to which it ought to be subsidiary and ornamental. The entire traffic of London is forced to take these two sides, the south being 250 yards, the east 170 yards, making together 420 yards, and being 170 yards in excess of the north line, which would, if opened, form a direct communication between the Bank and the West-End. Besides that, the Cannon-street line, which will soon be more crowded by the new street from Blackfriars, requires separation in the torrents of traffic by Paul's Chain.

If there were any symmetry in the iron railing, or if the inclosure were filled with gorgeous tombs, there might be some plea for the maintenance of an iron barrier so lethal to trade, so unsuited to the enormous carriage traffic of London; but there are, in fact, no tombs nor gravestones, except in the north-east angle; and the univalued cathedral would be much better viewed if this hideous fence were removed, and a line of low railing or light balustrade were drawn along a reserve, equable in width, to the extent of the portico steps, on the south and east sides, with perhaps a little wider but still equable reserve on the north side, and if the whole of this unused and desolate interior space were thrown into a grand piazza, for the use of the public, the accommodation of trade, and for the glory of Sir Christopher Wren's grandest monument.

On the west side there is an extensive paved Largo, or Campo Santo, near the centre whereof,

opposite to the grand west portal, stands the statue of Queen Anne: the new fence might be placed so as to enclose this handsome royal monument, with appropriate gates of entrance, if the Dean and Chapter should think such a reserve requisite for grounds where no interments had ever been made. The rest would, in addition to the other surrounding liberated spaces, form an extensive and imposing area, from which the Cathedral could be viewed to advantage *without an iron screen*; and the few tombs that might be disturbed on parts of the south-east and north sides could be transferred to suitable positions, where the names and legends are unnoticed, or a mural tablet inside the church, might more suitably reveal the names and designations of the transferred remains. A uniform ground-line, with massive granite curb, and a continuous strong but light iron rail, would set off the edifice; and the removal of the oval projections, opposite Doctors' Commons and St. Paul's School, would at same time clear the way and open the aspect.

When St. Paul's was first designed, the surrounding routes were ample to accommodate the commercial requirements of an age of pack-horses and small wains. Now both population and trade have increased, as the metropolis has also extended, over twentyfold. It cannot be apprehended that the Church will stand in the way of great public requirements, or that they will uphold antiquated barriers which disfigure the cathedral whilst they cripple free intercourse.

QUONDAM.

SMOKE AND SEWERAGE IN THE POTTERIES.

A CONFERENCE of members of the various governing bodies of the Potteries has been held at Stoke-on-Trent, for the purpose of considering the questions of the consumption of smoke and the disposal of sewage. The mayor of Henley presided, and there were present representatives from all the towns in the district.

Alderman Boothroyd stated what had been done in reference to the question of smoke by the Hanley town council.

A committee, appointed by the council, had made inquiries of twenty-nine towns, in ten of which the consumption of smoke was enforced; in five of which smoke was partially consumed; in thirteen of which the consumption of smoke had not been attempted, and one where not only had there been no attempt to enforce the consumption of smoke, but the town surveyor declared all consuming apparatus to be "booby." The result of the inquiries of the committee clearly proved that there were no trades carried on in this district but what might, to a considerable extent, consume the smoke at present evolved.

The alderman then read a report of the committee, in which the smoke-producing sources in the Potteries were classed, and the means of ensuring the consumption of smoke in the different classes discussed. The most annoying and injurious source, and the most difficult to deal with was the calcining of ironstone. The smoke and gases from ironstone might be consumed by the adoption of Mr. John Ojers's patent. Smoke from iron furnaces could be consumed by the adoption of plans which were named. The ovens and kilns in potteries could, the committee believed, be also dealt with, and to the advantage of the manufacturer, and there was no difficulty in regard to other chimneys. The Act could be at once applied to slip kilns and steam-engines, but as to ovens, it might be left a little longer, in order to ascertain what was best to be done with them. They would be better able to tell in six or eight months' time what to do.

After some discussion, it was resolved, with one dissentient,—

"That the local governments be recommended to give notice that the smoke-consuming clauses of the Sanitary Act of 1856 be put in operation forthwith in the cases of slip kilns and engine chimneys, and such like chimneys, and that pottery ovens and ironworks' chimneys be referred to the Chamber of Commerce and the Coal and Ironmasters' Association."

A committee was then appointed to watch the carrying out of this Act in the cases in which it had been decided to recommend the enforcing of the smoke clauses, and also to deal with the question of fully carrying out the clauses by applying them at a future time to the chimneys at present excepted.

The conference then went into the sewerage question, which was discussed at some length.

At a meeting of the Henley Town Council the surveyor, Mr. Snaith, reported on both subjects

what the committee (including himself and Mr. Boothroyd) had done, and what they recommended. On the subject of sewage, Mr. Boothroyd remarked, in the discussion which followed, that a district sewerage system would not be so formidable a matter as some people seemed to suppose, the estimate of Mr. Smith, the contractor, being something under 40,000*l.* for the sewer, without the purchase of the land: the surveyor said 32,000*l.* would suffice; and another member of the council stated that the Duke of Sutherland would take the sewerage. The surveyor seems to have laid great stress upon the dry-earth system of treating excreta, but it was remarked that this system would involve them in considerable expense, and would not obviate the going of filth into the general sewerage system, and the pollution of the river. Regret was expressed that in the north of the district an outfall sewerage was likely to be opposed.

The surveyor's report was received, and the matter referred to the Town's Improvement Committee.

BIRMINGHAM.

THE memorial stone of the new church of St. Nicholas, which is to serve a district of the parish of St. Stephen, has been laid by Mr. Frederick Elkington. The new church is to accommodate 600 persons. It consists of a nave with two aisles, a chancel, an organ, chapel, and vestry. The extreme length is 104 ft., and the extreme breadth of the nave and aisles 56 ft. The nave is 26 ft. wide, and 56 ft. high to the ridge. The nave is separated from each aisle by five brick and stone arches, carried on columns of Bath stone. Above these arches is a lofty clearstory, by means of which the church will be principally lighted. The roof is of timber, and will be open to the ridge. The chancel is lighted by means of a large eastern window of five lights, the head of the window being filled with geometric tracery. The total height of the chancel is 50 ft. The church is being built almost entirely of brick, the bell-turret, copings, and east and west windows, and entrance doorway, being the only portions of the exterior which have stone dressings. The style is Geometric; but, from the nature of the material used, it differs from the old typical forms of that style. The total cost of the church will be about 3,550*l.* The architects are Messrs. Martin & Chamberlain; the contractors, Messrs. W. & J. Webb. Messrs. Elkington give the site.

The corner-stone of the new church of St. Augustine, Hagley-road, Edgbaston, has been laid by the Bishop of Worcester. The new church will be situated on a site given by Mr. Joseph Giltott, near the corner of Hagley and Rotton Park roads. It will be cruciform, and consist of a chancel, nave, north and south aisles, north and south transepts, &c. The internal measurement will be from the western door to the inside line of the apse, 123 ft.; from wall to wall of the aisles, 52 ft. 10 in. Over the south transept a tower will be erected, and when the spire is built it will form the point of convergence of four avenues leading up to the church. The nave will be divided from the aisles by two arcades of five arches each, resting on round piers with carved capitals, and surmounted by clearstories. A plinth of Darley Dale stone will run round the base of the church, and over the plinth the wall will be of Box-ground stone, with occasional bands of Hamstead stone. Internally the church will be faced with grey and red Bromsgrove stone, piers and dressings of Corsham Down stone. The roof will be open, the arched ribs of the principals resting upon clustered shafts, with carved capitals. There will be accommodation for 700 persons. It is intended eventually to raise the spire to a height of 200 ft., but at first only 30 ft. of the tower will be erected. The cost will be 5,500*l.* Mr. Chatwin is the architect, and the builder is Mr. William Partridge.

A new site for the Aston Union workhouse has been purchased in Luckcock's-lane, near the Gravelly-hill Railway Station, containing about ten acres of land. Upon this it is intended ultimately to erect a new workhouse, with schools, infirmary, &c., complete. For the present, only a portion of the schools is erected. The work has been undertaken by Mr. Yeville Thomas.

The schools, when completed, will provide accommodation for 250 children, in the proportion of 100 boys, 100 girls, and 50 infants. The

ventilation is arranged by a series of air trunks under the floor, with gratings in the floor to open and shut, and the foul air is passed off into extraction flues immediately underneath the ceilings. These are also covered with gratings to open and shut, the whole being of simple character, and not liable to get out of order.

The water supply will ultimately (as present it is only temporary) form a part of an extensive scheme for supplying the entire house, and will be obtained from a deep well sunk on the premises, and raised to cisterns placed at high levels by means of rotary pumps. The soft water from the roof is collected into extensive cisterns placed under the washhouse and laundry, capable of holding 10,000 gallons. The drainage, by reason of a good fall, is easily conveyed away to the agricultural land adjacent.

Externally, the whole of the buildings are of red bricks, with blue bricks to all plinths, strings, arches, &c., and moulded bricks to the windows and principal cornice, with stone, where required, for constructive purposes. All the roofs are covered with blue tiles; all the windows have double-hung sashes, as being superior to iron. Internally, the woodwork is stained and varnished. The staircases are of stone, the passages, &c., laid with quarries, and all day-rooms and dormitories boarded. All ornamentation is avoided.

The cost of the whole, including engineers' work for the water-supply, boundary-walls, roads, and approaches, was estimated at 8,500*l.*; but as this was in excess of the borrowing powers of the guardians as allowed by Act of Parliament, it was determined until the full amount could be obtained to omit the dining-hall, infants' rooms, a portion of the offices, palisading, &c. The present outlay has therefore been limited to 5,200*l.* The works have been carried out by Messrs. Jeffrey & Pritchard, of this town, under the superintendence of the architect.

The Board of Governors of the Children's Hospital in Steelhouse-lane have resolved to lease, for ninety-nine years, a piece of ground in Steelhouse-lane, on which to build a new department of their hospital for out-patients.

OXFORD IMPROVEMENTS.

THE local papers, as usual, report progress on the architectural and building improvements of the city. These seem to show a gradual progressive movement, and a determination, on the part of the University especially, to renovate and restore what was becoming dilapidated,—an example which the city itself has not been slow to imitate. We cannot just now enter into the numerous improvements recorded in the local *Journal* and *Herald*; but we may select two or three as a specimen, and first of the University:—

The important work of rebuilding the greater portion of Balliol College, and the Master's Lodgings, which was contemplated last year, has been vigorously proceeded with. The old buildings in Broad-street were pulled down in April last, and rapid progress is being made in the erection of the new ones, as upwards of a hundred men are employed upon the works. Miss Brackenridge gives the sum of 20,000*l.* towards the undertaking. The new building is not raised to a sufficient height to enable one to judge of what its peculiarities will be, but it is intended to build a finer front than the old one, to make a higher and more elaborate tower, and there will be some Oriel windows less confined than in the previous structure. The architect is Mr. Waterhouse, and the builders are Messrs. Brass & Co., London.

In addition to the library of All Saints' College, a law library has been formed, consisting of a room 50 ft. long and 16 ft. wide. It has an open timber roof, with panels of glass, and a glass ceiling at the line of collar-beam. Mr. Bruton was the architect, and Mr. Wyatt the builder.

The completion of Worcester Chapel restoration is being proceeded with. All that remained to be done was the laying of a new floor down the centre, from the entrance to the altar, and this work is being done by Messrs. Fisher & Harland, of London. It is being executed in a most costly and elaborate manner, and some portion of it is laid down; but the nature of the design is of so complex a nature that much time must necessarily elapse before it is completed. The principal material used is polished marble, arranged in the form of tessellated pavement, and the figures in the portions

now finished represent SS. Gregory, Austen, Ambrose, and Jerome.

A work of considerable importance and difficulty has been executed at the Radcliffe Library. It having been ascertained that the rain found its way through the roof into the interior of the building, under the direction of Mr. Gutch, the architect to the Radcliffe Trustees, and Mr. Thomas were instructed to ascertain the cause. They found that the lead was perforated in several places from the top of the cupola to the bottom of the dome, which terminates at the parapet where visitors generally have access to. The trustees held a meeting to consider the subject, and they directed Mr. Thomas to execute the necessary repairs. He then found that the injury to the lead was confined to those parts of the roof where it was in contact with the oak supports. In those places a gallate of lead was formed, a subject known to chemists as a combination of gallic acid, the active principle of oak, and lead. The lead had been destroyed in those parts where there were pins of oak, and nowhere else. The more arduous portion of the task of executing the necessary repairs arose from the difficulty of erecting scaffolding to the injured parts, but this was effected, and the whole work has been carried out without accident. As it is an established fact that it is impracticable to place oak in contact with lead, mahogany is now being generally substituted.

It is impossible to visit any of the suburbs of Oxford without observing the spirit with which building operations are being carried out, and the formidable list of applications to the Local Board at every meeting of that body, for permission to erect new dwellings, is conclusive evidence that before many years have elapsed the City of Oxford will have entirely outgrown its original bounds with greater rapidity than almost any other town, the manufacturing districts excepted. East, west, north, and south, the same progress is perceptible.

MR. E. L. BETTS, THE CONTRACTOR.

THE inhabitants of Maidstone and its vicinity have presented an address to Mr. E. L. Betts, on the occasion of his departure from Preston Hall. It expresses a deep regret at the circumstances connected with the cause of your departure, and their deepest sympathy with you under misfortunes so rarely paralleled, and so equally unmerited. During a period of nineteen years you have often been the originator, and always the promoter, of every measure that would tend to advance the science of agriculture, and elevate the character of the labouring poor. By your schools have been erected, reading-rooms opened, old charities have been sustained, and new ones established; your aims have been directed to the relief of the sick, and the support of the needy. What you and Mrs. Betts effected in the parish of Aylesford alone entitles you to the gratitude of its inhabitants, leaving marks in strong characters not easily effaced." Mr. E. L. Betts, replying from Betchworth, says:—"Obliged as I have been by adverse circumstances to leave a place so long cherished as a home, it is no small gratification to see my efforts to fulfil the duties of my position have been so generally and spontaneously acknowledged and appreciated, not only by my more intimate friends, but by so many with whom I have not the honour of a personal acquaintance. I trust are long again to become a resident in my native county, to which I am bound by so many ties."

NEW WESLEYAN CHAPEL AND SCHOOLS, PRINCE OF WALES ROAD, HAYVERSTOCK HILL.

TOWARDS the close of last year a plot of land, of about half an acre in extent, adjoining the Tailors' Benevolent Institution, in the Prince of Wales road, was, after some negotiation, obtained by a body of trustees, who proposed to erect upon it a Wesleyan chapel and schools. Mr. J. L. Hoole, of Craven-street, was appointed architect, and received instructions to prepare designs for a chapel, to accommodate at least 1,000 worshippers, with schools for the education of 500 children. After vacillating for a short time between the Classical and Gothic styles, the trustees chose the latter, and the plans were accordingly prepared and adopted. Some considerable delay was occasioned by the necessity

the trustees were under of obtaining the approval both of the authorities of the Tailors' Benevolent Institution and of the Charity Commissioners, by whom its affairs were for the time administered. But at length all difficulties were overcome, and the works commenced. A portion of the school-buildings is now rapidly approaching completion, and will be used as a temporary chapel until the funds for the permanent structure are raised. As 620 persons can be seated in the school-room, it will answer its immediate purpose in a very efficient manner for some time to come. Stock brick and Bath stone are the materials employed for the exterior of the school-buildings, which, though plain, are of a substantial character. It is proposed to open this first instalment of the premises on the last day of the present month.

Mr. Hobson, of the Adelphi, is the builder.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

St. James's, Westminster.—Dr. Lankester's report treats fully of what was done last year versus cholera in the parish of St. James, Westminster. The mortality of 1866 was 769, or thirty-seven in excess of the average for ten years, but this was not owing to cholera, for during the quarter when it was prevalent in London the death-rate was less than in any of the other quarters of the year: so much for active sanitary warfare with this deadly epidemic. Sudden cold Dr. Lankester regards as a more deadly influence than any other.

St. Marylebone.—Dr. Whitmore states that sanitary work of every kind has greatly progressed, and is still progressing with accelerated speed in this parish. The type of the cholera was not of that formidable kind which has heretofore distinguished it; and no doubt if sanitary progress does continue it would become still less and less formidable. There were fifty deaths, however, from cholera, and 175 from diarrhoea. The overcrowding and deficiencies in ventilation in the dwellings of the poorer classes are much dwelt on in this report, together with the practical difficulties in the way of satisfactory amendment:—

"If the amount of cubic space necessary to healthy respiration be allotted for each inmate of a house, how many thousands in this metropolis will find themselves without a home to shelter them? In the poorer and more densely populated districts of St. Marylebone there are numbers of long dreary streets, the houses of which consist of not more than six or eight rooms. For the most part each separate room is tenanted by a separate family; and, in many, the cubic space afforded to each inmate does not exceed 200 cubic feet: in some instances that have come under my notice, it has been less than 100 ft. Now, as every one at all conversant with sanitary subjects well knows that each adult person requires at least from 350 to 400 cubic feet of house-room, some idea may be formed of the extent to which the want of the requirement be granted; and yet every consideration of health and personal safety shows its absolute necessity."

Mill-end, Old-town.—Dr. Corner, like others of his colleagues, feels this to be one of the chief difficulties in the way of sanitary amendment. The new regulations, he observes,—

"Must be carried into effect judiciously and with much tact and discretion: this course has always been my aim, to ensure that the sanitary measures are efficiently carried out, without at the same time creating opposition or annoyance to the owner or occupier by unreasonable or impossible demands. I believe this system has been most effective in staying the progress of diseases by destroying their infectious properties in the places where they had become fixed. Recently, in the west ward of this hamlet, where fever has been very prevalent for several months, I have observed many marked instances of the success of the course pursued, whereas in houses in which such measures had not been adopted the disease continued to extend."

"A labouring man sleeping, or rather narcotizing, with his wife and family in a room allowing from 60 to 150 cubic feet of air to each person, and without the most ordinary provision for ventilation, becomes totally unfitted for his work, and unable, however willing, to bring to his aid sufficient vigour and spirit to attempt to raise himself and family from their condition of poverty, misery, and dependence. In this way the statistics of pauperism are increased."

"I am fully conscious of the difficulties in the way of a speedy and perfect remedy for these evils, but seeing that they are literally the cause of so much disease and death, I think we ought, so far as we may reasonably be expected, to endeavour to mitigate them, and to this end we can do much."

If it be impracticable, in the meantime, to carry out the restrictions as to cubic space which ought to constitute the ideal to be more or less approximated to, according to circumstances, then to supplement shortcomings in this respect the powers of sanitary officers to compel the making of as efficient arrangements for ventilation as possible in bedrooms ought to be very great. Here too, however, another difficulty presents itself, especially in the winter

months. The poor are generally but too ill off as regards warmth of bed and other clothing: hence chiefly their inveterate propensity to stuff up everything in the shape of ventilators whether accidental ones or intentional. Then again, what medical authorities tell us as to the deadly effects of cold on health (especially amongst the ill-fed) must be well considered, and above all else the evils of draughts. To ventilate a room properly without incurring the risk of suffering from draughts, especially in winter, is no easy matter. Still, approximations may be made to a more satisfactory state of matters than as yet exists; and with judgment and great discretion much may be farther done to improve the health of the people even in the most crowded localities till more and better accommodation be supplied to them in future years, as it is earnestly to be hoped it will.

OLD BEWICK, NORTHUMBERLAND.

A SMALL Norman chapel at the foot of a heather-clad hill in the parish of Eglingham, that has long lain in ruins, has been recently restored, and was opened for the celebration of worship on the 4th instant. On the top of the hill there is a Celtic camp, in the form of a semi-circular entrenchment, with a double fosse and vallum, and at the foot, as we have said, lies the pretty little Norman relic in question, as open to the skies and as deserted as the camp of the ancient Britons. All around the country is one vast undulation of hills and moors. The village of Old Bewick is three miles distant from the parish church, and it has long been in contemplation to restore the chapel for the convenience of the inhabitants. As the population in 1851 only numbered 191 souls, it has been a work of time to gather the required funds together. It is about twenty years ago that a report and designs for the restoration were first procured from Mr. Hardwick, who has now carried out the work. The chapel consists of a nave with a chancel which has an apsidal east end. To this has been added a small vestry at the west end of the north side, and a small porch in a corresponding position on the south side. The windows of the north and south sides, and in the apse, are remarkably small: they have been filled with stained glass by Messrs. Clayton & Bell. Those at the west end are somewhat larger and have a small rose window above them. The roofs are open-timbered, and covered with slates. The sittings are of white wood varnished. There is a small stone retabulum at the back of the communion-table. The most pleasing feature of the structure is the beautiful tint which exposure for centuries on the moorland air has given the interior stone-work as well as that generally submitted to external influences. The ornamented north arch into the chancel, and the small second arch over the apse, with the rest of the masonry, have been toned down into a silver-grey colour that is particularly in keeping. On the exterior this effect is not so noticeable, the new slates intruding modern associations. A single bell-turret strides the point of junction between nave and chancel. About 120 persons can be accommodated with seats in this secluded and interesting relic of old times. Such of our readers as may be travelling northwards in these touristic days, and visiting the unique herd of wild cattle in Chillingham Park, will be within a knapsack-walk of Old Bewick; and within sight of other Celtic encampments, specimens of the newly-found inscribed stones, and of a natural cave called Casteranes' Hole, formed by a fissure in a freestone rock which descends to a great depth at an angle of 15 degrees.

THE COURT-YARD OF THE INDIA OFFICE, WESTMINSTER.

THE India Office, as all must know, forms part of the new pile of Government offices fronting Downing-street, St. James's Park, and Charles-street. The main entrance to it is from this latter street. The accompanying engravings illustrate the Court-yard, a rectangle in plan, about 115 ft. in length, and 60 ft. in breadth, which occupies a nearly central position in the building, and affords means of light and air to a large number of the rooms in the north, east, and west sides, and to a portion of the main corridor on the south side.



INNER COURT OF THE INDIA OFFICE.—Part of Upper Story Enlarged.

The general design of the architecture consists of three stories of engaged columns and piers supporting arches; the upper story being much more richly ornamented than the lower stories. On the south side the columns are detached, and are double. Above the third story are a plain frieze, with slabs of red granite, inlaid, and a cornice: this entablature breaks forward over the columns, and has large scroll shields on the projections. The top of the cornice is crowned by a balustrade. The ends are occupied by open loggias, two stories in height, the columns and arches corresponding with those in the main structure. On the ground and first floors the arches are all filled with glass between the piers, excepting on the south side, where the columns are two in depth, and the windows are here fitted to iron stanchions between the columns. The upper story all round has two-light windows, a baluster-looking mullion of rich design separating the lights. The total height from the floor of the court-yard to the top of the balustrade is about 80 ft.

The whole of the work is constructed of Portland stone; the Doric columns and pilasters of the lower story, the Ionic columns and pilasters and the pedestal dies of the second story, being all of Peterhead red granite, with the caps and bases of the columns of red Mansfield stone. The columns of the upper story are of dark grey granite, from the neighbourhood of Aberdeen, with caps and bases of grey Dean Forest stone.

The effect of the architecture is considerably

enhanced by the introduction of this red and grey granite, and further by the frieze of the Doric story being in Della Robbia ware, the ground of which is of a greenish grey, with enrichments of toned white, and the frieze of the Ionic order is partially of tiles and of mosaic, the prevailing colours of which are blue, and shades of yellow and brown. In the spandrels of the arches of the Doric story are moulded fluted discs with red centres, and in those of the Ionic story are panels similar in material and colours to the Della Robbia frieze below, with a fret border of red tesserae.

The cornice of the Corinthian story forms an impost for the arches above. These arches are deeply recessed and coffered, and in them is placed a series of busts of celebrated worthies, both civil and military, connected with the Indian empire, beginning with Admiral Watson and Lord Macartney, and including heroes of recent historical renown, as Havelock, Clyde, and Lawrence. The back-ground of the busts is in each case formed by a large scallop shell with a branch of laurel and oak on either side. The total number of these busts is twenty-eight.

Amongst the architectural ornaments are introduced representations of the fruits and flowers of India.

At the four angles of the court are niches, which are filled with statues: the four on the ground-floor are of Marquis Hastings, Minto, Amherst, and Wellesley, sculptured by Mr. Protat: those on the first-floor, immediately above the others,

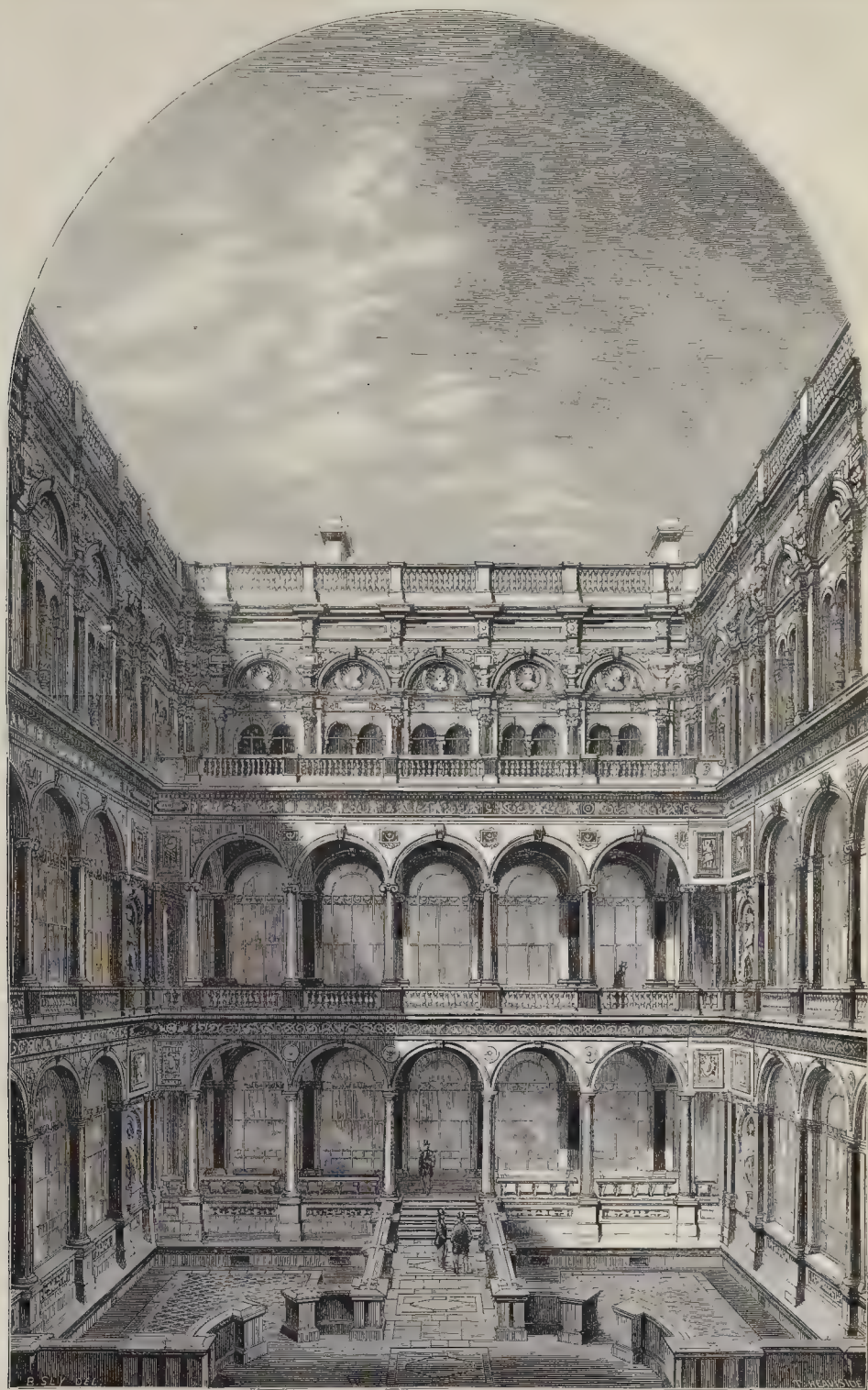
are Cornwallis and Clive, by Mr. Nicholls; and Warren Hastings and Teignmouth by the hand of Mr. Phyllers, who has also produced the four sculptured panels in high relief representing striking incidents in Indian history, and the shields of arms near them.

The loggia on both the ground and first floors have tessellated pavements of Maw's tiles, by Messrs. Simpson & Sons, of the Strand, by whom also the mosaic frieze was executed. The access to these is through four arched openings on each floor, richly decorated with carving, and in the jambs and arches are arabesque panels in low relief.

The court-yard is occupied on the basement-story by record-rooms, above which is a floor of tiles. A terrace-walk crosses the centre of the court-yard, both longitudinally and transversely.

The court-yard was used, it will be remembered, as a ball-room on the occasion of the entertainment given to the Sultan by the Indian Government, when its merits were brought out very prominently under the aspect of interior decoration.

The Della Robbia frieze was produced by Messrs. Minton, Hollins, & Co. Mr. Earp executed the carving, and Mr. Protat modelled the busts in the upper story. The builders were Messrs. George Smith & Co., of Pimlico. The whole of this, as well as the interior of the India Office generally, has been executed from the designs of Mr. M. Digby Wyatt, under the superintendence of Mr. Daniel Ruddle, the clerk of the works.



INNER COURT OF THE INDIA OFFICE, WESTMINSTER.—MR. M. DIGBY WYATT, ARCHITECT

INTERIOR OF PRESTON TOWN HALL.

THE interior of the new town-hall at Preston, recently opened, displays a considerable amount of decoration. The entrance-hall, which is on a level with the ground-floor, is approached by a triple archway. The ceiling is composed of highly decorated cast-iron girders, which support the stone landing above. The flooring is laid on tiles, 12 in. square, of Hoptonwood and red Mansfield stone, alternately laid. The grand staircase turns to the right and left, and after passing up a flight of steps the landing approaching the Guildhall is reached. Looking westward from this point there is observed on the wall which divides the staircase from the main portion of the building, an allegorical representation of Industry, having on the left hand an allegorical illustration of Manufactures, and on the right an allegorical illustration of Commerce. Beneath the allegorical representations are full-length portraits of Caxton, Columbus, Raleigh, Linneus, Arkwright, Watt, Sir R. Peel, Dalton, George Stephenson, and Wheatstone, each bearing a device. Leaving the grand staircase by the east, the great hall is approached. The room is 82 ft. 6 in. by 54 ft. 6 in.* The height from the floor to the apex of the roof is 48 ft. There is a spacious gallery on the south side, approached by a corridor running along the east side. The gallery is 69 ft. long and 15 ft. wide; and it is calculated that, exclusive of the accommodation for performers and others, about 1,100 persons can be seated in the room. At each gable there is a circular window. The east window contains seven compartments, and in the centre is one bearing the arms of the county of Lancaster. There are also emblazonments of the arms of Preston, Liverpool, Manchester, Clitheroe, Wigan, and Lancaster. The west window has also seven compartments. The centre bears the arms of the United Kingdom, and surrounding it are the arms of England, Ireland, and Scotland, and the first Lancastrian sovereigns,—Henry IV., Henry V., and Henry VI. The other windows are all formed of stained glass, each window having alternately a medallion containing the arms of the borough of Preston, and the red rose of Lancaster. In the niches above the large windows are emblazoned the arms of Blackburn, Bolton, Burnley, Rochdale, Stockport, Oldham, Salford, and Warrington. A circular opening on the west side are representations of the heads of Henry IV., Henry V., and Henry VI. Beneath the spring of the roof are portraits of the following celebrities:—Purcell, Mozart, Handel, Beethoven, Mendelssohn, Faraday, Humboldt, Sir Humphrey Davy, Newton, Bacon, Herschell, Clive, Cook, Sir J. Franklin, Dr. Livingstone, Nelson, Wellington, Michelangelo, Raffaele, Titian, Reynolds, Flaxman, Wren, Gibbon, Goldsmith, Dr. Johnson, Addison, Macaulay, Chaucer, Shakespeare, Milton, Scott, Byron, Burns, Hunter, Harvey, Currier. On the west side, within the space devoted to the gallery, are also the shields and names of several benefactors to the town. The gallery is divided from the main roof by an arcade of four bays. The front of the gallery is open. The ceiling is supported by five pairs of principals, which are moulded, stained, and varnished. The ceiling of the main part of the hall is divided into 120 panels with carved ribs. The roof is supported on the south side by fluted iron columns. The orchestra is on the north side. On leaving the Guildhall by the principal entrance, the retiring-rooms for ladies and for gentlemen are passed, and on the right is a room to be devoted to committees connected with the Town Council. The lobby running between this room and the landing is richly vaulted. On the left, at the north end of the edifice, is the mayor's parlour, containing the arms of the present mayor (Mr. Birley), the arms of the Guild mayor (Mr. Parker), and the arms of the borough, which are carved on the stone fireplace. In the lobby approaching the council chamber the vaulted ceiling is filled in with Longridge blue stone and Bath stone alternately. At the north-eastern angle, and nearly facing the mayor's parlour, is the council chamber, which is 35 ft. long, 25 ft. broad, and 16 ft. 6 in. high. It is lighted by five two-light windows. The cornice consists of wood; and immediately under it, on the right side, is a coloured band, containing on shields the arms of all the known Guild mayors of the borough, from 1328 to 1862, inclusive. Between each shield are three roses, representing the historic rose of Lancaster, with the word "Lancastria" on the twisted

riband underneath. On the left side is a similar number of vacant shields, intended for the arms of future Guild mayors. The chimney-piece consists of carved red Mansfield stone, supported by Rouge Royal marble pillars, and surmounted by a shelf of Irish green marble. In the centre of the carved work are the borough arms. Leaving the council chamber, and proceeding in a southerly direction, a large committee-room is approached, measuring 26 ft. by 21 ft., lighted by two two-light square-headed windows. The chimney-piece is a handsome one, and bears at each side the borough arms. The vestibule, which is immediately opposite the entrance to the Guild-hall, has a floor of inlaid marble, variously coloured. Over the doorway leading to the Guild-hall is a sculptured allegorical representation of Music; over the gentlemen's retiring-room is a representation of Painting; over the ladies' retiring-room, Sculpture; and over the committee-room, Architecture. Over the door of the council chamber the borough arms are sculptured. The sky-light over the vestibule is filled with various heraldic shields; and the sky-light over the landing contains the arms of the mayors of the borough since the passing of the Municipal Reform Act. On the walls of the vestibules are representations of Peace and War, on land and at sea; and, running along the ceiling, is a representation of one of the Guild festivals. Beneath the mayor's parlour, on the first story, is the town clerk's office, with accommodation for his clerks adjoining. Under the council chamber is the office of the borough treasurer, and he has also a room for his clerks. The ground-floor contains the Merchants' Exchange. The ceiling is vaulted, and is supported by eight large polished granite pillars, with carved capitals in Penswick stone. The responds to the granite pillars are sixteen in number, and are formed of Devonshire marble. The Exchange also contains two hooded chimney-pieces, very elaborately carved, and containing in the centre the borough arms, supported by angels bearing shields, and also by small pillars of Rouge Royal marble.

TOWN v. COUNTRY.

SIR,—I was very much struck with a little passage of criticism in the *Builder* of September 18th. A North-Northamptonshire rector, whom you properly corrected, was proved guilty and convicted, in the first place, of the sin of omission in showing himself ignorant of the author's very name, and, secondly, of the sin of commission in mangling and mis-quoting the beautiful and highly-suggestive line in Cowper,—

"God made the country, and man made the town."

Being struck with your criticism, I fell a thinking on the subject; and soon began to remember that I had somewhere read an elaborate argument against the poet's aphorism regarded as a philosophical truth. In fact, I remembered to have seen it laid down somewhere as an indisputable proposition, that God made the town as well as the country! I could not, at the moment, call to mind the author's name; nor could I recollect the precise phraseology in which it was expressed. Indeed, I could not lay my hands on the passage for several days; and I may as well tell you the process of reasoning by which I ultimately discovered it; for it may be useful to other people of short or failing memory like myself.

Being kept awake one night with the violence of the equinoctial gales, this paradox (for such I more than suspected it to be) came, like an unbidden guest, into "the chamber of my inmost thoughts." Who was its author? Where could I have read it? I could not tell. After a long taxing of my fugitive and somewhat treacherous memory, I hit at length on the idea of writing out the problem by the old process of syllogistic reasoning, which I proceeded to do as follows. I do not know that the method is strictly accurate; but it did the business:—

Proposition I.—

"God made the country,
Man made the town."—Cowper.

These conjoined propositions I regarded as indisputable.

Proposition II.—

"God made the country,
God made the town."—Unknown.

First premiss admitted; second, *quære*.

Argument.—If God made the town (*universally*) He made every part of the town

(*particularibus*). Therefore God made Hound-ditch or Bethnal-green—which is absurd.

Proposition III.—Author's (unknown) meaning must have been that God, *through man*, made the town.

Argument.—But God, through man, also made part of the country (fields, gardens, trees). Inconsequential, therefore, and incomplete.

Proposition IV.—Author's (unknown) meaning must have been that God made man, and man made the town.

Such, I supposed, must have been the identical language. And now for the author. On the principle of excluded middle this proposition signifies that God is the maker of the town,—is responsible for the errors of the town,—in one word, that God made Bethnal Green. But no account is taken of man's responsibility and free-will. Accordingly, it is simply a distorted phase of the doctrine of inevitable necessity, of which there is an old, old illustration in existence. ["The woman that *Thou* gavest me," &c., Gen. iii. 12.] I then proceeded upon the exhaustive method:—

Proposition V. No English author could have written this.

Proposition VI. No German author would.

Proposition VII. It must, therefore, have been a French author.

Argument.—Voltaire? No. D'Alembert? No. Rousseau? Very likely.

But Rousseau died in 17—, and Cowper published his "Task" in 1782. It must be, then, a modern writer of his school, or the schools which sprang from his philosophy.

Argument.—A. The Pantisocratist. B. The Egalitaires. C. The Socialistes. Probably Fourier.

Proposition VIII.—That Fourier was in all probability the author of the dogma that God made man and man made the town. (See "*Le Phalanctère*").

At this stage of the argument I fell asleep. Next morning I discovered, not that Fourier or the French socialists had evolved from the tremendous depths of their perverted consciousness this formidable dogma; but, to my great surprise and astonishment, that it had sprung—fully armed like Minerva from the forehead of Jove—from the fertile imagination of a Scotch political economist! My deductions, it is proper to state, were to some extent correct with regard to the school from which it had emanated. For, while searching in a volume in which, as I now recollect, were discussed certain doctrines of the French socialists, I stumbled across the very passage I wanted. You will find it in Mr. Stirling's translation of Frederick Bastiat's well-known "*Harmonies of Political Economy*"* (at p. 36 of the Introduction). I have ventured to transcribe it for you literally, and I have quoted a few lines of the context in order to render the passage intelligible:—

"Bastiat was not one of those pessimists who persist in looking at the existing fabric of society as if it were some ill-made, ill-going clock, requiring constantly to be wound up, and to have its springs adjusted, its wheels lubricated, and its hands altered and set right. Far from this, he regarded society as a self-acting, self-regulating mechanism, bearing the stamp of the Divine hand by which it was constructed, and subject to laws and checks not less wise, not less immutable, not less trustworthy than the laws which govern the inanimate and material world.

"God made the country, but man made the towns" (*sic in originals*), was the exclamation of an amiable but a morbid poet. He might as well have said, 'God made the blossom, but bees made the comb.' Reason asks, Who, then, made the bees? Who made man, with all his noble instincts, and admirable inventive reasoning and reflective faculties?

A manlier, because a juster, philosophy enabled Bastiat rather to say with Edmund Burke, 'Art is man's nature.' Looking at the existing fabric and mechanism of society, and the beautiful harmony of the economic laws which regulate it, he could see nothing to warrant constant legislative tampering with the affairs of trade. He had faith in moral and material progress under the Empire of Freedom. Sweeping away all Socialist Utopias and artificial systems of social organization, he pointed to society as it exists, and exclaimed, '*Digitus Dei est hic*.' Unlike the sickly poet, he believed that the same good and wise Being who created both town and country upholds and sustains them both; and

* The Exchange-room is 82 ft. 6 in. by 39 ft.

* Svo. London: John Murray. 1863.

that the laws of value and exchange, left to their own free and beneficent action, are as much His ordinance as the laws of motion, attraction, or chemical affinity."

I will not take up more of your valuable space with pointing out the fallacies which underlie this argument. When the astute author has got the length of comprehending the difference between the instincts of bees and the reason of mankind, I shall then condescend to break a lance with him in defence of the fine philosophy and high-toned morality of Cowper. In the meantime I conclude by quoting, with your permission, a few more lines of the noble passage which, in my opinion, deserves to be written in letters of gold:—

"God made the country and man made the town:
What wonder then that health and virtue, gifts
That can alone make sweet the bitter draught
That life holds out to all, should most abound,
And least be threaten'd in the fields and groves?"
The Task, book ii.
RUS.

THE RAILWAY COMMISSION FOR IRELAND.

A CORRESPONDENT writes,—I suppose you observed the appointment of the Railway Commission for Ireland. There are some good names amongst them, but it appears to me there is no representative of the cheap railway system alluded to in your recent paper on the subject. I think on all these commissions all interests should be represented, otherwise it will be all one-sided, and not satisfy modern requirements; and surely those men who have helped to get our English system of railways into their present fix are not exactly the men to help the Irish out of theirs. The present Government have been tolerably fortunate in their selection of men for their public commissions; but I think in this instance they have omitted an essential element of the inquiry; as I presume it is the intention to bolster up that which has been shown to be utterly rotten and unworthy, as dividends prove.

SOUTHWARK PARK.

SIR,—I regret very much that you should be misinformed as to the progress of New Southwark Park. I have seen the same statement elsewhere, and took no notice of it, but, when such a paragraph becomes inserted (in all good faith) in the *Builder*, it is a very different thing. Then it acquires importance.

The park is not "rapidly approaching completion;" it is not much more than begun. No "gardeners and labourers are employed in laying out the flower-beds and walks, and in transplanting young trees, evergreens, and flowering shrubs." So far from its being true that "the walls are completed, and there is a bit at the side of the partially-formed road, even commenced," so far from its being true that "it is expected the park will be opened to the public on or about Christmas," it is, on the contrary, expected that two or three Christmases must come before that "opening" occurs.

It has been publicly stated that "the works of the Southern Embankment are nearly completed." You are aware that the total contract for that embankment is £300,000; and, by the engineer's report to the Metropolitan Board, the progress of that work to the last instant was (including 23,800 ft. for materials on the ground) 139,790 ft., leaving 170,000 ft. to do!

My heart is so set on the rapid improvement of London, that I could not allow the above-mentioned paragraph about Southwark Park to stand in the *Builder* without a word.

ARQUE LAURE NIEL.

CONCRETE WALLING AND THE BUILDING ACT.

SIR,—There is something so questionable in the quasi-authoritative assertion of the Camberwell District Surveyor that concrete walling is not properly bonded under the meaning of the Building Act, that, perhaps, I may be allowed a little more space in examining a conclusion which, if endorsed, must exclude from the whole metropolitan district a material elsewhere successfully adopted in solving the problem of erecting economical, healthy, and durable habitations for the labouring classes.

The very word concrete, importing a mass formed by concretion, or the coalition of separate parts, is significant of its derivation from the essential fact of the materials composing it being efficiently bonded or connected. "In masonry or brickwork," Gwilt says, "bond is that disposition of stones or bricks which prevents the vertical joints falling over one another." Concrete being so homogeneous in texture that there are no joints, its close bond can scarcely be considered inferior, as such, to that of masonry or brickwork. Then comes the question of solidity, or how far the respective materials resist crushing and hold together. On this point, recent impartial and conclusive testimony may be cited. In his report on healthy and economical dwellings, written for the English Commissioners of the Paris Exhibition, Mr. Edwin Chadwick says,—"It is proved that with a proportion of from one-fifth to one-eighth of Portland cement to sand, gravel, or small stone, a wall may be made one-third stronger than common brickwork; or, with concrete, a wall may be made of equal strength with one-third the thickness of

common brickwork, and of equal thickness about one-half the price. The common brick absorbs about 21 per cent. of water. The concrete wall does not absorb one-quarter that quantity." Further, he remarks that the principle of concrete construction is that "everything is made, as it were, a monolith." Yet such, we are now gravely informed, is not properly bonded, although the concrete strength, as in some concretes manufactured by M. Coignet, is often something enormous. Even flat roofs of wide span are formed of concrete, without what Mr. Chadwick elsewhere notes, "the insecurity of numerous mere common mortar joints;" and the workmen's dwellings erected by the Emperor of the French, with others in this country, practically exemplify the value of the system.

Next, turning to the Building Act, as you, sir, who had something to tell the Institute about concrete thirty years ago, and can speak officially on the Act, indicate, "the construction of concrete houses is not prevented by it." One section provides that,—"Every wall constructed of brick, stone, or other similar substances, shall be properly bonded and solidly put together with mortar or cement." That concrete walls fulfil these conditions appears manifest from Mr. Chadwick's report. If they are out of the Act, it must surely be because their bond is more effectual than that contemplated in it. "The thickness of any wall of a dwelling-house, if built of materials other than such bricks as aforesaid, shall be deemed to be sufficient if made of the thickness required by the table, or of less thickness as may be approved by the Metropolitan Board." In this latter case alone, I submit, when it is proposed, on account of their superior strength, to erect concrete walls thinner than the thickness prescribed for brickwork, is there real occasion to apply at all to the Board? If the walls are the tabulated thickness, or one-third more if horizontal bedding is urged; and not under sect. 66, until better evidence is adduced to class them with "buildings to which the rules of the Act do not apply."

But if, after all, it is true that, notwithstanding the severe tests of strength concrete has successfully sustained, it cannot be even "said to be properly bonded" in the sense intended by the legislature, but, on the other hand, undefined both by the officer who insists on "strict technical" purport and in the Act itself, then it seems, indeed, clear that the fulness of time has arrived for modifying or abrogating an enactment which admits of such misapprehension and mystification, and is so unsuited to the legitimate requirements of the age.

E. L. TARDIEU.

CLOYNE CATHEDRAL COMPETITION.

SIR,—A brief recapitulation of facts, without any comment on our part, will be a sufficient answer to the lengthy communication from Messrs. McCarthy and Goldie on the above subject, which appeared in your journal of the 11th inst.

Three gentlemen are invited to enter a competition on certain stated conditions. Two of the gentlemen thus invited, without consulting the third, conclude for the purpose of effecting a total alteration of the terms of the said competition. They endeavour to impose upon the committee a set of "amended conditions," drawn up and signed by themselves, and then send them to the third competitor for signature,—having, however, previously done their utmost to secure two things.

1st. That these "amended conditions" should be binding on the third competitor, whether he signed them or not.

2nd. That his refusal to sign would make a bad impression on the committee.

The third competitor (1), not recognising the right of the other two gentlemen to interfere in the manner they had done, and (2) seeing no reason for departing from the original conditions, which he had already unreservedly accepted, refused to sign.

At last, after repeated but ineffectual efforts on the part of the coalition to force their "amended conditions" upon the committee, and obtain the signature of the third competitor thereto, the committee decided to reject the two dissatisfied competitors either to accept or decline the competition on the original terms (with a minor alteration). The two still attempt to enforce their amendments, and therefore the third competitor is absolutely chosen.

It is the old story of the "biter bit," or "too clever by half."

FUGIN & ASHLEY.

DARLINGTON WORKHOUSE COMPETITION.

SIR,—You have done the public so much good by your publications on the vexed subject of competitions, that I trust you will think fit to insert my experience in the above. A year ago the guardians issued an advertisement for designs for converting their notoriously badly-arranged poorhouse into a properly classified establishment for 250 inmates. The terms of the advertisement were, however, so unreasonable, that the guardians, under protest, withdrew their advertisement, and accepted to receive designs under fresh conditions, which, though poor enough, comprehended the payment of the successful architect 20k. If he should not be employed to carry out the work. As I was engaged at the time converting the poorhouse of a neighbouring union into a properly classified house, and at the same time the guardian's endowment of great courtesy and proper professional treatment from the guardians of that union, I resolved to treat myself to the mercy of the Darlington guardians. I therefore went to the expense of securing the necessary plans, and made out necessary elaborate plans. Previously to doing this I wrote to the clerk to ascertain whether estimates were required, because I had determined not to complete it if he had to incur the risk of its not being adopted. Having, on the 28th of October, last year, received a reply from the clerk that no estimate was required, I sent my designs. After this, on the 16th of November, I received a letter from the clerk, asking me to submit the amount of cost I estimated the alterations and additions to the workhouse, according to my plan. In the full faith that the preparation of my estimate thus became a distinct transaction, not fettered by any condition, and that I should be paid for preparing it, I went carefully into the matter, and duly forwarded it. From that time to this I have not heard of my plan, nor any intimation of the intention of the guardians relating to them, or my estimate. To my great surprise, I now find that the guardians

have issued advertisements for fresh designs,—this time for an entirely new house, on a new site. My unfortunate experience, therefore, is that the Darlington guardians have kept my designs and estimate nearly a year, and have entered into fresh arrangements, without informing me of their intentions as to my plans or estimates.

I have sent an application for my designs to be returned and claimed payment for the estimate.

AN OLD SUBSCRIBER.

FROM MELBOURNE.

ST. PHILLIP'S CHURCH, East Collingwood, has been consecrated. The foundation stone was laid by Sir Charles Darling three years ago. The church is built in the Gothic style, and, exclusive of chancel and tower, which are not yet added, costs 2,414l. 3s. Mr. Lloyd Taylor is the architect. It at present accommodates 300, and when completed will hold double that number.

The new Independent Church in Collins-street East has been opened for divine service. The foundation stone of a Roman Catholic church has been laid at Richmond. The edifice is dedicated to St. Ignatius. It will be Gothic in its style of architecture, and will consist of a chancel, two aisles, and Lady Chapel, and have a tower and spire. The ground measurement according to the plan is 140 ft. by 60 ft. It will be built of bluestone with freestone dressings.

The relaying of the foundation stone of the Ballarat monument to the explorers Burke, Wills, and Gray, has been performed by Mr. Thomas Davey, mayor of the borough. The following document was placed with the coins, &c. :—

"28th August, 1867. Burke and Wills Monument.—The Committee of the Burke and Wills Monument having failed to carry out the original design by Mr. Canute Anderson, the treasurer of the committee handed over to the borough council the balance of the funds in hand. The borough council decided to supplement the sum and to have a drinking-fountain in commemoration of the memories of the unfortunate explorers. The design was prepared by Mr. Canute Anderson. The contractors are Messrs. Murray & Broome for the stonework, and Messrs. Walker & Co. for the cast-iron work. The bottle containing the original coins and documents was replaced by the mayor of the borough, Thomas Davey, esq., on Monday, the 26th day of August."

The Bendigo Gas Company have declared a 5 per cent. dividend (per annum); the Daylesford, their usual dividend of 12½ per cent.; the Williamstown, a 10 per cent. dividend; and the Geelong, one of 10 per cent.

A LITTLE DIFFERENCE AT SOUTH HAYLING.

TENDERS have been delivered by seven builders for the erection of the West Town Hotel, South Hayling, Hants, Mr. F. Whitaker, architect; and here is a list of them:—

Fish	2,264
Perry	2,060
Welch	1,820
Lambert	1,695
Tegg	1,675
Strieder	1,322
Taylor, H. (accepted)	845

And a pretty little it is; the highest being about 140 per cent. above the lowest: 845l. one, 2,064l. the other; and this difference, it will be observed, is not the result of an accidental slip, because, mark, the amount of the next tender but 4l. below it. The amount of the lowest tender is not so well backed up; but still more than 50 per cent. must be added to the lowest tender but one to bring it up to the figure of the highest. Will any one favour us with an explanation? Such differences, and they too often occur now-a-days, are very unsatisfactory, not to say disreputable.

LEAMINGTON SEWAGE.

THE engineer in charge of the sewage works of Leamington, Mr. T. D. Barry, writes to us denying the correctness of the statement made in our columns (p. 753) that the diversion of the waters of the Leam have shown that the filtration works fail to render the town sewage innocuous. He says,—

"In the river had a considerable quantity of black mud been found; and this deposit was known to have existed long before the filtration works were properly in operation, and occurred before any reliable mode of filtration was adopted, so that solid matter for a long time found its way into the river. So far from the bed of the river proving that our works are faulty, it proves the very reverse; as it plainly shows that, when in time past black deposits had been made, now a thick superstratum of road-silt, gravel, and sand (in some parts 2 ft. deep)

the driving process was continued. By a mishap, part of the pipe fell forward, and cut open the head of one of the workmen, but he was not seriously hurt. When the depth reached was 20 ft., there was a breakage of the pipe. No water had been obtained, and the attempt had to be laid aside for a few days, until more pipes can be obtained from Manchester."

A person wishing to have a well sunk, has to answer three questions—"At what depth from surface is water usually found in the district? What is the nature of the strata for that depth? In what kind of strata is the water?"

On the Heathville Estate, at the foot of the bank, where the experiment was made, Mr. Castree recently had a well sunk 16½ ft. into the sand, and found an excellent supply of pure water. To confirm the assurance of the existence of abundance of water, Mr. Castree, after the breakage on the bank, employed the agent to sink a tube-well on the estate. The boring was begun at half-past four, and by five o'clock, says our authority, "the tube had gone in 15 ft. 9 in., and the plumb-line showed a water depth of 5 ft. 9 in.: an apparently inexhaustible supply was bubbling up from the gravel." The agent showed the copy of an order from Colonel Simmons, of the Royal Engineers, for the apparatus for fifty wells to be sunk through the arid Abyssinian surface for the supply of the English force. The inventor was recently having wells sunk at Aldershot. Wells have also been sunk at Cheltenham.

CHURCH-BUILDING NEWS.

Arksey.—It has been determined to restore the church here, and Mr. Scott has reported to the vicar on the subject. Subscriptions amounting to 1,200l. have been paid, or promised, towards carrying out the work, but a much larger sum will be required.

Hinton Waldrist.—The parish church has been re-opened, after being restored. The gallery at the west end has been pulled down, the roof raised to its former pitch, and, instead of having to go down three steps into the church, it is now on a level with the ground without. The whitewash and daubing outside have been washed off and the stones pointed, and low seats put in the place of high-backed pews.

Egloskayle.—The parish church of Egloskayle, Wadebridge, having fallen into a state of decay, the parishioners raised a fund for its restoration. The contractor for the work was Mr. William May, of Pool, builder, and the building has recently been re-opened. The contract was for 1,400l. The tower and porch are to be restored.

St. Sennen, Land's End.—The church of St. Sennen has been re-opened for divine service after restoration. Two years since the rector, on the completion of some chancel repairs, found how decayed was the state, and unsightly the appearance, of the north transept and south aisle. Assisted by his parishioners, the church is now restored. The plans for the restoration were by Mr. J. P. St. Aubyn; and the work has been executed by Messrs. Carah & Edwards, of Crown, at a cost of 800l. The church now consists of a nave, an aisle, and a north transept—the aisle 50 ft. long, the nave 60 ft., and the transept 14 ft. The roof is open. The seats will accommodate 200 persons. They are entirely free.

Gamblesby (Addingham, Cumberland).—The chief stone of a new church has been laid in this village by the Bishop of Carlisle. The style of architecture is Early Gothic, and the plan consists of a nave about 42 ft. long by 18 ft. wide; with an apsidal chancel, and a small transept on the south side, forming a vestry. The west end is surmounted by a wooden spirelet about 50 ft. in height. The interior has an open roof and open sittings, and affords accommodation for about 100 persons. The church will be built with new red sandstone. The architects are Messrs. Cory & Ferguson, of Carlisle; the contractors for masonry, Messrs. A. Watson & Sons, Kirkoswald; joiner, Mr. Pollock, Penrith; plumbing, glazing, &c., Mr. W. C. Porter, Penrith; slating, Mr. Watson, Penrith.

Lincoln.—The church of St. Peter at Arches, which has been closed for two months, has been re-opened for divine service. The part to which special attention has been given is the galleries, in which 260 sittings are kept free. These galleries have been repaired and painted. In addition to these and other practical and useful works, an attempt has been made to bring out the few architectural features the church possesses. This has been done by distempering the arches in coloured patterns, and picking out the

few mouldings which exist. The columns, which have never received a finished face, have been tinted and "flatted." An attempt has also been made to make the chancel painting contribute to the improved cheerfulness of the church. The cost of executing the whole of the works has been 250l.

Selmeaton.—The ancient church of Selmeaton, after having been completely restored, or rather almost entirely re-built, has been re-opened. About eighteen months since portions of the building which were condemned were demolished, and the restoration commenced, the designs being furnished by Mr. Christian, of London, architect, and the contract undertaken by Messrs. Avis, of Hastings. The style of the old church, one of that kind so common throughout the wealth of Sussex, has been strictly followed. The stained-glass windows around the aisle are all memorials. The north window in the nave has been erected as a thank-offering by the patients of Dr. Skinner, of Selmeaton. Another, in the east, has been put in by the schoolfellows of the vicar; while an inscription to a three-light window on the south side states that it has been placed there to the memory of children of Nathaniel and Harriet Blaker, of Tilton. There are other smaller ones put up at the expense of various friends of the church. The tower has been re-built, and the chimneys therein are arranged on a new principle—worked easily by means of a handle—arranged by Mr. J. Murray, jun., of St. Leonard's, and the same as that in use at Westminster. The wood-carving has been executed by Mr. Walter Avis, of Selmeaton; the iron-work by Messrs. Skidmore, of Coventry, and Mason & Filmer, of Guildford. The cost of the whole re-building has been 2,500l.

Weston (Herts.).—The parish church of Weston has been re-opened for public worship, after passing through the process of repair and restoration. The foundations of the tower had given way, owing to some coffins having been inserted under the south-west pier; and to the decay of courses of wooden slabs, which had been built at intervals nearly through the whole thickness of the walls of the tower, and which had probably formed the bottoms of the boxes in which the flint-work was built, the sides only having been removed. The walls had also become quite disintegrated, from numerous settlements; besides being out of the upright. This made it necessary to rebuild the tower; but owing to the stone-work of the Norman piers being of very hard stone (Barnack rag), it was found possible to use them again, and they were all marked, and have been rebuilt in their old places, thus leaving this specimen of Norman architecture unaltered. Of the five bells, one has been recast; and all the peel re-hung. The interior of the church has been re-paved and re-seated, with open benches of polished yellow deal. The south aisle has been roofed, and the whole of the church, except the chancel and nave roof, restored. Arrangements have also been made for heating the church with hot water. The works have been carried out under the superintendence of Mr. Robert Heskeith, of London, architect. The builder employed was Mr. James Hayward, of London. The cost of the restoration slightly exceeds 2,000l., of which Mr. Robert Pryor, we understand, contributed 1,500l.

SCHOOL-BUILDING NEWS.

Gateshead.—The building of the Gateshead Ragged or Abbot Memorial Schools is now rapidly progressing, and the chief-stone has been formally laid. The site is an open piece of ground to the south of Catherine-terrace, and facing Durham-road. The plan of Mr. Swan, of Newcastle-upon-Tyne, has been accepted; and the building has been contracted for by Messrs. N. & K. Reid, of Newcastle. The structure will be of a bright red brick, and the style Gothic. The outside walls are double, so as to allow a space between the four bricks, which comprise the thickness, to prevent damp. The building will be three stories, two only being accessible from the front. The basement floor will be the only one into which entrance can be had from behind, on account of the sloping nature of the ground, and will comprise at the extreme south side a large workroom, 58 ft. 5 in. by 24 ft. 8 in. On the northward of that are several workrooms, including a tailors' room, a printers' room (17 ft.), a general work-store; and also, at the north side, on the same floor, is a large drying-shed, 28 ft. in. by 22 ft.; a laundry,

kitchen, &c. Proceeding eastward on the same floor are the lavatories, baths, and large wash-shed, divided by a large wall for the males and females. A covered corridor runs in the same direction to the closets and coal-cellars. The main floor is the principal part of the building. At the south end there is the boys' school-room, 58 ft. 5 in. by 22 ft., standing directly above the general work-room. Next to this room there is a large class-room, 28 ft. 2 in. by 16 ft. 3 in.; and another printers' room. Dividing the boys and the girls' side of the building are the official apartments. The large dining-hall, to the east measures 50 ft. by 27 ft. Northward, on the same floor, are the girls' school-room (same size as the boys'); also a class-room (same size as the boys'); The ventilation and lighting of this flat have been especially considered. The dormitory floor is the third and highest story. The corridor running through the building are lofty, and are 6 ft. wide. The front entrance will be by a rise of stairs. Behind the building is a large open space for gardening.

Sheffield.—The chief-stone of the new School and Club Rooms, of St. Paul's parish, at the junction of Cross Barges-street and Cambridge-street, has been laid. The new building will occupy a superficial area of about 650 yards. The elevation will be plain. There will be upon the ground-floor a boys' school, 52 ft. by 42 ft. and three class-rooms, respectively 17 ft. 6 in. by 19 ft., 29 ft. by 19 ft., and 29 ft. by 14 ft. Above the boys' school will be a girls' school of the same dimensions, and three rooms, respectively 26 ft. by 19 ft., 28 ft. by 19 ft., and 29 ft. by 14 ft. The girls' school will have a gallery, 26 ft. by 10 ft. There will be an occasional room in the roof. The girls' school and one class-room will be contrived so as to form one room when required, as for services, &c. The architect is Mr. H. D. Lomas; and the masonry has been contracted for by Mr. Butler; and the joinery work by Messrs. Badger & Holmes.

STAINED GLASS.

St. Peter's, Newcastle.—Two stained-glass windows have just been erected in this church. That at the west end has been erected as a memorial of the late Rev. Wm. Dodd, M.A., who was for many years the incumbent of St. Andrew's Church, in this town, and through whose exertions St. Peter's Church was built. The window is in the Decorated style of architecture, and consists of four lights. The subjects introduced in the upper portion of the window are the baptism of our Lord, and the baptism of the Eunuch by St. Philip; and in the base or lower portion, the subjects are our Lord calling Peter, James, and John to be his disciples, and our Lord's charge to St. Peter. The window and brass were from the establishment of Messrs. Heaton, Butler, & Bayne, of London. The other window, similar in architecture, consisting of three lights, has been erected as a memorial of the late Mrs. Abbot. The subject is taken from the ninth chapter of the Acts of the Apostles, and represents Tabitha or Dorcas. The latter window is from the establishment of Mr. W. Wailes, of Newcastle.

Ely Cathedral.—A new window has been added to the stained glass of this cathedral. It is put up in memory of Mr. Richard Freeman who died about a year ago. He was well known as a builder, and executed, under the superintendence of Mr. Scott, a great deal of the work lately carried on there. The subject represented is the purchase of the cave of Machpelah. The left compartment represents the death of Sarah, her son Isaac apparently standing by her bedside. The centre contains a representation of the purchase of the cave of Machpelah from the sons of Heth, in whose presence Abraham is weighing out the purchase-money of 400 shekels of silver. The right compartment represents the burial of Abraham, who is borne on a bier into the cave; the name Machpelah being written over the tomb. The window was designed and executed by Mr. Freedy, architect. The whole of the windows of the north aisle are now filled with stained glass, representing various Old Testament subjects.

St. Mary's, Oxford.—A stained-glass window has been erected in the north side of this church, in memory of the Rev. Charles Marriott, B.D., formerly fellow of Oriel College, and for many years vicar of the parish of St. Mary, the Virgin, who died in 1858. The window, which was executed by Messrs. Hardman, of

Birmingham, represents the patriarchs and other scriptural subjects. It is contemplated to erect another window, aided by a fund lent by the late Mr. Bartley for that purpose.

*Aston Old Church (near Birmingham).—*A memorial window has just been completed and fixed in this church, executed by Mr. Holland, of Warwick, and containing two openings, with the subjects of Visiting the Sick, and Our Saviour healing the Lame, Halt, and Blind, under canopies, with inscription at bottom, and angel in tracery bearing a scroll.

Books Received.

We have before us a little heap of books, mostly for boys and girls, recently published by Messrs. George Routledge & Sons.—Routledge's Every Boy's Annual, "Barford Bridge," "The Handbook of Football," "Original Poems, illustrated," three or four sixpenny coloured toy-books for children (such as "The Multiplication Table in Verse," and "Old King Cole"). Every Boy's Annual," hasatory by Mrs. H. Wood, called the Orville College Boys, and a capital series of papers by the Rev. J. G. Wood, headed the Waves and their Innates, illustrated, as are many of the other contributions. It makes an excellent present-book for boys. "Barford Bridge; or, Schoolboy Trials," by the Rev. H. J. Adams, is also a remarkably interesting book, of its class, inculcating right feelings, without preaching, and carrying the reader, whether he be big or little, on to the end with undiminished attention. It is, moreover, a handsome little volume, prettily illustrated. To young readers the title, "Original Poems" will convey the impression of something new, but their elders, looking through the volume, will recollect that these poems were published years ago under the same title, written, if we mistake not, by Jane and E. Taylor, and will be sent back to the days of their childhood by sight of "Little Ann and her Mother," "The Red-Breast's Petition," and "Honest Old Tray." The present edition is full of charming illustrations, and is elegantly bound. Amongst the books sent by Messrs. Routledge is a smart paper-covered edition of "The Life and Opinions of Sir Isaac Newton," for sixpence; a book, we need scarcely say, not for children,—full of humour, wisdom, charming touches, and thrilling allusions. We have ourselves no great respect for the Rev. Lawrence Sterne, however much we may prize detached portions of his writings. The *Broadway* for November is in the same packet. We take from it a few notes on the value of land and rents in the city of New York:—

"Lots on Broadway bought, scarcely two hundred years ago, from the native Indian, for a handful of wampum, or string of beads; from hard-headed Dutchmen and proud Englishmen, in colonial times, for a score or two of pounds; and from sharp Yankees in our own days for a few thousand dollars, are now worth half a million or more. The proprietor of the *New York Herald* paid a lot, about 50 ft. in width and 140 ft. in length, the sum of 75,000 dollars, of which amount 250,000 dollars were paid to Bannum, the celebrated showman for the lot. The piece of ground next to the *Herald* building, 110 ft. in length and 86 ft. in width, was purchased by a New York insurance Company for 350,000 dollars, and upon it they are constructing an edifice which will cost 800,000 dollars. A thin slice of land, only 4 ft. in width, and 140 ft. in length, lately brought the large sum of 75,000 dollars. The lease—mark it, the lease only of another Broadway lot was but a few days since sold for 2,000 dollars, although within the last ten years the same lease had exchanged hands at the comparatively insignificant price of 25,000 dollars. A merchant built a warehouse which, with the ground, cost him 100,000 dollars; its value is now estimated at 800,000. A solicitor bought, some ten years ago, the Society Library building in Broadway for 150,000 dollars, and a few months since sold the lot, after the building was burned down, for 450,000 dollars. The purchasers are raising upon it a structure which is to cost a million."

—The October number of the *Church Builder* (Rivingtons), contains a short paper on the position of church organs, and an account of the origin of the Incorporated Church Building Society.—Mr. Laurent de Lara has just published some outlines for illumination, in which the designer has introduced *fac similes* in oil colours of works of old and modern painters, to serve as vignettes in the place of the photographs which are now extensively introduced in connexion with illuminated designs. The right colours for the various portions of the illumination are stated, so that people who wish to produce, mechanically, showy effects are provided with the means.

Miscellaneous.

THE CHURCH OF ST. BENET, GRACECHURCH-STREET.—Messrs. Fuller & Horsey have received instructions to sell by tender, in lots, the materials of this church, which will be the first removed under the Union of Benefices Act.

THE TELEGRAPH AT FIRES.—We long since urged the junction of the Fire Brigade stations and police-offices by telegraph, and we are pleased to see that telegraphic communication is about to be provided between the chief police-office in Scotland-yard and the other police stations, as well as the chief station of the Fire Brigade at Watling-street, in order to facilitate the transmission of information as to fire in the metropolis by the police.

SANITARY IMPROVEMENTS IN KIDDERMINSTER. The town council of Kidderminster have decided to spend 40,000l. on a complete system of sewerage, and a constant supply of pure water, for the whole of their borough; and at their meeting on the 22nd inst., they appointed Mr. Josiah Forster Fairbank, civil engineer, of London, to be the engineer, to carry out these works. The sewage will be disposed of by irrigation on lands of the Earl of Dudley and others.

WINDSOR CORN EXCHANGE.—The propriety of rendering the market-house fit for a corn exchange has been under discussion, and the mayor and corporation have been requested to give their consent and to assist in carrying out the plan. A subscription list has been opened to defray the expenses; and a committee, consisting of the mayor and others, appointed to confer and act with the town council in carrying out the undertaking and obtaining subscriptions. About a third (105l.) of the requisite sum (350l.) has already been subscribed.

SEARCH FOR THE BODY OF ST. CUTHBERT.—Various attempts have been made to find this long-buried "treasure," and recently efforts were instituted from the exposure of a secret tradition, found on the body of Bishop Mayer, in 1769, and since then secretly preserved until September, when the search was instituted. The secret, however, as understood, has proved not to be a correct one. The recent search was made in consequence of Mr. Swinburne, the town-clerk of Gateshead, making public the secret, which was entrusted to his father, who was a Roman Catholic. The Roman Catholics complain. Why it should be desired by the Roman Catholics to keep the information (if they really have it) as "a secret" it is hard to say.

NEW SHIP ENTRANCE OF THE REGENT'S CANAL DOCK AT LIMEHOUSE.—The Limehouse Dock and the river entrances have been very inadequate to the requirements of the traffic there; and, under the advice of their engineer, Mr. Edwin Thomas, the company obtained powers to enlarge and improve the Limehouse Dock, and to make a new entrance from the river, with extensive wharfs and space for warehouses. The estimated cost, including land, is 200,000l. The foundation-stone of the new ship-lock was laid on Wednesday, the 16th instant. The ship entrance lock will be 350 ft. long by 60 ft. 7 in. in width at coping level, with the outer gate sills fixed at 28 ft. below Trinity high-water mark. The lock will be fitted with three pairs of wrought-iron gates, by which arrangement provision is made for dividing the lock into two compartments of 120 ft. and 230 ft. each, whenever necessary.

VALUE OF LAND IN LIVERPOOL.—About a month ago an arbitration took place in Liverpool, to decide the value of a quantity of property in Lawton-street and Fairclough-lane, required for the contemplated Central Railway Station about to be erected in Ranelagh-street by the Manchester, Sheffield, and Lincolnshire and Great Northern Railway Companies. The property belonged to Messrs. Fairclough, and covers an area of 464 square yards. There was great diversity in the valuations made by the professional witnesses examined on either side—the claimant's witnesses estimating the value of the land at about 144. per square yard, while those for the railway companies assessed its value at about 5l. per yard. The arbitrator's award, though dated the 28th of September, has only now been made public, and the amount of compensation awarded is 5,800l., representing a value of over 12l. a yard for the land.

ST. JAMES'S TOWER, TAUNTON.—At a meeting of the parishioners to consider what should be done in reference to this tower, it has been resolved, after a lively discussion, that the plans and specifications of the churchwardens be produced, and that estimates be obtained for carrying out the work of taking down the tower to the groined ceiling and rebuilding it; a report to be made to a future meeting.

COAL IN SHROPSHIRE.—An important discovery of coal has just been made near Medely, in Shropshire, in a district leased by the Medely Wood Company. The coal has been struck at a distance of 256 yards from the surface, and the seam, known as the "top coal," is one of the most valuable found in the district, and is invariably followed, in regular succession, by the double coal, yard coal, best coal, flint coal, riddle coal, and little flints.

THE WORKMEN'S DWELLING QUESTION IN NEW YORK.—Dwellings for working men are occupying general attention in New York, and it is said that a company has been formed in that city for erecting such dwellings on the co-operative plan. They intend to build several blocks of houses contiguous to Central Park and other eligible localities, on the Parisian model. The design is to occupy the lowest floors with restaurants and provision stores, and to divide the upper into suites of six, eight, or ten rooms, where the occupants can enjoy all the quiet and comfort of a private home at a moderate cost.

HEALTH IN KEW GARDENS.—The Royal Gardens at Kew are acquiring an unenviable notoriety by the number of young men whose health is shattered by short terms of service there. According to the *Gardeners' Magazine*, four assistants in the herbarium have in succession resigned on account of ill-health, three of whom are dead, and the fourth, Mr. Helmsley, is quite incapacitated. The plant-houses ruin many young men of spirit and promise. They go there strong and hopeful; they soon after leave, with constitutions destroyed, and with little other hope than a quick consignment to the grave. There must be something wrong, and worth inquiring into. In all gardens the health of practical cultivators is exposed to a certain degree of risk, and the risk is usually in a direct ratio with the extent of glass and heating apparatus; but Kew Gardens appear to a great disadvantage in respect of the health of persons employed there, when compared with any similar establishments.

SITE OF THE NEW TOWN-HALL, MANCHESTER.—A meeting has been held at the local Chamber of Commerce, to take steps to induce the Corporation to enlarge and improve the site of the proposed new Town-hall, before the plans are finally decided upon, and to widen the contemplated approaches to the building. Mr. Malcolm Ross presided. It was resolved,—

"That this meeting is of opinion that the proposed new town-hall will be insufficient to meet the present and future wants of this city, and that the approaches thereto will not be so accessible as such an important building requires."

And also,—

"That with the view of testing public feeling on the subject, the mayor be respectfully requested to convene a meeting of the citizens at an early date to afford the ratepayers of Manchester an opportunity of approving or otherwise of the size and shape of the proposed building, and the arrangement of the thoroughfares leading to it."

It was also resolved that a deputation, consisting of the chairman and other gentlemen, be appointed to wait upon the Mayor, with these resolutions.

CAUTION TO LANDLORDS.—Mr. Thomas Mason, the owner of Nos. 1, 2, 3, and 4, William's-buildings, French-alley, Goswell-street, was summoned by Mr. James Neighbour, the sanitary inspector of St. Luke's, to the Clerkenwell police-court, to answer the charge of having the houses allotted to so overcrowded as to endanger the health of the inhabitants. The magistrate, Mr. Barker, made an order for the overcrowding to be abated forthwith, and fined the defendant 20s. and costs. The defendant was also summoned under the Metropolitan Local Management Act for neglecting to provide necessary water-closets, &c. Mr. Neighbour, in giving his evidence, stated that there was only one water-closet to the four houses, which contained seventy-three persons, and that the premises generally were in a disgraceful state. The defendant was fined the full penalty of 5l. and 5s. per day for twenty-two days, the time elapsed since the date of the notice, making in all 10l. 10s. and costs. This is the second conviction of the defendant for the same offence.

CLOSING OF THE COVENTRY EXHIBITION.—The Industrial and Fine-Art Exhibition at Coventry, which was opened by Earl Granville on June 19, has been closed. The report states that the number of visitors has been 98,569, exclusive of 6,000 school children.

RAPID PRINTING.—M. Marinoni has put up in the new printing office of the *Petit Journal* (a halfpenny daily paper), 61, Rue la Fayette, Paris, a machine of his invention, which prints 600 copies a minute. Four of these powerful machines turn out 144,000 copies an hour, the whole impression being 446,000 daily.

ALMSHOUSES, WANTAGE, BERKS.—The governors of the charities intend to erect a block of eight new almshouses in Mill-street, Wantage, for the residence of as many old pensioners. The works will be begun at once. Mr. J. P. Spencer, of Wantage, architect; under whose direction the old almshouses in Newbury-street and Mill-street are already being pulled down.

THE GLASS-BLOWERS' BURIAL SOCIETY.—The United Glass-blowers and Cutters' Trade Burial Society has recently been dissolved, and the property, in accordance with a resolution passed at a general meeting, presented to the oldest member, Mr. Logan, sen., who has been treasurer for some years. To "celebrate" the dissolution of the Burial Society, a supper took place last week. Twenty of the remaining twenty-seven members (most of whom are very old) attended. The society was established in 1783.

THE FARNHAM DRAINAGE PLANS.—One of the competitors writes us from Leeds, under the signature of "Expectation," saying,—"As the author of one of the schemes for draining the town of Farnham, I beg to ask the local Board of that place, through the medium of your paper, if they have inadvertently omitted to give me notice of the non-success of my scheme, or am I only one among the rest of those whose labours seem to be ignored?" He thinks that, to say the least of it, he has been treated in a very negligent manner. The plans were sent in on the 1st of March last. Letters from two other competitors have been received since.

CO-OPERATION IN LONDON.—It is to be feared that our butchers, bakers, and middle-men generally, are learning trades-union principles, and bringing them to bear on the public who are not trades-unionists; and it is full time the public were co-operating for their own interests, in order to meet the co-operative or unionist tactics of their tradespeople. We lately alluded to the formation of a co-operative association in the north of London; and we are informed that this is not the only one already at work. There are two civil service co-operating associations in London, one of which, the "Civil Service Supply Association," numbers many more than 4,000 members, and the other, the "Civil Service Co-operative Society (Limited)," has already 2,500 members; and as they have opened the doors to the army, the navy, and the clergy, they will probably soon double their numbers. It is said that one firm alone received from members of the first-named society in the course of last year as much as 10,000*l.*, while the accounts of another firm in connexion with the West-End Society, show transactions with its members to the extent of 12,000*l.*

THE SUSSEX ARCHEOLOGICAL SOCIETY.—The members of this society took their autumnal trip to Slangham, and had a very pleasant excursion. Hayward's Heath was the place of rendezvous. Slangham is about six miles distant. Slangham Place belongs to Mr. W. J. Sergison, of Cuckfield. Mr. M. A. Lower, the editorial secretary of the society, gave a short account of the ruins. He said they were in a part of Tilgate Forest, which was a highly interesting locality in a geological point of view. It was formerly a resort of the Ignaodon, a monster some 70 ft. or 80 ft. long [Query: The ancient "worm" of so many places, according to various local traditions. If man existed, as is now said, in the time of the monsters, why not?], and afterwards the forest was one of the principal sites of the great ironworks of the county. The party, after inspecting the ruins in detail, repaired to the church, which was explained by the Rector, the Rev. W. Sergison. Leaving Slangham, the archaeologists returned by way of Cuckfield, and paid a visit to the old church there; and thence returned to Hayward's Heath. A luncheon had been provided at the Station Hotel, at which the Rev. Edw. Turner presided.

THE POOR-LAW BOARD AND THE VALUATION OF PROPERTY.—The Poor-law Board have issued a letter on the subject of the proper mode of ascertaining the gross estimated rental. The Board considers that the rent which is actually paid is the best criterion of value; but it is not regarded as being conclusive, as it may be shown that the actual rental value is above the sum paid as the rack-rent, or that there has been a depreciation in value, which renders the rent paid higher than that at which the premises might be expected to let from year to year.

PROPOSED SUBWAY UNDER THE THAMES.—Mr. W. Haywood, engineer to the Commissioners of Sewers, has laid before that body the particulars of an application which had been sent in by Mr. Peter W. Barlow, the well-known civil engineer, requesting permission to tunnel under Thames-street, to enable a subway to be constructed by him beneath the river Thames. It was stated in the application that permission had been obtained by him from the authorities of the sewers to sink a shaft at a point north of Thames-street, and that in the tunnelling the surface of Thames-street would not be in the slightest degree disturbed. It was added that the subway was to be of sufficient diameter to take an ordinary omnibus, which was to traverse the tunnel each way as fast as it was filled. The subject gave rise to some considerable discussion, and was opposed by some of the representatives of Thames-street and the locality, but ultimately the application was acceded to.

LAND SOCIETIES.—The last quarterly report of the Conservative Land Society states that the receipts for the fifteenth financial year ending September 30th were 116,983*l.* 0*s.* 11*d.*, and the grand totals to Michaelmas, 1867, 1,100,603*l.* 7*s.* 9*d.* The shares issued were 27,783 at 50*l.* each, making 1,389,150*l.*; and the total withdrawals since the formation of the society (1852) to Michaelmas, 1867, 306,749*l.* 0*s.* 2*d.* The total sale of land for the same period was 537,050*l.* 19*s.* 6*d.* The second portion of the East London Estate was allotted on the 2nd August, and building operations are in active progress thereon. Additional portions of the Forest Gate Estate will be offered in due course. Bolingbroke Park, with its frontage to Wandsworth Common on the one side and frontage to Battersea Rise on the other, had been acquired for the society. Mr. Percé Stace, public accountant, and Mr. Newbham Winstanley for the Board, and Mr. W. H. Clewom and Mr. Jas. Goad are the four auditors to report as to the accounts and balance-sheet for the financial year ending September 30th, 1867.

OPENING OF A "BROCH" AT THUMSTER, CAITHNESS.—An interesting account of local excavations is given in the *John O'Grat's Journal* of last week. The brochs are a peculiar class of buildings, common all over Shetland, Orkney, Caithness, and Sunderland, but not found much farther south. The most perfect specimens are found in Shetland. They are circular buildings, having on the ground plan a wall from 12 ft. to 15 ft. thick, enclosing a central area of about 30 ft. to 40 ft. in diameter. In the thickness of the wall narrow oblong chambers are formed opening into the interior court. A stair in the centre of the wall leads to a gallery, which winds upwards from story to story with a gentle ascent, traversing the whole circle of the wall like an interior cork-screw, and opening here and there into recesses, which are all lighted from the interior court. There is only one entrance passage, generally low and narrow, to this court, from the outside of the tower. These brochs stood originally 40 to 50 or 60 ft. high, and the central court was open to the sky. The lower story was a solid wall with chambers opening from the court, hollowed out, as it were, in its thickness, while, from the commencement of the gallery in the second story, the solid wall of the first became a double wall, with a spirally ascending passage between. At Yarhouse Loch one of these brochs has recently been uncovered. The excavations disclosed a very fine ruin of a broch in the centre of a cairn, surrounded by a congeries of cells or dwelling-places of later date, mostly founded on and erected out of the rubbish and ruin of the older structure. The cairns seem to have been occasionally used in still later ages as burial-places, — sometimes even in recent times. Amongst the numerous stone and flint implements found in the Yarhouse broch were a number of spinning-wheels, of polished stone, and one of baked clay, ornamented with concentric circles.

OPENING OF THE DUDLEY FOUNTAIN.—This fountain has been formally opened by the Earl and Countess of Dudley, in the presence of a large concourse of people, in the market-place of Dudley. The total cost of the fountain, a model of which has been in the Paris Exhibition since its opening, is 3,000*l.*, a gift of the earl. The fountain is in form a quadrilateral, pierced by arches in one direction, in the other by semicircular projections, surmounted by two sea-horses. In the dome, two large plates of coloured glass have been inserted, and these throw a coloured light upon the water when thrown from three marble tazzas. The fountain also bears two figures, representing a miner and an agriculturist, in allusion to the characteristics of the county. The total height is 18 ft. Mr. Forsyth of London, is the sculptor.

TENDERS

For the erection of a shop and premises, No. 11, Church-street, Greenwich, for Mr. Mead, Mr. L. Chester, architect:—
Hutfield 21,515 0 0
Adams & Son 1,407 0 0
Hannet 1,400 0 0
Fox 1,375 0 0
Wills 1,287 0 0
Walker 1,147 0 0

For Dulwich Station, on the Peckham and Sutton branch of the London and Brighton Railway. Messrs. Banks & Barry, architects:—

W 24,990 0 0
Brascher & Son 4,800 0 0
Patrick & Son 4,550 0 0
Simms & Marten 4,397 0 0
Chappell 4,258 0 0
Winship 4,250 0 0
Jackson & Shaw 4,028 0 0
Sawyer 3,991 0 0
Perry & Co. 3,975 0 0
Butt & Co. 3,931 0 0
Myers & Son 3,839 0 0
Bull & Son 3,832 0 0

For rebuilding No. 17, Air-street, Piccadilly, a dwelling-house and shop, on the Sutton Estate. Mr. W. G. Clements, architect:—
Messrs. Nightingale 2,837 0 0
Adams & Son 710 0 0
Ives & Pelham (accepted) 680 0 0

For engine and boiler houses, chimney-stack, workmen's houses, &c., for the Corporation of Portsmouth, at their sewage-pumping works, at Eastney. Mr. J. E. Greatorex, architect:—

Simms & Marten 23,940 0 0
Bull & Sons 3,851 0 0
Fouress 3,875 0 0
Ward & Son 3,815 0 0
Burbridge 3,703 13 0
Messrs. Light (accepted) 3,593 0 0
Stevens 3,423 0 0

For bringing out new public-house front, Park-road, Hornsey. Mr. John Viney, architect:—

Clark 2,409 0 0
Hawkes 343 0 0
Green 339 11 0
Elder 322 10 0

For residence, with butcher's shop and out-buildings at Hornsey, for Mr. Edward Smeaton. Mr. John Viney, architect:—
Hawkes (accepted) 2,705 0 0

For the church of St. Stanislaus, Beaumont, Old Windsor. Mr. Blount, architect:—

	Contract No. 1.	Contract No. 2.
	Bath Stone Dressings.	Tisbury Dressings.
Wood	£11,650	£11,650
Messrs. Bird	11,017	11,039
Fatman & Fotheringham	10,935	11,531
Jackson	10,726	11,296
Messrs. Myers	9,252	9,775

For the erection of five dwelling-houses at Thornton Heath, Surrey, for Mr. Richard Davis. Messrs. Mills & Co. architects:—

Hitchcock 21,550 0 0
Roberts 1,443 10 0
Palmer & Turner 1,900 0 0
Day 1,222 10 0
Blackmore & Morley 1,175 0 0
Holloway 1,125 0 0
Smith 1,030 0 0

For alterations and additions to offices and warehouses, Cannon-street City, for the India-rubber Company (Limited). Mr. James K. Colling, architect. Quantities not supplied:—

Myers & Sons 21,897 0 0
Brown 1,800 0 0
Fatman & Fotheringham 1,800 0 0
Day 1,734 0 0
Dave, Brothers 1,685 0 0
Langmead & Way 1,650 0 0
Phillips 1,540 0 0

For Tring sewers, contract No. 3:—

Knight 2,827 0 0
Hosmer 779 0 0
Goodair 750 16 0
Chappell 706 16 0
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The Builder.

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The Present Condition of Ecclesiastical Architecture in Germany.

HEN in future ages the history of the nineteenth century shall be written, no more striking event will be chronicled than the fact that a style of architecture disused for about three centuries again came into use, and that not only in one country, but all over Europe. These pages, from time to time, give specimens of the revival of Gothic architecture in England; and on many occasions we have alluded to the gigantic progress that that style of architecture has made in France

within the last twenty or thirty years. Holland, Belgium, and Germany have also come under our notice; and we purpose now to give our readers a more extended account of the works in progress, and the present condition of Gothic architecture in the last-named country. In order thoroughly to understand the present condition of architecture in Germany it is necessary that we should take a retrospective glance at the history of art in that country.

The architecture which we call Gothic was not so early in use in Germany as in France or England. The Germans seem to have made use of the Round-arched or Romanesque style for nearly a century after it was abandoned in England. It must, however, be acknowledged that the Germans carried the Romanesque style to a pitch of excellence and perfection that it never reached in any other country. If, however, the Germans were the last people—except the Italians—to adopt the Gothic style, they clung to it with the greatest tenacity, and were certainly the last people in Europe to abandon it. This will be seen by referring to the dates of many of the Gothic buildings in Nuremberg and Augsburg, and particularly the Jesuit churches at Coblenz, Cologne, and Paderborn, all of which were built after the year 1600, and yet are thoroughly Gothic in style, although there is a slight admixture of Italian work in some of the minor details. Nor are these isolated examples, for along the banks of the Rhine are many village churches of even later date whose chief features—windows, doorways, &c.—are quite Gothic, although the other portions of the buildings are Italian. The thirty years' war, however, put an end to all architecture, and the churches built after that struggle are Italian. The Roman Catholic churches, though often vulgar and gaudy, are sometimes rich and costly in the extreme. The Protestant churches of this date are remarkable only for their meanness and absence of architecture. The French revolution, and the events conse-

quent upon that overthrow of everything ancient, put the finishing stroke to the destruction of architecture in Germany. The Prince-Bishops, who had been the great patrons of ecclesiastical architecture, were driven from their sees, which were given over to princes little likely to build churches; and from that time until about the year 1830, little or nothing was done that is worth study or imitation.

In 1835, the church of St. Ludwig, in Munich, was built by the ex-king of Bavaria. The architect was Gärtner. The style is a kind of Romanesque. As this church was, perhaps, the very first attempt at a revival of ecclesiastical architecture in Germany, we must not criticise it too harshly, although some of its defects are of the most glaring description. Such as the want of a chancel or choir, the use of plaster instead of stone, the admixture of classical features in the details, &c. The church of St. Boniface, in the same city, was building at the same time; and the church of "Maria Hilf," in the suburb of Au, in the next year: this last is a Gothic church of large dimensions. The architect was Ohlmüller; and, whatever faults the building may possess, it was a great advance upon anything that had previously been done, and is, perhaps, the first specimen of a real Gothic church carried out in Germany. In 1842, a great impulse was given to the "revival" by the commencement of the works for finishing the cathedral of Cologne. The architect chosen was Zwirner, and the choice was a wise one; for, although possessed of little originality, he was one of those men who devote themselves heart and soul to the performance of any duty, instead of consulting his own taste or ideas. Zwirner devoted himself wholly to study what was the intention of the original architect; in fact, he looked upon himself merely as an instrument for carrying out the ideas of that great master; and it is a matter for congratulation that he did so. What makes that noble church so interesting is the fact that it is such a thorough link between the Middle Ages and modern times; it is the design of a thirteenth-century architect still being carried out, though nearly six centuries have passed since the drawings for it were made. How very few architects would have had the wisdom to sacrifice themselves as Zwirner did. September 2nd of this present year was the twenty-fifth anniversary of the laying of the foundation-stone for the completion of Cologne Cathedral, and on that day the final was placed upon the canopy over the great western doorway. It may interest our readers to learn what has been done towards completing this noble edifice during the last twenty-five years. In order that they may realize the greatness of the undertaking we must describe the church as it existed in the year 1841. The great choir and aisles, the chapels surrounding the "chevet," the two northern aisles of the nave, and the sacristy, were the only portions of the building completed. The nave and two south aisles were carried up as high as the capitals of the great arcade, and covered with a temporary roof; two bays of the eastern wall of the north, and two bays of the eastern wall of the south, transept were built. The great south-west tower was carried to the height of 150 ft.; of the north-west tower there existed only the foundations, and the north-east buttress to the height of about 50 ft. This north-east buttress of the great northern tower was the latest portion of the old part of the cathedral; it will be seen by examining it that although it follows the general outline of the buttresses of the opposite tower, its detail is quite late Third Pointed. From this description it will be seen that about half the cathedral was built, and in this condition it had remained for about 350 years, during which period no work of any consequence was carried on in connexion with the church. The last archbishop but one

first conceived the grand idea of finishing this noble building; but he did not live to see the work far advanced. His successor, however, brought great zeal and energy to bear upon the undertaking, and received considerable assistance from the kings of Prussia and Bavaria, but by far the greater portion of the money for this grand undertaking has been collected from private individuals by a society called the "Dombauverein." This society has branches all over Germany, and deserves the greatest praise for its zealous and disinterested exertions.

The first thing that it was found necessary to do in 1842 was entirely to restore the choir, both inside and outside. Then the foundations were laid for the west front; the south aisles were carried up to their full height, and the vaultings constructed. The next step was to raise the walls of the two transepts to a level with the aisles of the nave, and construct the arches of the six great doorways. After this followed the triforia over the nave and transepts. The whole building was then again covered with a temporary roof, which remained until the year 1863. During the eight or nine preceding years the works were carried on with great expedition,—the clearstories over the nave and aisles, the flying buttresses, and the great vaultings over the nave and transepts were constructed. In 1863 the temporary roofs were removed, and the whole of the interior of the cathedral, with the exception of the two bays of the nave between the towers, was completed. We are not aware whether Zwirner lived to see this glorious work; if he did it must have repaid him for his patience and self-sacrifice. We are sorry to have to find fault with any portion of so grand a work, and one carried out so conscientiously; but we cannot help expressing our opinion that the omission of the stone lantern over the "crossing," as shown in the original drawings, was a great mistake, and its loss is not compensated for by the stumpy and ungraceful *filèche* which occupies its place. What a pity it is that Zwirner did not reproduce or study the beautiful *filèches* at Amiens or Rheims, as the one he has erected at Cologne is simply a great stone-like pinnacle, executed in metal. Another feature which we must criticise, is the cresting which, like the *filèche*, is thoroughly unmetallic in character, and the design is more suited for a stone parapet than a metal "bratishing." The finials on the transept gables seem to us far too large, and have a heavy and clumsy appearance; and surely nothing can be more miserable and paltry than the new altar erected at the entrance to the choir, which looks as if it had been bought ready made at some upholsterer's shop. Since Zwirner's death, the chief works have been the raising of the north-west tower to the height of the south-west one, the turning of the arch and building the canopy over the great west doorway, and the grand terrace round the north and east sides of the cathedral. This terrace was opened to the public on the 2nd of September this year, and is really a very fine work, which adds greatly to the dignity of the exterior of the cathedral.

Internally we notice the two new windows at the ends of the transepts, which are very beautiful, and far more like old glass than most of the modern windows in this church. Four new statues, by Fuchs, of Cologne, have been placed against the large piers of the "crossing," and an altar has been erected in the eastern aisle of the south transept. The reredos of this altar, called the altar of St. Agilolphus, originally stood in the Church of S. Maria ad Gradus, which was destroyed at the commencement of the present century. The reredos consists of a triptych of large dimensions, raised upon a super-altar. When closed the valves are ornamented with a series of pictures, by a Flemish master, of the sixteenth century, representing the chief

events in the life of St. Agilolphus, and another saint. When the valves of the triptich are open, the retables exhibit a series of niches, filled with small subjects, carved in wood. The whole is most elaborate and intricate, and is one of the most beautiful specimens of sixteenth-century carving in Germany. This magnificent work of art has been well restored, and forms a great ornament to the interior of the cathedral. Before leaving Cologne Cathedral, we must not omit to mention the new hangings which adorn the backs of the stalls; they are the work of the ladies of the city, and are thoroughly in keeping with the architecture of the building.

Another work of Zwirner's which we must mention is the church of St. Appollinarisburg, at Remagen. When we look at this church, we cannot feel too rejoiced that Zwirner did not indulge his own fancies at Cologne; for here, where he was untrammelled, he has produced a building which exhibits every fault possible in a church of its size: were it not for the glorious frescoes it contains, it would be difficult to find a more uninteresting building.

Contemporary with these works of Zwirner in Northern Germany, Heidlöff was restoring the churches in Nuremberg and the cathedral at Bamberg. We cannot, however, give much praise to his works, as in many cases his restorations were extremely destructive. This was particularly the case at Bamberg, where several most splendid Cinque-cento monuments were removed out of the cathedral, and a very picturesque "Passions bild" destroyed. Of the new churches built from his designs, the less said the better. It is remarkable, but not singular, that a man who could write so ably about architecture, and draw so well, should fail so terribly in the practical part of his profession.

The restorations of the cathedrals of Ratisbon, Munich, Ulm, and Speyer all helped to further, for good or ill, the cause of the Revival. We must now mention a church which is, perhaps, one of the finest monuments of the nineteenth century, the new church of St. Nicholas, at Hamburg, by Mr. Scott. This is certainly the noblest church ever erected by Protestants in Germany. We shall not attempt to describe this building, as we are speaking of the work of German architects, and it has been illustrated in our pages; but we mention it on account of the influence which it has had upon the taste for Gothic architecture in Germany. It showed the Germans that there was nothing to prevent the erection of a cathedral in the nineteenth century that should be perfect in all its parts, and a rival of the grand works of former ages. The works of Pugin, which were read extensively in Germany, had also the same effect. The works of Heidlöff, Girtner, and Möller had thoroughly instructed the German mind upon the principles of Gothic architecture; but still there was something wanted; for, however well the theory might be understood, the buildings erected were either tame and spiritless reproductions of ancient ones, or mere wild and fanciful jumbles of all kinds of styles. This want has at length been supplied by two men, both, we believe, pupils of Zwirner, and educated architecturally in the workshops of Cologne Cathedral: we refer to Vincent Städtz, of Cologne, and Professor Schmidt, of Vienna. Others have arisen round them who possess the same spirit, but we believe they were the first architects who ever built thoroughly good Gothic churches in Germany; and since they have set church architecture upon its proper footing, Germany has made immense progress in this art. We shall now speak of works at present in progress or recently finished, commencing by noticing some of the churches by Städtz.

The church of St. Mauritius, at Cologne, of which we give an illustration,* is one of the finest modern Gothic buildings in Germany. It consists of a nave and aisle, large western tower, crowned with an octagon lantern and spire, over 200 ft. high; transepts, with apses and small apsidal chapels, a deep chancel terminating in an apse, and two apsidal chapels. The arrangement of the eastern portion of the church is singularly original and good. The apse is in two stories, and bears a slight resemblance to the east end of the cathedral at Ratisbon. The walls of the lower story of the apse are much thicker than those of the upper, and this gives internally a deep recess in front of each window. The angles between the transepts and chancel are filled up with two semi-octagon chapels, set obliquely between which is an

octagon turret; the angles between the nave and the transepts are also occupied by octagon chapels, but there is only one on each side, the extra space being taken up by the aisles cutting into the transept. The interior of the church is very noble; the whole building is beautifully vaulted in brick, with stone ribs. The nave arches are rather narrow, and are supported upon very solid piers. Above the main arcade is a triforium, which is glazed in the apses only; and this accounts for the transoms in the eastern windows, which is nothing more than the back arches of the triforium showing externally. This arrangement is precisely similar to that in Ratisbon, and has internally a very pretty effect. The clearstory is noble and lofty, and lighted with large three-light windows. The chapels in the angles between the transept and chancel have a very picturesque effect when seen internally. Most of the fittings are temporary; but two very good side altars have been done, and a pulpit of good design is in course of erection. The sacristy opens out of the south transept.

There is very little sculpture made use of throughout the building; but in the tympanum of the western doorway is an old fifteenth century roof and attendant figures in stone, and on the top of the spire is a statue of the patron saint in stone. This is, perhaps, the only feature in the whole building with which we have any great quarrel. The effect of a statue on the top of a spire is never satisfactory. We know it was occasionally done in the Middle Ages, as in the case of the Capella della Spina at Pisa, and the cathedral at Milan; but we do not know of any ancient example north of the Alps, and we cannot help thinking that M. Städtz has ruined his mind, also, the spire has too many bands and lights in it, and would have looked better had it been kept more simple. However, we do not wish to criticise a building which is, on the whole, so extremely satisfactory. The length of the church is about 200 English feet, the width of transept about 120 ft. The material used is brick. The windows and dressings are of stone.

The next church we shall mention, and of which we publish a plan,* is the new cathedral of St. Mary, at Linz, on the Danube, also by M. Städtz. This church was commenced in 1862, and will, when completed, be the largest modern church in Europe and the largest cathedral in Austria. At present, however, the crypt, the lady chapel, and foundations only are completed; but it is expected that the church will be ready for consecration by the year 1884. The lady chapel was opened for divine service in 1866. The following will be the dimensions of the church (in Vienna feet) when completed:—External length, 410 ft.; width across transept, 211 ft.; height, inclusive of external roof, 136 ft.; height to vaulting, 96 ft.; height to vaulting of aisles, 42 ft.; height of spire, 410 ft. The material being made use of is granite, with sandstone dressings. The church will consist of a nave and aisles, with a western tower, flanked by porches and two apsidal chapels, opening out of the aisles of the nave, deep transepts, a large choir, and aisles, surrounded by chapels; a lady chapel, sacristies, munition room, and an extensive crypt, under the eastern portion of the choir, and lady chapel. The site on which this church is being built cost 300,000 florins.

The church at Euphen, by the same architect, is very similar to that of St. Mauritius at Cologne. It is, however, smaller. It consists of a western tower and spire, the design of which we prefer to the one at Cologne, a nave and aisles of three bays, transepts, and an eastern apse. The style is good Geometrical.

The churches at Kivlear, near Cleves, Höchen-sam, and several others in the neighbourhood of Cologne, are by the same architect; but our space does not admit of our giving a description of them. We shall carry on our observations in another article.

ANOTHER CITY CHURCH FOR SALE.—St. Mary Somerset, Thames-street, will be sold in the course of a few weeks, under "The Union of Benefices Act," and warehouses erected on the site which it at present occupies. Gilbert Ironside, D.D., warden of Wadham College, Oxford, who was Vice-Chancellor of the University in 1687, when James II. seized upon the venerable foundation of Magdalen College, and sent his commissioners to Oxford to expel the fellows, lies buried here.

CIVIL ENGINEERING IN INDIA.*

THE civil engineer, who has been educated in England, and commences to practise in India, will find that there are many things he will have to learn over again from a different point of view, and large accessions to his stock of information and experience to be obtained before he can make a move. We are not aiming at a platitude in making this statement. The fact has been so forcibly impressed upon us after looking carefully through two new volumes, edited by the indefatigable president of the Thomason College, Roorkee, Major Medley, and coming face to face there with a realization of the difficulties and peculiarities that must be contended against in every-day practice in civil engineering in India, that we are fain to give note of it; although many a harassed cadet has, doubtless, arrived at the same conclusion before. Trains of loaded elephants; railways drawn by bullocks; ever-recurring need of sunshades and punkabs; mighty inundations sweeping all before them; immense trees imbedded in rivers to the great increase of the dangers of navigation; vast deposits of silt choking up canals and rivers; boat-bridges; constant liability to the inroads, attacks, and devastations of a seemingly inconsiderable, but in reality insidious enemy it is impossible to exterminate, the white ant, are but a few of the local novelties quite unconnected with the puzzling differences in the building materials available, which, of course, present a still more important study to be mastered. On the principle that those who are forewarned are forearmed, Major Medley's works should be well digested by all who are in training for Indian service, as well as by those who have commenced practice. In many respects, however, the basis of Indian experience must be home experience, and we perceive this deftly interwoven with much of the major's teaching. To give an instance of this dovetailing of experience, we may note that the decay of the ornamental tracery of many handsome buildings at Agra and Delhi, including the Koutub Minar, would not have been so easily accounted for if the Cathedral of Lichfield, and some of the colleges at Oxford, had not also furnished examples of the decay of stone, and the cause of the misfortune.

The building materials, as we have said, present a most formidable difference from those in use in England. There are 164 kinds of Indian woods bearing the most outlandish names, either in use for house-building, furniture, agricultural implements, &c., or worthy of being experimented upon for those purposes. Some of them are familiar to us by name, and by force of association stand out picturesquely and almost poetically from the list,—the date-palm, sandal-wood, tamarind, cocoa-nut palm, locust, lancewood, ebony, all suggestive of Indian scenery or Indian industry in rich carvings and cunning inlayings; but most of them convey nothing to those who do not hold the key of their meaning in the native tongue. Novices would be puzzled with specifications naming such woods as Odoropoo, kurroo-vangay, though this is but the Hindoo disguise of the sweet-smelling acacia, corvee-allum, cusb-mulla, jambo, keekur, kuddapah, mahwah, neichitte, peddowk, htok - ghan, jedachoo, sissoo, tha-byew, thingan, thumbogum, tsheik-khyee, trincomallee, and the vomit-nut, which is the English name conferred, in Hindostan, upon the *strychnos nux-vomica*. The Burmese have noted the close grain of a large tree growing on the high hills between the Sitang and Salween rivers, and have called it Theomin, the prince of trees; and in like manner these curious names we have culled as samples have their significations. Indian timber is, however, comparatively an easy subject to master in comparison with Indian stone. Although Major Medley intimates that there are but few records descriptive of the various building stones found in India, he runs through a minutely graphic list of upwards of fifty varieties of sandstone. Every colour of the rainbow is found in Indian sandstones. The Aintih rock yields stone of a pinkish white, or ochreous yellow, barred or striped occasionally with black. Parach sandstone is white; that from Telri is of a dull blue-green colour, which turns to olive green after exposure; that quarried

* See p. 393.

See p. 802.

"The Roorkee Treatise on Civil Engineering in India," Edited by Major J. G. Medley, R.E., Assoc. Inst. C.E., Principal, Thomason Civil Engineering College, Roorkee. Printed and published at the Thomason College Press, Allahabad: Hill & Son, Calcutta: Thacker, Spink, & Co., Bombay: Thacker, Vining, & Co., Madras: Gantz, Brothers, London: Smith, Elder, & Co. 1867.

close to the Gwalior Residency is of a dull brownish red hue; Bamor quarry yields a dirty white stone; and Mamoor a dingy pink. Laterite is the rock most largely employed for building purposes wherever it is procurable, as in the Midnapore and Orissa districts. Cretaceous limestones are quarried for the construction of small village pagodas and chattrums. The natives use gneiss for their temples; trap, quartzose, and greenstone rock for building and paving purposes; coral-reef limestones for their rice-mortars and water-troughs. English architects and engineers occasionally contrast one stone with another, as in the pavement of the Gwalior Residency, where squares of olive-green sandstone alternate with others of a brownish-red color. When we come to bricks which are sun-dried and called *kucha*, or burnt and called *pucha*; tiles, which may be either pot tiles, pan tiles or flat tiles, flooring tiles, or drain tiles; limes, cements, mortars, concretes, and plasters, we come to just the same inconsiderable differences as we find in the tools and execution. Everywhere, of course, the amount of work performed by coolies and native horses is less than that easily executed by Europeans. A coolie laborer requires to be instructed in the use of the wheelbarrow, for hitherto a basket has been his only contrivance for carrying, and he does not care to dig more than 50 cubic feet a day. The force an English horse is calculated to exert when walking slowly on a level plain is about 120 lb.; but a native horse does not use more than 90 lb. An implement called a *scoop* is in much use here, as in America. This consists of an open box, like a hand-barrow, from which one side has been removed, leaving the bottom exposed. The edge of the bottom projects, and is sharpened, so, as the implement is dragged along, it scoops up the earth, and the three sides mentioned confine it for conveyance. A couple of bullocks or horses are attached to the scoop by means of chains or ropes, and a driver walking behind it guides it by means of a couple of handles affixed to the back of it. This implement is of no use, however, where the ground is not tolerably soft and loose.

In Indian railways there are many specialities. The greater part of the country being very flat, the gradients are very slight, and the tunnels very few. On the East Indian railway between Calcutta and Delhi, there is only one tunnel in a distance of 1,025 miles. This is the Moughrur tunnel, which is 900 ft. in length, and runs through an outlying ridge of the Vindhya range of hills, on a rising gradient of 1 in 500 up to within 75 ft. of the west face, where the gradient falls 1 in 500. On the Bhoze Ghāt incline there are, on the other hand, as many as twenty-six tunnels in a short run of thirteen miles. The white ants are a pest here as elsewhere, and have to be taken into account in the selection of sleepers and all timber work. The passenger traffic forms the most remunerative item in the receipts, although it was expected that the goods transit would have been the real source of profit. Major Medley divulges that it was laid down as a principle (when railways were first contemplated for India) that the great lines should be carried from end to end by the shortest and easiest routes, in the belief that it was the through traffic that must be looked to for profit rather than short local journeys; but, so far, the results tend to reverse this assumption, and to suggest that it is worth while to make very considerable detours to pick up the local traffic, as it is in reality more remunerative than any other. A ton of passengers, it might have been foreseen, though requiring no more haulage-power than a ton of goods, can afford to pay more for it than the competition, made by water-carriage and other transits, enables the directors to demand for goods. Short journeys in every-day life are more frequent than long ones; hence it follows that they should be well provided for in the laying out of a line to make it remunerative. A man may have occasion to visit the next town or station to that in which he resides several times a week, while he may, perhaps, never be obliged to proceed from one end of the line to the other. At Indian stations it is customary to provide verandahs, about 15 ft. wide, to extend the whole length of one platform, and waiting-sheds on the other; and a chutrota, well, and latrine for the use of third-class passengers, besides the ordinary waiting and retiring rooms. An Italian adaptation of Oriental architecture is the prevailing style used. Wells and bullock-runs are employed at some stations for the water supply of the tenders, and

Persian wheels at others. All the arrangements for traffic, such as the number of trains, the hours of departure, and the tariff are made in concert with Government through the medium of the consulting-engineer. Before turning from Indian railways, with their dark-faced, turbaned attendants, shadowy stations, alternating with glaring lines through scorching plains, we may state on the authority of statistics, furnished to the Major, that the East Indian Railway on the 21st December, 1865, was stocked with 322 engines and 5,547 traffic vehicles of all sorts. As in England, the receipts from the intermediate and third-class passengers exceeded those of either the first or second class.

Horse-railways offer several advantages in districts where unlimited traffic cannot be hoped for, and accordingly they have been put in operation in India. Our hard-working Major has explored these advantages, and lends his countenance to the conclusion that, where cheapness of construction and working is of more consequence than speed, horse and cattle power may be advantageously substituted for the locomotive; though he advises that the possibility of an increase of traffic warranting the use of locomotives should be borne in mind, and that, as a rule, all lines should be so constructed up to the surface of the roadway as to admit of such a substitution, leaving the immediate difference of cost to be effected on the lighter kind of rolling-stock, the cheaper kind of station required, and the sharper curves and steeper grades allowable for low speeds. Sir William Denison, with special reference to a proposed horse-railway in the Madras Presidency, advises the employment of stone blocks as supports for the rails instead of timber sleepers, adding, that in many parts of the presidency, where the gneiss crops out to the surface, the stone block would be cheaper in first cost than any other sleeper, as well as more durable. Iron-pot sleepers, where stone is not procurable, are the next, in his esteem, for this purpose. An early experiment of cast-iron sleepers was made on the East-Indian Railway, for a length of about seventeen miles; but the road made by them was so rigid and bad, that they were taken up, and wooden ones substituted. A second experiment has been made with wrought-iron, for a length of one mile, the result of which has not yet transpired. The Government bullock-train is another description of cattle conveyance with which India is furnished. As the daily journey of a bullock is averaged at ten miles, this mode of communication is no rival of the locomotive, except in the matter of cost. Captain Yule, writing of a projected cattle-draft railway in Rohilcond, ignores the expediency of making the road at the first in the substantial manner that would permit of the eventual use of the locomotive upon it, or of maintaining the gauge of the great railways, deeming that a great saving of expense would be made in the cost of wagons, works, and way, by the employment of a narrower gauge. His estimate for one mile of cattle-draft railway, including the necessary earthworks, sand and brick-ballast, timbers, cross-ties, spikes, laying way, rails, amounts to 15,923 rupees; and adding sidings, culverts, small bridges, large bridges, station buildings, fencing and gates, plant and wagons, runs up to a total of 26,500 rupees for the same distance.

Irrigating works must form a large section in an Indian engineer's practice, especially canals and tanks. A canal of the importance of the Ganges canal performs as much work as 300,000 men assisted by 1,200,000 bullocks could do. Well, irrigation also gives employment to the engineer to devise the means of raising the water, now usually performed by the *pascottah*, which is a lever with a bucket at one end, attached by a rope and a counterpoise at the other, worked by two men, the *mot*, which is a leather bag, made from a whole ox-hide, raised from the well by two bullocks walking down a slope, and the Persian wheel, a cumbersome piece of machinery, also worked by bullocks. This mode of irrigation is inconsiderable in its results, compared to that effected by means of canals. Major Medley reminds us that the first canals opened out in India were those which had been made two or three hundred years ago, in the days of the Mahomedan Emperor, but which had been so neglected as to have become useless. These were repaired by the cheapest expedients, so as to bring them into working use again, without much reference to the true principles upon which such works

should have been constructed. Little, indeed, was known of the laws of running canals until observation wrought them out. Sir P. Cantley, in prosecuting the construction of the Ganges canal, which was one of the first undertakings of the kind, made great accessions to the current information on the subject, which will be, of course, available in further works, although there are still important points that are yet open questions. There are two systems of canal irrigation now in use in the north and south of India, which are known as the Madras and Bengal systems. The first of these is chiefly confined to the deltas of great rivers, and consists of throwing a dam across the bed of a river to raise the surface level of the water to canals, whose mouths are above the dam, which conduct the water to the lands requiring it. It is only available where the adjacent lands are not above the level of the surface of the river. But as the beds of many rivers are highly charged with silt during the rains, and thus raised to the necessary height to make this mode of irrigation possible, many long strips of fertile country are watered in this fashion. The other system is by inundation. Cuts are made along the borders of the Punjab rivers, for a certain distance, and are then carried in directions parallel with the fall of the country. When the river floods, these cuts water the autumn crop. In the cold season, when the water is low, the cuts are dry, and they are of no use to the spring crops. As the waters subside, it is found that they have left a deposit of silt in the canals, varying from 1 ft. to 10 ft. in depth, and the opportunity the subsequent dryness presents is seized upon for an effectual cleansing. A large body of labourers is employed in removing the silt. Some of these canals are 300 years old, crooked, following every winding of the ground, but still in good working order, owing to this annual cleansing. Lieut.-col. Anderson, who has had considerable acquaintance with irrigating works, considers that one of the first points in the management of canals is to keep up the velocity of the waters. Any change of direction causes a certain loss. The slope of the main channel should be less than that of the branches, which in their turn should be less than of the minor channels and branches. By this means a uniform velocity will be maintained as far as possible, and the deposit of alluvial matter made as equal over the lands to be irrigated as is desirable. The snows of the Himalayas are in reality the great supply of some canals, as they feed the rivers in which the heads of them are fixed. From the necessity of fixing the source of supply high up on the river's course, so as to obtain plenty of command of level, that portion of a permanent canal near the head has to be built in a series of steps, down which the waters descend in falls. The first question is not, How much water do we want? so much as, How much water can we get? for, in Northern India especially, there is practically no limit to the amount of land requiring irrigation to prevent famines. It is not, however, considered economical to make the channel large enough to carry off the utmost quantity of water the river can spare when at its highest, for experience has proved that this extra water would only be available for one crop, from which there could not accrue sufficient profit to pay for the outlay on the extra size of the channel and masonry works. It is a singular fact that, though the minimum discharge of the Ganges is reckoned at 8,000 cubic feet per second at Hurdwar, where it leaves the hills, and the Ganges Canal is made to abstract 6,750 cubic feet, there is no perceptible diminution of the waters, nor is any interference with navigation felt. Each cubic foot per second of discharge is assumed to irrigate 218 acres. In the Soane Canal project, 1861, Colonel Dickens reckoned three-fourths of a cubic foot of water per second for every square mile of gross area. The Eastern Jumna Canal is found to irrigate 296 acres with each cubic foot; and in Madras, 40 acres of rice, or 100 acres of sugar, can be watered with the same discharge per second. But a new system is called for in the mode of payment. At present the area watered is the fact taken into account, not the amount of water used; and there is great waste.

The obstacle to an adjustment of this difficulty consists in the fact that no practical method has been devised for measuring water under a constantly varying pressure. Many things have to be contrived in the formation of these double-purposed canals. Some of the land through which they pass may be too swampy for irrigation; more may be reserved for forests, grass

ground for all purposes, it would have presented a very different appearance, and have told a very different financial tale to-day. Our plan would have been to have had it quite open along its entire frontage, except some dwarf railings for police purposes. Then all could see it and be invited to enter as they passed along. It would have been well lighted everywhere, and that is a great point; for nothing is so depressing or deterrent to trade as a half-lighted, gloomy shop or market. Then, again, the market-carts could have driven in easily and unloaded, and the market would have been busy and popular. But what was done? The market was put on the side of a very steep hill, up which no fully-laden horse could possibly climb.

Then, as if to put the thorough extinguisher on the possibility of transacting business or drawing custom, a long curtain of shops was allowed to close in the whole line of front towards Farringdon-street, and the market proper was over-weighted and killed—at least not killed quite, but chloroformed into a state of stupor that has paralysed it to this day. *Facilis descensus Avernus*, it is true, sed revocare gradum is not so difficult in this case as in the one put by Virgil. There is time, even yet, to make Farringdon a useful, thriving, popular market. Clear that unsightly curtain of shops, and bring the market down to the very edge of the pavement; have it all open, that it may see and be seen; make the cart-entrances all on the lower level of the street; secure land for extension northwards; then, with two levels, we might venture to stake the pen we write with that Farringdon Market, under the shadow of the new viaduct, and with these improvements, would put flesh on its starved, skin-cutting bones, and grow fat, prosperous, and happy.

With respect to the small retail markets, such as those we have previously enumerated, and whose resuscitation may be very desirable, the only successful way is to place them openly in the "high street" of the place; let them be convenient and low-rented, easy of occupation by everybody, and then rigorously sweep away street-stalls of every kind and degree, whether on wheels or otherwise. A retail market, properly regulated and inspected, ought to be a great guarantee to its locality. If unfit food of every kind were turned out of it with punishment, sharp and sure to the seller, and no possibility of costermongering it about the streets, the public health would gain largely. Make the market fair and reasonable; and, having done so, force every dealer into it, or mercilessly "wipe him out" of street-bawking as an act of public safety.

Look at Billingsgate. Can any one understand why three millions of people put up with the cost, inconvenience, and monopoly of a fish-market not much bigger than a good-sized jobbing carpenter's shop? It seems a marvel; but there is the fact. Three millions of people whose eternal throat-splitting cry is—"Local self-government and no surrender,"—allow their fish, gathered from the waters of every sea, to be sent down to Billingsgate, in order that tax and toll may increase the price of the already too dear finny food! We ought to have large, unfettered, well-supplied fish-markets, east, west, north, and south of Charing-cross, the modern centre of London. Why, even Paris has a fish-market ten acres in extent.

Let us turn now to its vegetable counterpart, the ancient market of Covent Garden. What do we find there? Why, that the market proper has now become only the centre of the market of business. On each market morning,—Tuesday, Thursday, and Saturday,—the laden carts, wagons, greengrocers' "traps," and costermongers' barrows completely block up, and make more hideous with their shouting, yelling, and imprecations in every street from the Strand to Long-acre, and from Drury-lane to St. Martin's. Here, again, is a curious phase of modern London character. Covent Garden has been, for generations, the chief fruit and vegetable market of the metropolis. It has altered little in size, at any rate, since 1830, when the present market buildings arose, at an expenditure of 50,000*l.*, under the superintendence of the late Mr. Chas. Fowler; the space has not grown with the growth of the people. A few years ago, a clearance was made at the south-eastern angle for flowers and roots, but this is like enlarging an estate by pulling down an out-house or two; but the market is still far too small, and, what is more, and what is worse, the "Bedford people" are at their wits' ends about "room, room," being made a leading cry of public

opinion; because, when that comes to pass, the market must "move on." Yet, there it is, and the same three millions of people before mentioned, with their battalion array of borough members and of county members in Parliament, with their vestries, their chief boards and district boards of works, and other things, and all their trumpeting and shouting about their power and their greatness, are content to have their principal market of this kind in a small crowded-in square, the property and tax and toll of a private owner.

Now, there is no enlargement, practicable, of Covent Garden Market on its present site; the cost would be enormous. Let us take, even, the most moderate extension to clear the ground. Begin at the right-hand corner of the Long-acre end of Bow-street, and walk down to the corner of Tavistock-street, then along to the corner of Bedford-street, turn up to the right to Long-acre, and on, again, to our starting-point. Nothing on a smaller scale would make a "good job" of it; yet does not the immense value of the property immediately brand the whole scheme as impracticable? The rebuilding of Covent Garden Theatre on the site of the old house was a fatal mistake, so far as the enlargement of the market was concerned, and so it is felt to be. But for the reconstruction of the theatre there was just the probable speculation that the market might have expanded eastward to the Bow-street line; the more especially as the police-court is to be removed over a couple of years or so. With that space thrown in from Tavistock-street corner to Tavistock-street, and on to James-street, a stop-gap might possibly have been found for the next ten years, but for no longer. A population that sweeps the farthest market-gardens of England for its earth-grown edibles, and then scours the continent of Europe, extending even to the fruitful fields of Algeria, is not likely to remain much longer contented with a stable-yard area for its principal centre of distribution, nor to let that centre continue in a private hand.

Old historic associations and memories are fast fading away from us before the flood-light of modern "improvements." We have mentioned the removal of the Bow-street Police-court in a few more years. It is intended to place it beside the present station-house, extending backwards, and then turning at right angles and debouching upon what was Little Russell-street—now Russell-street only—opposite the colonnade of Drury-lane Theatre. At this moment may be seen an indication of the proposed change in the newly-built entrance-front surmounted by the royal arms, now serving as a temporary builder's yard, opposite the pit-door.

Amongst the places doomed to be swept away is one old memory dear to the historic heart of a by-gone time. This is the *Harp Tavern*; Russell-street—the old "O. P. and P. S. House" of a former generation standing next door to the place just named. Up by the side of it is a gateway leading to a lively-stable yard, and as all are scheduled are numbered; so, whilst we have the opportunity, let us place on record some incidents connected with its history. If we mistake not, it has been in our family connexion for nearly a century; amongst the "noted" houses for the sale of "pure malt and hop," it has always been noted; and, even in the present age of shameless and wholesale adulteration, it has not degenerated, if we are to believe some half-dozen certificates of Dr. Hassall.

The Harp is an old house. The yard was taken in and a square cottage built upon it, the ground-floor being the parlour of the tavern. It is the associations of this parlour that have helped to make the house famous. In times when actors lived on the battle-field of the drama the Harp parlour was one of their evening rendezvous both for song and supper. When the great Edmund Kean came out at Drury-lane, in 1814, he often refreshed himself at this hostelry, and amused the company, who were all, more or less, of the theatre, with his favourite song of "Lord Allen's Daughter." There is, now, a cast of his face over the seat where he formerly sat, and a suitable tablet recording that circumstance. The walls are covered with portraits of actors and actresses whose name are landmarks to the English stage. Many a

"Poor player
Who struts and frets his hour upon the stage,"
and who has long since

"Shuffled off this mortal coil,"

has found substantial aid in that parlour before he became famous. It was round one of its tables, too, that the flourishing "Society of Buffaloes," which now numbers thousands of branches, was formed.

There is still a curious social institution upheld there, called "The Ancient and Honourable City of Lushington," that, strange to say, claims to be the oldest temperance society in the world. But to go into an account of this curious association would lead us too far out of our way.

To return to the main subject. The question of market accommodation must soon force itself upon the governing powers of the metropolis and upon Parliament. To say that the great west-central market area can remain as it is, because it happens to belong to a powerful nobleman, is to say that Covent Garden must stand still whilst all the rest of the world progresses. The next inquiry is,—What is best to be done? Turn whichever way we will the prospect of expense is fearful. Suppose we were to buy the Duke of Bedford out, in what direction should we move? The cheapest way would be towards Bedford-street, by removing the church and the contents of the churchyard, and taking in the enclosing sides of Henrietta, Bedford, and King streets. This would give us double the present market area. Then we might at the eastern end push into Bow-street as far as the theatre would allow us. Here is the only palliative we can apply on the present site. The cry is still "Room, room, room!" and there is no room to give. The consequence is that a general choke up and corresponding nuisance take place every market morning, from an early hour in all the surrounding streets. Surely this can never be allowed to continue,—that, for the special benefit of an individual market proprietor, the whole of the adjacent thoroughfares shall be taken up by his market-paying customers to the inconvenience of the general public. To work our way into Long-acre would be too costly; but we might take the block from Evans's Hotel and throw ourselves in the same direction; whilst on the south side we might get into Tavistock-street and Maiden-lane. Our readers will now see the difficulty that envelops the subject, and, we believe, the anxiety of the Bedford office about it is no secret.

But is this the best we can do? Let us look round and see.

If we commence at the corner of Endell-street, Broad-street, St. Giles's, and go south to Castle-street, then, still keeping to the right hand, pass down Castle-street, we come to the top of St. Martin's-lane. We then continue our course up West-street, and Crown-street, to its junction with Denmark-street, by which we reach St. Giles's Church, and down Broad-street to the corner of Endell-street, our starting-point. In this tour we take the boundary-line of what is called "The Seven Dials." This will comprise an area about equal to that from Bedford-street to Bow-street, and from Long-acre to Maiden-lane, amounting to three times the length and three times the breadth of the present Covent-garden Market, and twice as large as Old Smithfield. This is the place in which a great metropolitan market could be planted. The streets of the Seven Dials are all "slums" and the lower strata of the inhabitants are composed chiefly of the dangerous classes. The place is like a rabbit warren, all cut up into courts and alleys. Who that has seen those cellar-dwellings of Monmouth-street, to which place the old, notorious "Field-lane" seems to have emigrated, cannot confirm within what we say? All the property required within this extensive boundary is of a poor description. A thorough clearing away would purify the social and moral atmosphere of that part of the town. The next problem, of dealing with the dispossessed people, is one that is capable of solution hereafter: it would be too extensive for discussion in the present paper.

Now, let us look at the advantages of site of our market in such a situation. In the first place that long, much-wanted improvement, the continuation of Tottenham-court-road, by the western end of St. Giles's Church, to the top of St. Martin's-lane, could be carried out along the western line of the market boundary. By this means all the western and north-western traffic for the market could enter its gates at once by New Oxford-street, and Tottenham-court-road, Hammersmith, Fulham, Patney, and Brompton, could come along Piccadilly, and enter by the southern gates, whilst the eastern ones, opening upon Broad-street, St. Giles's, and

the south-eastern upon Endell-street, Long-acre, would admit of all that came that way. Nor would this space, large as it undoubtedly is, be too large.

In a comprehensive, self-contained chief market of that kind for London, it must be borne in mind, that room would be wanted for bait stabling to a large extent, and warehouse space for the necessary fodder. Besides, stores would be required for large consignments of fruit, potatoes, and other root edibles, in passing from grower to consumer. Provision must also be made for the sale of dairy produce as well. It is not everybody who will care to go to Smithfield for a turkey, or a pair of fowls, or fresh dairy butter. In such a market sufficient space would exist for the breaking of bulk, and the transfer of loads; the moving about of carts and wagons; the ingress and egress of railway vans from all points of the compass, and the proper supervision, control, and refreshment, of both man and horse. Classification of either districts or goods could be carried out to the greatest attainable perfection; there would furthermore be no crush, no crowding of adjacent thoroughfares, no shivering horses in the by-streets, and no confusion; laden vehicles could be emptied upon arrival, and their loads stacked for sale, when they could draw off to the stabling side of the market that would be set apart for their use. Here we could have entrances on all sides of the great arterial thoroughfares of the metropolis,—the eastern and south-eastern by the top of Bow-street, to the next corner of Endell-street; the south, the same way from over Waterloo Bridge; the south-western, by Piccadilly and St. Martin's-lane; the western and north-western, by Oxford-street and Tottenham-court-road; and the northern and north-eastern, by New Oxford-street and Broad-street. Compare such a market as this would be with the present coalshed and greengrocer kind of affair. In the new market both sunshine and shelter could be at the optional choice of everybody and for everything, and nothing need be left undone or uncarried for.

OUR DEVONSHIRE VILLAGE.

Our Devonshire village is really a remarkable landmark on the map of England. Its scenery, its houses, its people, manners, and customs, are all fit for a novelist's pen or a painter's pencil; and yet, with all, its name sounds harsh. Boasting in all that is romantic, its name is as ungentle as could be. Glorifying in the name of Beer, its fame is not imaginary, for, cloaked with the grandeur of nature, it is surrounded, too, by an army of workers as busy as bees, who produce for our West-End worthies the elegant Honiton lace; and there is hardly a lady whose laced shoulders grace the "drawing-room" or "evening party" who knows what a charming and romantic district is that which produced her delicate covering.

It was the love of rambling, with the assistance of the travellers' friend, Murray, that caused our being introduced to this Devonshire village, one of if not the most romantic on the English coast. We had already commenced our tour along the South Devon coast, had taken our rest at several villages on our way, had enjoyed the borders of Dorset, the beauties of Lyme, had narrowly escaped a fall of 200 ft. in the great Pinney landslips,—a grand and solitary region, where giant cliffs and dense copse, craggy pinnacles and Mistress Echo lend enchantment to the scene;—we had passed through Axmouth and Seaton, and along the coast hereabouts is a pleasant, as well as a dangerous ramble; but, when we cross White-cliff, called by Murray a "bluff, picturesque headland," we are eyewitness to a scene which well repays us for the venture.

From above we look down upon "Our Village" in the valley, and truly it is a picturesque view. A single street of small cob-houses has a rapid winding descent towards the shore. The background is enlivened by clusters of trees. In the centre of the village is its curious small shaped church; and down the street runs an open stream of clear spring-water. Rising in the hills above, and augmented by other springs on its route, its velocity is so great that at the foot a pretty cascade empties it into the sea. On our left a corn-field runs to the edge of a cliff, and from this another view is obtained. While the foreground shows houses amidst the clustering boughs of many a good-aged tree, and the merry laugh is

heard deep down in the valley beneath us, we see the ocean sending forth its glistening waves, contrasting admirably with the stone, the chalk, and the green bushes and landscape which meet our view further west across the South-down Common. And on the edge, bounded by the sea on one side, and the rising ground on the other, we notice Beer-head, and while admiring this ivy-bung promontory of the lower chalk, we see before us the last chalk cliff in England.

It was a Sunday evening when we made our descent, and never did a village look happier. The cottagers, principally fishermen, were holding their evening converse with their wives, their children, and their neighbours, while the young girls, released from a week's lace manufacture, were taking their evening stroll down the highway or across the cliffs. And how the eyes of many of our London friends would have opened had they seen the gorgeous lace shawls which covered the shoulders of the majority of these Devonshire village beauties, who, reared humbly yet respectfully, are not too proud to accept the title of "Dumplings," so healthy and well do they look. Of course the appearance of strangers was a signal for a village ovation. Every eye was turned, our features scanned, and inquiries daily made, and it is not too much to say that within a very short time after, who and what we were formed the leader of their "latest intelligence." And even this was lucky, for we were thrown into the society of a worthy fisherman, boasting in the name of William Good, whose life has been spent here, and who, bearing the character of a free and sincere adviser to his neighbours, was not the whitest less courteous to ourselves. It was his lively conversation, and really useful knowledge, that assisted to bind us to the place, and to him our thanks are due for many expressions of goodwill and kindly advice while on our ramble.

Our Devonshire village has not changed much this century, for it likes not new faces. The same cob houses stand that stood in the days of the residents' ancestors, and but a very few indeed have given place to rebuilding. Still it must be supposed the buildings are sufficient for its population—a reality sadly against the village; and it must be owned that the value of the property in rentals, ranging from two to six pounds, is detrimental to its participation in the great reform, long wanted, and hardly as yet awakened. The clear spring watercourse still runs through the village, as it did in the days of our forefathers, and though its course was contracted into a narrower channel some twenty years since, and it now forms an open sewer, yet it is ever clear, ever sparkling, and to the stream is to be attributed the health the villagers enjoy. Two conduits, erected in the street, give a "constant supply" of spring water, and the Lord of the Manor, the Hon. Mark Rolle, has already commenced other works to improve this luxury—a luxury which East London would indeed have worshipped in the last cholera year. The velocity, too, of this merry stream is so great, that anything put into its course at the top of the village would reach the sea within but a very few minutes. So curious, indeed, did this freak of nature appear to us, that we still have before us a vivid view, and we can still in imagination see it merrily capering towards its ocean bed. And while the stream runs merrily on, while we walked along the pebbled path, we can yet see another sight, for the very grass grows beneath your feet, and ducks and geese trot about, taking little heed, and having little thought whether it be a village green or the Queen's highway.

At the upper end of the village are the schools and almshouses founded in 1820 by Baroness Rolle, whose liberality finds much praise in this part of the county, while a little farther on is the newly laid-out cemetery, which, to save the villagers carrying their deceased friends to Seaton, the Hon. Mark Rolle has, at an expense of 1,200*l.*, considerably given them. And let me not forget to mention another benefactor to the village, a Mr. Williams, of the Isle of Wight, who, having occasionally visited here, and noticed how difficult it was to get the fishing-boats on shore on their return from trawling, presented the fishermen with a capstan, which proves to be a great friend indeed to them.

But if the village is bright in the summer's sun, it is not so when the darkness of winter makes all look grim. When the shades fall, and the moon is far away, few can picture the scene. And when, three winters since, brackets for the lamps were fixed in the walls, many there

thought a great reform had come at last, that a good genius had been at work, and his deeds had but just been brought to light; yet curious still is the aspect, for along the single street, with the rushing waters beneath, and perhaps the stormy element raging above, the only light to be seen in this romantic valley is the strange flicker of a candle, or the but little better illumination from a lantern.

In the bay by Beer-head, the natural formation of the rocks presents one of the most favourable opportunities for the making of a harbour; and such a plan has been, I believe, some time in existence. Now Beer-head, called by the fishermen Berry-wold, is another curiosity, remarkable for its two natural towers of chalk, not to mention the ivy-clad appearance which gives a particular character to the scene. Looking up from the beach, and surrounded by the great cliff in this rugged cove, there is a certain enchantment lent which no words can here repay. And even while we see all this around us, while our minds become mixed up with retrospective glances and present-day experiences, other sights come to our gaze, and we recollect that the celebrated Beer quarry is worthy of a visit.

Beer quarry, about a mile up the road from the village, produces a most valuable stone, which for three centuries or more has been worked here. It is in two divisions, the old and the new. The old one, the stone of which is much softer, has not been worked for many years, but the new one is now supplying stone for many great improvements, not only in the neighbourhood but at a distance, including the cathedral at Exeter; and should a railway be made from here, and a harbour formed, this quarry will tend to raise our village to no small eminence in the history of these parts. Occupying, as already worked, about eight acres, it is at present held by Mr. Mitch, of Colyton, who, from what we could see, would do well to infuse more spirit into the work by a company or otherwise. Arriving at the entrance, low, gloomy, and forbidding, we shout as we had been directed, and in the distance is heard the echo. Soon we see a candle flicker, and a quarryman is duly introduced to our notice. We ask his name, and he answers, John Cowley. He commenced his work here so long ago as the 13th of November, 1825, while a mate of his, a James Tucker, who died two years since, dated his apprenticeship from 1807, showing that life, though thus confined, can exist in the deep recesses of a free-stone quarry.

It was then with this guide,—and "bad luck" to him who would venture into the labyrinth without one,—we entered the cavern and surveyed its precincts. And a wonderful sight it was, consisting of beds of freestone, lying at the junction of the chalk with the green sand, being principally composed of carbonate of lime, soft and easy to work, but hardening on exposure from the evaporation of the water it contains. You here see the huge blocks cut and removed by a single quarryman. These caverns are rendered, too, more imposing from the fact of the square pillars of stone left standing in order to support the roof; and which pillars are huge blocks, 18 ft. long, 7 ft. wide, and rising to the height of 14 ft., for the stone is generally constituted in layers of seven beds, and not higher. And when it is recollected that these deep recesses in the earth are under the rising ground in parts 300 ft. from the surface, it naturally excites our astonishment that falls-in do not often occur—the last of any consequence taking place half a century ago. And far into the interior of the darkness—for our only light was a small and remarkably thin candle—are some curious nooks pointed out. Here, in a narrow compass, far underground, may be seen the remains of the Smugglers' Cave; here Jack Rattenbury, the bold smuggler of the Devonshire coast, kept his court, among the smuggled spirits; here existed—does exist still—the chamber wherein law was defied, and strange scenes enacted. Jack Rattenbury left this world some fifteen years since.

As already stated, the inhabitants of our village are for the most part a fishing population. The fathers employ their time in mending their nets at home, or casting their lines abroad upon the sea, for the distance of about ten miles from shore. On, with the early birds at two or three in the morning, they seldom return until the day has far advanced. Of course, the village is not great in fishing repute, but it is well known round the coast that the Beer boats are large and strong, and that the men bear the general character of being honest, sober, and industrious.

Some have other trades besides a dependence on fishing, and well for them that they have; for, when rough weather sets in, they would stand poor chance against the sea off Beerhead. The boats are twenty-three in number, of which seventeen are trawlers and six are employed in catching lobsters and crabs.

When your morning stroll is taken, when you return from a lounge at Seaton or a ramble over the South Downs, you take a turn to the beach, narrow and limited as it is; you watch a little speck in the distance; you see it approach nearer and nearer; you perceive a sail, and, waiting patiently, one of the long-looked-for boats runs to shore. Already have the buyers arrived; already we see excitement; and when the fish is landed, the Dutch auction held, and the haul sold for, say, 8s., 10s., or 20s., or even less than the lowest of these sums, the fish is soon hurried away to be retailed some miles inland. And, as each little sail makes a run for shore with her fresh cargo, or none at all,—the produce of the briny deep, a continual excitement is kept up on this usually quiet beach for several hours. But the fish caught off here seldom, if ever, enter the London market; the consumptive powers of nearer cities claim the produce for themselves.

The housewives of Beer appear industrious, while the girls form parcel of the great lace manufacturing district, which though bearing the name of Honiton, is at least ten miles around it. Of course we have heard of Honiton lace; our lady friends have justly prized it from the time the Lollards introduced it in the reign of "Good Queen Bess," but we fear our fair friends of the West and little imagine that the earnings of those that manufacture it, do not reach to more than from 4s. to 6s. per week. How often do we close our eyes to the actual pay for labour in this country, when bent on enjoying its proceeds. This makes our girls marry early, and often leads them to a life of misery. Then they leave the village, and as often their ambition is to go to London, to the great metropolis they come.

The young men, too, of Beer seek their fortune, and many find employment in the great City houses, seldom forgetting, however, their native village. And as for the children, they all take early to the water, are good swimmers, and death by drowning here is rarely heard of.

But if our village is a model in one way, it is equally so in another. If the character of its buildings tend to tell us that Beer loves old associations, so the character of its people proves that all live in good fellowship with all men. It boasts not of the assembly,—

"Where village statesmen talk'd with looks profound,
And news much older than their ale went round."

It sits at a higher mark of distinction. In trouble, in sickness, or in health, the love of mischief is a prohibited pastime. Curiosity is at all times allowable, and Mrs. Camp and Mrs. Partington are not ladies to be easily "put down" in this age of ours, but the horrors of scandal-mongering, as detestable a crime as a fellow-creature can commit, are in this village a name, but no reality. Woo to those that do scandal at Beer! Would we could say as much for all other villages.

But what will be thought when I state they have neither a doctor, a lawyer, nor a parson amongst them? The inhabitants say they nurse their own sick, and can well plead for themselves. As for the parson, he resides at Seaton, about two miles distant. Again, ever ready to help each other, a "Volunteer Life Brigade" has been formed; it now musters 68 strong and active men embodied to protect their homes and families, and what was once a hotbed for smuggling is now the haunt of law-loving Englishmen.

Such, then, briefly, are the appearance and customs of our little village,—as romantic in realities as any village could be. And yet it is not alone: it is surrounded by others noted in more ways than one, and places of interest to us all. We have on the west the straggling village of Branscombe, picturesquely situated between three hills, one of which is 600 ft. high. At Branscombe, the workpeople of the late Mr. Tucker (the principal lace-merchant in the county) turned out, in 1839, the Queen's wedding dress, and here was produced for the Exhibition of 1851, a marvellous specimen of the art, value 3,000l. Beyond lie interesting and lofty cliffs, with their Weston-mouth, romantic little dell; Sutcombe Regis, once a fort, the last in the county to hold out for King Charles; and two miles farther is the much-vaunted Vale of Sidmouth, where the

Duke of Kent (the Queen's father) died, and where the world-famous Knowle Cottage (now closed) was, by the late Mr. Fish, of Walworth, thrown open every Monday to the eager inspection of the curious. It was a museum, menagerie, conservatory, and geological collection combined; and it was a sad blow to Sidmouth when, on Mr. Fish's death at his Walworth residence, in 1861, no more "Fishites"—as the visitors were called—passed through the place.

On the east of Beer, across the White Cliff, is the little village of Seaton. Beyond lie the magnificent, yet terrible, landlips of Pinney; and, farther, the quiet and picturesque Lyme Regis, on the Dorset coast. More north is to be found the ancient, melancholy, and dreary town of Axminster, once famous for its carpets; with Honiton near at hand, which alike is celebrated for its lace and butter; and recalling to mind as well as taste certain treats in wholesome Devonshire cream, butter, and cider, I often think of the pleasant time spent at our out-of-the-way village on the South Devon coast.

N.

THE SEWAGE DIFFICULTY.

A LECTURE on this subject was delivered some months since, by Mr. Baldwin Latham, C.E., at Maidenhead, before the Local Board of Health, in reply to a paper by Mr. J. D. M. Pearce, M.A., which was also read before the same Board; and both have been published in the form of pamphlets. Of Mr. Latham's able discourse* we give our readers an abstract:—

From remote periods works of drainage have been considered necessary wherever men have congregated together. Hence we find that the most ancient cities of the world were sewered. Then came a period in history when their benefits seem to have been forgotten or were ignored—when sanitary science, like many other sciences, descended to the very lowest ebb; and, though an object, as I will show you, of immense importance, and attended with great advantages, it has only been revived in its true spirit within the memory of living man.

The sewers of ancient cities were intended to convey the fecal and other matter; but the early sewers of this country were intended only to carry the rainfall to the nearest stream. In fact, it was illegal, until 1815, to carry faecal matter into sewers. Such matter was retained in cesspools, or by means of other contrivances. But the growing evils of harbouring such matter in the vicinity of or under our dwellings were so great, that the laws guarding sewers were allowed to lapse; but it was not until 1847 that it became compulsory to drain into sewers. Now, if we inquire how this great change was brought about, we shall find that it was not forced upon the country. No: the country adopted the measure in self-preservation; for it was not until epidemic diseases had devastated our populations, and were still threatening us with dire calamities, that works of sewerage were carried out. We find that in 1848 and 1849 no less than 53,293 men, women, and children of this country perished by that direful scourge, the cholera. Sanitary works were carried out in order to stem the tide of disease and death, and how they have accomplished that end, experience in towns in which they have been carried out will most fully demonstrate. At page 4 Mr. Pearce refers to "the failure of costly plans, which have been introduced" for the sewerage of London; but what is the failure spoken of? London, we find, is the healthiest metropolis in the world—far healthier than towns of much smaller size; and it is well known that, as the population increases in a town, the more difficult it is to retain the standard of health; yet London stands at the head of the large towns in our own country, because works of sanitary reform are carried out there more completely than in the other places. If we take Liverpool, Manchester, Birmingham, Leeds, or Sheffield, all of which retain excrementitious matter on the premises of the inhabitants, they are the unhealthiest towns you can bring forward. No population can be said to be healthy or free from devastating epidemics if living in the midst of aerial impurities arising from the detention of fecal or other deleterious matters. Then it becomes a question of vital importance for every town to adopt such measures as shall free it from the abominations which more or less crowd every ill-drained or

undrained place. A system such as Mr. Pearce deprecates, wherever carried out, has saved the lives of hundreds, and increased the standard of health among thousands. So it has fulfilled the conditions, and I may say the only conditions, that were laid down when the system was first inaugurated. Although the results of sewerage works are inestimable, I cannot but see that to some extent they have been marred by the state of pollution into which the rivers of this country have been brought. Yet it should be clearly understood that, although the present state of the rivers is a crying evil, it is not so great as the evils from which the towns have been freed. In fact, the lives and health of our citizens have been purchased at the expense of the rivers. It must be admitted that the purity of water is of great importance, and we shall not, as a country, derive the full benefit to be obtained from sanitary measures until our rivers have been freed from the abominations that have been poured into them.

In the opinion of Mr. Pearce, a rational mode is one that requires sewers, but also special appliances, such as pails, tubs, barrels, carts, horses, and men, for removing faecal matter; in fact, he considers sewers necessary; and so must all the advocates, whether it be of earth closets or of any other description of sanitary appliance. They cannot get away from the simple fact that sewers are necessary in every town which chooses to deal in a proper manner with its refuse matters, and preserve the health of the community, the only difference being as to what should be sent into the sewers.

The great difference between applying liquid and solid manures is, that, while the former are applied to the plant, the latter are applied more properly to the land. In both cases, the land is the medium by which the nutriment is given to the plant; but, if two given amounts of fertilizing matter be applied, one in a liquid and the other in a solid state, the solid manure needs to be exposed to atmospheric influences until it has become soluble; after this it requires to be taken into solution by water, before the plant can utilize it; while, on the other hand, we find that the fertilizing elements in the liquid manure are presented in a form fit for immediate assimilation by the plant. From which fact it is obvious, that a greater number of crops can be taken with liquid than with solid manure; which is equivalent to an increased area of land; but with this great advantage, that you have only one rent or first charge to pay for it. Water is the vehicle that conveys nutrition as well to plants as to animals. The quantity of water that usually enters the roots of plants is extremely large; it is then evaporated through the leaves, leaving the fertilizing matter to build up the tissues of the plant. The vegetable kingdom always takes its food in a state of extreme dilution; in fact, a concentrated essence of fertilizing matter will effectually destroy a plant.

Mr. Latham then enters at large into the case of Croydon, where, as he observes, 2,500 persons are now alive who would have been dead had it not been for the sanitary works there carried out.

At page 32 he says, "Mr. Pearce states that 'Edinburgh has had the best possible opportunity of judging, during the 200 years it has been practised in Craighentiny meadows, of the merits of sewage irrigation, and that it is emphatically and finally condemned;' and he goes on to say, at page 10, 'and if Edinburgh gives it up, who hereafter will dare to uphold it?' The author has here quoted an article in the *Builder*, entitled 'The new Town of Edinburgh, its Drainage and Water Supply.' Yet I must say that the purposes of that article are greatly perverted. In reading the author's pamphlet, you would be led to conclude that Edinburgh was about to give up sewage irrigation; but such is not the case. Edinburgh has three outfalls for its sewage: one empties itself into the Waters of Leith, which have become far more foul than the Thames water before the construction of the intercepting sewers of London; another into Craighentiny Burn; and the third into a burn called Pow Burn. The system of sewers now being carried out (upon the completion of which the inhabitants may be congratulated) will free them from a crying evil, or that evil which exists in every undrained city. Edinburgh is an undrained city, and now adopts the system of drainage. But does it give up the system of utilization? No! The sewage flowing into the Craighentiny meadows will be utilized as in former years.

* A Lecture on the Sewage Difficulty. By Baldwin Latham, C.E. London: Spon, Charing-cross.

As to Mr. Pearce's own particular scheme, that gentleman says at p. 17:—

"I propose that the Board should make it compulsory to close every cesspit in the borough, and to substitute a pit to be placed under the seat for the reception of the whole of the excreta; that it should engage or enter into contract with a proper person to empty these pits daily at such times and in such way as they may think fit, and convey the same from the town in hermetically sealed barrels or cisterns. The sale would cover the expense, and leave a profit."

There you have a scheme advocating the daily removal of human excreta from every house, leaving all other matters to find their way to the sewers. He admits that sewers are required, and house-drains will also be required; for what is the use of sewers in streets if you have not the drains communicating with them? And yet he would tell you that this is a system which is to save the expense of 8s. or 10s. for every house. It is no such thing. The cost of a water-closet is a mere trifle. And then you are to have a most expensive mode of collecting the material, and you are to have horses and carts for taking it into the country. To say nothing of the inconvenience of having the privacy of your houses invaded daily by men for the purpose of removing such abominable matter, is it not far better, taking a commonsense view of it, to let the sewage carry itself rather than you should carry it? And then you are told that, if you adopt this system, it will pay and leave a profit. A very similar system to that of the author's was adopted in the town of Hyde, in Cheshire. A certain company, called the Eureka Manure Company, undertook to collect the whole of the solid and liquid excrements of the population. Now, what has been the result in that town? Why, we find from parliamentary returns that the cost of applying this system to the town of 20,000 inhabitants would be 10,000l.; and the system is this, that water-closets or cesspools are done away with, that boxes or drawers are put under the seats of the closets, that these are removed from time to time, not daily. When this company was originally started, it was with the idea that they were going to give the people something for this very valuable matter; but they found out, after working a very short time, that they could not afford to give anything for it, so they took it for nothing. A little further experience demonstrated to them that, even that would not pay, so that they must make a charge of 2s. for every house; but before they have time to prosecute their labours any further an action is brought against them for creating a nuisance; they are found guilty, and the works are stopped, after incurring an expense and a charge of 2s., which, if capitalised, would amount to 15s. per head of the population. The town still had to carry out a system of drainage just the same, and at as great a cost as if it had been done for the reception of the water-closets. After the failure of the company, the Corporation of Hyde undertook to collect the matter in the identical manner portrayed in the author's paper; but when they went to work they found it did not pay to collect, and then they gave three months' notice to the inhabitants that they could not collect it. If fertilising matter is of any value, certainly it is in those districts of Cheshire in the neighbourhood of Hyde, and yet you find that the corporation, from accidental circumstances, actually adopted the system of the author; and yet we find that it could not have paid them, and so they gave it up, and a great number of the houses have put up water-closets, and others unfortunately have had to revert to cesspools. From a list of over forty towns in this country, in which the local authorities undertake to collect fecal matter from the houses, in not a single instance do they make a profit.

Birmingham is reported by the author as being one of the places that has an injunction against it for polluting its streams, yet it is not a water-closet town: not more than 5 per cent. of the whole houses have water-closets.

Birmingham is a town of ashpits and cesspools, and yet there you find the rivers polluted, and an injunction brought against the corporation, which would be the case in every town where a system is carried out that would only deal with fecal matter; because it may be laid down as a rule that any water brought into a town and serving the domestic purposes of man is not fit to be afterwards turned into a stream from which his fellow-man may derive his supply of water, until it has been purified.

The system of the author, like that of earth-closets, attempts to deal with fecal matter only, leaving all other matter to run into and pollute

your streams, so that you will not be relieved from the injunctions, which is one of the principles set up by the author; and not only so, but the system, instead of bringing in munificent profit, would be worked at a great loss to the town.

In conclusion, I would say, with regard to those systems of filtration which seem to be strongly advocated by Mr. Pearce as being far preferable, in his opinion, to irrigation, that a person only knowing the very first rudiments of chemistry would know how impossible it is to purify sewage by filtration. Filtration has been tried and found not to succeed. Other measures have been adopted, such as precipitation and deodorization or treatment by various chemical substances; there is no single case in which the plan has been found to answer. There is one point which will ever stamp precipitation, deodorization, or filtration as unsuccessful, which is this, that ammonia is the chief constituent of value in sewage, and as there is no known mode by which it can be rendered insoluble in water, and as it is necessary, for the time being, to render it insoluble in order that it may be precipitated; on the other hand, if it is assumed that ammonia may some day be rendered insoluble, then in an agricultural point of view the system would be a failure, because insoluble ammonia would be valueless.

I trust a case has been made out for sewage irrigation to your satisfaction. I came here to explain facts and elucidate truths, and I hope I have thrown some light on this very important subject, sufficient to enable you to see your way out of the sewage difficulty."

ARCHITECTURAL EDUCATION.

In the course of the opening address at the *conferenza* of the Architectural Association, elsewhere referred to, Mr. Spiers said,—I have from time to time during the course of my paper, made comments on the want of a theoretical education in architecture in this country; this absence of any system of teaching of the principles of either science or art has, of late, been deplored continually in the various journals, comparisons being drawn between the products of all countries in the Great Exhibition of Paris, and considerably to the detriment of our own. It would appear that, notwithstanding the immense advance which we had standing the time acquired over other countries in engineering and commerce, the workmen of such countries as Germany and France, being instructed in the theory of their mechanical operations, were able to work with so much greater intelligence, that not only had they caught us up, but were really surpassing us on what we imagined to be entirely our own ground; and our great manufacturers, apparently not content with the result of the schools of the Department of Science and Art, have lately instituted commissions, to make serious inquiry into the system of the education of artisans abroad, with a view of introducing them into England. In art we have always been allowed to be far behind-hand, and though the progress made in England between 1851 and 1862 was such as to give us reason to hope that in a few years' time we should have equalled our foreign neighbours, this present exhibition shows us that we are still as far behind as ever. It would be out of the scope of an address to enter generally into the vast systems of education; but I wish to call your attention this evening to the great desirability of establishing some more definite system of architectural education. So long as the history and principles of art and architecture are completely ignored in our schools and colleges, as one of the most intelligent means of learning the history of nations, so long artists and architects must "con amore" instruct themselves in the best way they can, without expecting to receive from the public that assistance or approbation of their endeavours which is always necessary to the production of true art. At the present day the only class which can be said to take any interest in architecture are archaeologists; and though I must allow that they have worked much good among us, to be always dependent on them would be fatal, as we should always be obliged to move in the groove of precedent. Of this groove, however, we must free ourselves in some way, and it is best to be done by forming schools,

where students can walk together, interchange ideas, and co-operate with one another. In support of what I am now saying I cannot help referring to an admirable paper contributed to the American Institute by Professor Ware, who is now travelling in Europe forming materials for the formation of a school in America. Professor Ware remarks that "whilst every other branch of applied science has multiplied schools in every part of the country, the art of building, upon which more money is spent and misapplied than upon any other, is handed down from generation to generation by personal tradition alone." "The system of articling or apprenticeship," Professor Ware says, "in America has disappeared, as being unsuited to the temper of the time, and no other sufficient means of education has taken its place. In the meantime the building profession is suffering from the isolation of its members; whilst in other professions they are brought together, as lawyers in court, physicians in hospitals. Architects never meet; and the profession presents the singular spectacle of a score of men, living and working within a stone's throw of each other, as much allied among themselves as they are separated from the rest of the community by taste and education, but each leading the life of a hermit, and not only cut off from the stimulus of personal intercourse, but, through all, are engaged in the solution of the same problem; never comparing results, nor profiting by each other's experience." Now our Association does much good towards remedying this state of affairs, and there is not one here this evening who will not bear me out, and especially the members of the Class of Design, when I speak of the great advantages offered in it for the study of architecture and the promotion of friendly intercourse amongst one another; but our members, or rather the members of those who attend here, are but limited, and a great deal has yet to be done. The Association has from the first exerted itself in favour of an increased architectural education, and from time to time has memorialised the Institute to that effect. To its pressure may be ascribed the formation by this body of a voluntary examination, and it did its utmost to promote the proposed school of which Mr. Scott threw out the first suggestions. The voluntary examination, for the possible reasons above stated, has almost fallen to the ground, and Mr. Scott's scheme never took wing at all. I hope, therefore, to be able to convince you this evening of the necessity of taking further steps in this matter. You will all, I think, agree with me, that the position of the Institute is such that, if a school were formed, it ought to be its chief promoter and director; and yet I fear that it may be taken out of their hands, for it is the intention of the directors of South Kensington to establish there a school of architecture, and the principles of the formation of this school will be adopted from one existing already in Paris, of which I propose in a few words to give you the purport and history. The "Ecole des Beaux Arts" in Paris is, as you are probably aware, a Government Institute, open to students of all countries on their passing an examination. The chief prizes are, or rather were, awarded by a jury consisting of the members of the Institute of France; the secondary prizes by various professors of the school. Now, as many of these professors and some of the members of the Institute had private studios of their own, their feeling naturally prompted them to be indulgent to their own pupils when awarding the prizes. A considerable abuse, therefore, had crept into the school, causing at the time great disturbance. In the midst of this M. Viollet-le-Duc, the eminent Gothic architect, obtained the ear of the Government; and in consequence a decree was published in November, 1863, changing the constitution of the school as follows:—

First, the prizes were to be awarded by a jury selected from the architects in Paris.

Secondly, studios ("ateliers") were to be established in the school, under the care of Government inspectors.

Thirdly, any Frenchman might compete for the grand prize without being a student of the school. And,

Fourthly, a new staff of professors were appointed, amongst whom M. Viollet-le-Duc himself was named a professor of theory of art and architecture, and the student was to attend regularly all his lectures, pass examinations in them, and frame their designs in accordance therewith.

Now, much as the students (hitherto of classic tendency) appreciated the publications of M.

Violet-le-Duc on Gothic architecture, the pill he wanted them to swallow was much too large to be taken at one time; consequently, after three ineffectual attempts to make himself heard in the lecture-room, he retired in disgust, and the Government allowed the school to relapse into nearly its former state, without, however, satisfying itself, by withdrawing the decree. Shortly after this circumstance, M. Emile Treilat, professor of the school of arts and manufactures, conceived the idea of forming a school of architecture, based on the theories of construction and construction alone. He pretended that art had nothing to do with architecture, and that all the problems of antiquity had been worked out by reasoning alone; the necessary conditions for stability and equilibrium being all that the Classic or Gothic architect had had to deal with. To M. Treilat, M. Violet-le-Duc goes at once, to aid him in forming a rival school to the École des Beaux Arts; but, unfortunately, their principles were not the same. M. Violet-le-Duc has the greatest belief in art and archaeology, Mr. Treilat disavows both. A compromise, however, seems to have been effected. M. Treilat would advocate the principles of art and lecture on them, if M. Violet-le-Duc would give up archaeology and the study of ancient monuments. The school, called "L'École Centrale d'Architecture," was formed two years ago; and when in Paris in August last I was conducted through the establishment, and there saw the result of the two years' labour. As far as architecture was concerned, the compositions were as wild, extravagant, and ugly as possible, and, as a rule, badly drawn; the system of study in the practical details of architecture, such as construction, materials, physics, &c., seemed good.

I was there informed that the authorities of South Kensington, fully alive to the great want of a properly defined system of architectural education, had made earnest inquiries into the whole system, bought a large number of drawings, which were pointed out to me, with the intention of forming a similar school at South Kensington.

Now, glad as I should be to see any system of architectural instruction established in England, it would be, I think, a source of regret to all here if the Institute should allow what is really their province, as the only chartered society of architects, to be taken out of their hands by a department which, though admirable in its own sphere, was founded for an entirely different purpose, viz., the artistic education of artists.

Many will remember a paper read before the Association in these rooms, four years ago, by Mr. George Gilbert Scott, in which, after remarking on the utter inadequacy of the present system of articling, to supply to the student a theoretical knowledge of architecture and power of drawing, suggested a scheme of education, and recommended the nomination of a committee, consisting of delegates from various architectural societies, to make inquiries into the said scheme, and report upon it. The Association nominated four delegates, but as we have never had any communication from them, I may assume, as I believe to be the case, that this committee never met, and the whole affair was allowed to fall into "abeyance." Now, that scheme of Mr. Scott's, admirable in every way, and containing in it the chief elements of a school which will be one day established in England, had the further advantage of being more feasible than any other scheme (and these have been many), hitherto brought forward; but it would seem that a link of the chain, which connects its formation with the present system, is wanting. We are rather apt to sigh for fresh changes and improvements, without looking around us to examine, and find out what really exists; if, instead of endeavouring to graft a new and untried scheme on an old one, we were to take note of the numerous advantages and inducements held out already, and work them into a regular defined system, and *provident* of study to begin upon, the difficulty experienced would be less, and the result, I feel sure, more satisfactory.

With your permission I will just enumerate a few of the opportunities which now exist for the acquirement of a proper knowledge of the theory and practice of architecture, and show what little use is now made of them.

The Royal Institute of British Architects offer each year nine prizes and medals, of the intrinsic value of 170*l.*, and there were last year twelve competitors only in all subjects. They hold also a voluntary examination, to pass which four only presented themselves this year.

They have a most valuable technical library; but, with the exception of the librarian and one or two others connected with its establishment, there are no readers.

The Architectural Association offer seven prizes, of the value of 24 guineas: there were twelve competitors in all this year. The meeting and classes, I am glad to say, are well attended, and good use made of the library, though it is small.

The Royal Academy offer four and three prizes, in alternate years, of the value of 180*l.* and 110*l.* respectively. The competitors for these prizes average four to six for all subjects. They have also, amongst others, a valuable course of lectures in perspective, and students are admitted to draw from the antique.

In addition to these societies we have the Architectural Museum; the Classes at South Kensington, and its library; the Society of Arts; and the lectures by Professor Hayter Lewis on architecture and construction at University College; and on constructive materials and design by Professor Kerr at King's College. A course of lectures also of the greatest utility at the two above-named colleges in surveying and levelling, geometrical and landscape drawing, descriptive geometry, mathematics, physics, geology, chemistry, &c., which to my certain knowledge are not attended at all by architectural students.

Here, then, is a long list of prizes and medals offered, and of inducements held out to students, which, from a want of some system of reduction to practical use, are almost entirely neglected; for the average number of competitors for prizes I find to be little more than one for each subject, whilst many of the lectures are not attended at all. How is this to be accounted for? I can scarcely believe when I see so many around me to-night, when I remember the large audiences at our meetings last session, that the younger members of the profession are apathetic, and care not for distinction; there must be some other reason, which I venture to think is this: during the period of his articles the student either does not yet take sufficient interest in his profession, or else is so hard-worked during the daytime as to be little inclined to continue his studies in the evening. When out of his articles he is inclined to fancy himself already an architect; and, instead of competing for those honorary prizes and medals as a further means of study, plunges into the vortex of public competitions, in which he is tied down to economy and practical conditions, and from which he learns little but of the partiality evinced by members of town councils, committees, and juries for their own private friends. Now, whether I am altogether right or wrong in my surmises, much of this could be remedied if the Institute would publish a pamphlet as advice to students and their parents or guardians of the course to be pursued in architectural education; pointing out, for instance, where instruction on special subjects could be obtained; what medals or prizes the student should compete for; and in what order and what should be the general skeleton of study to be adopted. Assuming, for instance, that five years be the least time (and it was formerly seven) that an architect's education can be completed, the first year might be spent in making up for that deficiency of scientific teaching, so much to be deplored, in our schools and colleges, by following the courses of lectures at King's and University Colleges, drawing from the cast at the Architectural Museum, and (when established) attending an elementary course of architectural design. The next three years should be spent in an office, learning practical work four days out of the six; the other two days being devoted to the getting out of competition drawings for the various medals and prizes before enumerated. The fifth year might be spent in travelling, and in preparation for the voluntary examination of the Institute, which might be supposed to terminate theoretically the architectural student's education in the same way as the degree of M.R.C.S. for a physician, and being called to the bar for a barrister on completing their courses of study. Now such a programme as this, which I throw out as a suggestion only, is one which is perfectly feasible at the present day, and would go far to remedy some of the defects which are felt by one and all in the present system, or, rather, want of system, of a course of architectural study.

In concluding my address, let me call the especial attention of the members to the syllabus set forth for them this session; and, in doing so,

to remind them that the main object of our Society being mutual instruction, they are bound, to a certain extent, to attend our meetings as frequently as possible, and, by taking part in the discussion, to give whatever information may be in their power; and in order to be better prepared to do so, it is incumbent on them,—and let me specially impress this on you,—to read up and study beforehand the various subjects on which papers are read, that they may be able to impart to others the result of their labours, in return for that afforded to them,—so that working together and mutually assisting each other in this great object we all have at heart (viz., the advance of architectural art), remembering that the monuments we are called upon to erect,—if not more lasting than the recorded memory in history, painting, or sculpture,—of our great heroes and statesmen, exert a far more extended influence from their magnitude, utility, and constant presence amongst us. That as in all ages the architecture of a country has testified more than ought else to its greatness, so we have before us the proud calling of raising those edifices which shall in generations to come bear witness to England's greatness and power, and may thus attain to such honour as that which attaches itself to the memory of that great architect, Sir Christopher Wren, in whose *chef-d'œuvre*, St. Paul's Cathedral, the passing traveller now reads these words,—

"Lector, si monumentum requiris, circumspice."

THE MIXTURE OF STYLES IN A BUILDING.

ST. ALBAN'S ARCHITECTURAL AND ARCHAEOLOGICAL SOCIETY.

THE usual autumn meeting of this really useful society was held last week (Thursday), in the Council Chamber of St. Alban's Town Hall, and was well attended, especially by the fairer sex. There was, indeed, much to attract, for on the walls of the room—and it is a handsome one—were hung some 200 folio-sized water-colour drawings of churches in Normandy, done with scrupulous care and spirit by more than a master-amateur, the Rev. J. Lewis Petit.

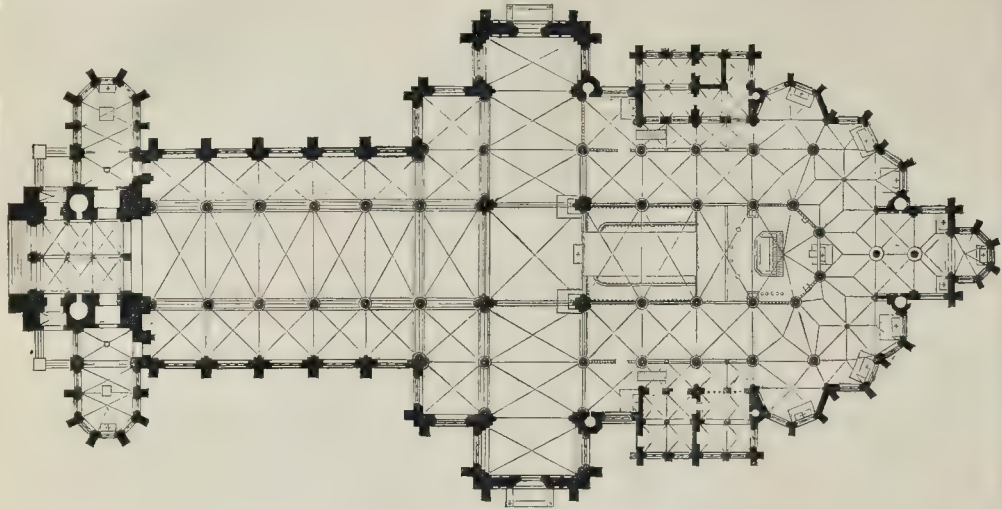
The meeting opened with a brief but sensible paper by Mr. Grove Lowe (the king of coin collectors in St. Alban's), called "Cold Harbours"—a puzzling subject among English topographical antiquaries. There are several "sanctuaries" (or Aleatican retreats) of the name in Hertfordshire—now, of course, of no use whatever to the murderer or the thief.

There was a "capital message," as Stow calls it, of this name in Dowgate Ward, on the Thames, in the City of London. The etymology of the name continues to be a riddle. Stow spells it "Cold Harbrough." A church in London, called Allhallows the Less, or Allhallows on the Cellars, was to be seen in Upper Thames-street before the Great Fire of London in 1666. Mr. Cunningham has a separate article upon it in his "Hand-book," with quotations from Ben Jonson's "Silent Woman," and Heywood & Rowley's "Fortune by Land and Sea," to which Mr. Lowe might have referred with advantage.

Mr. Lowe's paper was followed by Mr. Petit, who, from a few notes, and a good memory, proceeded to give a very interesting account of the "discrepancies of style" in the same building, which he was inclined to look upon rather as beauties than deformities; nor was he willing to look differently on the picturesque pent-house bits that surround so many fine old cathedrals and churches on the Continent, and, as at York, give grandeur to the whole elevation. These, when they are unmistakably old, he would not pull down. He then referred to the beauty of the High-street, Oxford, which, by the way, must have been once far more beautiful in its irregular sky-line of roofs than it now is.

Here is a sample of Mr. Petit's matter:—

"Among the objects which occupy a prominent position in the Acropolis of Athens, is a Medieval tower, perfectly plain, and evidently intended for this purpose of defence; it was, I believe, erected by the Venetians. It is possible that a rigid antiquarian, exclusively devoted to the art and architecture of ancient Greece, might wish this tower to be pulled down, as out of character with the pure Classic remains of the Propylæa, to which it is annexed, of the sublime



PLAN OF CATHEDRAL AT LINZ, ON THE DANUBE.—MR. STADT, ARCHITECT.

See p. 784, ante.

temple of the Parthenon, and the other relics of an age unsurpassed in the beauty of its productions. I confess this is not my feeling. I do not look upon the tower in question as any blemish in the scene. It rather improves than injures the general outline; it by no means detracts from the dignity of the other buildings comprehended in the same view, and it may have its value as a historical monument; for if the age of Pericles be the most interesting period in the history of Athens, it is not the only interesting period, and we are not called upon to sacrifice the records of other periods, for the sake of fixing the attention more especially upon one. If I am right in assuming that the individual tower is not out of keeping with the rest of the picture, it becomes a question whether there is any general principle which constitutes harmony between buildings altogether different in their character and architectural style. I feel very certain that my views on this subject will not meet with general acceptance, and I am not in the least disposed to bring them forward in a dogmatical manner; still, I trust they may furnish some suggestions not without value even to the practical architect." "We all know how perfectly the different Mediaeval styles harmonize together in our cathedrals and large conventual churches. Your own magnificent abbey offers the finest illustration that can possibly be found. What can be more different or opposite in character than the rude Norman tower and transepts, and the light and elegant Decorated choir? The nave comprises the Norman, Early English, Decorated, and Perpendicular styles (you must excuse me for sticking to the old terms, as I am used to them), and each worked in its most distinctive and characteristic manner, and yet who that has an eye for the picturesque, or a feeling of the value of architectural history, would wish to replace the effect by one of uniformity? Ely, Gloucester, Norwich, Winchester, Tewkesbury, are magazines of several Mediaeval styles, which are mixed and combined in the most perfect harmony; and the list, as you well know, might be much enlarged."

"Now my object is to suggest an inquiry as to what is the principal or the pervading element which gives to these groups that harmony which they decidedly possess. We notice that in all the cases to which I have referred the builder of every part has had his own definite aim and purpose, and has worked in the style, whatever it might be, which belonged to his own age and country. It may appear a paradox, but I fully believe that there exists so much harmony in each group, because there was so little attempt

on the part of the designers to ensure it. Their honest independence has proved a firmer bond of union than the most subtle adaptations and imitations. To my mind there is nothing which is less in keeping with an old Gothic building than a new Gothic building, not because it is inferior to it either in design or workmanship, but because the one actually belongs to its own age and expresses its spirit, and the other does not. It may be, or it may not, that the Gothic will again become our national style; if it does, there will be something about it to characterize it as such; and then it will no doubt harmonise with old Gothic on the same principle on which any building designed in the style of its own period will harmonise with it; nor do I suppose the similarity of detail will do otherwise than increase the harmony, but at present I doubt if even the most careful reconstructions, except it be on a very small scale, will perfectly satisfy the eye and the mind. In adaptations it is difficult to avoid deception on the one hand, or unsuccessful imitation on the other. Architecture is too high and noble an art to indulge in deception; and an imitation, to be worth anything, must be but little short of a deception. Our Gothic architects, are, indeed, now striking out a style in some respects distinct from and independent of the genuine Mediaeval styles; but while we cannot but regard their efforts with respect and admiration, and do honour to their genius, neither can we allow that they have as yet accomplished the task of forming or establishing a national style, and one expressing the spirit of the present age. But it is not my wish now to discuss the merits of rival styles; I would simply express my conviction that in almost every case in which buildings of different periods combine in a pleasing and satisfactory manner, each building is a genuine production of its own period, and not an imitation of the style of another. If we had a national style of the present day, I would rather see important additions, or what are called restorations, in our Mediaeval churches, carried out in such a style, than in imitation of the older building. It was in this manner that the Mediaeval architects themselves did their work."

Here is another example:—"The domestic style of architecture which prevailed in Queen Ann's time, at least such specimens as do not exhibit the classical orders too prominently, has always appeared to me to harmonise extremely well with Gothic buildings, and it is a style which might be used in the present day without giving the idea that we are adopting the manner of an age different from our own. For it is a style which, I may say,

without any modification whatever, is calculated to meet all the requirements of the day, whether we want size or number of rooms, fine proportions, good ventilation and lighting, convenience of passages and staircases, or a stately and dignified aspect. All these may be obtained in the Queen Ann style, with as little waste of material, or unnecessary expense, and with as much attention to durability, as any style that can be named." My belief is that genuine works of excellence, if they are brought together, as it were naturally, by accident, and without apparent effort, would always harmonise. I believe that Karnak, the Parthenon, the Colosseum, and York Minster, so brought together, would be found in harmony. I do not say that an artist could so bring them together, that is quite another question, for the great charm in such combinations is that they are not intended, or designed, for effect: the principle of unity is something natural, not artificial. If it is impossible to define or discover it, depend upon it we shall not find it impossible to create it. If there is anything in what I have said, the practical lesson we should draw from it is in the first place that we work, as far as it is possible, in our own national style, and that of our own age; or if there is not such a style, then take for our models such examples as seem best fitted to meet the purposes and the requirements of the present day, and which have architectural excellences we can appreciate. If such be found among the Mediaeval styles which have passed away, well and good; let us adopt it by all means. But if not, we are no more tied down to Gothic, than the Greeks were to the Egyptian, or the Romans to the Greek, or the Romanesque, Byzantine, or Gothic architects were to either. The men of the Renaissance did not think it necessary to conform strictly to their ancient models. Such an architecture as that of the Middle Ages could not pass away without leaving some permanent mark, and Italian churches show much that is Mediaeval in construction, composition, and spirit. The style, though derived from an ancient source, is anything but a tame and pedantic reproduction."

Some votes of thanks terminated the meeting.

COMPETITION.

Cheshunt College, Hertfordshire.—The design of Messrs. Lander & Bedells, of London, has been chosen, in a limited competition, for the intended new buildings at this college.



THE CHURCH OF ST. MAURITIUS, COLOGNE.—MR. STADTZ, ARCHITECT.

See p. 704, ante.

SIR ROBERT KANE ON TRADE UNIONS.

At the Social Science Congress, Belfast, Sir Robert Kane delivered an address, as president of the Economy and Trade Department. Touching on the question of trade-unions, he said,—To arrange the respective claims of capital and labour in the division of profits at any stage of an industrial undertaking, should require in itself very accurate knowledge of details to avoid injustice, and it is not surprising that, where both parties are interested in the result, and neither quite free from prejudice, serious difficulties and collisions should occur. It is, however, consoling to observe, that notwithstanding the deplorable revelations recently made at Sheffield and elsewhere, there has been of late years a steady tendency to more temperate and rational consideration of those questions both by masters and men. Instances of violence have been rarer and less serious, and the economic principles by which such questions must be governed have obtained more general acceptance. The gradual diffusion of education among all classes, the discussion of those subjects by the public press and in the Legislature, has helped to dispel a great deal of ignorance which had hitherto prevailed, and which was by no means confined to the lower or working classes, whose action, in seeking to protect themselves by associations for mutual defence against the overwhelming influence of capital was, when kept within proper limitations, not merely compatible with, but a consistent corollary from economic principles. The voluntary association of the members of any trade or industrial occupation to collect facts as to the circumstances of that trade, to discuss such questions as may influence its welfare, to determine and mark the qualifications of a skilled workman, and to propose the rate of wages by which his labour should be paid, cannot be considered as overstepping the legitimate field of action, provided that no attempt is made to coerce or injure those who do not freely embrace its membership and accept its rules. An individual and isolated workman is so powerless—he is practically so unable to stand out for a higher price—his necessities are so pressing, and generally he is so ignorant of what really influences the labour-market at the time, that, unless by union with his fellows, he is not in a position to get even his plainest rights, if it is the interest of his employer to refuse them. On the other hand, by the discussion to which the relative claims of capital and labour, of the respective rights of the employer and employed, must be subjected at those meetings of the most active and best informed among the working-classes, many of the prejudices which darken the mind of the working-man in regard to his employer are certain to be weakened, if not removed, when he obtains more information as to the circumstances of his branch of trade. Hence, although their agency has been so often employed for purposes which nothing can justify or even palliate; although frequently made mere instruments of the vanity of ambitious men who prey upon the simplicity and absorb the funds of the honest artisan, the operation of trade societies has been, upon the whole, more frequently useful than otherwise, and may, as I believe, be rendered highly beneficial in arranging all questions in dispute among the industrious classes. The fearful system of outrage that has been revealed by the inquiries lately conducted at Sheffield will, in itself, prove the necessity for some legislation, which, whilst firmly repressing by condign punishment all attempts at violence or coercion, will recognise and support that which is wholesome and just in trade organization, and provide a legitimate and authoritative tribunal for the adjustment of such questions as may be in dispute between masters and men. A very useful and effective agency in abating prejudices and diffusing sound knowledge of the economic laws which govern labour and its price, has been the establishment of co-operative societies, where the property of a factory or other undertaking is held wholly or in part by the workmen themselves, and where consequently they have to bear the responsibilities when they enjoy the profits of capital, as well as of labour. There is now no doubt of the practical success of a large proportion of the undertakings founded on that principle. Not merely in manufactories and general stores, but in mining and even railway management, that principle of co-operation has been tried, and with success. In Great Britain, in America, in France, and Germany, the workmen have thereby learned that the rate of wages is

by no means at the caprice of the employer; that the prices of produce may be raised and yet profits be none the larger, if the prices of raw materials have advanced in an equal or greater proportion. These co-operative undertakings have also had a valuable effect in bridging over the chasm which had for so long and so injuriously separated the capitalists and the working classes. For these countries, especially when, by the gradual development of our constitutional privileges, the middle and working classes are yearly acquiring more and more influence in public affairs, it is important that no feeling of hostility or estrangement should be allowed to remain between the employers of labour and those whom they employ; that all should feel that they are members of one common body, the producers of public wealth, the real sources of national power; that from the humblest workman to the great capitalist, there is but a graduated hierarchy, in which the ascent, though difficult, is not impossible to energy and talent; that the interests of all the industrial classes are indissolubly united, so that, for true and permanent success with men and masters, the surest course is mutual goodwill and co-operation. When it is fully understood that all civilised society is based upon the reciprocity of rights and duties; that the property of the humblest worker in the products of his toil is equally sacred and inviolable with the hereditary rights or the accumulated treasures of the greatest in rank or wealth; that under the protecting aegis of public law, the weakest is safe from injury or injustice; then those barriers of ignorance and prejudice which have for so long obstructed the normal relations of landlord and tenant in Ireland will of themselves fall down, and the true interests of both classes will be found in friendly intercourse, fair business contracts, and co-operation for the general good.

THE LORD MAYOR AND THE ART-UNION OF LONDON.

The Lord Mayor (Sir Thomas Gabriel) entertained at the Mansion House, on Friday evening, the 25th ult., the council of the Art-Union of London, including Mr. Antrobus, F.S.A., Mr. Henry Baker, Mr. Chas. Barry, Mr. Banno, F.S.A., Sir William Bodkin, Mr. Broadwater, Mr. Butterworth, F.S.A., Dr. Dickson, Mr. Godwin, Mr. Thos. Grissell, F.S.A., Mr. Henry Hayward, Mr. Jas. Hopgood, Mr. Charles Hill, F.S.A., Mr. R. Hudson, F.R.S., Mr. Charles Mayhew, Sir Chas. Nicholson, bart., Mr. J. R. Planché (*Somerset Herald*), Mr. Lewis Pocock, F.S.A., Mr. Zouch Troughton, Mr. T. S. Watson, B.A., Professor Westmacott, Mr. Thos. Williams, Mr. Alderman Wilson, and others.

In the course of the evening,

The Lord Mayor said,—Nothing tended so thoroughly to elucidate any subject under consideration as just and correct comparison, and nothing so fully illustrated the marvellous acquirements made by society in the present day in the arts and sciences, and in everything that bears upon the moral and social condition of the people, as comparing the present state of things with the condition of society thirty years ago. And, amazed as we should be at the progress made in that time in all that conduced to commercial and political greatness, when comparing our present mode of communication and transport by telegraph and steam with the modes known and used thirty years ago, we should be no less astonished at the advancement made in the physical and moral condition of the people, and especially in the general dissemination of a taste for the Fine Arts, when looking back at the state of society in these respects thirty years. The sole adornment of the dwellings of the humbler classes then consisted in a few vulgar, staring earthenware figures, or the well-known pictures of a fine lady with a red face and dazzling green gown, inclosed in the universal black frame. These, fortunately, have become things of the past, and the artisan and humbler classes show that they fully appreciate the capital engravings, illustrating the first masters of the day, and other works of taste brought within their reach. Nothing had tended so much to bring about this marked improvement in the tastes of the people as the labours of the Art-Union of London, the council of which society had that day honoured him with their company. This society, composed of gentlemen of all professions and calling, united for the single object of the advancing of art, had, during the last thirty years, expended

about a quarter of a million of money in bringing within the reach of all classes the choicest specimens of works of art; and by thus familiarizing the public taste with things of beauty, had helped the growth of the appetite for them by the things it fed on. If ever the labours of this society were necessary, they were so at this time, for nothing could enable us as a nation to keep our place among the manufacturing countries of the world but a thorough education, and training of the people in all that belongs to the arts. A love for the beautiful was innate in the human nature, and the rudest savage would prefer a decorated and well-proportioned tool or instrument to a rough, ugly article; but, if this is true in that class of manufacture, how much more so was it with reference to all those articles of every class required to meet the luxurious taste of the day incident on the vastly increasing wealth of every country. We might therefore depend upon it that if we wished to avoid seeing ourselves altogether distanced in the manufacturing of all articles in which any thing like taste could be introduced, and left as the manufacturers of only coarser articles,—in fact, becoming the hewers of wood and drawers of water among manufacturers,—we must diligently do all that tends to improve and raise the taste of our people; and in conclusion he said he would then give as a toast the name of the society which had done so much in bringing about the good already accomplished, joining with that toast the name of Mr. Godwin.

In returning thanks to the Lord Mayor on the part of his colleagues, as well for the observations he had then made as for his hospitable reception, Mr. Godwin said many years had elapsed since, when their esteemed co-member, Colonel Wilson, was Lord Mayor, the council had been received in the City. The career of the Art-Union had been an eventful and a remarkable one; and, when the history of the progress of art in this country should be fairly written, it would be found that the Association had played no unimportant part. The early progress of it was remarkable. When Mr. Henry Hayward, Mr. Lewis Pocock, Mr. Bond Cabbell, and himself, the only four of the founders remaining in the council, had sat down at a small table in a small room first to organize it they had hardly expected such a result as had followed. Scarcely able to obtain a subscription of 500l. in the first year, it soon became 1,000l., then 2,000l., 5,000l., 12,000l., 14,000l., and so mounted to nearly 18,000l., after which it subsided to a comparatively steady income of from 12,000l. to 14,000l. a year, according to the aspect of social and political events. About 340,000l. had been raised by its means, the whole of which large sum, with the exception of the necessary expenses for rent, clerks, printing, and so forth, had been devoted to the encouragement of artists, and the dissemination of works of art. The gallant admiral, Sir Alexander Milne, in replying for the Navy, had spoken of the extent of the service, and had mentioned many foreign ports. At all those ports, wherever an English man-of-war floated, the Art-Union had a colleague engaged in the dissemination of works of art: wherever, indeed, English men and women were located, whether in China, India, Barbary, Egypt, Russia, Turkey, New Zealand, or the gold diggings of Australia. It was surely no small thing thus to have spread over the world an associated brotherhood interested in the progress of the arts that ennoble and refine. Looking round the hall in which they were assembled, he was reminded of a member of their council, the late City architect, through whose endeavours mainly the corporation had been led to aid nobly the sculptors of the country, by filling the niches of that apartment with their works. It was to be hoped that before long the corporation would be led to call in the aid of the sister-art, painting. Strange to say, there was not a single picture in that Mansion House of the richest city in the world. He hoped he might not be thought impertinent for mentioning it: at any rate, it was a fact not to be proud of, and ought to be remembered. Many then present would remember a building in Venice, known as the Scuola di St. Rook; which, built by a fraternity of merchants 300 years ago, and still belonging to them, had been visited and enjoyed by pilgrims from all parts of the world. And why? Because that corporation had wisely devoted some of their funds to its adornment by Tintoretto and Titian, who had there set up grand specimens of their art. For many years the reports of the Art-Union had urged the desirability of placing works of art on the walls of

public meeting-places, and where they could delight, appeal to, and influence the multitude. Public galleries of works of art in our provincial towns were greatly needed. In most French towns, as at Rouen, Caen, Lyons, Lille, Bordeaux, there were galleries of art to which the public had free access: it was surely not creditable to us,—it was not wise, even commercially,—that, with the exception of those in the three capitals, no such collections were to be found in England. He was glad, however, to be able to mention, as a fact not yet generally known, that the corporation of Liverpool were about to redeem us from this opprobrium, so far as their town was concerned, having determined to erect a gallery and found a public collection of works of art. A leading member of that corporation and their architect had already commenced the examination of the principal picture-galleries in Europe, with the view of determining on the best plan; and as soon as that was settled the work would be commenced. It was earnestly to be hoped the example would be followed in our other large towns.

EVENING AND SATURDAY AFTERNOON RESORTS.

The London Early-closing Association has issued a printed syllabus of places of resort for instruction and amusement, such as literary institutions and evening classes; national institutions, including museums and art collections, to which should have been added the Schools of Art; and, for recreation, gymnasia, swimming-baths, parks, and environs, &c. It would have been well to have added places of temperate refreshment with instrumental music for the evening, where good tea and coffee, chops, &c., could be had at very moderate prices, and without either the strong drinks or the buffoonery of music-halls; but there is really no such place of resort in London at present that we know of. Hungerford Hall was the only thing of its kind, and it was knocked down when the Charing-cross Hotel and Station were built. We understand, however, that it is about to be revived, with the same name and on precisely the same principles, in the arches below the Charing-cross Hotel itself. At the old Hungerford Hall, a small teapot of excellent tea, with loaf and butter, and sugar *ad libitum*, could be had for sixpence, and good instrumental music all the evening, from five o'clock p.m., with chess and draught boards, newspapers, &c., all for nothing. The great want of such temperance *cafés* in London has often been pointed out in the *Builder*, and it is to be hoped the hint will be followed up. As regards instruction there are able and excellent scientific lectures nearly all the year round and at almost nominal fees, on Monday evenings, at the Museum of Practical Geology in Piccadilly. These lectures have not been attended as they ought to be, nor are the Schools of Art.

SCOTLAND-YARD.

It was in Scotland-yard that Evelyn built and furnished a house for Mr. and Mrs. Sidney Godolphin, ancestors of the Dukes of Leeds. It will be remembered that Evelyn's great-grandson, the late Hon. E. Venables Vernon Harcourt, placed a MS. of the renowned diarist in the hands of the Bishop of Oxford for publication, in 1848. It was a biography of Mrs. Godolphin, who was one of the maids of honour of the queen of Charles II. The good Evelyn calls the subject of his memoir a "constellation of perfections," a "young saint," a "jewel," a "starr," an "incomparable Christian, virgin, wife, and friend;" and seen, as he saw her, against a background of frivolity, luxury, and licentiousness, her purity and piety could scarcely have been depicted with less encomium. Her affectionate friendship and early death invested her memory with a peculiar interest in his eyes; and he required but little solicitation to put the particulars together which constituted the neatly-written MS., that for 170 years remained unpublished. She died at twenty-five, in Scotland-yard, leaving an infant son ten days old. Her husband made no second marriage. He was created Earl of Godolphin, and lived to see his son, Francis, thirty-four years old. The son married the eldest daughter of the Duke of Marlborough: a daughter of this marriage, Mary, married the fourth Duke of Leeds.

When Mrs. Godolphin was five years old she was taken to France by the Duchess of Richmond, who gave her into the care of the Countess of Guildford, then in attendance on the widowed queen of Charles I. When her Majesty came back to England after the Restoration, the child was restored to her mother, Mrs. Blagge, wife of Colonel Thomas Blagge, groom of the bed-chamber to Charles I., with whom she stayed in London till the Great Plague broke out. She was visiting her father's relations in Suffolk during the prevalence of this scourge, when the Duchess of York made choice of her as a maid of honour. Upon this, though only twelve years old, she removed to court, and lived there till the duchess died, when her services were retained by the queen, and she removed from St. James's to Whitehall. It was here she made the acquaintance of Evelyn. After seven years of attendance on the queen, during which time she scrupulously held herself aloof from the surrounding gaieties, she begged permission to retire, that she might devote the whole of her time to works of piety and charity. After some delay, and with much reluctance on the part of the king and queen, she obtained her suit. It is suggestive to learn there was another kind of life pursued in that gorgeous palace besides basnet-playing, love-song-singing, and "toying," with three duchesses at a time. Before dawn, Evelyn tells us, there was always one figure there, kneeling in adoration of the King of kings. And, again, "Were it never so wet, cold, and dark, even before daybreak, in midst of winter," she was always present at the first of the four daily public services in the chapel, and attended the rest whenever she could contrive to do so. It was on the occasion of her subsequent marriage, that Evelyn built the residence in question in Scotland-yard. We know him to have been a man of taste, the patron of Grinling Gibbons, and can well imagine that these premises were as "sweet and pretty," and full of "all manner of conveniences," as Mrs. Godolphin appreciatively and gratefully declared them to be. Where are they now?

THE STAGE.

Haymarket.—Mr. Sothorn has returned with the untiring *Dundreary*, strengthened by the advent of Miss Robertson (sister of the dramatist of that name), from Drury Lane. Additions were needed to the lady portion of the company here, and this is a good one. "The Winning Card" is a poor farce, but it enables Mr. Compton to make the audience laugh.

Princess's.—"Arab-na-Pogue" is running well again; and certainly, if a very interesting and well-constructed story, capital acting by Mr. Vining, Mr. and Mrs. Bonicourt, and Mr. Dominick Murray, and very charming scenery are of any avail, this is not to be wondered at. It is something, too, to have a piece which has been put into French, not translated from it.

Adelphi.—It is some time since a piece was so well put upon the stage here as "Maud's Peril" has been,—an effective though not in all parts agreeable drama by Mr. Watts Phillips, which will, doubtless, run some time, and ought to do so. The assistance of Mr. Grieve and his sons has been obtained in the scenic department, and with excellent effect. The first scene, an ornamental lodge with wide open verandah round, hung with plants in pots, and showing the hall and park beyond, is excellent; and the same may be said of an interior that follows. Miss Herbert has a part that suits her well, and does full justice to it, though her declamation is a little too stilted. Mr. George Belmore, one of our best actors, plays with great power and intelligence a returned convict. On the first night his acting was a little overdone, but the experience of a few nights has brought the necessary moderation.

The New Queen's.—"The Double Marriage" the romantic play with which Mr. Alfred Wigan has opened his new theatre has the great merit of being entertaining. Mr. Charles Reade being a competent and well-known author, some disappointment has been manifested on the discovery that the story mainly proceeds from a French source. It would seem almost that we have few, if any, dramatists who can invent a dramatic story. Our own belief is, however, that no one ever invented anything,—certainly not a whole play. Nothing can come of nothing. Everything is built up. Many rills are needed to make a river, and a great many story-tellers went to the making of Homer. Let this pass,

however, just now. Acted and mounted as "The Double Marriage" is, it can scarcely fail, in conjunction, too, with the bright new theatre, to draw large audiences for some time to come. Mr. Wigan, Miss F. Addison, and Miss Ellen Terry are its main supports, all acting admirably; but Mr. W. H. Stephens, Mr. Lionel Brough (new to London as an actor), Mrs. Saville, and Miss Henrietta Hodson, contribute greatly to the general result.

THE CO-OPERATIVE MOVEMENT.

THE co-operative principle, in various forms, is making rapid progress.

A numerous meeting of the inhabitants of Holloway and Highgate has been held in Hampden-hall, Hampden-road, in furtherance of the movement. The meeting was composed almost entirely of working men and their wives. Mr. W. T. M'C. Torrens, M.P., presided, and expressed his approval of the co-operative movement. Mr. Heine made an interesting and suggestive explanatory statement, and in illustration of the importance to the working classes of co-operation, and the practice of the ready-money principle in the purchase of their food. Resolutions were passed approving of Mr. Heine's plan, and virtually establishing a company, to be known in future as the Holloway and Highgate Co-operative Society (Limited).

A Co-operative Society for the sale of meat was formed in London in May last. The store is at 23, Rood-lane, Fenchurch-street. Associates pay 5s. a year; members 1l., without further liability. The present price for the best meat is 8½d. per lb.; everything else at corresponding prices. The patrons are Earl Spencer and the Earl of Ducie. The committee consists of Mr. J. W. Malcolm, M.P., Captain Holman, Mr. D. Forest, Captain Mackenzie, of the London Scottish, and his brother, Mr. A. G. Mackenzie. Captain S. Flood Page is the chairman of the committee. The society is managed with a view to reduction of prices, and not to profit.

A lively scene took place in the carcass market of Bristol on Saturday morning last. No sooner were the gates thrown open than some fifty or sixty workmen, representing as many firms, made their appearance, and commenced buying meat in the carcasses to be cut up and retailed at "prime cost" to their fellow-workmen. Some of the butchers were outrageously abusive, and a good deal of ill-natured "chaff" went about, but the purchases were made, and the workmen attained their object, for during that very day meat went down in price in Bristol.

At Highbridge, Somersetshire, a "co-operative bakehouse" is about to be started to sell cheap bread; and a firm has undertaken to purchase sheep and oxen and have them killed, so as to sell the meat for much less than do the local butchers. In this way prime mutton is being sold at 6d. a pound, and good beef at 5d. and 6d.

The movement has made great progress in Cheshire, there being no less than twenty-seven societies at work in it, which is a high average for the population. The largest of these is at Stockport, which has 660 members, and the next at Hyde, which has 624 members. The Sunderland-street Equitable Provident Society in Macclesfield has 320 members, 148 of whom were admitted during the last year. The amount received on shares during the year was 968l., and the whole share capital was 1,241l. The cash received for goods during the year was 12,980l., of which 1,319l. was profit. Of this 1,041l. were distributed in dividend to the members; 117l. were applied to paying off interest; 153l. were set down for depreciation of stock; and 6l. expended in charitable gifts.

Mr. D. F. Fowell, of London, has delivered a lecture at the Odd Fellows' Hall, Falcon-street, Ipswich, upon "Co-operation—what it has done and what it will do for Working Men." At the end a large number of those present gave in their names as members of a store. A successful co-operative store is in work at Chelmsford.

At Edinburgh, steps are being taken for the organisation of a supply association, on the plan adopted with so much success in London by the members of the Civil Service. A meeting of gentlemen, comprising representatives from various banks and Government offices, and a number of professional men, has been held, according to the *Scotsman*, and a provisional committee nominated to take preliminary steps. The proposal has been received with much favour.

by the large class of householders having stated incomes, such as those engaged in banks, insurance offices, Government offices, and other like employments, upon whom the increasing cost of living presses with great severity. Already some of the leading establishments have offered to deal with the association on the same terms as in London.

A SWEET SHOP IN OXFORD STREET.

No. 86, OXFORD-STREET, a house erected a few years past, with some architectural pretensions, has lately undergone considerable internal alterations, to render the premises applicable for the purposes of a first-class "Confiserie Française," similar to those tasteful establishments of the Rue de la Paix and the Boulevard des Italiens. The front has been cleverly decorated, in the Pompeian style. The want of flat surfaces on which to execute the delicately designed ornaments of the style, rendered the treatment somewhat difficult. However, our attention is more with the interior, inasmuch as we have here specimens of French shop fittings and decorations. The whole has a pleasing effect. The colouring has been kept to the same tone as the furniture and fittings, and is relieved by the judicious introduction of contrasting colours, used in small quantities in their original intensity. Greater part of the furniture has been made in France, and very well made. The coloured decorations were executed by Mr. Homann, who is, we understand, carrying out some of the decorative work at the Mansehouse erected by her Majesty to the late Prince Consort. Messrs. Finch Hill & Paraire were the architects. The costliness and elegance of some of the *bon-bon* boxes here will surprise ordinary visitors.

PRESERVATION OF STONE.

In a recent number we printed the heads of a paper on this subject by Mr. Spiller, read at the Dundee Meeting of the British Association; and we had previously alluded to a remark which was made in the discussion on that paper by Mr. George F. Ansell, to the effect that the best plan for preserving stone would, in his opinion, be by exhausting the atmosphere from the wrought or worked stone or marble by means of an air-pump, as it is done in the case of "oreostated timber," and then to admit an atmosphere of that dense gas which is known as ter-fluoride of silicon; or, as Mr. Ansell preferred to call it, non-silicic acid. The president of the section remarked upon this suggestion, that it was just such a one as cropped up at these meetings, and was likely to be of practical value. Those who were interested in the preservation of stone will examine this proposition, and should take some steps to carry out the idea conveyed. Let us look at the subject a little more in detail. Mr. Ansell stated that he would operate upon the stone when it was fitted for its final position, whether as statue, block, or moulding, and he expressed an opinion that a stone so treated would become one solid mass of insoluble substance, upon which the atmosphere would have no influence, and that, in fact, marble so treated would become as permanent as granite, without loss of colour. This, if it be the fact, is easy of demonstration. The action of the gas would be as follows: when the stone had been exhausted, the term is, it would represent a kind of sponge, into the pores or interstices of which the ter-fluoride of silicon would, when admitted, permeate, so that the stone would become saturated with that dense gas instead of with water and air, as it usually is. So soon as the stone thus appeared came into the air, the moisture of the atmosphere would act on the ter-fluoride of silicon, and mutual decomposition would ensue, the result of which would be to fill the interstices of the stone with pure silicic acid, better known as sand; while the ultimate result of the substance would be the formation of the fluoride of lime, commonly known as Derbyshire stone. In the case of ordinary mortar it is well known that the sand under the influence of time, moisture, &c., combines with the lime, and forms an insoluble silicate of lime; hence Mr. Ansell expressed an opinion that the silicic acid in the proposed would also form a silicate of time; and it will be seen that these changes are intended to take place throughout the entire mass of the stone. Expense can hardly stand in

the way of experiments in this matter, for ter-fluoride of silicon is readily obtained by boiling together washed sand, or broken glass, and Derbyshire spar in common oil of vitriol. The gas could be conveyed or collected in the manner used by chemists. Should, however, it become necessary to invent a more simple plan of operation, the creation of the want would be but the forerunner to its accomplishment, as has been so often the case. According to Mr. Ansell, there would be little or no practical difficulty in applying this plan to completed buildings.

THE SEWAGE QUESTION.

Kingston and Surbiton.—A special drainage committee was lately appointed by the borough council of Kingston-on-Thames, to inquire into the best way of disposing of the sewage of the borough which now runs into the Thames. The report of the borough surveyor, Mr. Charles Slagg, to the committee on this subject, has now been made and printed. He proposes to use the surplus water at Teddington Weir in the disposal of the sewage, and thinks it advisable that the Sewage of Long Ditton, Thames Ditton, East and West Molesey and Hampton should be similarly dealt with, by making use of the fall of water at Hampton Weir. For Kingston and Surbiton he suggests the formation of a reservoir and outfall near Teddington Lock, and irrigation of lands in the neighbourhood by conveying the sewage beneath the soil in reverse drain-pipes, or semi-cylinders, with serrated edges, and topped by flat tiles, so that the liquid sewage will pass through into the soil, a layer of gravel intervening. Every three or four years a ripping-plough for the purpose should lift and clean these pipes, throwing the sediment on the soil to be ploughed into it. The drains should be about 12 ft. apart, and 1 ft. or less below the surface. The sewage on this plan would be conveyed direct to the roots of the crops, and the surplus moisture would of course be drained off clean. The surveyor proposes to deal with 300 acres in this way to begin with. The total cost of the system he estimates at 29,180*l.*, and he anticipates not only that all expenses will be covered, but a profit ultimately reaped.

Reading.—The pressure of the great question of the disposal of the sewage equally affects this town. The Thames conservators are here threatening as well as elsewhere. The borough surveyor, Mr. W. H. Woodman, and consulting engineer, Mr. John Lawson, have made a joint report to the local drainage committee, in which they propose a new scheme of drainage, at an estimated cost of 49,000*l.*, with outlet works near Blake's Lock, and a sewage farm of 887 acres at Lower Earley, Sonning; the soil to be irrigated by the sewage on the South Norwood and Worthing system.

NEWS FROM SANDRINGHAM.

Great progress has been made during the last few weeks in completing the new kitchen and offices, in expectation of a visit from their Royal Highnesses the Prince and Princess of Wales. This wing, which is built of Car stone, and white brick dressings, is divided from the unfinished state, but is temporarily connected by a covered way. The portion now completed consists of the kitchen, 30 ft. by 23 ft., and 19 ft. high, and is fitted up with every modern appliance for cooking, by Messrs. Adams & Son, of London. The scullery adjoins, and is of the same height as the kitchen. The remaining portion of this wing extends at right angles with the mansion, and contains confectionery and pastry rooms, kitchen-maid's and footmen's room, and at the end a servants' hall of ample dimensions; out-buildings are again continued from this, consisting of washing-rooms, brushing and boot-cleaning rooms, and a pump-room. An iron tank, holding 3,000 gallons, is placed over the scullery for the supply of water to this part; and a 2½-inch main leading right through the building, with hydrants at various points, will furnish a considerable supply in case of fire.

Gasworks have been erected by Messrs. Walker, of Donnington, Shropshire, near the farm buildings, and the mains laid through the grounds to the hall, also to the residence of Sir W. Knollys and the Equerry's Cottage in the park. The

lighting of the new wing is completed. It is proposed ultimately to light portions of the grounds with standard lamps, the Norwich gates, &c.

The old conservatory adjoining the house is being rapidly converted into a billiard-room, and an American bowling alley, 100 ft. long, is being built: the wall on one side is of concrete, 18 in. thick, and has every appearance of being as hard as a rock. This alley and the billiard-room will be lighted with gas.

The intermediate block, now in course of erection, will consist of a large room, 30 ft. by 18 ft., to be used as the steward's dining-room, a housekeeper's room, linen-room, housemaid's sitting-room, butler's department, strong-room, coffee-room, &c., with dormitories over for female servants; a basement story runs under this portion of the building, and will be fitted with heating apparatus, wine, beer, and coal cellars. It is anticipated that this block will be roofed in by Christmas.

The whole of the building works have been carried out by Messrs. Goggs, contractors, of Swadham, under the direction of Mr. Humbert, architect. Mr. Schofield is clerk of the works.

THE WARMING AND VENTILATING OF BUILDINGS.

Mr. CONSTANTINE, known as proprietor of the Turkish Baths, in Manchester, has given much attention, with a view to obtain the best descriptions of apparatus for air-heating that could be procured. Some of these failed, from the constant tendency of the metal to superheat and overdry the air; others consumed an excessive amount of fuel, and rapidly wrought their own destruction. From defective internal arrangement, the combustion was so imperfect as to permit most of the heat to pass up the chimney. There was an obvious want of sufficient internal absorbing and external radiating surface, and an utter impossibility of securing uniformity of temperature, even with the most vigilant attention. In seeking to remedy these evils, Messrs. Whitaker & Constantine have devised and patented a stove, which they find, when in operation, fully to equal their expectations. Several have been erected in and around Manchester, for warming and ventilating churches, chapels, public buildings, Turkish baths, mansions, and drying-rooms. The apparatus may be thus briefly described:—The lower portion consists of an ash-box, with fire-grate above. These are surmounted by a series of nearly flat iron arches, each being deeply grooved, to form a chamber, with an aperture at the top of each arch leading to the smoke-box. These grooves extend also down the sides, and each is a separate coating, so as to be easily replaced, if necessary. They are fastened together by a peculiar joint, which is said to admit of expansion and contraction without risk of fracture. Fire-clay is used for projecting the flame into the convoluted flues, and for ensuring slow and uniform combustion of the fuel, and also for preventing superheating of the air, and at the same time protecting the castings. A stove on this principle, large enough for a small chapel, does not consume, according to the patentees, more fuel than an ordinary sitting-room fire; while, in consequence of the slow combustion, it only requires attention at long intervals. A circulating boiler could be fixed in the convoluted stove, without interfering with its use as an air-warmer.

ST. MARK'S, AT MARSKE.

The new Church of St. Mark was consecrated by the Archbishop of York on Thursday, the 17th October. Owing to the old church, St. German's, being inadequate to the increasing population, the Church of St. Mark was commenced, under the liberal patronage of Lord Zetland and a zealous committee.

The new church is a spacious and substantial building of the Early French period, to seat 705, all being free. Dimensions of nave, 76 ft. by 31 ft.; chancel, 30 ft. by 23 ft.; north and south aisles, 76 ft. by 13 ft., with an elegant and substantial tower on the south-east corner, and a spacious porch on the south-east side. The principal entrance is from the west, which forms a semi-porch with rich moulded doorway and carved capitals. The exterior is all built of pitched-face blocking, "light sand stone," from

Lord Zetland's Marsh Quarry; the windows of aisles being double lancet, having bar arches, with bases, shafts, and caps, &c., those to clear-story being sexfoil, and a beautiful rose window in the west end, filled in with cathedral glass. The east window is of stained glass, executed with great taste by Heaton, Butler, & Bayne, London, the gift of the tenantry to the memory of the late Countess of Zetland.

The main arcade in the interior springs from circular columns, which have carved capitals and bases of the same period. The lining is pressed bricks throughout, relieved with stone bands with good effect. The timber of the roof is all fir, constructed on the circular-ribbed principle, springing from stone and wood corbels, with ornamental hammer-beams, and boarded diagonally; that of the chancel forms a wagon-head ceiling, with moulded ribs. The benches are all red deal, stained and varnished. There is tile paving in the chancel, Maw's, of ornamental design; in the passages, red and black Staffordshire, neatly arranged. The heating apparatus was supplied by Messrs. D. & E. Bailey, London.

The contractors for other portion of the works was Mr. Wilkinson, Coatham. The entire cost was upwards of 4,000l., against which there were 1,000l. subscribed by the parishioners, and Lord Zetland presents the remainder. It ought also to be added that Mr. J. Pease contributes an illuminated clock and bells. The works have been executed from designs by Mr. F. P. Cockerell, London, and under the superintendence of Mr. G. Carter as clerk of works.

THE ARCHITECTURAL ASSOCIATION CONVERSAZIONE.

THE opening meeting and *conversazione* of the twenty-sixth session of the Association were held on Friday evening, the 25th ult., at the House in Conduit-street.

In the rooms were displayed a number of paintings and works of art. The drawings of the successful competitors for the various prizes offered by the Association were also exhibited.

The attendance of members and visitors was more numerous than usual, and included a number of ladies.

The chair, having been taken by the newly-elected president, Mr. R. Phené Spiers, it was announced that letters had been received from Sir F. Grant, Mr. Tite, M.P., Professor Donaldson, Mr. Godwin, and other gentlemen, expressing their regret at not being able to be present.

Mr. E. G. Tarver read the report on the class of design, which stated that the first prize had been awarded to Mr. G. Vials, and the second equally between Messrs. E. Lee and Metcalfe.

Mr. C. H. F. Lewes announced that the prize for figure drawing in the Life School had been given to Mr. E. H. Bearne.

Mr. J. D. Mathews (hon. secretary) brought up the report of the judges on the Architectural Union Company's prize, which recommended that half of the amount should be awarded to Mr. W. R. Tilling.

Mr. T. Blashill intimated on behalf of the judges that the prize of 5 guineas, offered by the out-going president (Mr. R. W. Edis), had been awarded to Mr. E. Lee.

The successful competitors having received their respective prizes, the President delivered the inaugural address, quoted on another page.

At the conclusion,

Professor Hayter Lewis ventured, both as a Fellow of the Royal Institute of British Architects and as a member of the Association, to congratulate the meeting on the prosperous and satisfactory condition of the Association. It was from the junior members of the profession that the Institute must draw its life-blood, and no machinery could be better devised for its circulation than an Association like that which had begun another session that evening, because all its members derived benefit from an interchange of knowledge, from healthy competition among themselves, and from a salutary system of self-government which was not too proud or too self-reliant to invite the senior members of the profession to visit them occasionally, and give them the result of their experience. He quite agreed with what had fallen from the president in reference to the necessity of sketching; and he thought he might paraphrase the words of Bacon, and say that sketching made a correct man; for it would be impossible for the student fully to understand the beauties of nature if he

did not carefully sketch. It was, in fact, careful sketching which accustomed the hand as well as the eye to appreciate the beauties of Nature and Art. The joining of the masonry, the forms and shadows of the mouldings, the light tints of colour, were all of importance, and might be overlooked without a sketch. He believed it was Mr. Street who, when dilating on this subject, said that, when the student had made a very good sketch, the best thing he could do with it would be to put it into the fire; and Professor Kerr, who was present on the occasion, thereupon observed, with much propriety, that for his own part, he would much rather the sketch were given to him than burnt. That which Mr. Street, however, no doubt intended, was, that when the student had made a careful sketch, he had got as much knowledge through its agency as could be acquired on that particular subject. At University College he found that the students failed most in sketching, and to improve them in this respect the questions were framed as much as possible so as to get the answers in sketches; for he felt no doubt that a few lines carefully drawn, and with a few references, would give a better description than any amount of writing. The reason of the failure to which he referred was that the younger students frequently endeavoured to do too much in too little time. He would venture to throw out as a suggestion, that it might be desirable to set aside, in some of the classes, half an hour or so, to be devoted to putting on paper thoughts upon some cognate subject suggested on the spur of the moment, and then comparing these notes. This would, he thought, be the means of eliciting a good deal of practical information. This sort of inquiry, even into the most familiar subjects, often revealed the somewhat discouraging circumstance that one knew very little indeed about them. But, on the other hand, this appreciation of one's own ignorance was most useful because it put the student on the high road to inquiry and reflection, and then after a little work it became quite a pleasant surprise to him to find that he knew so much. With regard to figure drawing from the life, he was happy to say that at University College it was now in contemplation by the Council to establish classes for drawing from life models under the instruction of competent artists. He had been in communication on this subject with the head master of the college drawing school (one of the most successful existing), and also with a gentleman well known in that room, Mr. Poynter. In the course of his address, the president had referred to the Institute; and with reference to this subject he (Professor Lewis) felt bound to allude to the discouraging circumstance that so few competitors came forward for the prizes which it offered. If, on the other hand, there were obstacles which were insuperable of removal, he was sure the Council of the Institute would be glad to consider them, and to act upon any well-considered suggestions which might be offered with that view. There was only one other point to which he would refer, and that was the modern style of architecture in France, noticed by the president. For his own part, he could not agree with the latter in his admiration of that uniformity, and he did not think foreigners themselves were enamoured of it, because he found it extremely difficult to get photographs of their modern public buildings. In conclusion, the speaker moved a vote of thanks to the president for his address.

Professor Kerr, in seconding the vote, availed himself of the opportunity to add his congratulations to those of the last speaker, on the progress which the Association had made for at least one-and-twenty years. The Association had steadily proceeded in one direction, namely, the instruction of junior architects, and in this way had effected much good. The Institute had been referred to both by the President and by Professor Hayter Lewis, and all he would say on the subject was, that if the student depended upon the Institute for education, he would not be able to realize his expectations, for it would be perfectly impossible for it to do much more than it did. The little success which had attended the voluntary examination scheme, got up, as it was, at considerable expense, and in a spirit of perfect sincerity of purpose, was a proof of how little the Institute could do in the way of education. The best means of education, apart from office-work, was that furnished by the Association, and it was a gratifying illustration of the good which had been effected by it to find that more than a dozen of the best designers of the day had been educated by it.

Mr. T. Roger Smith observed, with reference

to the tinting of the architectural drawings at the Paris Exhibition (to which allusion had been made by the president), that those exhibited by Mr. Waterhouse, and which obtained the only grand medal awarded to English contributors, were all tinted by that gentleman's own hand.

In the course of the evening there was a concert of instrumental music, by Messrs. T. H. Waight, Svendsen, Weiner, and Schmeier.

COMPENSATION CLAIM AT LIVERPOOL.

THE premises of an Italian warehouseman being required for the Central Station and Hotel, Lancashire-street, a claim for loss of property and business has been made against the Manchester, Salford, and Lancashire, the Great Northern, and the Midland Railway Companies. The original claim sent in was 12,085l., being 6,820l. for leasehold land, messuage, shop, warehouse, stable, hereditaments, and premises; 1,023l. compensation for compulsory sale, and damage; 3,692l. for loss or destruction of business; and 850l. for sudden realisation of stock-in-trade, and 198l. damage, compensation, and reinstatement. Subsequently an amended claim was put in for 11,000l. odd, which was resisted by the companies. The jury viewed the premises, which were shown by Mr. Jefferies, architect and surveyor, of Burkenhead, on behalf of the claimant, and by Mr. J. Arcott, for the companies. On returning into court a long consultation ensued, between the legal gentlemen, and an award of 7,257l. was accepted, the claimant, who will occupy the premises for other twelve months, retaining the fixtures, which were valued at 500l.

DARLINGTON WORKHOUSE COMPETITION.

SEN.—Noticing a letter in your last from "An Old Subscriber," which conveys the impression that the guardians have not honourably fulfilled their conditions, by withholding the premium advertised, I think it only fair to inform your readers that so long ago as December 24th, 1864, the committee selected my design as the best. A question, however, arose at the same meeting respecting the tenure of the land, and the Board have been some months negotiating respecting it and other affairs, the question is to alter the old or building a new house depending on the result. Having failed to make a satisfactory arrangement as to the old property, the guardians have at length purchased a new site, and have paid me the premium in lieu of employing me to carry out my design.

I do not see what ground of complaint your correspondent has, except that the committee did not appropriate the money as he himself appears to do.

I think if any one has ground of complaint, it is I, that, "owing to circumstances over which" no one "had any control," I should only receive a small premium instead of a good commission, and have to compete again for the latter.

J. P. FRICHTETT.

* * We do not agree with Mr. Frichtett, that our first correspondent has no cause of complaint; his actual complaint remains wholly unanswered by this letter.

HOLBORN BAR AND VIADUCT.

IT is evidently too true that, as this Journal has so frequently remarked, in all our endeavours to first improve, and then to beautify, our streets, we have been both, and simply in effect, that a third plan is not previously fairly laid down and accurately adhered to. In instance the long-sought for removal of that unsightly block of buildings known as the Holborn Bars, which has at length yielded to common sense, if not good taste and judgment, exposing, as it now does, the very irregular, winding frontage of the Corner Court-houses, some of which have been recently extensively rebuilt on their former very distorted line. Surely the Board of Works, and the Local Board, must have long since foreseen the certainty of the removal of this long and disagreeable excrescence in one of our greatest thoroughfares, and ought to have been empowered to enforce upon "the give-and-take principle" to arrange these frontages upon their rebuilding to a uniform line, ranging from the end of Staple-Inn buildings to the upper houses of the late Middle-row, or even to Southampton Buildings, thus giving or taking, in no instance more than 1 ft. either way, but affecting an aid and suited improvement. To the great credit of the engineer of the Thames Conservancy, this system is now always enforced and adopted, in the removal of all wharfs, piers, and embankments up and down the river, on whose plan a bold and sweeping line is defined, bearing no doubt the motto, "Thus far shalt thou go, and no further," but with permission, where necessary or beneficial, to recede or advance. The fine appearance recently erected all above upon the above site must strike with regret for the bungle which has been committed.

H. R.

TOWN v. COUNTRY.

YOUR correspondent "Rus" thinks it clear that—

"God made the country and man made the town."

because the town contains Homesteads and Bethnall Green. That the country is wholly God's handiwork is a notion none can doubt, while equally certainly the filthy, squalid, overcrowded, and disease-manifesting Homesteads and Bethnall Green prove the town to be man's work. If, then, all filth, squalor, overcrowding, disease, and pestilence are to be banished from the town, the first and most important step is to get rid of the man's production, where does "Rus" classify the storm that tears up the mighty trees like twigs and flings them in upward on the ground, the lightning that splits and burns the oak, the countless creeping grubs that spread their late-laid film over hedge and tree and up all every green leaf, the insidious earth-worm that in ignorant search after food cuts off the leader of the plant and stops its summer growth, the unreasonable frost of an early spring which

seeming satire and contempt strews the ground with tender shoots and makes the early tinge of green a broken promise, the universal law of nature by which the strong oppresses the weakly neighbour; the raven picks up for its morning meal the tender rabbit, with its nerves, its limbs, its wonderful eyes, when surely any disorganised lump of matter were as suitable food; the rabbit himself, who wages ceaseless war on every green thing, and would soon depopulate the earth were there not dealt out on him a star as ruthless? Illustration is as endless as the face of nature is vast, that the law established everywhere is the same, which gives its flint, aquator, overcrowing, and disease to Houndsditch and Bethnal-green—the power placed in the seemingly irresponsible hands of the strong over the weak. If, indeed, in the reduction of this power to the rule of right and justice, is made manifest the work of God, we see such manifestation clearer in Houndsditch and Bethnal-green than in the country, for there this mighty work is plainly in hand.

Basilist is surely right, and not "the amiable but morbid poet," and these injustices—these offences to our sense of what is just and good,—we were wise to attribute to the miserable conditions of early man, who, with God's all knowledge and in the intention of His uttering wisdom, must pass through the faulty state of ignorant animosity so offensive to our aspirations before he can step out into the clean and wholesome breadth of a man—achieved by God through the purity of the Builder and other such manifestations of handi-work we justly call man's own, if, indeed, in the highest sense, his creature can claim anything of his Creator. H. F.

FROM SCOTLAND.

Edinburgh.—Designs for new Free St. George's Church have been prepared by Mr. David Bryce, architect, for a site secured at the angle of Handwick-place and Stafford-street. The ground was occupied by houses, and in the purchase of the site something like £20,000, were expended. The design is in the Palladian style, and will supersede features new to the architecture of the city. The ground has been cleared, and already some progress has been made with the masonry. The cost of the building, exclusive of the site, will be from 17,000l. to 18,000l., so that the entire expenditure will not be less than 30,000l. The price obtained for the old church was £10,000l., so that the congregation will have to contribute an amount to raise; but a large proportion of the sum required has been subscribed.

Glasgow.—A new Home, erected at Lochburn, near Maryhill, for the inmates of the Glasgow Magdalen Institution (in which institution the original Magdalen Asylum of Glasgow was merged in September last) has been formally opened. The house is situated on the slope of a high eminence, about 300 yards north from the site, at Lochburn. The front of the house faces the south. It is three stories high, the ground floor being occupied by such apartments as the directors' room, waiting-room, business man, matron's room, and the upper floor by dormitories. At each end of this range of buildings there is a staircase, giving access to the various floors, and from these extend backwards a range of buildings two stories high, the ground floor being occupied as work-rooms, and the upper floors as dormitories. The space between these two pavilions is roofed over, and supplied as the dining-hall and the chapel, being only separated by folding doors, and, when desired, be used as one large apartment. Well lighted corridors extend along both sides of these apartments, which have access to the bath-rooms at the foot of each of the principal staircases. The dormitories are arranged to accommodate 100 inmates. Immediately north from the centre of the building there is a large range of buildings of one story in the plan of the letter T, the gable of the part represented by the lower limb being about 30 ft. back from the kitchen. This part is the laundry, the carriage-entrance is a lodge. The whole has been carried out from the designs of Mr. Honeyman. The following were the contractors engaged:—Masons' work, Messrs. Lyall, McKie; joiners' work, Messrs. McCraw & Key; slaters' work, Mr. W. Reid; plasterers' work, Messrs. A. Campbell; and slaters' work, Messrs. Stewart & Sons. The cooking apparatus fitted up by Messrs. A. & J. Nisbet; and the gas-boiler and fittings of washing-house and laundry by Mr. Purnell. The clerk of works Mr. William Kent. On an adjoining site the Glasgow Girls' School of Refuge, also designed by Mr. Honeyman, is rapidly approaching completion.

Edinburgh.—The colossal statue of the Prince Consort, by Theobald, has been uncovered at Balmoral. The Queen and other members of the royal family were present.

Glasgow.—The construction of new waterworks, valued at 3,000l., has just been brought to a successful completion. Messrs. Chalmers & Co., Glasgow, were the contractors.

Glasgow.—The new waterworks here have

been opened by the authorities. The works, which were done by Mr. Gale, C.E., Glasgow, have been in progress for the past year and a half, and consist of a reservoir, near the farm of Laperstone, and a filter and tank at the farm of Parkhill. The reservoir is 33 ft. above the mean level of the sea, covers an area of 26 acres, and is bounded by two embankments. The reservoir will contain 8,800,000 cubic feet of water, and is estimated to supply 12,000 people with water for a period of 100 days without rain, and 30 gallons per head per day. The cost of the works is as follows:—Reservoir, 4,339l.; conduct filters and tank, 22,301l.; pipes and pipe laying, 4,720l.; lands, engineering charges, &c., 5,000l. Total, 15,289l.

CHURCH-BUILDING NEWS.

Strathfieldsaye (Hants).—The church of St. Mary the Virgin, Beech Hill, has been consecrated. The site was given by Mr. Henry Lannoy Hunter, and the cost of the church (upwards of 2,000l.) has been defrayed by Mr. Hunter's sister, Mrs. Forbes, and her daughter, and son-in-law, the Rev. E. H. Landon. Mrs. Forbes also presents 4,000l. for the endowment. The site is an elevated one at the south-east corner of the "Seventeen Acre" Field, on the Home Farm. The architect was Mr. W. Butterfield, of London. Messrs. Wheeler Brothers, of Reading, builders, were the contractors. The church is built of red brick, flint, and Bath stone on the outside, and of red, white, and grey brick and Bath stone, in patterns, on the inside. It consists of a nave and chancel under one continuous roof, with a short north aisle opening to the nave by two arches, an organ chamber and vestry also on the north side, and a south porch chiefly of oak. The church is covered with tiles, and has a belfry covered with oak shingle at the west end, containing a peal of bells. A traceried screen of oak and walnut wood, with gates, divides the nave and chancel. The seats are low and open, and of one uniform character throughout. The windows are generally foliated lancet lights in different combinations, and the style of architecture may be considered as that of the thirteenth century. Some stained glass windows are in preparation, and will shortly be fixed.

Newmarket.—St. Mary's Church, Newmarket, has been enlarged. It was at first resolved simply to add a north aisle, or rather to convert the transept into an aisle, terminating at the east end in an organ chamber, which is in fact an extension of the aisle beyond the line of the chancel arch. In addition to this it was decided to build a vestry on the north side of the chancel. Mr. J. F. Clerk was the architect, and Mr. Andrews (of Bury) the builder employed. After a time it was thought that as these extensions would only provide about 100 additional sittings, and there was already a gallery on the south side of the church, it would be better to place a gallery above the new aisle also, and this has therefore been done, so that the recent alterations afford accommodation for about 300 additional persons, making the total number of sittings somewhere about 900. The new aisle is lighted by four Perpendicular windows, in harmony with those on the opposite side of the church, two of them being entirely new, whilst the other two, previous to the alterations, lighted the transept and the west end of the nave. The aisle has been fitted with benches of stained deal corresponding with those in the body of the church. The total cost of the alterations is about 1,200l.

Sealand (Cheshire).—St. Bartholomew's Church, Sealand, has been consecrated by the Lord Bishop of St. Asaph. The church, which is situated on the River Dee Company's estate, in the parish of Hawarden,—is about one mile from Queen's Ferry and five from Chester. The site occupied by the building was given by the River Dee Company, in addition to which they have contributed 1,250l. The total amount of subscriptions raised towards the building fund is 2,131l., and up to the present time there has been an outlay of 2,300l. Only a small portion of the oak seating is at present complete, the nave being arranged with chairs. The church affords accommodation for 300. The heating is by Porritt's underground stove. The east window is filled with painted glass, by Messrs. Hardman & Co., of Birmingham. The church, which is in the Early Gothic style, is constructed of stone from the Helsby quarries, the interior being finished with chiselled ashlar. The plan consists

of nave, 62 ft. by 26 ft.; chancel, 24 ft. by 17 ft.; a small transept on the north side is to contain the organ, and the vestry is under the tower on the south side of the chancel. The tower is 65 ft. high, surmounted by a metal cross, but at present only contains one bell. The whole of the roof timbers and doors are of oak. The spaces between the timbers of the chancel roof are decorated with designs in black and gold on a blue ground. The architect was Mr. John Douglas, of Chester, and the builder Mr. Robert Bellis. The decoration of the chancel was executed by Mr. Robert Ellis.

Slough.—It has been resolved at a public meeting of the parishioners to erect a new parish church, retaining the old one as a mortuary chapel or a chapel-of-ease. A committee has been appointed, and a subscription-list opened. A site has been offered.

Birmingham.—The chief stone of St. Gabriel's Church, Bordesley-street, has been laid in the presence of a large concourse of spectators. This church is the second that is to be erected by the aid of the Ryland fund. After the ceremony, and (of course) a luncheon which followed, the company adjourned to witness the casting of five church bells, a branch of manufacture which has only lately been revived in Birmingham, by Messrs. Blows, who have established a foundry capable of turning out at one casting a peal of bells 9 tons in weight. Those founded on the occasion were two of them for King's Norton Church, one of which, the seventh in the peal, weighs about 15 cwt., and the other, the treble, about 6 cwt. The other three were for Rock Church, near Bewdley, one, the tenor, about 13 cwt., the third bell 8 cwt., and the treble bell 6 cwt. Our old correspondent, the Rev. H. S. Ellacombe, was one of those present at the founding, and expressed his approval of the arrangements of the foundry.

Thorncombe (Dorset).—A new church has been consecrated here. The old one had been allowed almost to crumble to dust, and was dangerous to hold service in. It was accordingly decided that the old building should be pulled down, and that a new one should be erected upon a site presented by Mr. Bragge. Plans and specifications were drawn up by Mr. James Mountford Allen, architect, Crewkerne, under whose superintendence the edifice has been erected. The new church consists of nave, north and south aisles, Ford Abbey aisle, chancel, and north and south chancel aisle, and a tower at the west end. The walls are built of a portion of the material used in the old church, and limestone found in the neighbourhood, with facings of Ham-hill stone, supplied by Mr. Charles Trank, of Norton-sub-Hamdon. The aisles are divided from the nave by arches resting upon pillars of Ham-hill stone, ornamented with Bath stone capitals. The church is of the Perpendicular style of architecture. The windows are characteristic of the period, the model being one of the old cloister windows at Ford Abbey, in conformity with the expressed wish of its former owner, Mr. Miles. The nave is lighted on the north side by four three-light windows, the south aisle having two three-light windows, a door, and Ford Abbey aisle. At the west end of the aisles are two two-light windows. The roof of the nave is open, of stained deal, with plastered panelling. An arch of Ham-hill stone, supported on Bath stone capitals, divides the nave from the chancel, which is raised two steps. The chancel is lighted by a five-light window, with pointed tracery. On the south side is a two-light window, by O'Connor, representing St. Peter and St. Paul, with medallions of the conversion of St. Paul and the release of St. Peter from prison. The tower is divided into three stages with string courses and bell turret on the north side, above which rise the cross and weathercock taken from the old church. The tower has three two-light windows and a peal of five bells, which have been rehung. The nave is floored with blue Keinton stone, and fitted with open seats of stained deal. Open sittings formed of the old church pews fill the north and south aisles. The chancel stalls are of oak, as are also the fittings of the Ford Abbey aisle. The whole of the work has been carried out by Mr. Davis, of Langport, under the superintendence of the architect. The entire cost of the erection is about 4,000l.

Standish (Gloucestershire).—The church here has been re-opened, after a restoration, which, with an organ, has cost 1,370l. Mr. St. Aubyn, of Gloucester, was the architect employed, and Mr. O. Estcourt, of Gloucester, the builder. The stone-tile roof has been entirely renewed. The walls have been cleaned and pointed, inside and

out: the steeple is to be pointed, and also repaired at the top. The windows have been made new in the old style, and filled (by Messrs. Lavers & Barrard) with plain glass, tinted green in the borders. The flowing tracery of the east window is similar in character to the west window of York Minster. The nave is ceiled with the ancient oak panels of the fifteenth century, with carved ribs and bosses, which have been cleaned and restored. The chancel has an open stained deal roof, nearly 40 ft. from the floor. The flooring is of Painswick stone throughout. The high oaken pews have been cut down, and cleaned; the oaken pulpit has yielded material for a lectern; and the chancel is fitted with choir seats. The communion space is paved with Godwin's tiles. A road-loft stair was discovered in the south corner of the nave, and has been opened.

DISSENTING CHURCH-BUILDING NEWS.

Hythe.—The Building Committee connected with the New Congregational Church and Schools have opened the tenders sent in: they were as under:—

	Church.	Schools.	Total.
W. J. Adcock	£2,185 14	£2,088 14	£4,273 8
H. Tustin	2,156 7	709 9	2,866 16
J. Bowley	2,229 0	770 0	3,000 0
J. Waddell	2,192 17	652 2	2,844 19
J. C. Petts	1,977 14	688 14	2,666 8
R. Hazell	1,925 0	625 0	2,550 0

Mr. Hazell's tender being the lowest, was accepted, subject to some inquiries to be made by Mr. Gardner, architect.

Richmond.—The memorial stone of a new Wesleyan School-Chapel has been laid here by Mr. P. B. Hall. The new building has been commenced, adjoining the Kew-road. It is Early Gothic in style, and consists of a chapel, to seat 400 persons, with two class-rooms attached. The whole is designed to serve as a school when a larger chapel, for which space has been reserved, is built. The exterior is of picked stocks with Bath stone tracery and dressings. The roofs are covered with coloured slates, and surmounted with crested ridging. Mr. E. Hoole, of Craven-street, is the architect. The work is being carried out by Mr. Hookham, of Kentish-town, at a cost of 1,120*l*.

Wrexham.—The new Welsh Calvinistic Chapel, recently built between the town and the railway-station, has been opened. There are on the Hope-road half a dozen places of worship within a stone's throw of each other, which have been built at a cost of above 20,000*l*, the outlay on the latest being about 5,000*l*. The style of architecture adopted in this building is the Romanesque, the material being brick-work, with ornamental bands of red and black bricks and moulded stone dressings for all the more important parts. The principal front consists of a gable, flanked by two square towers, terminating in slated spires, which rise to a height of about 100 ft. from the ground. The lower portion is pierced with three small deeply-recessed lights, over which, at the level of the gallery-floor, rises a group of three large moulded windows, filled up with tracery, the pillars dividing these windows having polished red granite shafts, banded with stone and carved capitals. Entrance is obtained by means of two porches, one in each tower. These porches project about 3 ft., and terminate in gables, supported on polished red granite columns, having carved bases and capitals. A wheel-window, 11 ft. in diameter, filled with plate-tracery, is placed in the east gable over the pulpit. The interior of the chapel is about 80 ft. long by 43 ft. wide, and rises to the height of 35 ft. from the floor to the ceiling. It is galleried on both sides and at the west end. Seats are provided for about 800 persons. All the windows are filled with quarry cathedral-glass, having borders, the tracery being worked in patterns of different tints. A vestry is provided under the east end of the chapel. The building is to be heated by hot-air from a Gill-stove placed in the basement. The chapel is placed back from Hope-road about 30 ft., and at the street-line is built a low ornamental-dressed stone wall, with two entrance-gates, opposite the porches; and ornamental cast-iron railing is to be placed between the gate-piers. A dispute with the borough surveyor as to this wall was settled by rebuilding the wall. The chapel has been built from the designs and under the superintendence of Messrs. W. & C. Audley, architects, Liverpool; by Messrs. Thomas & Son, builders, Menai Bridge. The glass was manufactured by Messrs.

Edmundson & Son, of Manchester; and the carving was done by Mr. Stirling, of Liverpool.

Crewe.—The chief stone of a new Welsh Presbyterian Chapel has been laid in St. Thomas-street, off West-street. The plan and elevation of the proposed edifice have been prepared by Mr. El. Frost, of Crewe, architect; and the builder is Mr. Thomas Lee. The cost of erection will amount to about 600*l*. The building will be in the Gothic style, having a high-pitched roof. The front will consist of blue, red, and buff bricks, with stone dressings.

STAINED GLASS.

St. Andrew's, Smethwick (Birmingham).—The first light of a memorial window, to be dedicated "to the Glory of the Triune God, and in Memory of the Holy Dead who once worshipped in St. Andrew's Church," has been placed in the large chancel window. The colours are rich and brilliant, and the countenance of the saint, who is represented with uplifted hand, in the act of preaching from the knotted cross, to which, tradition informs us, he was tied for three days, is expressive. Nearly the whole cost of this light has been collected by the younger members of the congregation. It is to be regretted, however, that sufficient money has not been raised to complete the filling in of a window in one of the largest chancels in the neighbourhood, and so admirably adapted for this kind of ornamentation. The light has been executed from the design by Mr. T. W. Camm.

Husley Church (near Warwick).—The east wall of the chancel of this church has been taken down, and carried out, to enlarge the church, and a new window built up.—Mr. Kibler, of Wellesbourne being the contractor,—and the openings of the window have been filled with stained glass, executed by Mr. Holland, of Warwick, and erected as a memorial of the late rector. It contains three openings, and the design is arranged in medallions with the Annunciation, Nativity, and Crucifixion, upon grissaille groundwork, with emblems in tracery.

St. Giles's (Willenhall).—The north chancel window of this church has been filled by Mr. Holland, with stained glass, representing Christ Blessing Little Children, with ornamental groundwork of the vine foliage, and an angel in the tracery, bearing a shield, with the arms of the present rector.

Gloucester Cathedral.—Soon after the death of the late Mr. Francis, Judge of the Gloucestershire County Courts, the registrars and other officers resolved to erect to his memory a window in this cathedral. The work was entrusted to Messrs. Hardman, and was completed a short time ago. The window selected was the western one of the south walk of the cloisters. The chief part of the window is divided into six lights. In three of these the Saviour is represented rising from the tomb, and holding a banner; and on the sides are two Roman soldiers in amazement, and another asleep; in the other three, the Angel addressing the devout women bringing spices to the sepulchre. The upper lights are filled with coloured glass.

Wapley Church.—A stained-glass window has been placed in this church to the memory of the late Sir William Codrington, bart., M.P.

PATENTS CONNECTED WITH BUILDING.

IMPROVEMENTS IN CONSTRUCTING QUAYS, JETTIES, PIERS, SEA WALLS, AND BREAKWATERS; IN THE FORMATION OF RESERVOIRS, DOCKS, BASINS, COAST HARBOURS, HARBOURS OF REFUGE, LIGHT HOUSES, AND SEA BATTERIES; APPLICABLE ALSO FOR THE RECLAMATION OF LAND AND FOR THE BUILDING OF BRIDGES.—*H. Buss, M.D.* Dated January 11, 1867.—This invention comprises, among other features, the construction in a suitable dock of a framework of iron, efficiently supported by internal framing, and covered externally on every side but the top with sheets of iron so riveted to the said framework as to form a watertight vessel. The precise shape of such vessel will vary according to the structure it is designed to erect. When a jetty, pier, breakwater, or sea battery is to be constructed, the transverse section of such watertight vessel will be of a pyramidal form, truncated at the apex, of the full height and width of the intended structure, and in length varying according to need from 100 ft. to 1,000 ft. The ends thereof

will be square, oblique, circular, or of any other suitable form. The framing of the bottom will vary according to the nature of the bed on which it is to rest. The entire iron jacket internally, and externally will be coated with an incorrodible marine paint. Each pyramidal vessel, when completed, will be floated from the dock into open water, and be so weighted with blocks of stone, rubble, or concrete, as to sink it to a convenient depth. Next, it will be towed to its destination, and have as much water admitted as will compel it to sink down to its suitably prepared bed; and, after it has settled down in position, sufficient blocks of stone, rubble, or concrete will be introduced, to prevent, by their own weight, the vessel being filled up at high water. The contained water will be withdrawn, and provision being made in the internal framing, each pyramidal segment will, when deemed necessary, be invariably fixed to its sea or river bed by piles, iron bolts, screws, or otherwise, being driven through the bottom into its bed, and also into the end of the next segment. Finally, concrete will be poured in as quickly as possible until each pyramidal vessel is filled therewith. In some cases it will be more expedient, when the pyramidal vessel has arrived at its destination, to sink it at once by filling it up with concrete, instead of overweighing by the introduction of water as above.

WINDOW-SASHES AND WINDOW-FRAMES.—*Bullivant.* Dated 31st January, 1867.—This invention has reference to the construction and arrangement of sliding sashes and sash frames, and in the adaptation of roller-blinds thereto, with the view of rendering the sashes air-tight, and preventing any rattling or shaking of the same as also readily removed for being cleaned or otherwise, and in fitting the roller-blinds within the head of the said sash-frames so as to protect the blinds from dust or dirt when not in use; and consists in forming the sash-frame with vertical metallic grooves, or otherwise, pulley styles, in which metallic guides attached to the pulley-cords and weights on each side of the said frames are caused to work in such manner as to admit of the sashes aforesaid being taken out and replaced when required through the medium of fixing screws inserted within the sash style, flexible material being employed for covering the said metallic guides so as to give a smoother sliding action to the window-sashes, and also to shut out the draught. By these arrangements the inner beading at parting lead, together with the projecting outer side linings of the sash-frames, as at present are dispensed with. A box or cavity in connexion with the above is formed at the head of the said sash-frames for receiving the roller-blinds and sash-pulleys aforesaid, a space or opening between the movable head and front moulding being left for the blind to pass through when being drawn up or down.

Books Received.

Society of Engineers. Transactions for 1866. Spon, Charing-cross. 1867.

This volume contains a paper, by Mr. C. von Wessely, on "Arched Roofs" of Iron, which should prefer to have it called on "Arch-roofs", which, with the discussion that followed, well deserves study. It is illustrated with sections and details of the Dublin Exhibition Palace, Derby Market-hall, Crystal Palace (Sydenham), Amsterdam Crystal Palace, St. Pancras Station of Midland Railway (pp. 240 ft.). Papers on the utilization of sewers and on the designing of storage reservoirs, with the discussions that followed, assist in rendering this a volume of more than ordinary value. It may add, that the paper on the designing of construction of storage reservoirs (by Mr. Arthur Jacob), with its illustrations, is published by Messrs. Spon, in a pamphlet form.*

A Treatise on the Strength of Materials. PETER BARLOW, F.R.S. A New Edition. London: Lockwood & Co. 1867.

We have to mention the publication of the sixth edition of the late Peter Barlow's well-known treatise, revised by his sons, Mr. P. W. Barlow.

* We have before us a pamphlet on the "Practical Designing of Retaining Walls" by the same author, A. Jacob, A.B. Printed by Chas. Cooper, Lincoln's Inn, Dublin. 1867. It is a very valuable contribution to the full understanding of the subject.

and Mr. W. H. Barlow, and arranged and edited by Mr. W. Humber. Professor Willis's Essay on the effect produced by passing Weights over Elastic Bars, and various formulae for Calculating Girders, &c., are given as appendices. Mr. Humber seems to have discharged his part of the work conscientiously.

Lyra Germanica: the Christian Life. Translated from the German by CATHERINE WINKWORTH, and illustrated by John Leighton, E. Armitage, A.R.A., and F. Madox Brown. Longman & Co. 1868.

The first of the Christmas books, and a handsome one,—a book not merely for this year, but for many. We may suppose from the appearance of this second series of translations from German hymns that the first volume found favour with the religious and art-loving public. It necessarily addresses itself, so far as the literature is concerned, to a special circle: by its artistic embellishments, however, it widens that circle very greatly. Most of the hymns are popular for singing in Protestant Germany, and date from the sixteenth century to the present time. Six of the illustrations are by Mr. Armitage, three by Mr. Madox Brown, but the great majority are by Mr. John Leighton, whose fecundity and skill, within certain limits, are very remarkable. Initial letters, head-pieces, tail-pieces, and side-pieces, display an amount of quaint invention that is never wholly found out, and suggest never-ending matter for reflection. Some of his small landscapes, that at the head of "Services," p. 71, for example, and at the head of a "Morning Prayer," p. 79, showing an avenue of trees in winter, are particularly agreeable and satisfying.

Of the designs by Mr. Armitage, we prefer the illustration of the passage, "Doth conquer sin and death for evermore," p. 19,—a large picture in little. The chief contribution by Mr. Madox Brown, is the "Burial of Christ," p. 98, which has great merit. It may be objected, however, that the head of the Saviour is detached from the body. The volume is beautifully printed, and altogether a genuine article de luxe.

VARIORUM.

The *Quarterly Review* for October contains an able paper on "Trades' Unions," and one on "Science in Schools." The paper on Trades' Unions gives a review of the more salient points in the Commission evidence, and asks, as we ourselves did, "Are we not rapidly tending to the institution of caste as is found in India?" After putting the case against the trades' unions in pretty strong terms, the writer says:—

"We have by no means heard all that is to be alleged against them, and the evidence in their favour is utterly neglected. We say that they injure in the most vital manner the interests of the very working class whom they are meant to aid; that they threaten some branches of manufactures with extinction, and seriously limit the diffusion of others; that they are carried on by means fatal to every man that a free country respects; that they are ruinous to the legitimate ambition of industry and merit; that they can only be conducted by a systematic breach of the law; and that they run through the whole gamut of crime, from mere conspiracy in restraint of trade, to robbery, fraud, mutilation, and murder. We do not say that they are all alike. A vast interval separates such an association as the Amalgamated Carpenters and Joiners from the Hacklayers of Lancashire or the Saw Grinders of Sheffield. If they all contain within them the germs and elements of crime, they are all founded on the right of the majority to coerce the minority, on the absolute subjugation of the few to the many, and the employment of such means as are necessary in order to give effect to these false and dangerous principles. Is such a state of things as we have described to be tolerated in this country? Is every man who has hitherto been the pride of England to be sacrificed to the vain attempt to overthrow by brute force the most clearly established principles? Are we to rely to stand by and see these bodies ruin our trade and our country, and to tolerate a progressive demoralisation of the masses destined hereafter to have a potential voice in the government of this country, to which no limit can be set short of the worst and blackest of crimes? If so, what is the remedy?"

The remedy, continues the author, depends, of course, upon the state of the law. The law, he says, is not adequate to punish such enormities, although nothing is clearer than that common law will not allow conspiracies in restraint of trade or oppression either of workmen or of masters. The alterations in the law which he suggests are these:—

"I would absolutely, under pain of indictment,—or, if still, under pain of punishment before two justices,—the punishment of any Friendly or Provident Society with the certificate of its rules from the registrar of such societies. Give a reasonable time to all existing benefit societies to come in and register, and, after that time has expired, declare all such societies illegal and its members liable to punishment. Give to some

suitable tribunal a power of arbitrating between the society and its members, whenever it is impossible for them to comply with the requirements of the Registrar of Friendly Societies. Declare, in affirmation of what we believe to be the common law, that all societies formed in restraint of trade (other than those combinations protected by the 4th and 5th sections of the 6th Geo. IV., c. 129) are illegal, and give to justices a summary jurisdiction against their members.

The law will then be adequate to the mischief. If it can be enforced, society will have freed itself from a great peril; dangers to our manufactures and commerce, the amount of which no man can measure, will have been arrested, and a demoralization which threatens to lower the character of the English operative to the level of the Thug of India will have been stayed; if not, we must be prepared to see our property wither and perish under the ruinous influence of persons as ignorant of their own true interests as they are careless of the feelings and reckless of the interests of others."

With reference to the subject under notice, we may here incidentally allude to the important remarks of the premier on trades' unions in his recent speech at Manchester. Lord Derby characterised trades' unions, as they at present exist, as associations which endeavour not only to set class against class, but to promote ill-will amongst all classes. On the other hand, he extolled the co-operative principle, which he believed had already done great good not only in establishing habits of frugality and order, but in teaching working men to estimate the claims of capital as well as of labour. The almanacs and calendars are coming in; foremost amongst them and in the various well-known shapes are those of De la Rue & Co. Little books for ladies and large books for gentlemen. Indefinite Diaries, Red-letter Calendars, and improved Memorandum Books. The astronomical illustration for the year shows Lunar Craters.

Cassell's Illustrated Almanack for 1868 contains a large number of illustrations; some of them very good. Everybody's Year-Book (Wyman & Sons, Great Queen-street) contains, in a small compass, for six pence, a mass of carefully-edited information, including popular facts, knowledge as to family fairs, hints on gardening, a garland of anecdote, and the history of Great Queen-street, especially with reference to Franklin's press. Readers interested in the important inquiry as to Pre-Augustine Christianity in Britain, as indicated by the discovery of Christian symbols, may be glad to know there are some interesting notes on the subject in the September part of "The Journal of the British Archaeological Association." A paper in *London Society*, headed "How I fell into the Clutches of King Theodore," by Dr. Burette, is more than usually interesting under present circumstances. He gives a round portrait of the king, and some curious insight into his character.

Miscellanea.

RESTORATION OF WORCESTER CATHEDRAL.—A meeting has been held at the Town Hall, Stratford-on-Avon, to promote the completion of the cathedral of the diocese. There was a tolerably large attendance. Lord Leigh presided; and it was, on the motion of Lord Lytton, resolved, "That this meeting expresses its satisfaction with the progress made in the restoration of the cathedral of the diocese, and desires to reaffirm the obligation incumbent on the diocese generally to maintain the fabric in due order and architectural beauty." His Lordship remarked that the work at the cathedral had been commenced some eleven years ago, and the cost came out of the funds of the Dean and Chapter, aided by private friends, to the amount of about 30,000*l.*, and it was not until that amount had been expended that an appeal was made to the diocese generally, and it was computed then that it would require 20,000*l.* or 22,000*l.* to complete what had been begun. To perfect the whole, as was contemplated, it would need an outlay of something like 70,000*l.* If they could raise a sum of 15,000*l.* the work could be completed, and in a substantial manner, according to the plans drawn by Mr. Gilbert Scott, and now placed in that room. The whole amount, in fact, which had been subscribed up to the present time was 22,053*l.* 18*67* from Worcestershire, and about 3,186*l.* from Warwickshire. Sir J. Pakington moved, "That this meeting expresses its approval of the plans for the restoration of the choir, as prepared by Mr. Scott, and engages to co-operate in the attempt to raise a further sum requisite for the completion of such plan." This resolution was also carried. The subscription made in the room amounted to 594*l.* 1*s.* 6*d.*, and an additional sum of 47*l.* was collected at the doors.

PEOPLE'S PARK FOR LUTON.—An offer of 43 acres of land within a quarter of an hour's walk of the middle of the town has been made by Mr. J. S. Crawley, of Stockwood Park, in exchange for a portion of the Luton moor containing 11 acres, and a sum of 2,200*l.* The offer is looked upon as a liberal one.

NEW STREET FROM LINCOLN'S-INN-FIELDS TO THE STRAND.—A new thoroughfare, being an extension of Serle-street, Lincoln's-inn-fields, intersecting the site of the new Law Courts and leading into the Strand through Picket-place, is in course of formation. To effect this it has been necessary to pull down several houses in Carey-street, between Hemlock and New Courts, and the premises in the rear. To complete a direct and continuous communication for carriage traffic from Holborn to the Strand, the houses in Great Turnstile will be pulled down and the thoroughfare widened. Thus the necessity of widening Chancery-lane will be obviated.

ABATTOIRS FOR LONDON.—The corporation of London have under consideration a scheme for erecting, at an estimated expense of 36,550*l.*, a number of additional slaughterhouses at the Metropolitan Cattle-market, with all the necessary conveniences, and with the ultimate object of collecting them by railway with the new Meat and Poultry Market which the City authorities are now erecting in Smithfield. The site that has commenced itself to them for the purpose is a piece of ground, about eight acres in extent, on the east side of the market contiguous to the Great Northern Railway, and sufficient for fifty-five slaughterhouses; but the City architect, who has prepared the necessary plans and estimates, only recommends the immediate erection of twenty-two, with all the necessary appurtenances. For the estimated outlay of 36,550*l.* the architect calculates that an annual revenue of about 1,680*l.* would probably be derived by the corporation from the slaughterhouses proposed to be erected in conjunction with the Metropolitan Cattle-market.

PROPOSED EXTENSION OF BRADFORD WORKHOUSE.—The committee appointed by the local guardians called on the services of Messrs. Milnes & France, architects, and they reported that the present building used as imbecile wards, and also the building used as male sick wards, should be pulled down, and new buildings erected, according to plans furnished by them. The general plan of the new building for imbeciles is in the double form of the letter *I*—*L*, the centre part being about 50 yards long by 11½ yards wide, and the two wings each about 21 yards by 11½ yards. The plan of the infirmary is the letter *L*, the long leg being 30 yards by 8 yards, and the short one 20 yards by 8 yards. Each building is, for the present, proposed to be three stories in height, with the exception of the short leg of the infirmary, which will be four stories, having a cellar thereunder. By the new arrangement a superior classification of patients will be effected. The imbeciles' building was estimated at 8,000*l.*, and the infirmary at 4,000*l.* The consideration of the report of the committee recommending this plan has been postponed.

PATENT DIRECT-ACTING STEAM CRANE.—A satisfactory trial of a combined steam and hydraulic crane has taken place at the Duke's Dock, Liverpool, in presence of Mr. Mitchell, agent to the Bridgewater Trust, and many other gentlemen and engineers connected with steam shipping. The crane is the patented invention of Mr. A. B. Brown, C.E., of the firm of Brown, Wilson, & Co., Vauxhall Ironworks, London, by whom it was constructed. A flat containing 263 barrels of ale was placed underneath the crane, some 25 ft. below its level. These were raised, swung round one half revolution, and deposited in a warehouse in an hour and a half, the rate of lifting and swinging being in most cases two in one minute. The crane, we are informed, can raise 30 cwt. at a speed of 800 ft. per minute, and it has at the Hamburg docks, where sixteen have been at work, raised as many as ninety parcels of one ton each per hour, or 900 tons per day of ten hours, with a consumption of coal equal to 4 cwt. The advantages claimed by the patentee are as follows:—The direct utilisation of the elastic force of steam, governed by the inelasticity of water; the high working speed of load with low speed of machinery; the total absence of all cog wheels or revolving parts; lastly, extreme portability, combined with great power and speed, and without noise.

CLOYNE CATHEDRAL COMPETITION.—We have received a letter from Messrs. McCarthy & G. Goldie on this subject, but too late for consideration.

PIRACY.—The editor of the *Calcutta Engineer's Journal* will doubtless thank us for informing him that the article "Professional Skill in High Life," printed in large type in his September number, headed "Communicated," and signed "S. M.," is taken from an article published by us in March last.*

MANNINGTREE PARISH CHURCH.—The parish church of Mistley having fallen a victim to that well-known disease affecting timber, the dry rot, it is intended, if the requisite funds can be raised, to erect an entirely new edifice, at a cost of about 8,000*l.* The new church is intended to provide accommodation for 600 persons.

"RAMBLES IN THE RHINE PROVINCES."—A volume under this title, by Mr. Seddon, is about to be published by Murray. It will be illustrated with chromolithographs, photographs, and wood engravings, and has for principal object the preservation of some record of many interesting remnants of the old domestic as well as of ecclesiastical architecture, fast being interfered with by the wants of modern time. We can speak of our own knowledge of sad destruction since we first walked the banks of the Rhine, sketch-book in hand, in student days.

ONE REASON WHY LIVERPOOL IS UNHEALTHY. Some discussion took place at the meeting of the Health Committee of Liverpool, with reference to the fact that there are still in the town—in spite of the law—no less than 13,000 cellar dwellings. In answer to questions, Mr. Higgins, one of the inspectors of nuisances, said that people using the cellars had a trick of removing all traces of bedding, &c., in the day time, and the magistrates required proof—before condemning a cellar—that it was used as a sleeping apartment. In addition, the law also required two convictions in three months against a cellar before it could be legally closed.

THE MANCHESTER NEW TOWN-HALL SITE.—We understand that a meeting of members of the council favourable to some modification of the site of the New Town-hall, has been held, and, after a full discussion, the following decision was unanimously come to:—"That, whilst adhering to the choice of the Albert-square site for a New Town-hall, they were of opinion that, with a view of improving the present unsatisfactory shape, it is most desirable to extend the area so far in the direction of Dickinson-street, as to admit of the erection of a rectangular building." It was decided to call another meeting on an early day.

JOURNEMEN BUILDERS AND THE HOUR SYSTEM. At the Sheriff's Court, on Saturday (before Mr. Commissioner Kerr), the case of Mitchell v. Prince came on for hearing. This was an action to recover 1*s.* 8*d.* for grinding-money. It was contended that since the introduction of the system of payment by the hour, an allowance for grinding tools would be equivalent to double pay. The Judge was clearly of opinion that as a matter of law plaintiff could not recover the money. It had been proved to the Court that the men might terminate an engagement at any period of the day, and it would be most unreasonable to allow grinding-money when the hiring was an hourly one. Plaintiff must be nonsuited.

SALISBURY CATHEDRAL.—A number of men are just now engaged in a work which, when completed, will add materially to the beauty of the northern and eastern views of this cathedral. The work may correctly be described as exhuming a large portion of the cathedral wall, which has been literally buried for the greater portion of a century. Nearly eighty years ago an enormous barrel drain or culvert, internally 2 ft. in diameter, was formed to carry off storm waters from the cathedral roof. At that time, as no outfall could be obtained lower than the palace ditch, the culvert would have projected above the level of the ground, and in order to conceal it, it was earthed over, thus necessarily covering some feet of the base of the cathedral wall. The greatest beauty of the wall having thus been hidden, the right proportions of the building have been unseen by two generations. The culvert, being now useless, is being removed, also the earth which covered it and the base of the wall.

STONE AT PUDICOTE.—On the 20th, a new Primitive Methodist Chapel, at Chilson, Oxon, was opened for public worship. The chapel is built entirely with the stone recently discovered on the adjoining Pudicote estate. Mr. R. Norton, of Chilson, was the builder.

DISCOVERY OF AN ANCIENTLY-CARVED STONE AT ILKLEY.—The excavators engaged by Mr. Metcalfe, of Bradford, in making new drains, streets, and roads, found, the other day, a stone 2 ft. deep in the excavations near the top of Green-lane, which, when turned face upwards, was found to be elaborately carved in deep relief with the representation of three figures,—a male on the left, a female in the centre, and a child on the right. The general opinion is said to be that it is of the Roman period.

THE AIR OF THE UNDERGROUND RAILWAY.—The inquest on the body of the young woman who died suddenly while travelling on the Underground Railway has resulted in a verdict of death from natural causes. The evidence of the scientific witnesses was conclusive as to the innocuous character of the atmosphere of the railway. Two independent analyses were made, and both agreed in the opinion that there were no impure gases which existed in sufficient quantities to affect the health even of passengers who were in a diseased condition of body. We never had any other opinion ourselves.

ACCIDENTS.—A chimney at Wakefield has fallen. Two men were engaged in straightening the chimney, which is some forty yards in height and had been blown crooked in a late high wind, when the chimney fell, and buried one of them in the debris. He was inside, and the other man on a scaffold outside. When the man inside was extricated it was found that his head was dreadfully battered, one of his legs broken, and that he had received serious internal injuries. The fallen material has penetrated the earth to a great depth.—A serious accident has occurred at Cliffe's Foundry, Bradford. The corporation, in driving the main sewer in the direction of Bowling Old-lane, have to pass it under the foundry, and a shaft has been sunk in the foundry for this purpose. A number of men were at work in the excavation, which is 19 ft. deep, and at the same time the foundrymen were preparing to cast a large bridge plate, the mould being close to the excavation. The crane-ladle, containing 26 cwt. of boiling hot metal, was swung over the mould, and the men in charge of the ladle were in the act of pouring it out, when it obtained the mastery of them, turned over, and the mass of hot metal rushed about the foundry like a wave of fire, ran into the excavation, and dropped on to the persons of the eight men who were working below. These men were on three stages, one below the other, and consequently they could not all get out quickly. They were all more or less burned.

TENDERS

For Chatham drainage. Contract No. 2. South high-level intercepting sewer. Messrs. Gotto & Beasley, engineers:—

Stiff	£5,940 0 0
Smyth & Co.	5,785 0 0
Crockett	5,400 0 0
Girdler	4,314 0 0
Naylor	4,078 0 0
Ball & Co.	4,017 0 0
Beard	3,900 0 0
Potter	3,740 0 0
Gouldwin	3,738 0 0
Bugbird	3,688 0 0
Moxon & Mutton	3,420 0 0
Clements	3,350 0 0
Hulbard	3,315 0 0
Coker, jun.	2,814 0 0

What does it all mean?

For the erection of a house at Nettleswell, Herts, for Mr. W. Cox. Mr. Sabine, architect. Quantities by Mr. Strubsole:—

Nicholls	£1,805 0 0
Godbolt	1,494 0 0
Hunt (accepted)	1,297 0 0

For the erection of House and Offices at Surbiton-hill, Surrey. Mr. G. Somers Clark, architect:—

Kirk & Pary	£4,690 0 0
Browne & Robinson	4,600 0 0
Lucas	4,492 0 0
Myers	4,433 0 0
Ashby & Horner	4,221 0 0
King & Sons	3,984 0 0
Chappell	3,893 0 0

For repairs, &c., to No. 15, Grenville-street, Brunswick-square. Mr. J. Schofield, architect:—

Simpson	£204 0 0
King & Sons	195 0 0
Hussey	174 0 0
Lawrence & Baugh	168 15 0

For Church of St. Chad, Haggerston. Mr. James Brooks, architect:—

Hill & Sons	£7,670 0 0
Piper & Wheeler	7,183 0 0
Higgs	6,880 0 0
Higgs & Co.	6,780 0 0
Longmire & Burge	6,767 0 0
Foster	6,487 0 0
Hill & Keddell	6,387 0 0
Ennor	6,144 0 0
Ashby & Sons	6,140 0 0
Henshaw (accepted)	5,990 0 0

For Church of St. Columba, Haggerston. Mr. James Brooks, architect:—

Perry & Co.	£9,085 0 0
Longmire & Burge	8,700 0 0
Foster	8,375 0 0
Higgs	8,370 0 0
Ashby & Sons	8,140 0 0
Ennor	8,130 0 0
Piper & Wheeler	7,990 0 0
Henshaw (accepted)	7,894 0 0

Clergy House, St. Michael, Shoreditch. Mr. James Brooks, architect:—

Ashby & Sons	£2,680 0 0
Hill & Sons	2,635 0 0
Hill & Keddell	2,570 0 0
Henshaw	2,343 0 0
Foster (accepted)	2,342 0 0

For repairs, Wolestanton Vicarage, Staffordshire. Mr. James Brooks, architect:—

Barlow	£1,000 0 0
Sutton	963 10 0
Lowe	955 16 0

For building new casual wards for the City of London Union. Messrs. Tress, Purchas, & Willis, architects. Quantities by Mr. G. P. Raggett:—

Wood	£3,867 0 0
Ranner	3,840 0 0
Holmes	3,651 0 0
Garrud	3,630 0 0
Stangle	3,338 0 0
Martor	3,267 0 0
Egg	3,140 0 0
Lacey	3,110 0 0
White	3,068 0 0
Crook	3,010 0 0
Langley	2,967 0 0
Turner	2,890 0 0
Sheffield	2,885 0 0
Hall	2,880 0 0
Wilt & Son	2,824 0 0
Mote	2,813 0 0
Peckham	2,804 0 0
Cooper	2,800 0 0
Bland	2,889 0 0
Wyatt & Son	2,848 0 0
Henshaw (accepted)	2,768 0 0

For detached villa residence in the Seven Sisters-road, Stoke Newington. For Mr. Henry Taylor. Mr. A. Manning, architect:—

Brisby (accepted)	£1,250 0 0
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For a detached house in the Seven Sisters-road, for Mr. J. Andrews. Messrs. Franklin & Andrews, architects:—

Brisby (accepted)	£1,160 0 0
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For proposed new Cemetery, Biggleswade, Bedfordshire. Messrs. Ladds & Hooker, architects. Quantities by Mr. Glenn:—

	Chapels.	Lodge.	Entrance	Boundary
			Gates, &c.	Walls.
Chapell	1,020	342	173	250
Rates	964	301	166	231
Redhouse	856	296	172	223
Thomas & Son	856	273	145	238
Roy	845	266	139	223
Howe	816	259	134	192

* Accepted subject to revision of Lodge.

For house at Sutton. Mr. W. A. Murphy, architect:—

Smith	£1,714 0 0
Potter & Co.	1,690 0 0
Sharprington & Cole	1,617 0 0

For parsonage house and offices, Temple Grafton Warwickshire. Mr. Thos. T. Allen, architect:—

Giles (accepted)	£1,630 0 0
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TO CORRESPONDENTS.

F. H. & P. J. N. B. F. H. J. & H. J. R. T. L. P. A. L. K. J. O. A. K. & Sons. Mr. C. T. P. F. W. E. L. & H. C. J. W. H. E. M. P. J. P. W. F. J. G. A. B. J. R. S. & Co. H. R. K. M. Skewlack, India-Keston, India. J. O. T. M. R. S. J. G. B. W. & M. W. R. A. & A. J. B. H. N. A. J. D. P. (shall appear).—J. R. E. R. (reply to the Board).—J. D. P. (will call). A Victim (architects have at present no protection against piracy. There is no copyright as to a building when erected).—J. W. (cancelled, having appeared elsewhere).—We are compelled to decline printing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication. Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m. on THURSDAY.**

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

The Builder.

VOL. XXV.—No. 1292.

The Manufacture of "Roughs."

OW shall we improve the education of our artisans, so that England may not be behind in the industrial race, is a question that is being earnestly asked in several quarters. We have done something towards echoing the question, if not towards the preparation for eliciting a right response. The answer must be obtained, and acted on with promptitude and earnestness, if this country is to keep its place; and we shall not be found wanting in endeavours towards that end. Just now, however, we would go a little lower in

the body-politic, and speak of the entire absence of education there, and the urgent and crying need for it that exists. The Reform Bill of 1832 gave an impulse to education. Let us hope that the new measure of reform about to be bestowed on the people of England will act in like manner, and with redoubled force, and we do hope it and expect it. People have talked of the school-master being abroad, and the general spread of education. Never was a greater or more mischievous error entertained. Talk of the spread of education? Why, Parliamentary returns show that one-third of the men of Hertfordshire, Cambridgeshire, and Norfolk, who married in 1865, had to make their mark instead of signing their name to the register; and that more than a third of the men of Suffolk, Bedfordshire, and Staffordshire were in the same discreditable predicament. Why, in South Wales more than half the women were unable to write their names when married; and in Bedfordshire, where the children are put early to work at straw-plaiting, the proportion of the uninstructed was very little less. In Liverpool, out of 23,740 persons who were apprehended in 1866, only 253 could read and write well; while of 720 children, dealt with under the Juvenile Offenders' Act, not one could do so.

For the 148,000 marriages that were made in England in 1864, 42,000 of the men and 58,500 of the women (using round numbers) signed with a mark!

Whatever is spent on education is saved twice over, and more, in prisons and police; to say nothing of the mighty saving of misery and life. This is pretty generally admitted: how can it be denied? But we are very slow to act upon it. Some of the hinderances are found where, without knowledge of the human mind, one would scarcely expect to discover them. When all things are ripe for a large extension of the blessings of education, even Religion and Conscience step forward, and with a resist-to-the-death expression bar the way. Not that they are opposed to education; they have got beyond that after long reflection; they desire that education should be given, but it must be their own sort of education, and mixed up with their own menstruum.

"Orthodoxy" is my doxy, 'heterodoxy' any-body else's doxy: and that doxy I oppose to the last."

And so neglected weeds grow apace, and instead of corn we get deadly-nightshade: instead of men and women with honest hearts and clear minds, we get "roughs," and from roughs come burglars, garotters, and murderers.

The cost of crime is enormous; in fact, it cannot be counted. It operates in a hundred ways. Look at what the expense of the machinery towards punishment of crime alone amounted to in 1866 according to judicial returns:—

Police	£1,827,106	16	7
Sums paid by her Majesty's Treasury on account of criminal prosecutions	143,511	8	6
Cost of prisons	514,677	12	8
Cost of convict prisons	237,333	2	0
Paid by her Majesty's Treasury on account of reformatory schools	51,734	8	1
Do. do. industrial schools	18,467	10	6
Criminal lunatics	45,637	12	0
	£2,937,967	6	4

Three millions sterling *per annum*, and this is not all or anything like all. Another million, at least, should be added for the interest on money expended on buildings, the salaries of various officials, and other items. And each year it becomes greater!

Convicts in England, according to returns, cost 34*l.* 7*s.* a head *per annum*. What do they cost the country when they are free? The number of the criminal population in England and Wales was computed in the year 1864-5 to be 145,000, and we believe this to be enormously under the mark. Including beggars and persons subsisting by other disgraceful means the number has been calculated at 250,000. Let us, however, take the first to be the number, and say there are 145,000 persons, 117,000 of whom are at large, destroying instead of producing, living upon the industry of others,—taking from the community instead of giving to it. Would 50*l.* *per annum* a-piece be too much to put down as the loss caused by them to the community? No, nor enough, and yet at that sum we get nearly six millions to be added to the other four millions; or ten millions sterling a year, the cost of crime. If part of the cost of pauperism were added to this, as it might fairly be, the amount would be raised some millions more.

Proper education would save much of this enormous expenditure, and would not cost what it saved. We may safely say that four boys can be educated at the annual cost to the community of one moderately successful burglar. What gain, then, to that community, what gain to the sum of human happiness, if we picked out of the dirt four boys who otherwise would probably become burglars, and rendered them fairly honest and industrious members of society? We will say nothing here about souls; we are talking only of bodies; and yet the recollection that they have souls ought to strengthen the argument.

This is no new cry with us, no fresh perception. Fourteen years ago and more, the writer of these lines said, and afterwards, again and again, in varied words,—

"The number of children who at this time are being educated in vice, fitted for disturbing and injuring society, forbidden from good and prepared for a life of misery; children who have no affections or ties; in whom natural good feelings have been quenched; who have no advisers but the bad; no home, no hope; is perfectly appalling. They are to be counted in thousands; we fear to say how many. Can nothing be done to save them, and so save society? Here is a fertile field appealing for labourers to the Christian, the philanthropist, the political economist, and the mere egoist, who would save himself money and annoyance by preventing, instead of punishing. Let us remember there is no irreparable reason why these children should grow to be disorderly and lawless—lars, thieves, perhaps murderers; they were born as capable of good as your own offspring; and, with the same nurture and teaching, would make as useful members of society. Lead them into good habits; imbue them with right principles, and their lives, in the natural course of things, will be in accordance with those habits and principles. Equally, as a matter of course, will the lives of these poor outcasts follow the training they are now receiving. Knowing the seed, we know what the plant must be. It seems almost an injustice to punish for a natural result."

A few evenings ago we spent an hour with five

ragged little waifs of the London streets, not one of whom knew what discipline or letters were. Two of them lived "hany how;" two "nobows;" and, with one exception, it seemed pretty clear that when an opportunity for pilfering with safety occurred, it was regarded by them simply as a piece of luck. The story told by most of them was similar to what has been often heard before, and we need not repeat it. The condition of mind exhibited (the mingled ignorance and cuteness) was dreadful to contemplate. One, as pretty a boy as could be found without difficulty, showed generous impulses and inclinations to right. In the rest all such feelings had been smashed out, if they ever existed, and their faces were as debased as their minds. It is unnecessary to say what might have been the fate of these children, and what it will be?

What has become of the boys and girls we questioned thirteen or fourteen years ago in the Golden-lane district, the courts of Gray's Inn-lane and Drury-lane, the slums of Bishopsgate-street, Bethnal Green, and Whitechapel? What could they have come to but the bad? The great majority of them went to increase the ranks of the dangerous classes, have preyed upon society that disregarded them, and have filled, at society's expense, workhouses, hospitals, convict prisons, penal settlements, and pauper graves.

We showed years ago the extent and danger of the undercurrents of London society; that lying in the dark shadows of London, bred in town swamps, and living in the midst of ignorance, dirt, vice, and social degradation, an army of rough and desperate men and women existed unsuspected and uncared for. They are to be counted in thousands. An execution or a local riot sometimes brings them into daylight, but at ordinary times they are to be found only where they live, massed together, and under such conditions that improvement is scarcely possible.

Now is the time,—this very day,—to stop the recruiting of these fearful ranks. It is a disgrace to us that we should have such a class as "roughs;"—it means short-sighted parsimony and criminal neglect. The thousands of children running the streets of London and other places may be very nearly what we choose to make them. Humanity, Christianity, economy, self-interest, are all in favour of rendering them decent members of society. See that every child be awakened to a perception of the difference between good and evil, and receive the elements of knowledge. As the education and the training, so are the children; as the children, so are the men and women.

We stood nearly alone when we urged the Legislature to prevent men from murdering their own flesh and blood by a law against the overcrowding of dwelling-houses; and such a law has since been passed.

In calling upon the State not merely to see that the means of education are placed within the reach of every child, and that all connected with them should be compelled to avail themselves of these or other means, but in the event of this failing to give that education itself,—in fact, for the compulsory education of every child,—we have now with us a large portion of the public and many eminent social reformers. We have no doubt whatever that this will be ultimately done. We want it done at once. The Government that effects it, be it Whig or Tory, will deserve and have the never-dying gratitude of England in the future. Children are the sacred trust of the State. Improve the homes and teach the children, and we shall soon cease to have "roughs,"—soon lessen the number of the dangerous classes. We urge upon all interested in this holy cause the immediate necessity of renewed and continuous exertion:—

"Fail not for sorrow, falter not for sin,
But onward, upward, 'till the goal ye win."

* "London Shadows," By Geo. Godwin.

ENGINEERING AND AGRICULTURE.

The violent reaction brought about by the entire loss of confidence of the public in enterprises of every description, owing to the collapse of numerous rotten schemes brought out by speculators, after the passing of the Limited Liability Act, has resulted in a very anomalous state of affairs. With money at an unprecedented low rate of interest there is no appearance of activity in any of those channels which have, during the present century, employed to such a great extent one division of the professional talents of the country, and which have absorbed the investments of the people to an amount almost equal to the national debt. The railway system having extended itself to nearly every part of the island, and every town of importance being put in communication with the great centres of commerce, can no longer be expected to find sufficient employment for the great body of engineers who have been called into existence by the necessities of the construction of the various lines; and, although there yet remains a vast quantity of useful work to be done in that direction; in sewerage some of our towns; in providing others with an adequate supply of water; in the construction of docks and harbours, and other similar undertakings; yet the engineering world cannot look forward to the same active times as those which have gone by, until some genius, — some other Watt or Stephenson, — shall arise and change the whole method of locomotion, causing railways to retire and keep company with the old turnpike roads of the past.

Engineering talent having, by the extension of railways, given such a surprising impetus to trade and manufactures, and so found employment for thousands of hands, which otherwise would not have been required, tending to a vast and annual increase in the population, may be said to be morally bound to do all that lies in its power to assist in providing for the maintenance of the growing numbers. While the population of the island is annually increasing at the rate of many thousands, the area of ground remains the same, and cannot be increased; and unless other means are taken, there is no remedy but to become more and more dependent on foreigners for our supplies, and to cripple our resources by sending capital out of the country in exchange for food, instead of keeping it at home to be employed in the more profitable cultivation of our own lands. It is obvious that every extra unit of useful produce we can compel from our soil, by availing ourselves of the resources of nature and art, is so much clear and actual addition to the wealth of the country; and although the island cannot be increased in size, yet a very considerable portion of it may be made to yield a large addition to its present produce, and much which is now utterly barren be turned into fruitful land.

Here then is an opening for unemployed engineering and mechanical talent, and an outlet for investments which would yield a sure and certain return to the investor, and be productive of a national benefit in its results.

The more prominent improvements in the cultivation of the soil which may be said to come within the scope of the engineer include drainage, irrigation, embankments, and steam cultivation.

Since the days when Elkington first introduced the modern system of drainage, it has made such way that prejudice has vanished, and there probably does not exist the farmer who is not convinced of the desirability of drainage for his land: the only cause to be assigned for so many thousands of acres yet remaining undrained is the want of spirit or capital on the part of the proprietors or their tenants. But, although much has been done, a great deal of it has been done very badly, and to little purpose. The necessity and advantage of drainage, having once thoroughly permeated the agricultural mind, through the unceasing efforts of the engineers who took up this department of their profession, and whose skillfully designed and executed works paid so well for the outlay, has, in proportion to the difficulty which was at first encountered in convincing the farmer of its utility, led to the idea that draining can be carried out without the aid of skill and experience. The services, therefore, of the drainage engineer are dispensed with; and the tiles being laid in the ground, the field is considered as drained, — only in many cases for the unfortunate occupier to discover that his work has done him more harm than good. There is hardly a land-agent or surveyor who could not

tell of numerous absurd mistakes, and large sums of money which have been thus wasted by tenants who have executed their own drainage, the landlords having provided the material, and thus wasted his own and their money. There ought not to be an acre of land in the country which is not properly drained, and it is to the interest of every proprietor that he should himself undertake this work. The want of capital need be no obstacle, special legislation having provided for this, and companies being in existence who will advance the funds required, whatever the title of the occupier to the land.

The arterial drainage of the country may also well deserve the attention of the engineer. Here is a fine field open for the exercise of talent and ingenuity by improving and straightening the natural brooks and watercourses, cutting fresh channels, and training the outfalls of rivers through their estuaries to the sea. Perhaps there cannot be found now in this island a tract of land in the same condition as the fens of Lincolnshire and Cambridgeshire, where 600,000 acres of land have been converted by drainage from a swamp and a morass into one of the richest tracts of land in the kingdom, — a work which called forth the energies, at one time or another, of nearly all our great engineers. Old Rennie and his son Sir John have left their mark everywhere in these fens, in the canal-like drains, with their massive sea-slucices, and in the works carried out for the improvement of the great fen rivers, the Ouse, the Nene, and the Witham. Verryngham, Smeaton, Telford, Mylne, Cubitt, Walker, Brunel, and others equally celebrated, have at various times been employed; and although still there is work in the fens for the engineer, yet its present state is an example of what may be accomplished in draining flat districts, and rendering efficient the whole interior drainage by the improvement of the outfall of a river. There are thousands of acres of bogs and low lands in England equally capable of improvement as these fens, and only waiting the aid of the engineer and the capitalist to turn them into corn-fields and pastures.

But, while it is necessary to good cultivation that nature should be aided in her operations by the skill of the engineer in removing the surplus water which falls on the land from the clouds, or rises from underground springs, advantage may be found in bringing on to the very field which has just been drained a copious supply of water from a neighbouring brook or watercourse, and either inundating the field in order that it may take up the fertilising matter contained in the water, or simply refreshing the parched soil by allowing the water to flow in certain regulated streams across it.

Irrigation is of more importance to tropical lands than to a climate like England. In the former cultivation could not be carried on without it; and talent and ingenuity of the highest order have been called forth in designing the vast works which are to be found in those countries. The frightful famine which recently occurred in India has stirred up the attention of the Government to this all-important subject; and for the execution of contemplated works, they require at this time the services of an increased staff of engineers. In Spain, again, from the earliest recorded times, irrigation has been practised. Even now, large works are being carried out, the result of those already completed being to turn a barren, desert land, into fruitful gardens and fields. The engineer engaged in these works in Spain is looked upon by the peasantry as a public benefactor, and when surveying for a new canal, will receive the greatest courtesy and assistance from the occupiers of the land over which he has to pass. It is unnecessary to refer to the irrigation works in Italy; they are too celebrated to require comment. Although the English climate and soil may not yield such startling results as are found in the countries already enumerated, yet we have sufficient proof that even in this country there remains a wide field for the skill of the engineer in improving the grass lands of the country by irrigation. In Devonshire water meadows have been in existence for a great length of time; and wherever in other parts of England similar works have been judiciously carried out, most successful results have ensued. By the diversion of part of the waters from a natural stream, and the application of it to poor grass land, at an expenditure of a very small sum per acre, the land may be made to yield heavy and abundant crops, which will pay tenfold the interest on the outlay. The sewage of some towns has also been successfully applied to the land by irriga-

tion with surprising results; but whether this is the most serviceable mode of utilizing the sewage of towns is a question which has yet to be settled by experience. The attempt to convert a barren tract of sands into productive lands by the application of the sewage of London, which formerly was worse than wasted by polluting the great river of the metropolis, is an attempt worthy of all success, and a method of irrigation which, if it answers the expectations of its promoters, ought undoubtedly to lead to its imitation on every part of the coast where there are sands available for the purpose. The enormous tract of barren land of which Aldershot and Bagshot Heath form a part, lying in the heart of England and so close to its capital, which by irrigation might be rendered productive, is a disgrace to the intelligence of the country, and affords an opening for any enterprising capitalist and engineer.

Besides the improvement to lands already in cultivation, there are other sources to which the attention of the engineers might be directed. Around our coasts are many thousands of acres of accreted lands, which are now covered by the tides, but which, if embanked, would form rich corn land. On some parts of the West Coast, the land thus available for reclamation is from one to three miles in depth, the greater part of which is covered with coarse marine grasses or samphire, and which, with an expenditure of ten to twenty pounds an acre, could be enclosed, and would, when reclaimed, grow annually on every acre sufficient corn to keep at least one family, and pay ample interest on the outlay. The Roman engineers, during their occupation of the island, saw at once the value of this land, and the embankments thrown up by them to exclude the sea, on the south and east coasts, remain to this day a monument to their skill and perseverance. The reclamations on the Lincolnshire coast, of the large Crown estate at Sunk Island on the Humber; and in the counties of Essex, Hampshire, and Devonshire; on the estuary of the Dea; and more recently those made by the Norfolk Estuary Company; added to the numerous in-takes which are continually being made by private proprietors, show the feasibility of this work, and ought to raise a feeling of regret at the national loss which is being incurred in not availing ourselves of this land for growing corn, which now has to be fetched from Russia or America, the very cost of the freight of which alone would pay for the necessary works of enclosure. When the Romans formed the old embankments, they made their criminals work under the supervision of the military engineers, and their soldiers were also employed at these and other engineering operations. This example might well be imitated by our own Government. Work would be beneficial to the soldier, as has been urged before in these pages, and the gain to the country enormous.

Thus for the civil engineer, then, there is ample room for employment in the improvement of the productive resources of the country, in works of drainage, irrigation, and embankment. To the mechanical engineer there remains the improvement which may be effected in the various mechanical appliances which are used in the cultivation of the soil, and principally in the application of steam. Farming becomes yearly more and more of a science, and depends on machinery to a very considerable extent for its successful working. The machines used on a farm are endless, and their manufacture is a most important branch of our national industry. The several eminent firms of agricultural implement makers have displayed ingenuity and talent of the highest order, and give employment to an immense number of skilled hands. The Irishman who comes over annually with his sickle to help to reap our crops, finds each year less to do, and sees that his services are being gradually superseded by the reaping-machine; the flail had to give place to the thrashing-machine worked by horses, which only performed the same operation in a more expeditious manner. The horse has given way to steam; and now the motive power, taking its own machinery and appliances from farm to farm, at one operation thrashes the corn, stacks the straw, dresses the seed, and then retires, leaving the farmer nothing to do but to carry his corn to market; and how long it will be before the four horses dragging the wagon-load of corn slowly along the highway, will be superseded by the traction engine, who can tell? It is the manufacture of the machinery which will assist in cultivating the soil, and increasing the produce of the land which is now more especially

to be considered. Numerous inventions have been brought out for digging the soil, and otherwise manipulating it; but the perfection of the steam-plough, or cultivator, appears to be the great desideratum. So far back as the year 1618, a patent was granted to David Ramsey and Thomas Wildgoose, for "kinds of engines and other profitable inventions, as well to plough up ground without horses and oxen;" and from this time forward nearly every year produced some new invention for either digging or ploughing by machinery, until the commencement of the present century, when steam was applied to this purpose, a patent being taken out in 1816, by Joseph Reynolds, for "ploughs and other implements used in husbandry to be moved by steam, heated air, or vapours." In 1837, another patent was granted to Upton for "an improved method of generating steam power, and applying the same to ploughing and harrowing and other agricultural purposes." These and many subsequent inventions, however unprofitable to the patentees, formed links in the chain that led up to the comparatively perfect machines of the present day. The really successful application of steam to the cultivation of the land may be said to date from the show of the Royal Agricultural Society, held at Lincoln, in the year 1854, when Mr. Fowler exhibited his steam draining apparatus; the idea being suggested by a practical farmer, Mr. Smith, of Woolston, that this machinery might be applied to the cultivation of the land. Slowly, but steadily, steam ploughing is making its way: Messrs. Howards claim to have made and sold in England and the colonies upwards of 500 sets of machinery; and Messrs. Fowler, in their circulars, give references to 300 persons or companies who express their satisfaction with the apparatus which that firm had supplied to them. The manufacture of the supply for our own and foreign countries, Egypt deserving especial mention, has given sufficient impetus to the trade to render it a distinct branch of engineering.

The systems now generally adopted may be divided into two classes, the "roundabout" and the "direct;" the former, the method generally known as Howards'; and the latter, Fowler's.

Howard's system is generally considered most suitable for small enclosures. The method adopted is to place the engine in one corner of the field, and to surround it with an endless rope, stayed at the corners by anchors. To this rope the plough or cultivator is attached, and attendance is required to move the anchors and other parts of the machinery as the work goes on. One objection urged against this system is the waste of power in moving the great length of rope required, and the wear and tear of the same, an expensive item in steam ploughing. Fowler's plan is to place a traction engine on one headland, the rope running from that to a drum attached to a self-acting moveable anchor placed at the other side of the field, the plough being made to traverse backwards and forwards between the two. Where the work is carried on to any great extent, so as to warrant the additional outlay, as in the case of the steam ploughing companies, the drum and anchor are replaced by a second engine, the two engines alternately dragging the plough towards them, and uncoiling the slack rope. The engines employed are about 12-horse power. Beneath the boiler there is a large horizontal sheave or drum, 5 ft. in diameter, round which the rope is coiled. The plough or cultivator is a framework of iron balanced upon two large wheels. To each end of this framework are attached from four to six ploughshares, or cultivating tines; on reaching the end of the furrow, the part of the framework which was balanced is depressed, the other being raised, and the shares which were out of the ground, and which point in the opposite direction, are inserted in the soil and turn up the furrows on the way back to the other engine. To manage the apparatus three men are required,—two to drive the engines and one to guide the plough. The rate of speed is from three miles to three miles and a half an hour, and the quantity of work done in a day by the cultivator, under favourable circumstances, about ten acres. The cost of a single set of apparatus, with engine, self-moving anchor, ploughs, and scarifiers, may be put at 800*l*.

In the early days of steam cultivation, one of the greatest difficulties was found to be in connexion with the rope. One inventor tried chains, which, as may be supposed, from their weight and other mechanical objections, were found to be impracticable. Hemp rope could neither

stand the strain nor the wear and tear over the ground, notwithstanding the aid of "porters" and other contrivances. Wire rope, although more durable, was found to be very expensive, owing to the frequent breakages. The great improvement which has been made of late years in the manufacture of steel has enabled that metal to be applied as a material for the purpose. The rope now used contains twenty-four steel wires, about one-twelfth of an inch in diameter, and of such wonderful strength and pliability is the steel that each of these wires, although it takes one hundred and seventy-six of them to form a section of 1 square inch, will bear a pull of upwards of a ton; and yet, although this wire is so stiff as hardly to be bent by the fingers, yet when force is applied it may be twisted round in a coil sufficiently small for all practical purposes. These ropes are at once tough, pliable, and enduring, very little liable to break, and, when broken, easily repaired. To this ingenious and marvellous invention, steam cultivation, in its present form, in a great measure owes its success.

The advantages of steam cultivation may be summed up as follows:—It enables the farmer to perform his tillage operations at the best season of the year, and to free his land more quickly and effectually from weeds. Tenacious soils are rendered more friable and porous, and good drainage promoted by the efficient manner in which the subsoil can be stirred by the aid of steam. The steam cultivator can be worked to advantage in an unfavourable season when it would be impossible to work with horses, and considering the depth to which the soil is stirred and the expedition with which the work is executed, it can be performed as cheaply as horse labour.

Numerous able writers in the *Times* and other public journals have, this year, testified to the advantage to be gained by steam cultivation. Mr. Bailey Denton, in an able letter, gives one very striking example of a farm at Blackheath, where three adjacent fields had been differently treated. The first, land not naturally fertile, being drained and steam cultivated, had a crop on it equal to forty-five bushels of wheat per acre, worth 18*l*. The second had been drained and treated in all respects similar to No. 1, with the exception of the ploughing, which had been done with horses. The yield was estimated at thirty bushels, worth 12*l*. per acre. The third field of similar land, but neither drained nor steam cultivated, had not more than twenty bushels, worth 8*l*. per acre. The difference here shown between steam and horse cultivation being 6*l*. per acre. Mr. Smith, of Woolston, who speaks with the authority of experience, having used steam for twelve years, gives, in a letter to the *Times*, some striking illustrations of its advantages, and the increased results obtained from the land by its use. At the time of writing his letter his steam cultivator was at work, following closely on the teams leading the corn out of the fields, smashing up the stubbles at a time when the horses on the farm were otherwise occupied, and at a rate which no amount of horseflesh, which a farmer could profitably keep, could accomplish: thus giving the land the benefit of a summer fallow in scorching and killing the weeds. To quote his own words: "I have looked round in all directions and can see more than a usual quantity of dead fallows, and no end of land in a state that will cost vast sums of money to clean it. Yes, and I can look over the hedge on to the best farmed land in the neighbourhood and see more twich on a square yard of land than there is to be found all over my farm. Such are the results of steam and horse farming after wet seasons."

The first outlay for machinery is no doubt heavy, but taking Mr. Denton's statement as correct, that a gain of 6*l*. per acre may be secured by steam cultivation, and the statement is borne out by the report of the Committee of the Royal Agricultural Society, who quote similar statistics, on a farm having 140 acres in wheat the cost of the apparatus would be gained in the first year, including the price of the engine, which would be useful for other purposes.

Here, then, is an opening for enterprise and the profitable employment of some of the redundant money now in the market. It has been calculated that every 2,000 acres of cultivated land could find work for a steam-plough; and as encouragement, it may be mentioned that the companies which have been already established are rapidly making progress. From personal experience it can be stated that some of them have full employment nearly all the year round,

and at times have more orders than they can execute. To the engineer an inducement is held out for the employment of his talents in the manufacture and perfecting of the machinery; to the capitalist, for a safe and steady investment of his money; to the farmer, from the increased profit from his land; and to the philanthropist, from the increased supplies thus produced for the food of the people and the addition to the national resources. W. H. W.

LIVING AND DYING IN THE THIRD QUARTER OF 1867.

CONSIDERING how short a time has elapsed since all statistics were voted a bore, and statistics of births and deaths the "flattest, stalest, and most unprofitable" of all statistics, it is, at any rate, a most healthy sign to find that many subjects, which can only be treated of through statistics, are at last beginning to assert in public importance that place which it is of such real importance they should hold. The Public Health is one of these subjects. There is no social problem to the solution of which it is more decidedly the duty of us all to lend our aid than the reduction to a minimum of the unnatural waste of life that has been for years going on around us, in town and country, through ignorance and neglect of the simplest sanitary laws. "Cleanliness," it has been said, "is next to godliness." Using the word cleanliness in its largest sense, only those who have seen the disease and misery in some of the worst parts of our unhealthy towns can fully appreciate the force of this axiom and its antithesis. But the public does now, we are convinced, take an interest in its health, and an honest rivalry has been established between towns, with regard to their death-rates, which has already, it would seem, resulted in increased sanitary activity all over the country.

We have before us the Registrar-General's Quarterly Return for the third quarter of 1867, and the insight it gives us into the vital condition of the country is, on the whole, encouraging, both as to past months and the future prospects of the sanitary measures which have been, and are being every day adopted, in both town and country, for the improvement of public health.

During the past quarter the excess of births over deaths in England and Wales was 81,793, averaging very nearly 900 per day. In the corresponding quarter of last year the excess was only 62,156. This result has been as much due to the increase of births as to the decrease of deaths. The births were at the annual rate of 35·2 per 1,000, a rate unprecedented in the third quarter of the year. The deaths registered in the quarter were 108,462, giving an annual rate of 20·1 per 1,000, against 21·8 in the corresponding quarter of 1866, and 20·3 the average rate in the corresponding quarters of 1857-66. Only twice in the eleven years 1857-67 has the death-rate in the third quarter of the year been lower than it was in the quarter just ended; in 1860 and 1862, when it was 17·2 and 18·0 respectively. The weather during the past quarter was, on the whole, favourable to health. The mean temperature at the Royal Observatory, Greenwich, was 59·7, agreeing almost identically with the average of the corresponding quarter of ninety-six years. The rainfall in the quarter was 11·3 in., and nearly 4 in. above the average of the same period in fifty-two years. Of this rainfall so much as 3½ in. fell during the twenty-four hours of 25th July: this fall is almost unprecedented for England. There was scarcely any really hot weather during the summer, and the rain was abundant: the combination of these two circumstances, it will be found in comparing a long series of summer quarters, almost invariably produces a low death-rate. The remarkably cold and wet summer of 1860 was the healthiest on record.

In all the large town-districts of England and Wales, containing at the last census about 11,000,000 persons, the death-rate last quarter was 22·4 per 1,000, or 2½ below that which prevailed in the same period of 1866, and slightly below the average of the ten previous corresponding quarters. In the remaining or rural population, amounting, in 1861, to rather more than 9,000,000, the rate of mortality was 17·0 per 1,000, or only ½ below both the rate in the same quarter of last year and the average of the past ten years. It will thus be seen, therefore, that the principal improvement in the public health during last quarter was shown in towns.

This must be attributed in a great measure to the epidemic of cholera, which last year unnaturally raised the death-rate; but, as we shall find, the improvement was also conspicuous in many of the towns which did not suffer from cholera last year. It will be useful to examine a little in detail the figures relating to those ten large towns of England for which weekly returns are published by the Registrar-general, both because the condition of these towns and the measures which have recently been adopted for their sanitary improvement, or which have been neglected, as the case may be, are pretty generally known, and because the means of comparison with previous years is ready to hand.

These ten towns, including London, are estimated to contain at the present time a population of rather more than 6,000,000. In these towns the excess of births over deaths in the quarter was over 17,000, and the birth-rate equal to 36·8 per 1,000, against 35·2, the general rate in the whole of England and Wales. The death-rate in the ten towns was 23·8, or 3·7 above the rate for the whole country, and 1·4 above the rate in the entire town population above mentioned. Although in some of the smaller towns no doubt great sanitary shortcomings exist, we may feel sure that in these ten towns are included most of those which have in past years principally contributed to the excessive death-rates in towns.

In the following list these ten towns are arranged in the order of their rates of mortality during last quarter, from the lowest, and against each town appear the death-rates per 1,000 prevailing in the third quarter of each of the years 1865, 1866, and 1867. Returns from Sheffield and Newcastle-upon-Tyne were, however, not published in 1865:—

	1865.	1866.	1867.
Bristol.....	20·4	20·8	19·2
London.....	21·9	25·9	20·7
Sheffield.....	—	24·0	23·8
Birmingham.....	23·6	19·2	25·8
Hull.....	30·3	22·4	26·9
Salford.....	29·7	26·3	25·4
Liverpool.....	33·7	60·6	28·6
Leeds.....	31·7	31·0	28·7
Newcastle.....	—	31·6	28·5
Manchester.....	32·9	30·6	31·6

As the figures for last year were somewhat disturbed by the epidemic of cholera in many of the towns, a reference to those for 1865 materially assists in arriving at just conclusions as to the improvement which appears in some of the towns, and the conspicuous absence of it in others.

Take Liverpool and Manchester, for instance. Ignoring the rate for Liverpool last year, the rate has declined from 33·7 in 1865 to 28·5 this past quarter. In Manchester the rate may be said to have remained stationary. It is well known that the Liverpool Corporation has, with the aid of their medical officer, resolutely set to work to clean their Anglian stable. It is as equally well known that, in Manchester, they have not yet made that first great step which is an earnest of sincerity in such measures,—they have not yet appointed a medical officer of health, though the step is determined on. Leeds forms a good example of sanitary progress. In 1865 and 1866 the rate was almost stationary, although no cholera appeared in the latter year; but, since the appointment of the present medical officer, the fatality from fever and other zymotic diseases has continually declined, and the death-rate in the borough has fallen from 31·7 in the third quarter of 1865 to 28·5 last quarter. This town, however, still stands low down in the list. Newcastle continues to enjoy an unenviable notoriety for its excessive death-rate. This is another of the towns which is without a medical officer of health. Birmingham, too, presuming, it would appear, upon the comparatively low death-rate which generally prevails there through the natural advantages which the town enjoys, still holds back from the appointment of such an officer. It is to be hoped, however, that the recent mortality in that town from diarrhoea and scarlatina (the latter of which is still fatally prevalent), and the retrogression which is shown in their death-rate for last quarter, will stimulate them to delay no longer. Bristol still occupies the post of honour as the healthiest of our large towns; and it is satisfactory to know that this position is fully appreciated and valued by the inhabitants. It is needless to say that this city has some time possessed the services of one of the most active and efficient of the at present small body of our medical officers of health. Even in Bristol, which enjoyed the

lowest rate in the summer quarter of 1865, the rate has progressively declined from 20·4 to 19·2.

Without looking beyond what has been already achieved in Bristol, it is well to remember how terrible is still the waste of life that is going on in our large towns, compared with the number of deaths which would occur if the death-rate did not exceed 19·2 per 1,000 in our town populations. During last quarter, the saving of life in these ten towns alone would have been 6,063, of which 1,389 would have been in Manchester and Salford. We dare hope, however, that we may look for a still higher standard of health in towns. In many ways, life in town should be more healthy than in the country, and we see that the death-rate in the rural districts last quarter did not exceed 17 per 1,000. Salisbury appears by the present return to have attained a success, in her sanitary system, which but a short time ago would have appeared most wildly visionary; in this town the death-rate was 28 per 1,000 between 1841-50; 24 between 1851-60, and has steadily declined, until in the quarter just ended it has been only 10 per 1,000. This is indeed encouragement, if any be needed, to all those towns still hesitating to adopt sanitary reform, and to incur its necessary expense, from want of faith in the result.

THE EDUCATION OF THE WORKMAN.

THE subject of this paper is, perhaps, not generally considered to be one upon which a painter has any right to discourse; but having in early life seen much of those trades of which the products have since been ennobled by the title of art-manufactures, and having devoted considerable time to the teaching of workmen engaged in such artistic occupations, I have very naturally given the education of the workman very earnest study. Moreover, a thorough investigation of the theories of art and education has shown me that their fundamental principles are the same,—that they should be influenced by the same formative idea.

The processes of modelling and of education are very analogous; it is in one case the lifeless clay, in the other the living earth which has to be formed in rectitude; but man can only be effectually remodelled by right reason working from within. The educator, therefore, commences the reformation of plastic humanity, by the rectification of the understanding, in order that the ideal pattern, which he in common with the statuary, keeps steadfastly in view, may ultimately be realised palpating with life.

Each successive International Exhibition has shown that English workmen,—art-workmen especially, require a more complete education than they have hitherto received. The present one, indeed, from all that I can gather from competent observers, has convinced them that some educational measure is imperatively and promptly required,—that British workmen may have a fair chance of successfully competing with their naturally clever allies. All the reforms in technical education which have been made since 1851, would appear to have been mere surface scratching instead of deep ploughing. To produce substantial and lasting results, there must be a radical change in the system of primary education.

You will, perhaps, trace through the lecture a leaning towards my favourite theory of "The Mean," of which the following four laws are the broad exposition:—

1. That the fundamental form of phenomena is quantitative.
2. That the mean is the scientific measure of rectitude and beauty.
3. That every aberration from the mean, either in excess or defect, must be compensated by an equal but opposite one. That any undue expenditure of vitality by one function, or group of functions, must be compensated by inaction in others; or by a system generally, by a period of absolute rest, otherwise organization will be impaired, the fund of vitality unduly drawn upon, and existence shortened.
4. That the lawful limits of departure from the mean are those of moderation, which permit variation in the tenor half of the scale of possible fluctuation.

This is, I believe, the substance of what science yields towards a system of ethics; and on a former occasion I showed how universally

these principles obtain in the fluctuating phenomena of the entire solar system,—a theory, though perchance it be erroneous, often serves as a ground on which to marshal and parade one's facts; and I hope before I conclude that mine—if I may call it so—leads, at least, to some common-sense conclusions. If I appear to you to be somewhat *doctrinaire*, I believe you will find that I am also practical; and that I am *doctrinaire* only because no one can hope to be practically of any great advantage to others unless he be theoretically correct.

The art of education, as I have just now indicated is essentially *formative*, as essentially so as the arts of design; and I believe human nature to be as plastic to its hand, through periods of time, as the clay to the potter, and that in the plenitude of its mastery over means it will be able to develop whatever manner of man it wills. You will, I think, find, if you examine them, that most of the popular notions upon education have been derived from phrenology: hence tendencies, which appear to me to be only habits of thought and action, are elevated into faculties, and these so numerous that we can scarcely wonder at the anxiety of teachers and parents that our youth shall be cultivated by all the "ologies" that can be mustered. Let us, if possible, dismiss this notion for the present, and trace the natural order or sequence of our knowledge. Facts are first received by the outposts, observant senses; secondly, they are registered by the memory; thirdly, they are ordered, systematised, and utilised by reason; or to describe the process by a lower analogy, there are the receptive, the retaining, and digestive processes. Now, it is no matter what kind of phenomenal knowledge it is, but it must pass through either the first, the second, or all these stages; and I should desire you to be impressed with this very natural inference,—viz., that if the senses be not correct *observers*, we can neither expect facts to be correctly remembered, nor just conclusions drawn from them. You will therefore be prepared for my return to this portion of my subject, and insisting upon the proper training of the senses. These three powers or faculties, observation, memory, and reason, should be of an equally apportioned excellence. For if the power of observation be cultivated to the neglect of the retaining and reasoning faculties, there will be a clinging to mere facts and minutiae, a too facile credulity, disconnected thought, uncertain and inconsistent action. If memory be cultivated to excess and burdened with encyclopaedic information to the detriment of the observing and reasoning faculties, there will be loquacity on all subjects, and a facile dispensing of second-hand knowledge; but should originality be attempted by this conformation of intellect, the data will probably be incorrect, its conclusions false. If the reasoning faculty be unduly stimulated and the powers of memory and observation allowed to lie dormant, it will be at fault in its premises, fruitless in reckless hypotheses, systematically wrong. The moral form or right constitution of these three functions, then, is when they are duly proportioned to each other, and which when thus constituted may be said to have the perfect capacity for investigating nature, for confirming or discovering truth, for receiving and communicating knowledge. Lord Macaulay says, when writing of the men of a certain eventful period of our history,—"The constitution of their mind was remarkably sound. No particular faculty was pre-eminently developed, but manly health and vigour were equally diffused through the whole." Or, as Shakespeare would have written,—"The elements were so mixed in them that nature might stand up and say, These were men!" Now, this equable development, these mixed elements, are precisely those moderate qualities indicated in the middle column of the following table; they are those, indeed, of the ideal man, whom a true system of education keeps steadfastly in view as its "pattern." It is that average or essential manhood divested of all the accidents of eccentricity, of aberration. Yet we may very frequently find the average man jauntily asked for, as if he were a common and very easily to met with creature, ready to answer and flock to advertisement by the thousand. Why, it is this manner of man, "in whom no particular faculty is pre-eminently developed," but the whole manhood, who has been at all times the true reformer and deliverer. He, of all men, is least likely to damage or wreck a good cause. It is because society is a conglomerate of disproportioned materials that the

State has to assume his functions, to harmonise and balance the whole.

TABLE OF MEAN AND EXTREME QUALITIES.

Excess.—Immoral, Destructive.	Mean.—Moral, Constructive.	Defect.—Immoral, Destructive.
Fast Talk Reckless Extravagant Buffoon Irritable Gay Indulging Licentious Overbearing Assurance	Mainly Tame Reverent Prudent Liberal Wit Good-tempered Good-humoured Temperate Free Magnanimous Confidence	Clownish Talk Over-cautions Parasitism Dullard Immature Austere Obstinate Morose Mean-spirited False modesty
Predisposition to Disease.	Health.	Predisposition to Disease.
Excessive exercise Immoral use of function Deficient organi- zation Shortened exist- ence	Moderate exercise Moral use of func- tion Moral organiza- tion Long life	Defective exercise Immoral disease of function Deficient organi- zation Shortened exist- ence
Deformity.	Beauty.	Deformity.
Giant Gross forms and features Disproportion	Average height Average forms and features Average propor- tions, the beau- tiful or moral form	Dwarf Defective forms and features Disproportion

You will perceive, then, that the theory I am advocating is in direct opposition to the popular notion of cultivating and still further developing the strongest natural bias of a youth. Only attempt to carry out this notion thoroughly and consistently, and you will be convinced of its immorality. The strongest natural bias is always impatient of bit and curb; but give it head and spur, and it clear blows a man. The true object of education should be, on the contrary, to strengthen those qualities which may be defective and undeveloped. Both the intellect and the physique draw upon a common fund of vitality, the prodigal expenditure of which by either disturbs the desirable balance of the system. And not only is this the case as regards the general equipoise of mind and body, but by the extravagant use of any particular functional power of either. In fact, any disproportionate organization and activity in any portion of our natures destroy the just temper and harmony of their well-being. Having thus briefly given you my theoretical views upon the subject of education, I turn to the practical suggestions, which I believe, will be found perfectly consistent with them, and which, if the theory be rejected, may be judged of separately, as measures designed to improve the education of the workman and raise the quality of British workmanship.

Preserving the ideal of a well-balanced manhood before us, it will be seen to be of the utmost importance that the studies essentially necessary to its development should be separated from those which may be mere amplifications, specialities, or superfluities. These would appear to be,—1. The English language; 2. Ethics; 3. Arithmetic and Geometry; 4. Drawing; 5. Music; 6. Athletics. This was the course of training to be pursued in the primary schools which I proposed should be established throughout the country in a pamphlet which I published in 1851. Let me give the reasons for the foregoing selection. Those for the study of English and ethics are obvious. I will merely observe with reference to ethics that I use this word as a general title for religious instruction. For my own part, however, I lean to a rigorously secular system which would permit the study of scientific ethics only, or leave moral training to home direction. The studies of arithmetic and geometry are included, not for their more obvious utility alone, but also on account of the logical training they furnish. Nos. 5 and 6 in our list are drawing and music; of these studies I have more to say, having just now, as you will perhaps recollect, drawn your attention to the importance of educating the senses. Let us bear in mind, that through the eye and the ear we chiefly bear witness to what is passing in the world; and teachers of drawing and music only know, to the full extent, what false witnesses these senses are before they are properly cultivated. Let it not be forgotten, too, that it is upon these generally uncultivated senses that character and life are frequently at stake. The desire to obey the command,—“Thou shalt not bear false witness,”—may

sometimes be strengthened, but evidence cannot be guaranteed upon oath. If a witness be an imperfect observer by eye or ear,—and such he commonly is,—in default of the educational training we insist upon, he will conscientiously swear to the absolute truth of his erroneous impressions. I have on several occasions pointed this moral in teaching. “If,” I have said, “you misapprehend the truth with regard to the model immediately before you, and biding your time for deliberate inspection, how can you expect to observe, and accurately record the fleeting facts and occurrences of every-day life?” It is not, however, in the witness-box only, that trained senses are required, but for the appreciation of harmony and beauty in nature, to preside watchfully over all kinds of work, and to endow the manufactures of a nation with that permanent excellence which will insure their appreciation throughout the civilised world. I am speaking now more immediately of the education of the eye. I will venture to say that you would find that painters and sculptors would be more readily inducted to the exercise of any craft, could more readily turn their hands to any kind of work, than any other class of the community; and why? not only because their arts require the greatest dexterity of hand, but because they see better.

There is a certain affinity between all true work, be it of art or manufacture. The system I propose I believe to be the only true way to produce a nation of unrivalled workmen: depend upon it all the study of the physical sciences in schools, now so much insisted on, will never effect that. The study of the sciences promotes invention, extends our command over means, but does not materially and directly contribute to the development of the student's nature. And when I propose a course of study of drawing and music in these schools, I do not mean that drawing is to be practised in inconvenient and ill-lighted class-rooms, furnished with a cast or two and a few flat copies, for an hour or two in the course of the week, but that the class-room be properly designed for the purpose, well found, and that a fair share of every day's time be devoted to the study. I cannot so well speak of what is required for the proper study of music, but I would have the arrangement as thorough and complete. As the localities which would be fitting for the establishment of these schools for the workmen's children would very probably be also convenient for the workman, I would have these school studios, or others in close proximity with them, open to him in the evening, classes established for the study of the sciences, &c. Think of the effect such measures would produce upon manufacturing skill; what new and healthful sources of pleasure they would open to the workman, and how they would contribute to raise the whole status of art in the country; for as the toe of the mechanic “gibed” the heel of the artist, he, too, would have to move forward.

The last subject enumerated in our scheme of primary schools was physical training; but of this presently. The system proposed, therefore, provides for the appropriate expression of ideas by the study of English; for correct observation and the appreciation of beauty and harmony by the studies of drawing and music; for the exercise of right reason by the mathematics; and for the moral and physical health by ethics and athletics. If, then, this course of training be sufficient to educe the essential qualities of manhood, it is the fundamental system on which any extension of study in the direction of science and languages might be superimposed. The man is intellectually potent when he is able to observe, remember, and reason rightly. The formative system, I think, commends itself by its simplicity, and simplification in education is of the utmost importance to the workman; for his children cannot drone at school through long periods of time, and require, more than those of any other class, that the time which can be devoted to schooling shall not be wasted on what is not immediately necessary or what is inessential. General knowledge could afterwards be obtained and superadded in this and similar institutions. The scope of the local Schools of Design could easily be widened so as to embrace the larger plan proposed, and the new buildings about to be erected here* are arranged in a way which would favour the establishment of a school such as I have proposed.

I will now return to the subject of physical exercise. In most crafts this is amply provided

for the workman by the occupation itself, but not always of a kind calculated to improve the symmetry of the human frame. The subject on this account is one of great importance to the workman. There are some employments necessitating some particular list of the body, cramped position, &c., which are prejudicial to form and health, and which if it be not possible to mitigate by mechanical contrivances might be counteracted by judicious athletic training. And not only on this account, but that we have all to recollect that in the present state of the world true men must be militant; for we know not if the work of progress and the institutions most dear to us may be forcibly assailed; and if they be not, and the world move forward in the tenor of reason, we shall learn that symmetry of form is an index of a really progressing, healthy, and noble people. For however opposed it may appear to commonly accepted notions, rectitude of life does restore and preserve the beauty of a people: it may be a slow, but it is a sure and certain result. Great changes in the organization and form of living beings can only be gradually effected. If the deformation of nature be not the result of erratic action, what is its cause? The consequences of the irregular and careless treatment of machinery are well known. How much more, then, are the wonderfully delicate structures of living organisms affected by ill treatment? A variety of causes tend to shake the nerves, dwarf the bodies, deform the limbs, and distort the features in the present competitive haste of life, so fraught with mischief, morbid ambition, highly wrought nerves, unhealthy occupations, vice; and we may be certain that social disorganization will gradually increase till a higher and healthier purpose than the mere attainment of the power of wealth, supervene, and produce remedial reaction. We all know that physical exercise has long been considered an important branch of education by the founders of the Working Men's College; to them, indeed, I believe we may attribute the present popular recognition of the value of athletic sports, but as the new hobby is now in danger of being ridden to ridiculous excess, I venture to offer a few remarks in reference to its scientific direction. If the mean be accepted as the scientific measure of that stature and fulness, of that perfection of the human form, which has neither excess nor defect, of that ideal to which men are to gradually go on, and grow up unto, by the moral or just use of every function of their being, of that pristine symmetry which has been marred by error, and which is only likely to be restored by mind dominating body—I say, if we accept this measure of rectitude, there will be no danger of muscularity being over-developed for the sake of being stronger in mischief, or for those purposes which had so long prejudiced and degraded athletics in the eyes of the public. In the exercise of the body this great law of formative ethics should be remembered, viz., that as vitality is a fixed quantity, no one faculty, or group of faculties, can be excessively exercised or developed, but at the expense of others, prodigious mental exercises at the expense of the body, great muscular effort by diminution of power of thought; and if the vital power be unduly and continuously directed to either of these purposes, abnormal deformation and disproportion ensue. The danger that has to be guarded against in the institution of athletic sports is, lest the true object of education be lost sight of, and an excessive development of the and sinew be educed, instead of that moral form, in which all the faculties are co-ordinated, and from which any departure implies deformity and predisposition to disease. Rewards, in my opinion, should never be offered for excessive feats of strength, but for general capacity of mind and body. I believe, if it were practicable, that it would be of greater advantage to human progress, to crown perfect form, than feats of strength. The Greeks, who of all people, perhaps, best understood the training of men, and consequently those proportions in which beauty of form inheres, had intellectual as well as physical development in view in the institution of their Olympic Games, which had a dignity of purpose wanting to the Roman amphitheatre, in which men, brutalized by strength, contended with brutes. The foregoing operations are perhaps, the more necessary, because some of the recently-established athletic associations have adopted the device of a figure of the Farnese Hercules, with the legend, *Mens sana in corpore sano*. Now this antique statue is an embodiment, as painters well know, of muscular

* The Working Men's College, where this paper was read.

excess, a mountain of physical strength capped by a weak summit. Such an embodiment is wide of the mark demonstrated to be the standard of manly beauty, in which all the faculties of mind and body are duly apportioned. The *mens sana* would be impossible in an incarnation of the Hercules; such a being, from his mental immobility, would only be useful as a club-bearer or porter. This device of the Hercules shows that the true objects of muscular training are not yet popularly understood. It has been raised as an objection to the formative theory that the power of remoulding human nature is very limited; but we all know that very great changes in the human form can be effected in the wrong direction, let us try if as much cannot be done in the right. We also know what changes knowledge can effect in other forms of being over which man exercises greater control. The true intellectual and physical conformation of man is, doubtless, the increasing purpose which, as Tennyson expresses it, is widening with the process of the sun. Let us give our energies to it, without minding how long it will take to accomplish. It takes a long time to learn how to be, and to be men. You may, perhaps, think this lecture has been less special than its title promised. But are we not all workmen who must set before ourselves the self-same ideal, and keep it steadfastly in view? To be men, I take it, is alike the ambition of the artisan and the peer.

If you think I have anywhere expressed myself too authoritatively and positively, set it down to the earnestness of conviction. I know you would rather forgive me for being a little too positive than for not being in earnest.

W. CAVE THOMAS.

ASSOCIATED ARTS' INSTITUTE.

We have before us the programme of the current session of this society, showing that several very interesting papers are promised, and we would take advantage of the opportunity afforded to draw attention to the existence of a society which offers considerable advantages in its bringing together the younger members of the three professions of architect, sculptor, and painter, and affording them an opportunity of yielding one another that mutual assistance and co-operation which history has shown us to be necessary for the production of true artistic works. The "Associated Arts Institute" meets at the House in Conduit-street on Saturday evening. The society now numbers 120 members, and Professor Westmacott, R.A., is its president. The essays or papers read are short, and a discussion on them afterwards is one of the more important objects held in view by the founders of the society. The subjects given for sketches are so selected that it be possible for any member, whether painter, sculptor, or architect, to contribute designs. There is also a class of honorary members, who are either amateurs or non-residents in town. We are disposed to think that such a society offers considerable advantages, and that publicity only is required to induce young students to enrol themselves as members.

OPENING MEETING OF ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The opening meeting of the new session of the Institute took place at the House, in Conduit-street, on Monday evening last, Mr. Charles Barry, one of the vice-presidents, in the chair.

The Chairman, in terms of regret, announced the obituary of Fellows and Associates deceased since the close of the last session, in June last. Chevalier Heinrich Ferstel, Professor the Chevalier Friedrich Schmidt, and Herr Carl Hasenauer, eminent architects of Vienna, were elected by acclamation honorary and corresponding members of the Institute, their claims to that distinction having been stated by Professor Donaldson, the hon. secretary for foreign correspondence. Mr. Godwin referred to the Chevalier Ferstel and Chevalier Schmidt, from his own knowledge, as having played an important part in bringing about the present condition of ecclesiastical architecture in Germany, in conjunction with Herr Vincent Stutz, who was already on the list of foreign honorary members. He regarded this as a well-merited distinction to those gentlemen.

Professor Donaldson announced the liberal

donation of 1901. by the president, Mr. Tite, M.P., towards furnishing the library of the Institute with architectural works, more especially those of foreign authors of great value, which it does not at present possess, and a special vote of thanks for the same was accorded to Mr. Tite.

Mr. Godwin mentioned the fact, to which we have elsewhere referred, that the Governor-General of India had issued a commission, for the purpose of ascertaining the best means, and acting upon those means, for the preservation of records of the numerous architectural remains which abound in our Indian empire.

Professor Donaldson expressed a hope that a similar spirit would actuate the Government with regard to the architectural remains of this country. He mentioned that, on the occasion of a recent visit to Wales, he found the castles of Conway, Carmarthen, Beaumaris, and Harlech in such a state of dilapidation as to threaten their entire destruction; which, he said, might be prevented by a little judicious repair with the materials on the spot. He had taken upon himself to communicate with the First Commissioner of Works and Buildings on this subject, and received a reply stating that the castles held under the Crown did not come within that department. By means of another letter he learnt that they were under the control of the Woods and Forests. He thought it specially became this Institute to take what steps they could for securing the proper preservation of the old castles and similar buildings of the country; and added that he would be prepared to place a motion in the hands either of the president or Mr. Bevesford Hope, for a return of all the buildings held under the Crown since the year 1600, stating their present condition and by whom and under what terms and conditions they are now held. Until they had a return of that sort, the ancient architectural monuments would not be properly preserved.

The paper read was a "Memoir of the late Mr. Charles Fowler" (Fellow), written by Professor Donaldson, to some parts of which we may return. At the conclusion of it,

Mr. Edwin Nash said he knew Mr. Fowler sufficiently to form a very high appreciation of his works and character. As an instance of that gentleman's kindness of disposition, he mentioned that on one occasion he applied to him for some information respecting one of his works, when Mr. Fowler not only furnished the information required in writing, involving a considerable amount of labour, but added to those labours a number of drawings, which he specially prepared. He could not refrain from mentioning it on this occasion, and he did so with a view of encouraging intercommunication between themselves as a valuable means of promoting the interests of the profession as well as a personal gratification to themselves.

The chairman having risen to propose a vote of thanks to Professor Donaldson for this paper,

Mr. Godwin said he thought it would be a pity to allow the observations on the subjects brought forward by Professor Donaldson to terminate so abruptly as they appeared about to do, inasmuch as there were so many texts opened to them in the papers, that they afforded matter for half a dozen sermons. He had no intention of preaching a sermon on those texts himself, but there were one or two points on which he begged to say a very few words. For example, he was not able to agree with Professor Donaldson's statement, that there was a difference of opinion amongst medical men in the present day on the subject of having parallel wards, side by side, in hospitals. Anything more preposterously bad than such an arrangement as that could not be conceived. He spoke from long consideration of the subject, and from knowing the opinions of many of the most eminent medical men of the day upon it. It was impossible, with such wards opening into a corridor, as they usually did, to prevent the spread of an "hospital atmosphere," which there could be no doubt was highly detrimental to the recovery of convalescent patients; and in many of the old hospitals the inmates had died more rapidly, probably, than if they had been placed under a hedge, covered with a blanket, and decently fed. That was the opinion of men of long experience in the matter, in which he fully agreed. He should be very sorry if the expression in the paper should lead any architect to believe that if he submitted a design which included double wards side by side it would stand a chance of being selected. He was glad to think, he might even say he was proud to think, that no such design would now be selected. He

had laboured for some years in endeavouring to spread a knowledge of the advantages of the pavilion principle in hospitals, and he was happy in the belief that the double ward system would not now be admitted in the construction of those buildings. With regard to competitions he was glad to hear Professor Donaldson's observation—he put it very mildly—that the instructions to architects, instead of being more precise, should rather be left more open. It was a very difficult thing, he knew, to obtain a decision without precise instructions that would give satisfaction to all; but he was quite sure that instructions of a general character were best calculated to bring out the talents of architects, and more likely to lead to the production of good buildings. The restrictions under which architects were usually placed precluded the exercise of their own opinion and judgment in any case. It was of the utmost importance that the Institute should take up this matter, and discuss the four propositions which Professor Donaldson has laid down, with the view of arriving at a more general understanding in respect of competitions. A good deal might be done towards improving competitions by the profession itself. There was, as they all knew, a great disposition to cavil and find fault, often very necessary; nor was there any alteration in that respect when the committee or municipality called in professional men to assist them, the only difference in that case being that the referees came in for the abuse instead of the committee or municipality. Committees would feel that they might as well exercise their own judgment, and allow local prejudices and favouritism to have their weight; because there was the same abuse bestowed whether impartial persons were called in or not. Let the profession give their brethren credit for honesty of intention, and not assume a "job" without at least some evidence of the fact. He would, in conclusion, say one word with reference to their excellent friend, the author of the paper. They must all agree that considering his recent and still existing indisposition which precluded him from reading his own paper that evening, and other circumstances, together with the weight of some years upon him, the time and labour that he gave to the matters of that Institute, and for the benefit of the profession at large, were beyond all praise. He knew no man so ready ever to come forward to bear testimony to the good qualities and abilities of a fellow-labourer, whether he were alive or dead. In this respect especially he deserved the gratitude of all, and he was sure there were none present but would hope that when they died they might have such a friend to tell their story.

Mr. Digby Wyatt remarked that it was his good fortune to have known Mr. Fowler for upwards of twenty years. He had also seen most of his works, and he confessed they had all impressed him, as his personal acquaintance with him had done, with a profound respect for that gentleman's character. There was a degree of uprightness which was impressed upon him both in his life and in his works,—a straightforwardness of purpose of which any architect might be proud, when manifested alike in his life and works. Professor Donaldson had dwelt principally upon the architectural phase of their late friend's character, and had not touched upon the domestic phase of it. Happy in his every relation of life, Mr. Fowler was a man to be respected in all things; and in every piece of professional business, small or large, with which he was connected he never issued from that business without carrying with him the respect of his employers and the esteem of those who laboured with him. Mr. Wyatt fully endorsed all that had been said with regard to the great merits of Professor Donaldson and his exertions on behalf of the Institute, and the profession at large.

The Chairman, in proposing a vote of thanks to Professor Donaldson for his able memoir, expressed his unequalled concurrence in all that had been said of him by the preceding speakers, adding, that he had set an example to the younger members which they would never forget, and which he trusted they would all endeavour to follow.

The vote of thanks having been passed with acclamation,

Professor Donaldson returned his acknowledgments for the kind manner in which the proposition had been received by the meeting. He said if he had yielded to his own feelings he should have said more about Mr. Fowler and the

valuable qualities he possessed; but he felt assured his late esteemed friend would not have wished to have one word more said about him than others might be disposed to accept; and he had forbore to treat of his private character because there was so much in his professional career; such integrity, high honour, and straightforwardness, that he felt there was in that career alone sufficient to occupy their attention for that evening, as he hoped and believed, with interest and not without instruction. With regard to the young members of the profession he had written a few words, which he hoped would come home to them, so as to induce them to greater exertions, to infuse more energy into them, and lead them to sympathise in the feelings with which they looked upon their art, in which respect more was expected from them than they had yet done. It was from their ranks that the vacant places which were left must be supplied; and he hoped they would not only do honour to their profession, but also to their country.

It was unanimously resolved that the honorary secretary be requested to convey, in suitable terms, the sincere condolence of the members of the Institute with Mrs. Fowler and her family on the great loss which they have sustained.

THE NEW PUBLIC OFFICES FOR LIVERPOOL.

It is now some years since the corporation of Liverpool resolved to erect public offices in the town worthy of the importance and standing of the great northern port, and in which all their numerous officials should have accommodation sufficient to enable them to transact the business of their respective departments. The want of such offices had long been sorely felt; the inconvenience and expense of having the corporate servants dispersed about different parts of the borough became more apparent day by day; and the urgency of the case having become irresistible, the local parliament commenced what may, without exaggeration, be called a somewhat gigantic undertaking. That was some five or six years ago, but, owing to the chief being in unforseen circumstances—the chief being its inability to obtain the particular kind of stone required—the work dragged slowly along, and for awhile matters were almost at a standstill. The huge pile, but half complete, became for a length of time the subject of many a bitter comment, and afforded a capital illustration of the slowness with which corporate bodies are popularly supposed to proceed with any great public work intended to meet a great public want; but about a year ago matters were pushed on with considerable vigour, and the large building is now all but ready for occupation. The site chosen is in Dale-street, and is admittedly one of the best in the town, being situated in the busiest of the many busy streets of Liverpool. The building, which abuts considerably too close upon the public pavement, thus marring the general effect, presents a bold and substantial appearance. In size it is only inferior to St. George's Hall.

The Public Offices, which in form represent a quadrangle, cover an area of about 4,800 square yards, and have a depth of about 196 ft. The style is Corinthianesque, treated very freely. The height of the building to the upper cornice is about 60 ft., and to the roof of the pavilion between 80 ft. and 90 ft. A tower, to a height of about 200 ft. rises from the centre of the building, and its elevated position renders it conspicuous at a considerable distance off. The frontage is, of course, in Dale-street. There is a large granite-framed doorway in the centre, and on either side of this are massive stone columns projecting so as to form a porch. At intervals along the front other columns are placed, and the wings at each end take a tower form, covered by a pavilion roof. Each angle of the building is similarly completed. The top story is constructed as an attic, and single figures, representing different branches of art and science, occupy positions upon broken entablatures. The caps of the columns which support the front are not formed after the usual acanthus model, but from designs supplied by English firms. It is proposed to place a clock in the tower, which is to be furnished with bells to strike the quarters, and which is to be regulated by electricity. The building has five main entrances, and there is plenty of vacant ground in its rear; which fact makes it the more to be regretted that the struc-

ture was not put much further back from the thoroughfare in Dale-street.

Round the entire building within runs a broad corridor with a groined roof, from which access to all the offices can be obtained. The ground and upper floors are similarly arranged, and at each entrance a stone staircase leads from the one to the other. The Tax Office is the most spacious room in the building, and it is 40 ft. by 60 ft. It is placed in the centre of the pile, and is lighted from the roof by means of skylights. The woodwork on the ground and first floors is all of oak, and on the upper floor of pitch pine; the whole of the work being very substantially done. There are upwards of 100 rooms: the corridors are lined up to a given height with tiles of a handsome pattern; while the staircases are lined with enamelled plate. The principal offices will be on the ground-floor; the clerks in connexion with different departments occupying the upper floors. A hoist travels from the basement to the top, having a communication with each floor; and the building is warmed by means of Price & Co.'s hot-air apparatus. The eastern portion of the building is appropriated to the departments under the direction of the borough engineer, the treasurer, the medical officer of health, and the officials at present having rooms in Cornwallis-street. The western wing, on the ground-floor, is assigned to the town clerk's department, with the exception of five distinct rooms, each 34 ft. by 18 ft., which are set apart for committees; and upon the second-floor will be the muniment-room, and the offices of the borough architect and surveyor, the water engineer, and the deputy town-clerk. The different parts of the building will be communicated with by means of speaking tubes and electric bells. The land and furniture apart, the cost of the building will be somewhere about 100,000l.

We need only add that the design was originally made by the late well-known architect and surveyor to the corporation, Mr. John Weighman; that the builders are Messrs. Holmes & Nicol, Messrs. Haigh & Co., and Messrs. Parker & Son; and that the new borough architect and surveyor, Mr. Robson, has personally superintended the erection of the building, and has made such modifications in the first design as seemed desirable.

BIRMINGHAM ARCHITECTURAL SOCIETY.

A MEETING of this society was held on the 31st ult., at the Town Hall Chambers, Mr. J. J. Bateman, president, in the chair, when the session was opened by an address from the president. In the course of it he said, as to the Paris Exhibition building, that although in arrangement well adapted to its purpose, it was of all iron and glass exhibition buildings the very ugliest; indeed, it was scarcely possible to conceive a building erected in the present day so devoid of any attractive features. Here Mr. Bateman remarked how very little we, in Birmingham, have attempted in the adaptation of iron in the construction of buildings, the town being so favourably situated for the development of designs in that material. After paying a passing tribute to Messrs. Payne & Maw, as the authors (though as yet unrecognized by the authorities) of the plan published in the *Builder*, from which the design of the building was taken, Mr. Bateman proceeded to speak of the Exhibition itself, and said it appeared to be the accepted verdict that England had not successfully competed in the fine arts, and there was little doubt of this being the case in historical painting. In our own department of the fine arts, he said, we appeared to have lost an opportunity of offering to France that of which she stood in need—a lesson in ecclesiastical architecture. Noticing the care and attention which French architects pay to the plan, Mr. Bateman said here we could take a lesson ourselves, in making the plan a more important feature of the design. No one could examine a French design without being struck with the greater amount of study given to it than we were in the habit of bestowing. The French plan was as much a picture as the elevation, and generally more carefully treated. We should also profit by studying from French designs the art of tinting, the beautifully transparent toned colouring of their geometrical elevations and plans, preserving clearly every line and detail of the design, and at the same time heightening the effect of the composition to the utmost. Next Mr.

Bateman referred to the much-praised practice of the French architects in making very large geometrical drawings as studies for their designs. However advantageous this system of colossal drawings might be to the painter, he totally disagreed with the practice as applied to architecture, as having an inevitable tendency to produce a want of boldness and a littleness in the detail of executed work, arising in part from the fact that they could not draw the building full size. While admitting that, under Louis Napoleon, Paris had become a magnificent city, Mr. Bateman remarked that there was little force or vigour of design, which their street architecture appeared to him always to want. In two particulars we might profitably study their buildings: firstly, the undisguised and effective treatment of the roof, which we resorted to, all expedients to cover up and hide; and, secondly, the beauty and delicacy of their sculptured detail. Being in a transitional state, we need not be afraid of interfering with the nationality of our school of architecture; we should, therefore, be ready to adopt, from whence-ever it might come, any suggestion which might aid us in producing a worthy, national, practical school of architecture.

RAILWAY MATTERS.

The underground railway has carried in six months' time over 12,000,000 passengers, or about three times the population of London. The actual number transported over the line since its opening in January, 1863, is about 70,000,000. The line is only three miles and three quarters long, and was constructed at an enormous cost, but makes good annual returns in dividends.

A tube, intended for use in constructing pneumatic railways, has been patented by Mr. A. Beach, of New York, U.S. It is composed of sheets of wood veneer, about one-tenth of an inch in thickness, laid one over another in alternate transverse spirals, and firmly glued together, forming a shell about 1½ in. in thickness. The full-sized tube is cylindrical in form, about 8 ft. in diameter, and is put together in sections of about 5 ft. in length, with overlapping joints. The car is nearly cylindrical in form, running on wheels upon a track laid on the bottom of the tube. Around one end of the car is a disc, fitting as closely to the interior of the tube as it may without creating too much friction. The current of air pressing upon this impels the car. The impelling current in this case is created by a fan, shaped like an ordinary marine propeller, which is placed in one end of the tube, and driven by steam or any other power. Letter-boxes are to be placed at convenient points along the line of the road—in a town they might be at every street corner—the boxes being divided into two compartments, marked for letters going in either direction. The boxes are so arranged that, as the proper car passes, the bottom of the box opens and deposits its letters in a box of the car.

The thirty-sixth half-yearly general meeting of the Great Indian Peninsula Railway Company has been held in London. The report was adopted, and the chairman in reply to a question stated that the probable cost of the restoration of the works which had failed would be about half a million sterling.

PROPOSED NEW ROAD FROM BELGRAVIA TO SOUTH KENSINGTON.

We would direct attention to the following communication:—

One of the most characteristic features of the age is the marked improvement which has taken place in our great city. Wealth, population, and civilization were always connected with London, but the beautiful and picturesque have long been wanted. Our noblest temples of piety and magnificence are buried in obscure places, and deprived of their otherwise commanding effect by miserable dwellings surrounding them. It is only of late years that we have erected a suitable senate-house for a parliament which has existed for 1,400 years. But the spirit and sense of beauty, combined with utility, which has made Paris the "city of the world" has at length come amongst us. It was the boast of a great Roman emperor that he found Rome of brick and left it of marble. Let it be the boast of our age that we found London ugly and left it beautiful.



ANCIENT BRONZE MEASURE, OCHSENFURTH: A.D. 1403.

In your most valuable journal you have repeatedly urged the necessity of improving our town thoroughfares and approaches. The Belgrave and South Kensington new road is a scheme which is considered not only likely to be commercially successful, but also pronounced to be of immense utility as a London improvement.

A complete barrier is now presented between Prince's-gate, on the one side, and Belgrave-square on the other: such a road as the above would at once bring these favoured regions into direct communication with each other, thereby uniting the district foreshadowed as the future centre of opulence and fashion with that which is at present so, to the improvement of the entire surrounding neighbourhood and the immense enhancement of the value of local property.

The communication in question will pass in a direct line from the part of Belgrave-square opening into Pont-street to the Cromwell-road; and it is proposed to render this not alone a mere thoroughfare between these two favoured points of our metropolis, now almost entirely cut off from each other, but to give to it the most imposing and attractive character, presenting a straight mile, such as no other city in Europe can boast, and giving to this quarter of our capital a grandeur of effect *par excellence*, of which she may be justly proud.

To accomplish this, and at the same time ensure sufficient privacy to the spot (there is already an authorised new road to the right of this from the Brompton-road to Eaton-square, over which the heavier traffic would pass), triumphal arches of allegorical design, honouring Fame, Glory, and similar attributes, might be erected at each end; the one opposite Cadogan-place in Sloane-street, directly facing Pont-street, the other at the opposite end, and in a line with Cromwell-road. These would open upon a Broadway sufficiently wide to allow in its centre

and throughout its entire length an ornamental garden, supplied with fountains and statues, and bordered on either side by rows of palatial mansions, after the style of the most attractive Boulevards of Paris, thus offering a striking feature of interest to our metropolis, regenerating the West-end, and at the same time conferring upon us a national prestige for awaking practically from a long lethargy, and at once give our chief capital rank by the side of the most tasteful cities of modern Europe. Opening up also, as this great artery would, the Government property at South Kensington, and especially the vast and important site of the Exhibition of 1862, as well as forming a direct line of communication between the Royal residence and a spot so associated with the memory of one who was ever the first to recognise and promote any enterprise of a great and useful nature, it cannot be doubted that such an improvement would meet with the highest countenance and favour, and also forward the future prospects of the West-end to an immense extent.

"The Birdcage Walk" would only be broken by the intervention of a few yards at Belgrave-square. A magnificent continuity of route westward from the Houses of Parliament, the Thames Embankment, Westminster Bridge, &c., would be developed to this important point, thus effecting an improvement worthy of the age, alike useful and ornamental to this aristocratic quarter of our great city.

South Kensington being now the cradle of science and art, in addition to possessing so many elements of attraction as it does in its Museum, Horticultural Gardens, proposed Hall of Science, and ere long its Royal Academy of Music, such a thoroughfare or Boulevard as this really would make, ought to be named the "Boulevard of Arts," and the statues, placed

at equal distances throughout its length, should be those of our greatest Englishmen, so many of which, now scattered in every direction, might here be appropriately concentrated, thus heightening the national character of the undertaking, and improving the source of proud gratification with which our countrymen might view so magnificent a triumph of their taste and skill.

A BELGRAVIAN.

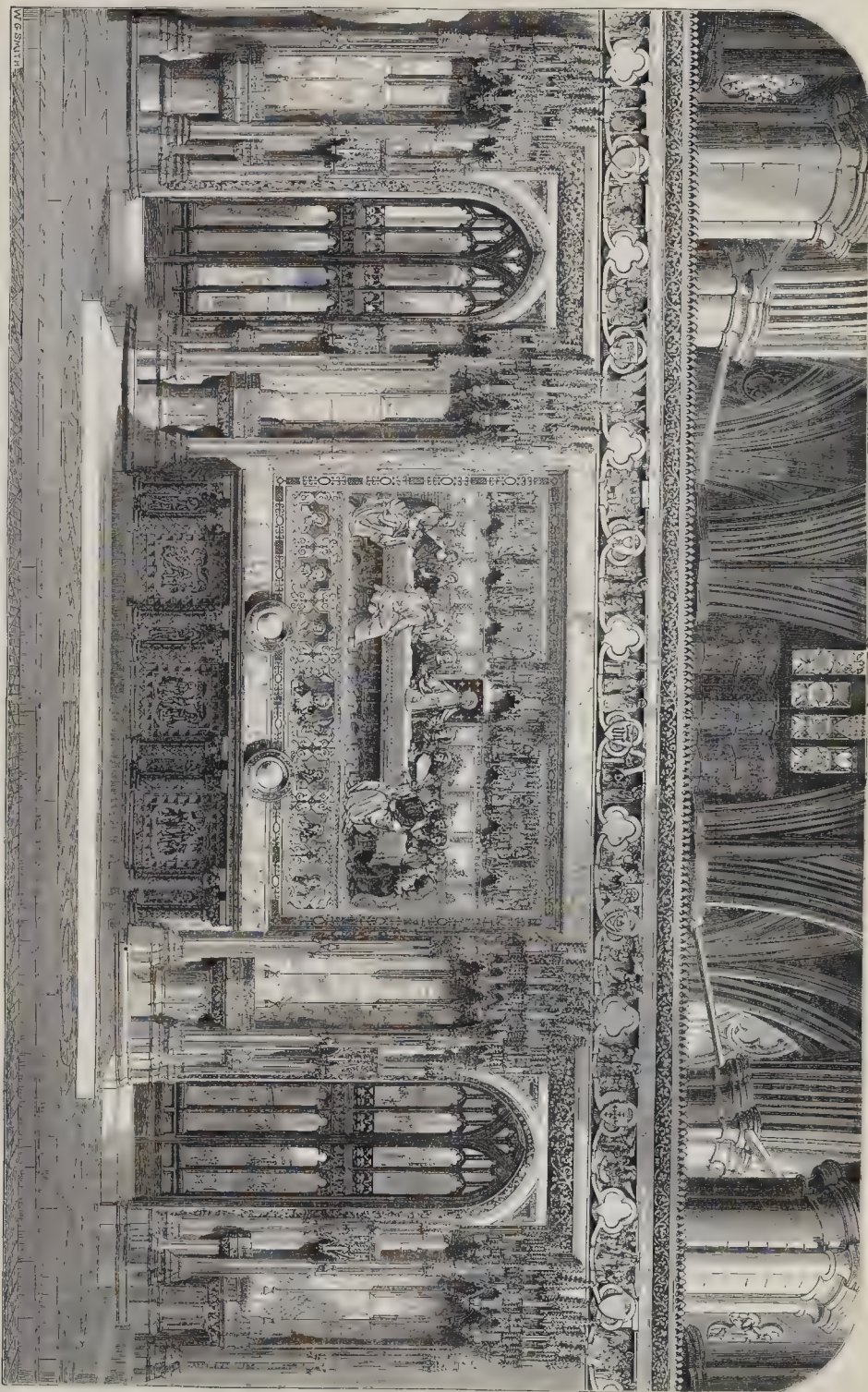
* * The proposed road has our heartiest concurrence, and should have the aid of the Privy Council Department of Art and Science. A considerable part of the line is at present uncovered with houses, and we are informed that the required capital, or greater part of it, is forthcoming.

ANCIENT BRONZE MEASURE, OCHSENFURTH, GERMANY.

The accompanying engraving represents the "Eimer" measure still used in the town hall at Ochsenfurth. It is cast in bronze. On the rim is the date * "Anno domini M^o CCCC und III." 1403. The mixture of German and Latin in the inscription is very singular. The subjects represented in low relief are the "Crucifixion," on the first and third compartment, and "St. Michael and St. Lawrence" in the second and fourth. The handles are curious, but very convenient. The following are the dimensions of this peculiar relic of antiquity:—

Height	29 in.
Diameter	22 in. at rim.
Figures	6 in. high.
Thickness at rim ..	2 in.

This measure is preserved in the council chamber of the town-hall. On a future occasion we shall give drawings of other remarkable specimens of ancient furniture in the same room.



THE REREDOS AND ALTAR-TABLE, WESTMINSTER ABBEY.—PROFESSOR G. G. SCOTT, R.A., ARCHITECT.

NEW REREDOS AND ALTAR-TABLE,
WESTMINSTER ABBEY.

THE new reredos, executed in marble and alabaster, and the altar-table of cedar, are now in course of completion in Westminster Abbey, from the designs of Mr. Scott. The new works also include the restoration of the sedilia and a tessellated pavement of marbles and enamel mosaic surrounding the table. The work has been admirably well executed by Messrs. Poole, at a cost of about 6,000*l.*, defrayed from a fund devoted to decorative purposes in connexion with the Abbey.

The design for the large mosaic of the "Last Supper" was made by Messrs. Clayton & Bell, and has been executed by Dr. Salviati, of Venice. The size of the recess to contain this mosaic was determined by the old central canopies of Bernadoni and by the length of the ancient retabulum, fragments of which are still preserved in the Abbey, under glass: it was, however, discovered, after the mosaic was prepared, that these canopies were not originally attached to this part of the reredos; so their restoration was abandoned, and the mosaic set between two necessarily disproportionate borders. The whole suffers in consequence. The upper border, not yet executed, but represented in the Abbey by a temporary cartoon, will consist of canopies in metal-work and enamel, and the lower part (also at present represented by a cartoon), of medallions in mosaic, after the manner of the old retabulum. The carving of the subjects from the life of our Lord in the cornice were executed by Mr. H. H. Armistead.

The table has been executed in pencil cedar, and inlaid with other woods, by Messrs. Farmer & Brindley, the front and sides being ornamented with Scriptural subjects, carved in relief, the gold marble slab being placed on the top.

The tessellated pavement on which the altar stands is now set back to its original position, so as to admit of the restoration of the part of the old marble mosaic floor which was previously hidden by it.

In previous numbers of the *Builder*, notices have been given of the progress of the work, with reports of several interesting antiquarian discoveries then made, to which we refer our readers.

ARCHITECTURAL REMAINS IN INDIA.

Our readers will be glad to hear that the Governor-General of India, Sir John Lawrence, has taken the praiseworthy step of issuing a commission to inquire into the best means of preserving the numerous fine and interesting architectural remains which exist throughout the whole of our dominions in India. For years Col. Cunningham and others have been advocating this measure, but have failed to obtain a proper hearing. It is said that an efficient plan will be organized for taking photographs, plans, and measurements.

PROVINCIAL NEWS.

Liverpool.—The foundation-stone of the new Southern Hospital has been laid by the Earl of Derby. The new hospital, which will be built upon a plot of land in Caryl-street (late Harrington-street), will cost 35,000*l.* It will include, it is said, all the most modern and approved sanitary arrangements. The endeavour is to combine entire simplicity of architectural outline with the most perfect internal arrangements, so doing, to prevent the occurrence among the patients of those diseases peculiar to hospitals, and which have often proved more fatal than the accidents and diseases for which they have been admitted. The subscription-list, headed with twelve individual contributions of 1,000*l.* Altogether towards the cost of the building 25,000*l.* have been contributed. The principal front of the new building will be in Hill-street, presenting a frontage of 300 ft., and extending in depth 180 ft. There will be a centre and two end blocks. The former will contain the administrative department, with the operating theatre, chapel, board-room, waiting and examination rooms. The end blocks, separated from the centre by corridors east and west, will contain one large and one small ward each, with nurses' rooms, baths, patients' lifts to each floor, and every arrangement for the comfort and convenience of the patients.

The proposed accommodation will embrace 200 beds. The building will be erected from the designs, and will be under the superintendence, of Mr. Culeham and Mr. Summers, of Liverpool.

Penzance.—The state of the Penzance Western Esplanade will engage attention. The further fall of 25 or 30 ft. of wall, and the consequent exposure to wintry gales of the path and roadway, begin to excite apprehension in the town. Already there is a thousand pounds' worth of wall to be rebuilt, for a foundation has to be sought 25 ft. deep through sand, beach, boulders, and clay, and a wall 14 ft. or 15 ft. high raised on this foundation. But this is not the worst. A southerly or south-easterly gale would undermine more of the wall to the east, and furiously assail the shaly wall and ground outside the Baths, which is only about 12 ft. from the outer wall. It is feared that a gale might bring down this large structure. To make a good job of it, says the *Cornish Telegraph*, some would have the Local Board rebuild the whole length of the sea defence, widen the Esplanade 12 ft. or 14 ft., and purchase and remove the Baths. These ought to form the centre of a fine crescent on the unoccupied land known as Miss John's field. This improvement might cost 6,000*l.*, but it would not be dear. A small rate thrown over thirty years would meet it.

Salisbury-by-the-Sea.—A meeting of the inhabitants of Salisbury has been held, for the purpose of considering the advisability (or otherwise) of establishing a company for the erection of a promenade pier at Salisbury. The cost of the proposed scheme is guaranteed to be under 6,000*l.*, and it was ultimately resolved that a company under the limited liability principle should be formed, the capital being 7,500*l.*, in 1,500 shares of 5*l.* each.

Exeter.—The buildings of the Devon House of Mercy, at Bovey Tracey, have been opened. The building is from designs by Mr. Woodyer. The plan is a parallelogram, running east and west, with two principal wings projecting to the south, the chapel being an extension of the main line of building to the east. Being built on a sharp declivity, there is a basement story under the west end of the house, containing the kitchen and other domestic offices, stores, &c. A large laundry and wash-house, extending to the north or back of the main building, contain all the modern conveniences for carrying on that branch of industry, by which it is hoped that the inmates will be able to earn funds towards their own support. The western wing contains a large dining-room, probationers' rooms, and dormitories, with sisters' rooms annexed for superintendence. On the ground-floor of the centre block of the building are class-rooms for the instruction of the inmates, and porters' rooms, with dormitories and sisters' rooms over. The eastern wing, which is not commenced, owing to a deficiency in the funds, will contain the sisters' community and dining-rooms, the sister-superior's apartments, and the infirmary and visitors' room. The materials of the building are granite and Bath stone, and extreme simplicity, as is fitting for a building devoted to such a purpose, has been studied in every detail in the house. The chapel is lofty, and terminated in the east end with a polygonal apse. A chaplain's room and vestry are built on its north side. The windows are single lights, with moulded jambs and hoods, internally standing upon circular shafts of grey forest stone, and five of them are filled with stained glass, by Messrs. Hardman & Co., of Birmingham. The reredos is for the most part of alabaster, principally English, but some portions of white Italian. It consists of an arcade filled with figures of angels, above which the work is carried up in geometrical forms as high as the plate of the roof, and the openings will be filled with English mosaics. The east window is so treated as to be embraced by and form part of the reredos. The whole of the fittings will be of oak. At present, however, only the western screen, with the organ-gallery over, is completed. A simple bell-turret, of oak shingles, surmounts the west end of the roof. When completed, the house will accommodate eighty inmates,—viz., seventy-two penitents and eight sisters.

Greenstreet, near Faversham.—A small institute building has recently been erected in this village by a limited liability company, composed of a few spirited inhabitants of Greenstreet and its neighbourhood, under the presidency of Captain Lake, to whose assistance the company is mainly indebted for its success. The building comprises a lecture-hall, capable of seating about 400; reading-room, and offices. The hall has an

open-timbered roof, with a pierced quatrefoiled cornice, forming the upper part of roof-plate, for the purposes of ventilation. The room is lighted with gas from bracket-lights against each side. The woodwork is stained and varnished, and the walls distempered a light fawn colour. Externally the building is of gray stocks, relieved with red and black brickwork. The total cost has been about 500*l.*, and the works have been carried out from designs by Mr. Benjamin Adkins, architect, Faversham, the builder being Mr. S. George, of Greenstreet.

FROM SCOTLAND.

Dundee.—A serious accident has taken place at Dundee Old Gas Works, whereby twelve men have been dangerously hurt, and some of them, it is feared, beyond the hope of recovery. A gas iron tank, 100 ft. in diameter, is being erected by Mr. R. Laidlaw, of Glasgow. There is an excavation 26 ft. deep, into which the tiers of plates are lowered, the men working on scaffolding fixed in the middle of the excavation. The men—15 in number—were attempting to lower the third tier of plate, weighing about 10 tons, when it swung to one side, breaking the scaffolding and precipitating twelve of the men to the bottom of the excavation.

Grief.—Since the accident which occurred about the middle of August at the new bridge in course of erection across the Earn at Grief, the rebuilding has been pushed forward. The arches were finished some time ago, and the parapet on the east side is in an advanced state. One of the centre arches, however, has bulged out, and showed symptoms of again giving way. The contractor became alarmed, and gave orders at once to stop the traffic and works, which was accordingly done; and it is doubtful if the building can be proceeded with till after the winter months. The inspector from Edinburgh has examined the damaged arch, which measures in length from pier to pier upwards of 40 ft.

Jedburgh.—Another slip has occurred at the Castle-hill Tunnel. A somewhat serious slip had taken place owing to the presence of much water and sand. The contractor thought that the best thing for them to do was to sink another shaft at the place where the ground had slipped; and accordingly this was done, not, however, without a considerable amount of labour, the men having been working night and day in it so as to have it completed as speedily as possible; but another slip took place, and, as fears were entertained that the wall in front of the Castle might also be brought down, the workmen were ordered to fill the shaft up immediately for safety; thus undoing in a few hours what it had taken nine days and nights to accomplish. The work will now be carried on only by the shaft situated a little further towards the west, until the workmen again approach the dangerous spot which has just been filled up.

Glasgow.—Free Barony Church, erected at the corner of Castle-street and Mason-street, has been opened. The edifice (a notice of which has already appeared in the *Builder*) is seated for 1,100, and large side rooms adjoining will hold 500 or 600 in addition. The chief peculiarity of the interior is the arrangement of the pews, which are in concentric tiers, both in the area and gallery, so that the sinner in every part of the church directly faces the preacher. There is a tower, 180 ft. high. The style is Gothic. The building was commenced about two years ago; its cost is about 10,000*l.*, inclusive of site. The architect was Mr. Honeyman. The contractors were,—For mason-work, Messrs. Bruce & Keir; joiner-work, Messrs. Watt & Wilson; plumber, Mr. R. Philip; plasterer, Mr. Alex. Campbell; slater, Messrs. J. McOat & Son. The heating apparatus was fitted up by Mr. Ritchie, of Edinburgh, and the painting was done by Messrs. McFarlane & Smith.

Stirling.—Mr. McLean, acting for Mr. Rothead, architect of the new transept of the High Church here, has examined the unoccupied space above the modern plaster ceiling of the West Church, and finds that the old open timber roof of the thirteenth or fourteenth century still exists, in all its entirety. A tracing of this roof has been taken, and the wonder is expressed that it should ever have been hidden under a mass of plaster. It is hoped that the discovery will engage the attention of the town-council.

Alcoa.—The Episcopal congregation finding their present church to be inconvenient in various

ways, began to move some time ago for the erection of a new place of worship. The Earl of Kellie offered to defray the cost of the new building, on condition that the old one should be placed at his disposal. The offer was at once accepted, and arrangements have now been completed for the erection of a new church. Mr. R. Anderson, Edinburgh, is the architect whose designs have been selected, and under his superintendence the work will be carried out. The church will accommodate in the nave 165 sitters, exclusive of space for chairs, and the choir thirty sitters, exclusive of the clergy. The entire cost of the church will be over 3,000l., the contracts amounting to 2,600l., exclusive of boundary walls, cost of site, and incidental expenses.

THE NEW ORPHAN HOUSES, - ASHLEY DOWN.

THE twenty-eighth report of the proceedings of the remarkable institution for orphans at Ashley-hill, Bristol, has just been issued by Mr. George Müller, its founder. It is, like all the statements on the same subject that have preceded it, very extraordinary. The institution has been more than thirty-three years in operation. Its beginning was very small, but the expenditure during the past year amounted to 31,849l. 0s. 6d. In no case is an appeal made to any individual for help, and everything is paid for in ready money, although there is no capital to fall back upon should the hand-to-mouth system happen on any occasion to fail the 1,304 orphans who have to be provided with their daily food. It is a most perilous position for such a multitude of children to be placed in, unless, indeed, one believes that Mr. Müller and his wife are not liable either to accident or disease.

Here is the principle in operation,—

"Nov. 30.—This morning we had only received for the benefit of the orphans 17l. 10s. 6d., and for the building fund 16l. 2s. 6d. We gave thanks to the Lord for this, and asked for more. In the afternoon came in further 7l. 13s. 3d. In the evening when my dear wife and I were giving thanks for this, came in further, while we were in prayer, 6l. 5s. We again gave thanks for this, when presently, while we were yet in prayer, came in 2l. 1s. 9d. and 7s. 6d. We further praised the Lord for this, and *God Elin* in prayer, that even this very evening He could *send us more* than He had done all the day, when a few minutes after there was a knock at the door, and a letter containing 300l. was handed in, which a gentleman had just sent. In prayer we had especially spoken to the Lord about the high price of provisions, &c., and asked Him for large supplies on that account."

The most of all this money was actually given, and on the way, before the prayers that we are to understand evoked it were uttered. Mr. Müller wants 40,000l. for the current year, and no doubt he will get it.

WREXHAM CHURCH, NORTH WALES.

THE parish church of Wrexham was re-opened for divine service on the 16th of October. The alterations effected in the interior, by the demolition of the huge galleries and the removal of the high square pews throughout, have restored to the nave arcade its massive and grand proportions. Previous to the changes nothing could be worse than the arrangement of the seating, &c. The aisles were choked up, and the fine Perpendicular windows cut in two by ponderous galleries, in which very few could see the clergyman; while the approach to the chancel was blocked by a huge pile of carpentry, forming the pulpit, reading-desk, and clerk's desk. The chancel itself was in confusion,—the fine old brass lectern stowed in one corner, disused, no proper stall-seats, and the north window of the chancel, next the apse, concealed by a monument of gigantic size, the work of Ronbillac. The curious metal screen to the chancel has been preserved. During the process of cleaning the walls from the successive coats of whitewash, some very interesting remains of mural painting were brought to light, the most important being portions of the representation of the Last Judgment, over the chancel arch, the colours remaining in good preservation. The east ends of both the north and south aisles were originally chapels; that on the north was probably the lady-chapel, the entire wall surfaces being powdered with *fleurs-de-lis* and other devices. Every trace of art-workmanship has been preserved, and the fragments of window-tracery depending from the new chancel-arch left as

historical evidence that the chancel and apse were subsequent additions to the church itself.

By the kind permission of Mr. Fitzhugh, the large monument on the north side of the chancel has been removed and fixed between the windows in the north aisle, and the window which it concealed has been restored. The chancel has been paved with handsome encaustic tiles, and studded with oak seating on each side. On the north-east side of the nave, at the entrance to the chancel, a handsome stone pulpit, having niches filled with the figures of our Lord and the Evangelists, and enriched with marble shafts and much carving, has been fixed. This has been presented to the church by Mr. Walker, the mayor of Wrexham. The prayer-desk stands on the south side of the chancel-arch, and the noble brass lectern is again used for the reading of the lessons to the congregation.

The entire area of the church is filled with wainscot open seats, having ornamental benches. It is much to be regretted, that owing to insufficient funds, the north chancel aisle (intended to receive the organ) has not been built. The western gallery, therefore, and the organ-chamber over, still remains; but the removal of the organ, and the erection of a suitable chamber for it, on the north side of the chancel, will probably be accomplished at no distant period; for, until this is done, the work cannot be said to be complete. The church has been efficiently warmed with a hot-water apparatus, by Mr. Roper, of London.

Mr. Yates, of Shifnal, has carried out the works in a most able manner, under the architect, Mr. Ferrey, F.S.A., of London. The cost has been upwards of 3,000l.

THE POLLUTION OF RIVERS.

A CONFERENCE of representatives of the municipal corporations and other local authorities in the valleys of the Irwell and the Mersey, has been held in the Manchester Town-hall, upon the invitation of the corporation, to consider the steps it may be desirable to take when the Rivers Pollution Commission sits in that city. The Mayor of Manchester presided; and the mayor's parlour, in which the meeting took place, was crowded. There were representatives present from Bolton, Blackburn, Oldham, Macclesfield, Bury, Stockport, Wigan, Bradford (near Manchester), Newton Heath, Rusholme, Heywood, Bacup, Rochdale, Salford, Chorley; from the millowners' associations along the course of the Irwell and the Mersey; and a considerable number of the city corporation.

The Chairman, in introducing the business, said the question was felt to be a very important one. It seemed to him that nothing could meet the requirements of the Commissioners but the formation of very large sewers, upon the London model, by which the sewage and other impurities of the towns in the basins of the Mersey and the Irwell might be conveyed direct to the sea. If Manchester were to adopt that plan, the action which it might take would be useless unless the other towns above and below it on the Irwell acted in combination on the same plan. It was clear, therefore, that the works must be either undertaken at the national cost or be shared in by the whole country. It had been suggested that the sewage should be used for the purpose of irrigation; but it would be exceedingly difficult to carry out that system near Manchester, which was surrounded by a network of house property for many miles. The atmosphere in and around the city was not very agreeable, but if the sewage was to be turned upon the land he was afraid that the present evils would be very much aggravated. He believed it would be unadvisable to attempt to carry out a scheme of irrigation; and he supported a plan which would remove the nuisance of the sewage matter from the neighbourhood and carry it direct to the sea. The practice in Manchester had been to collect the refuse and send it into the country, but the demand was falling off, because while the production increased the extent of land requiring the article was getting smaller every year.

The town clerk of Manchester said that the Rivers Pollution Commission would hold a preliminary inspection in that city on the 12th of November, preparatory to beginning their public inquiries in respect to the condition of the basins of the Mersey and the Irwell. The city surveyor had prepared a map (which was exhibited in the

room) of the towns which drained into the Irwell and some of its tributaries, and it showed that there were 169 towns, or villages, having more than 500 inhabitants, which were so situated. The commissioners recommended irrigation as the best means of disposing of town sewage, and that in order to carry out the plan local authorities should have the power to purchase or take land compulsorily to the extent of one acre for every fifty persons in the population. As regarded Manchester that suggestion was absolutely impracticable. First of all, the commissioners proposed that all privies and ashpits should be done away with, and they were of opinion that the system of sewage irrigation could never be effectively carried out until the water-closet system was more thoroughly adopted. It had never yet been proved that irrigation with pure water could not be as beneficial as irrigation with sewage. There were 50,000 houses in Manchester, and he estimated that it would cost 10l. per house to substitute water-closets for the present system, and it would require half a million of money at the outset. He could not even suggest what would be the probable expense of the sewers that would be necessary to carry away the volume of sewage. Where were the local authorities to purchase the land? Taking the population of Manchester at 380,000, that would give more than eleven million gallons of sewage water per day which they would have to dispose of; and if he added Salford, the population would be increased to 450,000, and the sewage matter to fourteen million gallons. It would require, on the commissioners' scale of one acre to every fifty persons, more than 7,500 acres for Manchester alone as a sewage irrigation farm. It appeared to him that that was an absurdity.

Great regret was expressed, in which we participate, that the town-clerk should hold such views.

A resolution was passed declaring that, in the opinion of the meeting, all the local authorities should combine in giving the fullest information to the commissioners; urging upon all corporations and local boards interested in the inquiry to be prepared with evidence of the mode in which sewage is at present dealt with in their respective localities; and to say to what extent irrigation or any other system could be carried out, and generally to point out the local difficulties of dealing with the whole question.

ACCIDENTS.

AN inquest has been held on the body of an excavator, who was killed whilst at work in the tunnel of the St. John's Wood Railway by the fall of a large quantity of clay which formed part of an embankment along the centre of the tunnel in the Park-road. The evidence showed that deceased, with another man, whose thigh was broken through the accident, was engaged in a rather irregular manner in attempting to drain some water which had accumulated at the base of the clay bank, and which would have impeded the progress of the works. Although a ganger had instructed the men to drain the water off, the superintendent of the works said this was not done by his orders, or he would, before allowing the men to proceed with the work, have shored up the clay bank. Whilst the men were making a small trench to carry the water off a portion of the soft clay halfway up the bank gave way, and the top of the bank, which had become hard through exposure to the wind, broke off for several yards in extent, and in falling struck deceased on the head and knocked him up against the wall of the tunnel. It also partly buried deceased's comrade. The jury, after deliberation, returned a verdict of accidental death; but added a resolution that, in their opinion, more care in future should be observed on the St. John's-wood Railway, in protecting the lives of workmen, by shoring up in the excavations.

At the Lewes-road Viaduct, Brighton, an accident in connexion with the Kemp Town Railway Extension Works has just occurred. Workmen were about to lower an iron girder on to the abutment of the viaduct which spans the Lewes-road, near the entrance to the Parochial Cemetery. There were three girders; and two of them, weighing 12 tons each, had been lowered safely, and the third weighing only 4 tons, was about to be lowered by the same tackle. A seaman, being practically acquainted with the making fast of ropes, had charge of the "sheer

legs" and "guy," and was standing on the abutment to ease off the girder with a crowbar, a case it hung up anywhere. While attending to this, the stump to which one of the guy-rope was fastened was torn out of the ground, although it was driven into the earth 4 ft. at an angle of 45 degrees. When that happened, the sheer legs" fell over, and a chain, catching him by the leg, pulled him over the viaduct, he being too near the edge to recover himself. The distance which he fell was about 51 ft., and the poor fellow died in the hospital. The ground into which the stump was driven was clay and slits, with only a few inches of mould; and it was examined before the girder was lifted. None of the witnesses could account for its giving way under the strain of the lighter girder when it had carried the heavier ones. The jury was of opinion that every precaution had been taken, and returned a verdict of "Accidental death."

At Chesterfield, a man was engaged in putting in the roof of the new building for the Sheffield and Rotherham Branch Bank, when he accidentally fell, and his body came in contact with the joists of the first floor. He was much injured in the side and head. A similar accident occurred in St. Helen's-street on the same day.

Mr. Edwin Wragg was engaged in putting on the roof of some houses, and he fell, his body coming in contact with the joists of a floor. Several of his ribs were broken.

At Leeds, a chimney about 20 yards in height, attached to the Pontefract-lane chemical works, which has been completely demolished. Great damage was caused to surrounding buildings by its fall. The chimney, which was a square one, had been built many years, and the damage to the buildings will only be repaired at the cost of several hundred pounds.

At Orpington, near St. Mary Cray, nearly twenty buildings have been destroyed by fire, rendering fifty families homeless. The fire, it would appear, broke out in a large wood and broom-handle yard, situated in the parish of Orpington, which is about half a mile from St. Mary Cray. The fire next seized upon a large barn, and the flames drifted over the roofs of fourteen private residences. Owing to the large quantity of wood used in their construction the whole burned with the greatest vehemence.

PROPOSED ST. PANCRAS INFIRMARY.

The Poor-law Board having sanctioned the purchase by the St. Pancras guardians of 44 acres of land at Highgate, on which to build an infirmary for the sick poor in the workhouse, the *Medical Journal* says,—"It is proposed that 20,000l. or 25,000l. should be spent upon the building, and a limited number of architects are to be invited to send in plans for competition; but, as the tenders of builders for such works often far exceed the estimate of the architects, it is proposed that it shall be a condition with the architect that he shall make no claim upon the guardians if he cannot find a respectable builder to carry out the works at the sum he estimates them to cost."

Are the guardians prepared to pay each architect the cost of a precise estimate? or will they allow the builder who submits a tender to execute the works at that amount, without further competition? Of course the guardians do not wish to get something for nothing. Are they aware that each architect, if he employed a surveyor to make a correct estimate, would have to pay at the least 200l. (1 per cent.) for it?

DARLINGTON WORKHOUSE COMPETITION.

Notes.—The publication by you of my letter herein has brought about two results. On the 31st ultimo I received back my designs apparently from some anonymous source, but there is no communication therewith to lead me to suppose they have come back from the guardians; neither have any estimate returned, nor any reply received to my demand concerning it; and there was a paltry sum of 10d. sent for carriage. The other result is, Mr. Pritchett's letter in your last impression, conveying to the public as well as to me, a competitor, for the first time, the fact that the premium had been awarded, and that so far back as December 24th last year. My grievance with the guardians is, if anything, aggravated by Mr. Pritchett's announcement; for by it I find they have retained my designs ten months after they had awarded the premium to another; and left me in doubt how long or for what purpose they would have retained them had I not applied to them. The most honourable course for the guardians would be to advertise the award of their premiums and return immediately the competitive designs.

AN OLD SUBSCRIBER.

THE HIGHEST CHIMNEYS IN YORKSHIRE.

In your impression of the 5th of October, you call attention to a chimney lately erected at Bradford, as being the highest in Yorkshire.

The paragraph states that this chimney measures from the foundations to the top 110 yards, and rises a clear 100 yards from the ground-line. Its foundations consist of two courses, 22 ft. and 21 ft. square. It measures 20 ft. across at the foundations, and 9 ft. at the summit. The flue is 7 ft. in diameter. It is also said that the next chimney in size is one near Huddersfield.

I beg to state that this latter chimney was erected by me in 1857, for Messrs. Brooke, Fire-clay Works, Huddersfield; and the following statement of its dimensions shows that the Bradford chimney is not the highest in Yorkshire:—

Messrs. Brooke's chimney is built throughout of fire-bricks. Measured from the foundations to the top it is 107 yards high, and rises a clear 102 yards from the ground-line.

The base at the foundations is 36 ft. square; at the ground-line it is 31 ft., and 11 ft. diameter at the summit.

The flue is 14 ft. in diameter at the bottom, and 9 ft. at the top. The chimney contains 144 cubic yards of concrete, 2,227 cubic yards of brickwork, 2,452 cubic feet of ragstone footings, and 3,841 cubic feet of ashlar.

By these it will be seen that Messrs. Brooke's chimney is 2 yards higher from the ground-line than that erected at Bradford, and is in every respect considerably larger. I have no reason to believe that there is a larger or higher chimney than Messrs. Brooke's in England.

ROBERT MORGAN, C.E.

COLLIERY EXPLOSIONS.—A CAUTION.

SIR,—Having given attention to this study, and believing that colliery explosions are induced by certain extraordinary conditions of the atmosphere, I now beg to return once more to the subject.

The most terrible catastrophes of this class were preceded by remarkable oscillations of the barometer and great changes of temperature, with frequent rains, and the characteristic meteorological features at the precise time of each explosion were high temperature and greatly diminished atmospheric pressure, with damp heavy weather. Such were the exact indications on the 10th, 11th, and 12th of December last. The barometer rose and fell, considerably in a few hours, and the temperature as rapidly advanced and declined in the same way, the greatest heat being invariably registered simultaneously with the most reduced readings of the barometer, and the awful explosions at the Oaks and Kidsgrove collieries occurred on the morning of December 12th, at the very time when temperature, having been just previously very low, became suddenly high, and just when the pressure of the atmosphere, which had been considerable a few hours before, was then much reduced.

We have been and are still passing through the like conditions of weather,—dry and cold one day, damp and warm the next. The rush of these various kinds of air, with constant changes of atmospheric pressure, must interfere with the ventilation of our collieries. Hence the need of caution. The men should be warned of the increased danger of using naked lights. The shutting and other ventilating facilities should be closely watched. Every such mining inspector ought to study meteorological elements, especially in the winter season; and should make himself familiar with the changes of the weather, rise and fall of the barometer, and temperature, particularly during a critical period like the present and the season in anticipation.

THOMAS L. PLANT, F.M.S.

THE GULF OF LIONS.

In the article on "The Road to India" in the *Builder* for October 26th, your printer has fallen into an error, which, however, is very frequently made, and even in many of our best maps, in spelling the Gulf in the Mediterranean, the ancient "Gallicus Sinus," as the "Gulf of Lyons," as if it were so called after the city of that name. The city of Lyons is nearly 180 miles inland, and has no connexion whatever with the name of the gulf, which is properly the "Gulf of the Lion," or, as it appears in some French maps, "of the Lions" (*des lions*), and was so called on account of the sudden and violent storms which prevail on its coasts.

The Abbé de Longueur, in his "Description de la France," says it is called the Gulf of the Lion, "à cause des grandes tempêtes dont il est fréquemment agité, et des bas fonds qu'on trouve à ces côtes-là, qui font périr les vaisseaux qui y abordent, ou qui y sont portés par la tempête; de sorte que l'on compare la cruauté de cette mer orageuse et dangereuse, qui engloutit ceux qui y navigent, à celle d'un lion dévorant."

Guillaume de Nangis, in his "Life of St. Louis," speaks of it as "*Mare Leonis idcirco sic nuncupatur quod est semper asperum, fluctuosum, et crudele.*"

M. Bruzen de la Martinière, in his "Dictionnaire Géographique et Critique," 1732, says,—"Quelques-uns imaginent faussement que cette ville (de Lyons) a donné son nom au golphe, ce qui n'est ni vrai ni vraisemblable. M. Boudrand a conjecturé que ce nom pouvait avoir été donné à ce golphe à cause des tempêtes auxquelles il est fort sujet." M. Guibert says, in his "Dictionnaire Géographique et Statistique," "Golfe du Lion. On attribue l'origine de son nom à l'agitation continuelle de ses eaux, qui a été comparée à la violence du lion." The Spaniards call it "Golfo Leone."

In Blackie's "Imperial Atlas," edition 1856, under the head "Lion, Gulf of," we read,—"The name of the gulf is said to be derived from the fury with which the waves are often lashed by the violence of the winds, and not, as is sometimes supposed, from the French 'City of Lyons.'"

By using the original orthography of the name, and writing the "Gulf of Lions," we should at once correct a popular error, and at the same time preserve the sound to which we have been accustomed. J. C.

POOR STRAW-PLAIT WORKERS.

APPEAL TO LADIES.

The *Builder* has long been known to readers as having several times gone beyond its diversified provinces to "do good." May I ask permission to submit through it the sorrows—I had almost said "wrongs"—of a large body of English women, in what may be termed a national manufacture, promising to wilfully "set down nought in malice?"

The distress of the "plait workers" (to which, I now learn from the neighbourhood, should be added "bonnet-sewers") has been several times mentioned. A correspondent of the *Belfast Times*, in quoting *Echoes from the Clubs*, seemed to have hit the mark in observing, "Ladies should, from principles of humanity, wear straw bonnets, like their not less attractive mothers and grandmothers."

May I digress for an instant? The "young days" memories of my contemporaries will bear me out how very pretty young girls looked in "cottage" or other rather coquetish-shaped bonnets, with "ribbons"—not least when "blue"—at fancy. I am sure, also, that a "Thompson" or "Bloomfield" would have agreed with me—quite equally attractive, or inclining to hymeneal aspirations, as all the "silk" or "velvet" in the world. Would they receive less male admiration now, if known, as "good girls," to have reverted to the other from real patriotism and benevolence?

I shall probably have to meet one objection (though not from them) to dispose of. It "makes good" for the *silk, &c., trade*. Very likely; but pity if that rises on the unexpected and undesired ruin of another.

Also, as certainly expected, I have received (equally disinterested) good medical corroboration, that the "patch," however rich, on the "top" of the head, is no sufficient protection. To me it has long seemed a special mercy that they have not frequently had sunstroke, else deadly chill in the opposite season; and can we be sure now that, "from want of proper bonnets," ought not to form a small part of each week's account of deaths; or that none, dear as fair, have been lost to parent or lover through this origin?

But, to the "point,"—Luton (long known to Antiquaries for its large church and "Baptistry"), now the straw plait "metropolis," even more than Dunstable, has a very large parish,—16,000 or 17,000 acres,—with enormously increased population of late years, believed now nearly 20,000. Of this I fear about five thousand females, of all ages, are "three parts starving," unable to earn half-a-crown "where they could" "seven shillings" a week; and mainly supported by the poor-rates, which have reached "fueles" shillings in the pound. Also, we have read of "poor children crying for bread in the streets." The same applies more or less to several neighbouring places, including part of Bucks, and, I believe, Herts; and even at Bedford, twenty miles distant, one or two large plait-shops have been entirely closed.

Alas! for the "caprice of fashion,"—harmless,

perhaps, sometimes, but hardly so if it causes the helpless misery of many thousands. And this, perhaps, the work and continuation of three or four "Madame Mantalins," as I will not believe, ladies of the aristocracy or middle class would have knowingly brought this distress on their country-women. Might we not hope our beloved Queen might be moved to "set the fashion for straw" again?

There is yet a last view, rather delicate, but well worthy the attention of principled ladies for their less favoured "sisters." The morals,—or, rather, temptations,—of younger females in more than one manufacture have been thought a little perilous or "slippery," and I fear that at Luton is not exempt. How very sad, then, if they should anywhere have the added temptation of want!

A CAMBRIDGE MAN,
NATIVE OF THE QUARTER.

DERIVATION OF NAMES.

BEING very much amused with some remarks headed "Human Beasts, Birds, and Fishes," which appeared in a recent article in the *Builder*, induced me to try my hand, at what might be done in a similar fashion, with the surnames of my brother registrars, scattered up and down the land, and I have ventured to send you a few for perusal and insertion, if you think proper. I could make out lists embracing almost anything and everything, making altogether a very curious, amusing, and interesting lot of surnames.

JAMES JOHNS, Registrar of Births and Deaths.

REGISTRARS' NOMENCLATURE.

Disposition and Temper.—Allgood, Carnell, Croker, Cross, Faithful, Gay, Egar, Good, Jolly, Light, Noble, Savage, Smoothy, Wildish, Meek, Sturdy, Bland, Moody, Still, Sharp, and Grave.

Animals.—Bullock, Bear, Buck, Bull, Fox, Hare, Hart, Kid, Lyon, Fitch, Stag, and Wolf, with Hunters and Butchers to slay them.

Feathered Tribe.—Bat, Crow, Daw, Joy, Parrott, Peacock, Swan, Teale, Martin, Kite, Nightingale, Wildgoose, Finch, Crane, Woodcock, Goshawk, and Buzzard; but nothing but Archers, Fowlers, and Cannons to bring against them.

Food.—Hacon and Lamb, either Roast or in a Pye, with only Salt, Sage, Radish, Onion, Mustard, Garlic, and Rice as adjuncts, a very meagre bill of fare; to be washed down with Beer, Porter, Perry, Goodale, Hollands, and Water. There is a Kitchen provided and several Cooks.

Apparel.—Coat, Glove, Wig, Cloak, and Bussel.

Useful Articles.—Pulley, Sponge, Saw, File, Gad, Pillow, Harness, Chalk, Candy, Hatchet, Hartshorn, Emery, Flint, Cork, and Wagon.

Considered Precious.—Alabaster, Ivory, Silver, Gold, Dymond, and Jasper.

Countries, Counties, Cities, and Towns.—Derbyshire, Cornwall, Lancashire, Cheshire, Holland, Ireland, Bradford, Bromley, Bromwich, Clapham, Crewe, Croydon, Davenport, Douglas, Fulham, Lancaster, Leeds, Leith, Oldham, Paisley, Preston, Sunderland, York, Cairo, Nuremberg, Whitch, Chester, and Hull.

Judicial Bench.—Turner, Stuart, Wood, Wightman, Mellor, Shee, Williams, Martin, Willes, Byles, Lush, and a Wilde for those tired of the marriage tie.

PROFESSIONAL SPARRING.

SEN,—I am happy to find you set your back against allowing your periodical to be used as a sparring ground between professional men. If they have not sufficient self-respect it is well they should have the most unwelcome tone of the profession taken out of their hands.

AN OCCASIONAL READER.

THE BUILDERS' BENEVOLENT INSTITUTION DINNER.

THE Twentieth Anniversary Festival in aid of the funds of this excellent Institution was celebrated on Thursday evening (31st ult.), at Willis's Rooms, St. James's. Mr. W. R. Rogers, president of the Institution, officiated as chairman, and about 200 gentlemen were present. After the usual formal toasts.

The Chairman proposed "Prosperity to the Builders' Benevolent Institution." He said that most of those present were aware that the Institution had been established more than twenty years, for the purpose of giving relief and granting pensions to unfortunate members of every branch of the building trade, as also to their widows; and during that period a vast amount of good had been done, owing to the very great judgment exercised in conducting and managing the affairs generally. The desire still was to increase the society's sphere of usefulness, by increasing the number of pensioners. He found that they had put by sums of money every year, which were invested in the public funds; and he had no doubt, when he addressed them, there would be a good deal more. He found that they had in stock 13,000*l.*; then there was the interest to be added to that amount,

and also the new donations and subscriptions, which, without going into details, he might say would be considerably over 1,000*l.* The sum of 13,000*l.* mentioned was not of itself entirely for the pension fund, for out of that sum 2,900*l.* had to be set apart for a special fund for building purposes. He would not, however, go further into that question, but call the attention of the gentlemen present to the number of pensioners then upon their books, namely, 45; and he would also say that at each election several of the candidates who were unsuccessful had to wait for a second, third, or even a fourth time. And then, again, in order that the candidates might be eligible to the rules, they must be 65 years of age. That was not what the builders of London would be contented with. No person, according to the rules of the Institution, could be eligible to the benefits until he reached the age of 65; and then, having been elected, his enjoyment of the pension could only last for a few years, say (as he understood was about the average), ten years. He wished to alter that, and for the purpose more funds were required. That was the way it was to be remedied. He was of opinion that the pensioners should receive the benefits of the Institution before they reached so advanced an age. He would make it sixty instead of sixty-five. He was very glad to find such sympathy among them. The question then was, how it could be done. There was only one way. There were 1,800 builders in the metropolis, besides a vast number of other persons connected with the different branches of the trade, from many of whom were prosperous and wealthy an annual subscription had not been obtained. If they were to subscribe, the funds of the Builders' Benevolent Institution would be greatly enhanced and the desired aim could be attained. When he (the Chairman) became their president his first effort was to endeavour to raise that important element—the funds of the Institution. He could see that those subscribers who gave one guinea might give two guineas, or even three guineas, if they made a slight sacrifice; for really it was no charity to give away that which they did not want themselves. If they had any doubt as to whether it should be two, three, or five guineas, all he could say would be, "Give the Institution the benefit of the doubt." He was about to call their attention to another circumstance, and that was the vicissitudes by which their trade was surrounded. Any master builder might be taken by misfortune, through no act of his own, and become so reduced that he might be necessitated to seek relief from that Institution; and he mentioned that for the purpose of showing how useful it was that they should look after their unfortunate brethren. A very distinguished architect, upon whom he (the chairman) had called, gave a good subscription; but he was surprised that the builders were not able to help themselves. He (the chairman), since he had become connected with them, had felt a great interest in the Institution, and had collected a considerable sum. He would tell them what that sum amounted to,—it was 1,000*l.* He had done that with a motive. He thought the building trade should have ample funds to relieve their distressed brethren. He wanted to increase the number of pensioners, and he wanted to increase the amount given. At present they gave 24*l.* to the men and 20*l.* to the women, per annum but how much more satisfactory it would be if they could give them 30*l.* and 25*l.* He was quite content to believe that ample funds could be obtained for such purpose, for there was no want of sympathy. The want was,—more funds, more subscriptions,—to make the declining years of their unfortunate brethren happier and to obtain such result he suggested that each well-wisher of the Institution should call upon his friends and obtain his subscriptions; for means they required, and he was sure that, if sought for, the efforts would be crowned with success. He had obtained ten subscriptions of 100*l.* each, and he was sure that if applications were made, such examples as those he had just mentioned would be followed. They would give a subscription,—they would give something in proportion,—so that their own Institution should be first supported before going to another. The chairman resumed his seat amidst great applause.

The successive toasts were then proceeded with, complimentary speeches accompanying each. Mr. George Plucknett having replied to the toast "The Treasurer," Mr. Thomas Cozens, the founder of the Institution, expressed his sentiments on the procedure of the child—his child—which had now passed his majority (as stated by their worthy chairman), and he hoped that the "big boy" would be provided with funds to carry him on. Mr. Benjamin Hannen, the late president of the Institution, as also other gentlemen, replied to complimentary toasts given to them. Mr. A. G. Harris (the Secretary) then announced the donations and subscriptions of the evening to amount to 1,325*l.* 12*s.* 6*d.*

Books Received.

Examples of Chinese Ornament, selected from Objects of Porcelain, Enamel, and Woven Fabrics, in the South Kensington Museum and other Collections. By OWEN JONES. London S. & T. Gilbert, Cophthall-buildings. 1867.

SINCE the late war in China a large number of works of ornamental art have found their way into England, and old opinions in respect of Chinese art have been greatly modified. With thousands the willow-pattern plate was the limit of their knowledge in that direction, and a lesson could be drawn even from that, but, like a very distant object, it required pointing out before it could be seen. The best works from China that have reached England have been gathered up by the South Kensington authorities, Mr. Alfred Morrison, Mr. Louis Hubb, and others; and Mr. Owen Jones, indefatigable with pencil and brush, has transferred their ornamentation to paper, and by means of chromolithography has given it to the public in the shape of a handsome volume of a hundred plates, which may be regarded as a supplement to his remarkable work, "The Grammar of Ornament."

"We have long been familiar," he observes, "with the power of the Chinese to balance colours, but we were not so well acquainted with their power of treating purely ornamental or conventional forms; and in the chapter in 'The Grammar of Ornament' on Chinese ornament I was led, from my then knowledge, to express the opinion that the Chinese had not the power of dealing with conventional ornamental forms; but it now appears that there has been a period in which a school of art existed in China of a very important kind. We are glad to think that this art must in some way have had a foreign origin, for it so resembles, in all its principles, the art of the Mohammedan races, that we may presume it was derived from them. It would be no difficult task to take a work of ornament of this class, and, by simply varying the colouring and correcting the drawing, convert it into an Indian or Persian composition. There is, of course, in these works, something essentially Chinese in the mode of rendering the ideas, but the original idea is evidently Mohammedan."

We have no desire to see these forms adopted and reproduced as a fashion of ornamentation to last for a season or two, like a chignon or an invisible bonnet, and it would certainly not last longer. The forms are not generally good. Many of them are ugly, and in entire contradiction of a system of ornamentation of which Mr. Owen Jones has been one of the chief expounders. Our author, however, views, as the chief merit, their suggestiveness. They show how unnecessary it is to be content with the stock forms; and that many natural objects may be conventionally rendered in ornamentation without overstepping the bounds of propriety; and so far we go with him. In another direction we can go further still. The system of colour adopted is for the most part excellent. The scheme of colouring of the Chinese is their own. They deal with broken colours: pale blue, pale green, and pale pink for the masses; dark pink, dark green, purple, and yellow and white, in much smaller quantities. There is nothing crude or harsh in their compositions; the eye is perfectly satisfied with the balance and arrangement of both form and colour; but there is, as we have already remarked, an absence of purity in the drawing. As to arrangement, as Mr. Jones points out,—

"In the Chinese ornamentation, triangulation is the main feature; the geometrical arrangement is absolute and undisguised, but softened by a free treatment of the intermediate spaces left by the triangulation."

The examples given are mainly from works in cloisonné enamel and painted china vases and bottles.

The taste and skill shown by Mr. Jones in the selection and representation are entitled to the greatest praise, and we shall hope to find our manufacturers largely benefiting by the lesson to be learnt from his elegant volume.

Verba Nominativa; or, Words derived from Proper Names. By RICHARD S. CHARNOCK, Ph. D., &c. London: Trübner.

ANY well-known words have originated in proper names, and it is well to have a record of them made from time to time before the origin of such words is forgotten. Mr. Charnock's is a very good dictionary of such words, and is both instructive and amusing. It contains many words of interest to our readers, though the origin of few of these may be new to professional men. Passing over all such words as *athic*, *Doric*, *Ionie*, *et hoc genus omne*, we may instance such as *Derrick*, *Parian*, *Travertine*, *Canizae*, &c. Under "*Parian*" the author has alluded to those statues and other articles of artificial and marble-like composition now called *Parian*. Under the word *Cockney* some amusing remarks on its origin: cockney, he thinks with others, had something to do with that land of Coccagne where fowls were roasted cry "Come, eat me." Under "*halloo*" are some interesting remarks on the monkish practice of seeing friends in the most sacred part of their churches. Humbug traced to Home or Hume of the Begue: it has nothing to do with another gentleman of that name of more modern date. Hurrah is a word which originally denoted *Tu Paradise!* having its origin in an Eastern battle, on the idea that who died for their country went straight to *Paradise*, or *Hur*, and the *Hurra*, or nymphs of *Paradise*. The discovery of an ancient city of old, called *Hur*, in the district once called *Haldee*, where Eden or *Paradise* was supposed to have been situated, might have been alluded under this head, as well as the obvious association of *Houris* or *Huris*, as the word has also been spelt, with *Hur*, and the Slavonic *hur-huraj*, winged, no doubt, of *Hur* or *heaven*.

Antiquities of Hastings and the Battle-field. By THOMAS H. COLE, M.A. St. Leonard's: Earl Burg. 1867.

A little volume contains some interesting matter as to Hastings. In Part I. the possibility of Roman origin is considered, an attempt is made to fix the site of the Saxon town, and the passage in Domesday book relating to Hastings investigated with especial reference to the "*New*" therein mentioned. Some materials have been given for determining the date of the battle of the arms of the Cinque Ports. From Part II. it appears that in the course of a careful examination of the Battle-field the writer was fortunate enough to discover a ravine which corresponds in every respect so exactly with the "*val fosse*" of the "*Roman de Rou*" that the writer considers that it settles the *questio usitata* of its position; and this appeared to be the general opinion, it is said, of those who examined on the occasion of the late Octocentenary anniversary.

Miscellaneous.

SALE OF THE BRIGHTON OLD WORKHOUSE.—A building materials comprising the Old Workhouse Infirmary, at Brighton, and outbuildings, have been sold. The sale was attended by a great number of persons, and there were thirteen bidders; the several lots realising 7731. 1s. 6d.

WORK NEW METROPOLITAN STREETS ACT.—The Act for regulating the traffic in the metropolis, &c., has come into operation. Some sympathy is felt for the costermongers, and for the poor who are their chief customers. Meetings have been held at the East-end to take the case as to street dealers into consideration, and the advisability of presenting a petition to the Secretary of State, praying for the revision of the Act approved. The occupation of the "putting men" seems gone, and a good thing. Suspended to various lamp-posts at the corner of the principal thoroughfares in the city "police notices," directing attention to the streets and portion of the streets" having special reference to the Act with respect to carriage traffic. The cab proprietors are making most determined resistance to the clause requiring them to affix lamps to their cabs at night. As a protest, all those cabs which have hitherto carried lamps of an evening, principally the cabs, have come out without them. The cab proprietors also threaten that, if the police commissioner determines to enforce the observance of the clause, after a given day no proprietor will send out his cabs after dark until the order is withdrawn.

THE HOLY SEPULCHRE.—Letters from Jerusalem state that the works of reconstruction at the grand cupola of the Church of the Holy Sepulchre are advancing rapidly.

THE NEW PARK FOR HULME AND CHORLTON.—MR. MIDDLETON.—Arrangements have been made for the purchase of the land for the purposes of a new park on the south side of the city. The sum of 24,000l. will be paid to Lord Egerton, the owner of the soil, the area purchased being sixty acres. Lord Egerton will give the street land, and the corporation have agreed to pay 5,200l. for the making the roads, for sewerage, and for the necessary fencing of the streets on both sides.

ST. JAMES'S TOWER, TAUNTON.—The announcement that a faculty had been granted to take down and rebuild a portion of this tower, and to restore the remainder, was somewhat premature. The court has just decreed that a copy of a resolution of the vestry to raise the necessary funds for the work proposed must be filed in the Registry of the Court before the faculty would be issued. It is considered questionable whether the funds will be forthcoming. The churchwardens, however, have advertised for tenders for taking down the tower, and as soon as they come in will call a meeting of the parishioners.

THE TRAMWAYS SCHEME.—The Islington vestry clerk, at a recent meeting of the vestry, read a communication from Messrs. Noble & Co., the promoters of this scheme, stating that they intend to fix notices of their intention to apply to Parliament this session for powers to lay tramways in Archway-road, Holloway-road, Upper-street, High-street, City-road, Seven Sisters'-road, Camden-road, and Park-road, and inquiring if the vestry wished to give any instructions as to how those notices should be posted. Mr. S. Smith thought Messrs. Noble & Co. should conduct their business in their own way, and the vestry resolved to take no action in the matter.

AN ELECTRO-MAGNETIC "DIVINING ROD."—An American, according to the *Hamilton, C.W., Times*, claims possession of the secret of a wonderful discovery for making subterranean explorations from the surface for mineral deposits by the application of electro-magnetism. The apparatus, as described, will indicate the direction of the bulk of a mineral vein at any depth, and affords a principle for calculating the species of the ore and the richness of the deposit. The direction of mineral deposits, when away from any railroad line, which exerts a counter attraction of great power, is indicated at a distance of several miles. The remarkable success of an American silver mining company in the Lake Superior region is attributed to this discovery.

TUNGSTEN, IN DRILLING ROCK.—It is proposed by Mr. E. Gaudin to substitute tungsten for the black diamond employed for drilling rock. Mr. Gaudin prepares from tungsten, in a flame supplied freely with oxygen, a substance far more brilliant than the ruby, and which will pulverise the hardest granite quite as readily as the black diamond. Numerous experiments, it is said, have shown that it can be obtained in any form and of any dimensions without difficulty: it is equally applicable for drilling rocks and for working tempered steel, and even white cast-iron. We should think, however, that if it be far more brilliant than ruby, and attainable of any dimensions, its value as a precious stone would far exceed its money-value as an article of purchase for any other purpose in the mean time.

THE CHESTER CATHEDRAL BELLS.—Five new bells have been formally received at Chester Cathedral, and added to the three remaining there, so that there is now a peal of eight instead of five as before. The ceremony of depositing them was witnessed by a large concourse of spectators. The curfew weighs 32 cwt., the same weight, and said to be of the same sonorous tone, as the old one. It contains the following inscription:—"Benevolentia Civium erga Decanum F. Anson, S.T.P. Warner et Fil. Londini." There will now be a peal of eight bells in the belfry. It is proposed to form a Bell Ringing Association, consisting partly of amateurs and partly of paid ringers in connexion with the cathedral. The bells having been suspended in the cathedral, the Dean addressed the people who had assembled together respecting the reception of the new bells. The large bell has been contributed for by the citizens of Chester as a mark of respect to the late Dean, Dr. Anson.

PORCELAIN GLASS.—The New Bedford Glass Company (U.S.) has recently begun to manufacture porcelain glass for photographic plates. They are blown in hollow cylinders 4 ft. long, cut longitudinally, flattened in a furnace, and cut into plates of the required size.

ARCHITECTURE AT THE ROYAL ACADEMY.—Professor G. G. Scott will give a course of three lectures on Architecture this season, commencing on Thursday, January 23rd. The first course of the season will be by Professor Westmacott, on Sculpture, and will commence on Monday, the 11th instant.

BUILDING-BLOCKS, AMERICA.—The New Haven Building-block Company are manufacturing patent brick, having a long, narrow slit, or air-chamber, which they claim will keep buildings constructed therewith cooler in summer and warmer in winter than when built with ordinary brick. The bricks are made of a mixture of cement and shell lime.

AN ARCHITECTURAL SOCIETY FOR SHEFFIELD.—A meeting of architects was held at the council hall on Monday morning, when it was resolved to form an architectural and archaeological society in Sheffield, to be composed of architects and gentlemen interested in the objects of the society. After preliminary matters had been discussed, and several resolutions passed, the meeting was adjourned.

ENGINEERING BEAVERS.—A paper was recently read before the American Association for the Advancement of Science, which stated that on the southern shore of Lake Superior, in Marquette county, Wisconsin, were found remains of long canals and dams constructed by the beavers for the purpose of transporting their cuttings, consisting of trunks of trees, 2 ft. or 3 ft. long, from the places where the trees had fallen to their lodges. Some of these canals were 300 ft., 400 ft., and 500 ft., long. They were generally 3 ft. wide, with an average depth of 3 ft. In order to maintain a continuous depth of water, they made dams at certain distances, and followed the Chinese plan—to whom the lock was unknown—of drawing their cargo from one level to another.

LIVERPOOL ARCHITECTURAL SOCIETY.—The third meeting of the present session of this society was held in the Lecture-hall of the Royal Institution on the 30th ult. Mr. Kilpin in the chair. Mr. J. A. Pictou said he had lately made a pilgrimage to the village near Conway, which was the birth-place of John Gibson, the sculptor, and he looked in vain in the church for any monument of the artist. An idea had forced itself upon him that the Royal Academy, to whom Gibson had left all he possessed, should erect a monument to his memory in his native place; and, if they did not, he thought Liverpool would do itself honour by subscribing a small sum for the erection of a mural monument in that place to the memory of the eminent sculptor, whom, without much violation of fact, they in Liverpool might call a townsman of theirs. Mr. Pictou and Mr. Boulton then agreed to co-operate and take initiatory steps to carry out the object.—The paper of the night was by Mr. F. Horner. The subject was "Notes on Progress in Architecture and the Arts."

THE GREAT CATTLE MARKET FOR PARIS.—The large market at La Villette, on the outskirts of Paris, for the sale and slaughter of animals used for food, was opened on the 21st of October. The constructions completed consist of three immense halls, built much in the same manner as the great *halles centrales*, at the east end of the Rue St. Honoré, that is to say, principally of corrugated iron and glass. The central hall is for horned cattle, that on the right hand for calves and pigs, and the other for sheep. Near the halls are two large streams of water, with sloping sides, through which the cattle are driven and thus refreshed, and beyond are large layloads and pens. The present market will contain upwards of 40,000 animals of all kinds, and when the buildings are completed half as many again. The establishment includes an exchange, a bank, and a *café restaurant* and *buffet* now in course of completion. The dealers draw lots every morning for the places which they are to occupy in the halls. The means of communication are admirable. The establishment stands close to the circular boulevard which lies round Paris, just within the fortifications, and has on one side a canal, and on the other the *Chemin de Fer de Ceinture*, which communicates with all the great lines of railway and all parts of the capital.

THE LATE PROFESSOR M'GAULEY.—We are glad to hear that a fund, to be called the M'Ganley Memorial Relief Fund, is being raised for the assistance of the widow and family of the late Professor M'Ganley, editor of the *Scientific Review*, whose death was recently announced. A committee, of which Sir David Brewster is chairman, is associated for this purpose, and particulars will shortly be made public.

PROPOSED RESTORATION OF DUNSTABLE PRIORY CHURCH.—There is a necessity for restoring this church, which is in some respects in an unsafe condition, but there is a difficulty in obtaining the means of doing what still requires to be done. The inhabitants are chiefly of the working classes, and have already contributed altogether nearly 3,000l.; and the county, and the public generally, are appealed to in the *Belford Times* for aid in the work. Besides 1,700l. immediately wanted to complete the roof according to the plans, the east-end gable must be taken down and rebuilt, the north aisle repaired and lengthened, and the whole church repaved and fitted with new seats. Besides all this, the exterior much requires attention and restoration.

THE KIRMESSE OF TENIERS.—The museum of Brussels has just made an important acquisition. A picture by Teniers, of a character such as is not to be found save in the collections at St. Petersburg and Vienna, has been for many generations in the possession of a family of Antwerp, handed down as an heirloom, and preserved as a sacred heritage. All the great amateurs of Europe have long known of this picture, and large sums have been from time to time offered to induce its possessors to part with it, but always without success until now. The subject is a Flemish peasant, and the host or seigneur is Teniers himself, who is accompanied by his wife and two daughters. The Musée of Brussels have paid 125,000 francs for it.

IMPROVEMENT IN THE STEAM-ENGINE.—An invention, said to be of great importance, has been successfully tested, in the presence of a company of engineers, scientific men, and others, at the engine factory of Mr. Smith, Holborn. The most remarkable circumstance in connexion with the scheme is that the inventor (Mr. Alexander Caesar F. Franklin, junior) is a young gentleman of the tender age of thirteen! His invention is thus described. "By applying the steam to one side only of the piston a vacuum is caused, without condensation, as in the old low-pressure engines; and the cushions of ordinary high-pressure engines are done away with. The opposite end of the cylinder is left open, and the pressure of the atmosphere—15lb. on the square inch—forces the piston back again. Irrespective of this pressure, the saving of motive power is exactly one-half." In speaking of "the immense value of Mr. Franklin's discovery to navigation, if it be successfully brought into practice," it is added, "the effect will be to dispense in most instances with any need of coaling stations on long voyages." But where is the novelty in "applying the steam to one side only of the piston?"

ARTISTIC INSTRUCTION.—Professor Leone Levi recently gave a lecture at King's College, London, on the need of extending artistic and technical instruction in the United Kingdom, and concluded his observations by stating that, with peace and progress in Europe in the last half century, a complete metamorphosis has taken place in the productive powers of the principal countries; that, after vain attempts to prop up manufacturing industry by restrictive legislation, most nations have accepted the economic axioms of Adam Smith and Stuart Mill, and have acted on the policy of free trade; that such freedom of trade has opened for British manufactures the commerce of the world; that, with the extension of mechanical knowledge in all countries, and the facilities of communication, British prosperity must henceforth more than ever depend on the abundance of capital and a plentiful supply of skilled labour; that it is all-important to remove all obstacles and discouragements to the investment of capital in manufactures; that the unhappy difficulties between capital and labour, which have produced strikes and dissensions, demand a prompt remedy; that it is necessary to improve the education and elevate the mind of our labouring classes; that the system of apprenticeship, as prevalent in many branches of industry, is not a sufficient means for affording art instruction; and that the support now given by the State to the teaching of science is not sufficient.

INSTITUTION OF CIVIL ENGINEERS.—Mr. Edw. Byrne's paper, "Experiments on the Removal of Organic and Inorganic Substances in Water," which was read at the Institution of Civil Engineers before closing for the recess, is to be brought forward for discussion next Tuesday evening, the 12th instant, when the meetings of the members of this Society are to be resumed.

THE SEWAGE QUESTION.—The works in connexion with Mr. Piltrow's scheme for the drainage of the city of Canterbury, have commenced at the point where the outfall sewer is, and empties itself into the deodorising tanks. A staff of labourers are employed in making excavations.—The New York press are urging that the sewage of that city and Brooklyn, which now runs to waste, should be saved and applied to filling up the marshes which lie on the neighbouring shores of New Jersey and Long Island.

THE LATE EARL OF ROSSE.—The astronomical world has lately met with serious losses. In ten days Lord Rosse, Lord Wrottesley, and Sir James South have all died. Lord Rosse and Lord Wrottesley had both of them been presidents of the Royal Society, and the only scientific noblemen who have held that presidency for many years. Every one has heard of Lord Rosse's wonderful telescope. The discoveries made with it have been of great interest and importance; and the telescope is still unrivalled. It was made chiefly by Lord Rosse's own hands, and cost 20,000l.

THE "ACCUMULATOR" DOOR-SPRING: TRADE MARKS.—At the Central Criminal Court, before the Recorder, Henry Brook, ironmonger, was placed at the bar on a charge substantially of forging a trade mark with intent to defraud. The prosecutor was Mr. R. E. Hodges, of Southampton-row, who manufactured an "accumulator" door-spring. For this article Mr. Brook acted as an agent for eleven years; but in 1866, Mr. Hodges, not being satisfied with his conduct, refused any longer to supply him. The defendant then got a similar article made, and sold them in printed wrappers similar to those used by the prosecutor. The patent having expired in 1863, anybody was at liberty to manufacture the "accumulator;" but the charge was that he disposed of those of his own make under the representation that they were the prosecutor's. The jury returned a verdict of Not Guilty.

OPENING OF A NEW PARK AT CHESTER.—The new park, lately presented to the city of Chester by the Marquis of Westminster, was opened on Tuesday with great expression of the citizens' appreciation of the gift. The park has been in course of construction about two years. On the right-hand side of the principal entrance there is a lodge which is built in the timbered style, and corresponds in every particular with the ancient characteristic architecture of the city. In November, 1865, a subscription was originated for the purpose of erecting a testimonial of the public and private worth of the Marquis of Westminster. Upwards of 5,000l. were raised for this purpose, and it was resolved that the testimonial should take the form of a statue, to be erected in the new park, which at that time had been just commenced. A fountain has been erected over a spring known from time immemorial as "Billy Hobby's Well." The entire cost is said to be 70,000l.

THE LEEDS EXHIBITION.—We may as well make clear that this undertaking is exclusively for the illustration of the fine and ornamental arts, and that the works will be distributed as follows:—1. Three galleries of oil paintings by the old masters, and a collection of their drawings and sketches; 2. Two galleries of oil paintings of the English school by deceased and living artists; 3. A gallery of oil paintings by modern foreign artists; 4. A gallery of English water-colour drawings; 5. A gallery of portraits of deceased Yorkshire worthies; 6. A collection of miniatures; 7. A gallery of engravings, etchings, &c.; 8. An Oriental museum; 9. A museum of ornamental art, from the earliest British period to the close of the eighteenth century, including furniture, tapestry, china, glass, metal work, &c.; 10. A collection of marble sculpture. The building in which the display will be held is the new Infirmary of Leeds, lately erected at a cost of 100,000l., its principal interior features being a large central hall 150 ft. long by 65 ft. wide, surrounded by corridors and galleries.

DERBYSHIRE MEMENTOS OF NIAGARA FALLS. A Quebec paper states that the Table Rock ornaments, sold at the Falls of Niagara, are manufactured from spar imported into America from Derbyshire in England.

FROM IRELAND.—The improvements at the rising town of Hollywood, according to the *Belfast News Letter*, are rapidly on the increase. New houses are being erected on a large scale. Hollywood ranks amongst the healthiest towns in Ireland. The town commissioners have lately constructed new sewers in every part of the town. The public buildings are all of modern erection. The parish church is immediately to be greatly enlarged, and ground has been taken for the new Roman Catholic chapel. The increase of the population, within the last few years, has been remarkable.

MONUMENTAL.—The marble statue of Andrew Marvel, executed by Mr. W. D. Keyworth, jun., of Hull and London, and presented to the town by Mr. Winslip, has been inaugurated at the town-hall, Hull. The ceremony took place on the ground landing, where the statue has been placed.—A statue has been inaugurated at Rotterdam, to the memory of Count van Hogen-Orange, the statesman who went to England to offer the crown of the Low Countries to William of Orange, son of the Stadtholder, William I. The King of Holland, the Prince of Orange, the ministers, and the principal personages of the kingdom were present at the ceremony, which was presided over by the burgomaster of the place.

TENDERS

For the erection of a pair of detached country houses in Croydon-road, Penge. Mr. H. Wiber Webster, architect:—

Foxon & Smith	£1,992	0	0
Alterations to the Vulcan Tavern, Salmon-lane, Limehouse, for Mr. John S. Eassey. Mr. Arthur Harston, architect:—			
Heiser	£1,331	0	0
Clemens	1,275	0	0
Johnston	1,233	0	0
Palmer (accepted)	1,218	0	0

Alterations and reinstatements after fire at Vulcan Cottage, Frederick-street, Limehouse, for Mr. Eassey. Mr. Arthur Harston, architect:—

Clemens	£238	0	0
Allen	204	0	0
Heiser	199	0	0
Heiser	185	0	0
Bullock (accepted)	145	0	0

For building house, shop, and dairy, Whitehorn-street, Bromley, Middlesex, for Mr. Sharpley. Mr. Arthur Harston, architect:—

Brown	£237	0	0
Heiser	715	0	0
J. Allen	664	0	0
Golding & Son	660	0	0
W. Allen	655	0	0
Salt (accepted)	535	10	0

For building public-house, boundary wall, and fencing at Nuckham, for Messrs. Day, Noakes, & Sons. Mr. H. Alexander, architect:—

	Public House.	Wall.	Fencing.
Eustace	£297	£45	£28
Waterer	910	50	24
Tarrant	894	08	27

For additions and alterations at the Ship Public-house, Erith, for Messrs. Day, Noakes, & Sons. Mr. G. Elkington, architect:—

Blotfield	£560	0	0
Tarrant	655	0	0
Willis	640	0	0
Falkner	630	0	0
Eustace	493	0	0

For alterations to 18, Great Portland-street, for Messrs. G. Haggie & Co. Mr. W. P. Potter, architect:—

Tezer	£187	10	0
Stephens & Watson	178	0	0
Gill	170	0	0
Perkins	168	0	0
Ashley (accepted)	150	0	0

For building a house at Beckenham. Mr. James L. Pedley, architect:—

Conner	£2,365	0	0
Howard	2,093	0	0
Messrs. Browne & Robinson	1,987	0	0
Messrs. Breeze & Russell (accepted)	1,688	0	0

For new shop-front, No. 26, Down-street, Piccadilly, for Mr. S. Benjamin. Mr. Joseph S. Moye, architect:—

Wilton	£237	0	0
Bywater	178	0	0
Barnett (accepted)	170	0	0

For building a public-house for Messrs. Vallance, Catt, & Co., at Brighton. Mr. Tugger, architect:—

Patching & Son	£1,045	0	0
Lockyer	1,035	0	0
Chesterman & Co.	1,020	0	0
Ascombe & Newham (accepted)	953	0	0

The Builder.

VOL. XXV.—No. 1293.



Coloured
Architecture.

IN the exposition of the claim of colour to contribute to harmonies which are the essence of music in the largest sense, we had but little occasion to refer to that theory of harmoniousness that refers all success to the admixture of colours in the proportions that constitute white light. This theory has had, at least, its fair share of prominence; but the combinations that have been most influenced by it, if the truth must be told, have not been so conspicuously satisfactory that we should be blamed for approaching the subject from another side. Beauty produced by a formula will seldom be worth very much, but it will be worth least of all when proposed to be

brought about by applying a rigid formula, and the works referred to bear too frequently the impress of such origin. From the seed so sown a more plentiful crop has sprung up of discords than of harmonies. Advancing to the analysis from another side, we were led to take note that every possible shade of every possible colour might take its place in a series along which the eye might travel from beginning to end,—encountering no sudden shock, turned back upon no harsh revulsion. Pleasingness of combination and pleasingness of transition are in colour as in sound the essentials of harmony and melody,—the negations of discords. But discords are continually inflicted on us by those who, having set their palette of architectural colours by the sanctioned rule, scatter its assortment of tints too much at random, and manage at last to fail as often by tame opposition as by harshness in absence of softening gradations.

Before, however, adverting to any of these failures, a few words may be given to the mischief which, so long as it lasts, must ever move a previous question in every discussion of colour, good or evil. Harmony of colour pre-supposes comparative purity of colour, and how can this be secured against the double invasion, from the road below and black-charged skies above, of all defiling dirtiness? While the causes that induce this subside, we must,—at least in our cities and large towns,—limit our ambition for harmonies of colour: much of the only satisfaction we can hope for will be, that we do not make matters worse or invite the enemy that destroys us.

It is on this ground that brick has so much to answer for in the gloominess and griminess of aspect of many otherwise noble streets. Some-

thing may be done, no doubt, by excellence of material and workmanship, by closeness of texture, evenness of face, and fineness of joints. Something, again, might be done by an alteration of proportions of the brick; a flatter proportion would not only confer an appearance of general fineness to the construction and also solidity by subjecting each individual brick to the manifest bite of a greater number and a larger circumambient mass; but the very reduction of the difference in area between the face of the brick and the mortar-seams adjacent would enhance the sense of bond, and then a more general average would result of stains and discolourations on the bricks; and the colour of the seams, however fine they might be made, would become capable of contending in some degree with that of the plain surface they surround. After twenty years the memory lives in the mind of the sense of repose conveyed by large and plain buildings at the Hague, for which no other explanation could be given but the value of the long flat bricks. These suggestions leave aside, of course, the consideration of what sized brick will do for all constructive purposes,—will be most economical of labour in handling and brick-laying,—

"Oh, reason not the need [says King Lear], our basest beggars
Are in the poorest thing superfluous;
Allow not nature more than nature needs,—
Man's life is cheap as beast's!"

and his dwelling will be scarcely dearer; and we shall descend even lower again from that style of accommodation in which some of the noblest of the land might seem at present less to be housed than warehoused.

Do what we will, however, brick, as we have it, will still absorb damp and harbour dirt, and even lodge lichen-growth. We by no means wholly escape from these evils when we move from brickwork to stone; and here there is the further disadvantage that stone can scarcely be becomingly introduced into architecture without some acknowledgment of its dignity by carving; and to nooks and crevices that are provided in abundance by a capital or a frieze, fly at once all the unhandsome miseries and abominations of our atmosphere,—like the heaped unhappiness and unholiness that huddled about the altar of Pity in the Agora at Athens, or took sanctuary at Westminster in the bright Middle Ages.

We can scarcely hope, then, for anything but palliations until after the suppression of coal-smoke, which those of us who are younger need not despair to see—if they will persist in reiterating the *delenda est*.

If brick be taken at its very best and under best circumstances, it is capable—we may not only say with memory of Roman ruins in our minds—of dignity, but of harmonies of colour of considerable value. For illustrations of this we must, it is feared, rather look to the works of the past than of the present. We demand colours good in themselves, and then in effective combination. Walks may be taken of no little interest in search of examples through the older streets of London that were once fashionable, and are still sometimes genteel, though often no better than highly respectable. Good bricks well set together will be here found, and often of a colour that may be safely accepted as original—as unchanged and very agreeable. The colour of the brick is the complexion of the future dwelling, and should no more be left to chance even within several shades than the colour of the same house would be if it were introduced by a painter into a picture. Rawness, coldness, crudeness, seem to be the opprobrious words that rise most readily to the lips when we are moved to revile brick architecture that offends us. The disagreeableness they indicate is very happily corrected in the best of the examples we refer to, by a clear warmth, not without obligation to an admixture that gives faint suggestion of an

orange glow. The uncleansed accretions of years do injury to the best examples, which it is easy to see, even now, only require the healthy application of a bath from a powerful fire-engine to discover themselves in all the grace of a tone as fresh as ever was recovered in an old master from under the brown varnish of Sir George Beaumont. The same process would reveal that no little, though by no means perfect taste, was exercised in the associated colour of bricks at the angles, edges, and borders of windows. In the distribution of these there is often much to desire; but in the selection of colour there is rarely a failure of harmoniousness. There can be no greater contrast to much of modern practice. The associated colours blend by the gradation of relationship,—we had almost said of consanguinity,—do not start asunder and fly into the fragments of repulsive contrasts and antagonisms. From one colour to the other we should not have to travel far if we compared the route between them upon the consecutive spiral of the diagram demonstrated in our previous article. The sin, as it seems to us, of too many later attempts at polychrome in architecture lies in harshness of contrast,—in breach of sequence. Contrast clumsily attempted ever founders on a discord. Black voussoirs alternating with cream-coloured, and not even kept in countenance by any analogous broken alternations elsewhere, are as painful to the musical eye as was ever unprepared and unresolved discord on the ear. The choice of the contrasting colour has to be sustained by appropriate place,—by happily proportionate mass. When these points are neglected or ill-managed, the eye is attacked—the word is not too strong—by the intrusive glare; is left without any intermediate help to escape; is carried away to other parts only by violence of will instead of spontaneous solicitation; and is teased by the apprehension of again encountering its enemy; worried by vagrant lines of red and spots of blackened angularities that defy all rational rule, as vexatiously as if it were pursued by a tormenting and dazzling reflection. To such baited misery, tameness is a relief, and insipidity for a moment passes with approval for sobriety; but why should we be exposed to either one or the other? Wearied by a reader or a declaimer, who is lavish of emphasis, but ever gives the distinction to the wrong word, the wrong clause, we may accept with gratitude for a time—through this it is not impossible to sleep—unaccustomed monotony or drawl; but when we escape from both in no moderate discontent, we are, if wise, no nearer to renouncing faith in the possibility of either true eloquence or coloured architecture as verities in art.

When stone is associated in the same work with brick, we may observe how all-important it is that its permanent colour, or that which it is sure to assume, should be duly allowed for in the colour of the brick selected. How the transition from one to the other is best managed—especially how the immediately adjacent mortar-beds can be masked by moulding or projection, and must be, at peril of much offence, is matter that belongs elsewhere: enough if it be noted here that unless some relationship of tone and hue is within reach, it were better that any presumed enhancement of dignity to the inferior material should be sacrificed, and the nobler left in its quarry or cast into the sea.

The permanence with which red granite preserves a high polish in a London atmosphere has recommended its employment in very costly and important external enrichments chiefly in the form of columns free or attached. The beauty of the material renders it a matter worthy of most careful study to secure for it a place and surroundings in every way appropriate: this can scarcely be unless in a building of any importance it be applied in such abundance as to

preclude the appearance of being but a *purpureus pannus*, and the effect of simply branding the general material with poverty by its implied costliness and rarity; the next condition is that when rightly applied in place and in quantity it shall be only supported by the associated colours.

It is difficult even for an ardent admirer of Early English architecture to acquit it of having set but an unlucky example in its use of Purbeck shafts. The colour of these is ever in harsh contrast with the masonry contiguous and connected with them, and whether in the pillars of Canterbury or Ely, or in the pillars of the Temple in London, we shall fail to do free opinion justice if we accept the combination as harmonious. In some former papers on architectural development we showed how the application of Purbeck affiliated on the precedent of Pisa; but England failed in a wealth of varied marbles to complete the ideal. An age in which imitation and revivalism cannot but have important sway amidst reviving enthusiasm of ancient monuments, has ever to be on its guard against reviving the erroneous and taking the immature and the mistaken for models. We would say boldly that the Gothic architects never did full justice to any one of their styles; before they had perfected one by elaborating its best capabilities and revising its defects, they were carried off by suggestions of novel forms, and pushed on an improvement at once so rapidly, that it came out forthwith as blank substitution. If this be so, the task of the modern Gothic architect who selects a period for special attention should be quite as much to correct and complete as to imitate his master. How far he is capable of such a function he will have an opportunity to show, in his treatment of Purbeck shafts, as well as many another detail. Gothic apart,—there is much the same objection to the position of polished granite shafts where by splendour and permanence they shame the poverty of the stone above them and around, that is always taking stains and variegations from the atmosphere even when not suffering in surface as being "soluble in soot and water."

We see dust and weather-stains so far co-operating in some instances, that while the sheen of the granite is reduced, and its colour deepened, the stone of the building acquires a yellowish tone, that helps to some appearance of a union. But this is not architecture, any more than a sweep's dirty face is full dress.

It is but seldom we see these enrichments without being tempted to cry, would there had been more or less. Costliness fails fatigued even before it has accomplished the column; and to escape a harsh discord, not merely in quality of material but in colour, we demand both for ease of transition and as matter of keeping that it should have such a bronze base as was familiar in Sicily to Pindar, and a bronze if not gilt capital. If any part whatever of the column is to be exceptionally rich, it would seem that it should be the naturally rich and conspicuous capital and moulded base. To leave these poor conveys the intimation that extravagance has made a vulgar blunder, and, exhausting its purse upon an equipage, has nothing left for horses.

OUR DAILY BREAD.

THE subject of the supply of food to the population of the United Kingdom is one which the annual increase of that population renders every year more important. Nor can we measure that increase by the moderate augmentation of some one per cent. per annum, indicated by the total of each successive decennial census. The ever-increasing complications of modern civilization, the strain put upon the productive power of Europe by the diversion from agriculture to military occupation of 4,000,000 of the flower of her youth, the competition of all manufacturing art with the patient toil of the farmer, and, perhaps more than all, the insatiable rapacity of speculation, tell with formidable weight on the exertions of the bread-winner.

The mother-idea, as our Continental neighbours would term it, of the British school of political economy, was that of the difference in the ratio of increase between consumption and production. In this, as in all theories which start from a single assumption, practice differs widely from hypothesis. The under certain given circumstances the difficulty feared by Malthus might arise, may be freely granted. That in a country which is a very hive of industry, and of which the ports are freely open for

the reception of the harvests of the world, an increase of the inhabitants should be, were all things wisely ordered, anything but an increase of wealth, may be unhesitatingly denied. Of all the products of civilized life the mature, healthy, educated man or woman is the most precious. It is that without which no other product has any value at all.

To secure this ultimate product of civilisation the first and most important requisite is an abundant supply of cheap and wholesome food. Increase in the price of food, or, what is the same thing, diminution in its quantity, or deterioration in its quality, is instantly felt, and the immediate tendency of such a change is the deterioration of the race. Brought to a certain pitch, such a change is the sure cause of political convulsion.

That continental government which assumes to be the ultimate expression of the popular will invariably keeps a watchful eye on the supply of food for the people, and is accustomed directly to interfere when the price of bread threatens any notable rise. In our own country any such interference on the part of the Government is inconsistent with our habits, and foreign to our political forms. But it by no means follows that the supply and the demand will equalise themselves with the happy propriety promised us by political economists. It is true that the opposing interests are altogether disproportionate in their magnitude. The want of cheap and good food is universal. The benefit to be derived by individuals from the rise of price or from the adulteration of quality is disproportionately small in comparison to the injury inflicted on the consuming public. But, on the other hand, that small benefit is divided among so small a number of persons that the amount which may be received by each of them is very large. There is, therefore, a very powerful inducement to the formation of such an organised system on the part of the suppliers,—not the producers,—of food, as the consumers can only meet by some sort of counter organisation. In other words, the tradesman's profit has become disproportionately high. The difference between the wholesale and the retail price, between the sum which the farmer receives for his beasts and his wheat, and that which the butcher and the baker demand for a joint and for a loaf, is too great to do no more than cover the proper risks and profits of trade. Butcher will not undersell butcher, or baker, baker, because it is more to their interest to arrive at a common understanding, and to keep up the price of their commodities against their common prey,—the public.

The above statement is not matter of mere opinion. Not a season passes without the attention of the public being more or less forcibly called to the subject, by such means as the comparison between the Leadenhall price of meat and that charged by the West-end or even by the country butcher; and the remark of the steady maintenance of the items of the baker's bill, in face of a fall in the corn market. But exposures in the newspapers effect little, unless it be by turning more and more the attention of those to whom domestic economy is important to the practical application of that remedy which lies nearest to the hand.

In every speculation, and in every kind of business, profit is in some sort dependent on risk. Risk and profit might be spoken of, in mathematical language, as "functions" of one another, were it not that the latter is generally so contrived as to increase much more rapidly than the former. The increased profit, in business as well as in the lottery system, generally far exceeds the increase of risk which forms its pretext. In this fact lies the secret of the large fortunes which are now so rapidly accumulated in trade. The risk of the tradesman, who is sufficiently at home in his trade to understand the art of purchasing his wares, may be reduced to two items,—want of custom and bad debts. If we except the risk of pilferage from his own servants, and suppose the salesman to be fit for his trade, he can only lose either from having his wares left on his hands from want of custom, or from having them taken off his hands by customers who subsequently fail to pay him for the goods. If these two sources of risk can be eliminated, the profit of a tradesman may be calculated with the most exactitude. It will depend, to a certain extent, on the amount of his business, because a certain fixed expenditure in rent, wages, &c., will have to be divided over a larger or less difference between income and expenditure; but we are supposing the magnitude of the business to be to some

extent determined beforehand, when we speak of avoiding the risk of want of custom. Let a man be assured that he shall have a steady demand for so many pounds, hundred-weights, or tons of food or other merchandise per week, and let him be assured that he shall be paid for such demand down on the nail, and he can afford to be satisfied with a very moderate per-centage upon the wholesale price.

This practical piece of political economy has been acted upon, with the best results, by some of the co-operative associations of the day. There are signs that the attention of the consuming public is being more and more steadily turned in the direction of self-protection by association. Of course the danger will arise, as we have not unfrequently pointed out, of the waste of money from want of experience, or from want of faithful service. A number of householders uniting in a meat association, and appointing their own agent to buy and to manage for them all, are very much at the mercy of such a manager; and if they light on an incompetent or a dishonest agent will be likely by and by to speak back again repentant to the triumphant butchers, who will, no doubt, celebrate the return of the converted prodigals by the addition of an extra halfpenny or penny to the price of the pound of meat. That great source of loss in all undertakings that are carried on by subscribed associated capital, namely, the want of a sufficient personal interest on the part of the manager, must never be forgotten by those who seek to save or to gain money. They must take care that the principles of human nature are acting for, and not against, their enterprise, or human nature will win in the long-run, and the enterprise will come to an end.

It is, therefore, rather by the association of a respectable body of customers, on the one hand, with respectable and selected tradesmen on the other, than by means of more directly self-originated undertakings, that we hope to see a reform in the supply of food. But such enterprises must have, in order to be sound, a certain degree of restriction. There must be a reality in the membership, if there is to be any position and permanent advantage to be derived by the members. A co-operative association must not sink into a mere means of advertising certain tradesmen. Above all, it seems important to insist on exclusive ready-money transactions, and that for a twofold reason: one is the avoidance of risk, for even with a weekly payment there is a certain amount of risk—a definite maximum, it may be, but still an appreciable item in the balance sheet; the other is, that the man who pays cash trades on his own capital. The returns are rapid. Pay day by day, and your shilling is turned daily by the tradesman, and earns its daily profit. Pay once a week, and the shilling is turned only once, instead of six times. The risk may be little; the time is very short; the bank will readily find the money to conduct the short credit business; all this is true. But it is no less true that 100L daily turned over will earn just six times as much in a year as 100L weekly turned over. If we are seeking for economy do not let us neglect so obvious an element.

With the function of the retail tradesman the supply of the family at the smallest remunerative advance on the *bonâ fide* wholesale price of the chief articles of consumption the question by no means ends. The full light of publicity has to be turned on the sources of primary production. Some producers, many, it may be, object to this. Farmers refuse to give information as to the acreage devoted to various crops, and resent what they consider an unwarrantable interference with their own business. Let them rely on it that they are wrong in so regarding it. They thus injure the consumer, and by no means benefit themselves. Ignorance is hostile to the true interest of either producer or consumer. Such a proposition, nakedly put, is self-evident. There is, indeed, a class of people who live upon that ignorance; it is the class which, known to our ancestors by odious names of forestaller, regrater, and the like, now dignifies itself by the name of speculator. We do not speak of that free and open speculation which is the life of all commerce—the fair risk which the merchant knowingly runs, and for which he deserves to be fairly remunerated. But it is the speculation which has prolonged the panic of 1866 to the winter of 1867; it is the unrighteous and accursed speculation which broke bank after bank that men might make money by the depreciation of shares, and grow fat upon the ruin of families, that we deprecate. The man who sells

that which he has not—cotton, iron, wheat, shares—in the intent, which he forthwith sets himself to work to carry out, *per fas et nefas*, so to force down the prices as to buy a week hence at a lower value than that for which he sells, or the man who buys that which he cannot pay for, in the hope that he can puff his purchase into imaginary value before he is called upon to pay,—these are the men, and these alone, whose interest it is to close the eyes of the public as to the actual operations of yearly husbandry.

With statistical knowledge of the actual state of our agriculture, should be associated full information as to the most reliable improvements in husbandry. Very much has been effected within the last ten or fifteen years. A ride or a drive through an agricultural district now, is very unlike what it used to be. If the progress of the railway system has, unfortunately, been brought to a stand, such is not the case with that of the steam plough. Drainage is annually adding to the productive acreage of England a far more certain gain than that effected by such operations as the annexation of Nice and Savoy to the French empire, at the cost of fifteen years of imperial rule. New manures, and, better still, the intelligent use of the refuse of our great cities, are only commencing their beneficial service, and the chemical investigation of soil, and scientific application of the deficient elements, in each particular case, are raising farming to the rank of practical science.

Connected with this application of science to agriculture, are the labours of the naturalist. Acclimatization, which hitherto has for the most part been studied for the sake of ornament and luxury, is more and more attracting attention for economical purposes. In our colonies and foreign dependencies, this is, perhaps, more the case than in Great Britain. The extension of tea and coffee culture in India has had a sensible effect upon the home market. The encouragement of the growth of cotton has received a powerful stimulus from the past campaigns of the American civil war. Perhaps the most noticeable of all similar efforts has been the safe conveyance, under circumstances of peculiar danger and difficulty, to suitable climates in India, of the seed and seedlings of the cinchona, and the successful inauguration of a new and domestic source of the invaluable drug quinine. In England itself we have welcomed the visit of that marvellous stranger, the *Euphorbia Caudata*, the new radish, with pods that grow with visible celerity, the very bean-stalk of the fable! We are just now witnessing an amusing newspaper discussion as to the merits of a new cereal, the Chinese sugar-grass, which disappointed purchasers declare comes up only by aid of the hot-bed, and is worth nothing when it has so come up. We are receiving lessons from the growers of Normandy pippins and *Bon Chrétien* pears as to the more productive management of our orchards. In kitchen horticulture, as well as in floral horticulture, our gardeners seem arriving at great power of modifying, and, in many instances, improving the ordinary operations of nature. That this skilful attention may be directed with the best results to the wider field of agriculture, we have at least two very notable and luminous proofs. One is to be found in the magnificent growth of giant turnips that have been attained by the carefully repeated process of selection of seed from none but the finest plants; the other is the similar result of a similar care in the case of wheat. The instances which we have quoted are enough to encourage the hope that we are but on the threshold of a very marked and beneficial improvement in the results of agricultural study,—improvement which will combine the naturalisation and successful growth of plants hitherto strangers to our soil, with the transformation of those long cultivated among us into highly improved varieties.

We have left no space to speak of that which was chiefly in our thoughts on taking up the pen,—namely, the improvement in water-farming. Everywhere, indeed, by land as well as by means, the increase of scientific knowledge is leading men to respect more, and to destroy less, the works of God. The grouse disease of the present season has called attention to the ill results of a wholesale destruction of the birds of prey. But our rivers have suffered far more than our forests and hedge-rows, and that from the double cause of the wanton and greedy destruction of the fish, and the pollution of the streams by sewage. In both of these respects we have brought legislation to bear with visible success. The care of man, directed to the artificial hatching of fish,

is restoring the salmon to those rivers from which unpardonable neglect has allowed this king of fishes to be driven. Even the Thames gives promise of a return of these noble migratory fish, and there is reason to hope that within a few years they may become common in many of our inland waters. It is, indeed, time that we should try to restore the fish to their element, or the element to the fish, for it is announced that we are at the end of our oysters. So vigorous has been the onslaught of the dredges, that the beds are exhausted, the price of the natives is becoming fabulous, and, without the scientific aid of the oyster farmer, the eaters of that nutritious mollusc will be driven to depend on the supplies furnished by the French and the Italian bays and lakes. Look where we will, the need of man has so far impaired the wealth of the uncultivated stores of nature, that he is called upon to labour in order to replace the waste. He has so far subdued the earth, that he has no time to lose in tilling her surface and in replenishing her stores.

MR. HENRY COLE'S ADDRESS TO PARIS ARCHITECTS.

THE opening meeting of the École Centrale d'Architecture in Paris was held on the 12th inst., when Mr. Henry Cole, C.B., delivered a discourse in French. We English it thus:—"Readers of the Bible, at your Universal Exhibition, thanks to the Emperor, you know well that no one is a prophet in his own country. If the South Kensington Museum were endowed with life, it would on this occasion express to you at once surprise and gratitude for the gracious consecration that you give to it in my person. In its own country, the museum has had to fight for its life. Parliament pays, but discusses seriously its existence, besides salutary opposition. An ignorant public, it is true, delights itself in filling our galleries; but in England our high priests of architecture have crucified the author of the designs for the museum buildings,—Captain Fowke, to whom, nevertheless, the International Jury of your Exhibition has awarded a gold medal of the first-class. Finding myself in the midst of friends of the museum, as I flatter myself you are, allow me, notwithstanding the quality of my French, as well as that I am not an architect, to say a few words to you on architecture. I ask myself why you have done me the honour of requesting me to preside over you, and I imagine I have found the reason in a certain analogy that exists between your Central School of Architecture and our museum at Kensington: we put in practice, I believe, the theoretic principles that you teach here. If I do not deceive myself, you regard construction as constituting the skeleton of monuments; so do we; you hold as a fundamental principle that a monument should be appropriate to its purpose, the same as we do. You believe that the nature of the materials used should regulate the form: we also. It is then, and then only that you concern yourselves with decoration: we the same. You subordinate decoration to construction: so do we at Kensington. Is it, then, a heresy to proceed thus? The arrangements of a public museum, which thousands of blondes and short jackets frequent, differ from those of a religious temple, whether it be Egyptian, Greek, or Roman: they differ from those of a cathedral or of a church, reformed or not reformed; nor are they any more like those of a fortress, of a battlemented tower, of an imperial palace, or of a feudal chateau. Museums are, so to say, a sort of modern socialist monument, where the level is the same for all. There is no dais, and there are no reserved places, and the architecture of the past furnishes us with but rare suggestions for their foundation. London not enjoying the brilliant clearness of the Paris climate, we have sought to obtain the greatest amount of light possible: that being obtained, we regulate it by means of blinds. It is easy to intercept the light, but not to make it. It is necessary for us to provide heat on a great scale, and we have miles of pipes moderately warmed. We have since our opening lighted the museum by illuminating each night 14,000 gas-burners, and we hope soon to have 40,000. Our ventilation is provided by that primitive process that consists in introducing an abundance of fresh air or of warmed air, according to the exigencies of the season, and allowing the vitiated air to escape by the ceilings. Not having that magnificent freestone of Paris, which

cuts like,—cheese, we use red brick and terra-cotta; and terra-cotta, you know, resists atmospheric influences better than granite itself. You have noticed, perhaps, in the Exhibition a semi-circular arch and a work in brick, which the despotism of a logical classification has placed in the gallery for machines. We have had the honour of offering these specimens to the *Conservatoire des Arts et Métiers*, where they will be placed in the garden. We imitate at Kensington the example you give us in Paris in daring to apply iron for the support of carpentry and ceilings. We even allow to be seen some of the iron ribs, which we decorate with gildings. Upon the walls we place majolica and mosaics of enamelled faience,—an invention to which I venture to call your attention, because it offers the means of giving an eternal duration to mural paintings. Gentlemen, if you are willing to brave the terrors of La Manche, to have faith in the recipes against sea sickness, and to come and see the Kensington Museum, we shall be happy to act as your guides, and you will find, I dare hope, that we are faithful to the true principles of architecture,—principles that are so resolutely, so brilliantly, taught to you in the Central School of Architecture. Perhaps you will find there some ideas,—some useful suggestions that you will accept in exchange for the magnificent examples of your studies that we have been permitted to obtain from your school. It seems to me that architecture, like many other things, is just now in a state of transition. The architecture of our days is not studied in the cloister for the purpose of building cathedrals, fortresses for the nobles, or numerous palaces for kings. It ought all over the world to supply the wants of a civilized democracy, and cannot progress but by resting on common sense directed by science and inspired by art; and it is thus architecture should devote itself in all humility. May M. Haussmann long continue to respect these tranquil gardens of the Central School, which recall to me the peaceful shelter of a cloister, and permit you to pursue your studies, so pacific, so useful, of a character so elevated, and which contribute so much to the happiness of humanity. Gentlemen students, I am happy to be able to say that your director has been so kind as to allow me to offer, for the end of the present scholastic year, a prize to be given to the most successful student in drawing the figure: this prize will be awarded by the students themselves.

Mr. Cole is a valuable public servant, and has often entitled himself to our warm thanks, which were never sparingly given. We are very sorry that we do not find ourselves induced to add to those thanks by this address. The work for which the International Jury awarded a medal to the late Captain Fowke has no connexion whatever with the building designed by him which provoked hostile criticisms, nowhere more severe than in France; nor did "the high priests of architecture" crucify Captain Fowke for those portions of the permanent museum which could now be shown. In setting forth the ordinary principles of architectural design as those in which the École Centrale d'Architecture and the South Kensington authorities agree, his Paris audience must have been led to suppose, erroneously, that these were not the principles taught in England, and carried out more or less by English architects according to their ability and taste. Again: surely it was neither necessary nor correct to say that the iron construction in the new Courts at South Kensington was the result of following what had been done in Paris. That Mr. Cole, of the Great Exhibition of 1861, should say this, is surely remarkable. The French architects who studied years ago the court of the Oxford Museum, and imitated everywhere the construction of our railway stations, must have listened to this remark with surprise, though much too jealous of national credit to question for a moment its correctness.

AMERICAN MANUFACTURE OF STEEL TIRES.—The manufacture of steel tires for locomotives, formerly a branch of trade done only in England, is now accomplished successfully at several places in the United States, one of the latest factories opened being located at Nashua, New Hampshire. Philadelphia was the first place in America where steel locomotive tires were made.

SANITARY AND SOCIAL ACCOMMODATIONS IN THE STREETS OF PARIS.

THE sparkling streets of Paris have several features in sanitary and social accommodation that deserve a word of notice. Ever gay, with the use of light colours and gilding, and full of motion, with the fluttering of awnings drawn here and there over the footways in front of houses, and shops, and *cafés*, with *jalousies* and *sombreros* to the windows on the sunny side of the streets, and green, rustling, and leafy with the blending of trees with roadways, the authorities have made them still more attractive by erecting and allowing others to erect various constructions of an ornamental character for useful purposes in great numbers. The Boulevards, the Palais Royal, the Champs Elysées, the most frequented of the *places*, have all isolated erections of the kinds we are about to describe. But before specifying these we would allude to a still more important experiment, the concrete roads that are now in use. In some streets the noise and rattle we are accustomed to associate with much traffic is suddenly lost, and although the bustle continues and there is just as much swift coming and going to and fro, a comparative quiet reigns around. This is owing to the construction of the roadway. Instead of the surface presenting the rough, uneven form of granite blocks or macadam, it is entirely concreted and smooth. The wheels of the omnibuses are muffled, and all that is heard is the ring of the metal shoes on the horses' hoofs.

The disadvantages of this system appear to be the rapid casting off of a fine powdery dust; which inconvenience is only to be obviated by the use of the water-cart or watering hose. The limey nature of the concrete combined with the sun-heat absorbs the water rapidly, and watering is continuous in fine weather. Accordingly, a feature in Parisian streets is the frequent presence of the watermen. One of M. Hausman's grand points is evidently to effect a saving of labour; and this intention is carried out right and left, even to the watering of streets. The apparatus used for the purpose is ingenious. Several lengths of metal pipes, each about 10 ft. long, are attached together by hose junctions, the junction of each length resting on very low small wood trucks furnished with tiny wheels. One end is attached to the *borne-fontaine*, or water-plug, and at the opposite end is the nozzle, which the waterman carries in his hand, squirting the water right and left from the main, with great dexterity, among passengers and vehicles, easily moving the metal pipes on their wheels along the smooth surface in any direction he requires, and standing at considerable distances from the water-plug. This system can, however, only be applied in very wide and uncrowded streets. The new roadways are constructed on a principle that has some advantages on the score of cleanliness and sightliness as well as noiselessness. Instead of the gutters being made as open channels running parallel with the curb-stone, they are partly recessed underneath it. Besides the deep curve beneath the overhanging curb-stone there is a slightly-raised portion in granite blocks, which confines the waters in the channels, discharges them into the concealed gullies, and prevents them from overflowing on to the cement roadway. As the daily dust, waste, and *débris* accumulated by Parisian householders are turned out on to the gutters and collected by the scavenging carts every morning, the gutters necessarily hold for several hours before noon the filth. Water is turned on three hours a day to purify the streets, and men are employed to sweep them as the water runs; the gutter keeping the filth out of sight under the curb is therefore a desirable sanitary provision.

At intervals, among the trees that border the footways of the Boulevards and other places of public resort, are somewhat fantastically constructed pavilion erections, varying from the size of a pillar-post to a small Swiss cottage. Some are for the sale of light drinks, others for the exhibition and sale of newspapers and small literary wares, and others, again, are "stopping-places." The proprietors of *cafés* have, indeed, time out of mind, carried awnings over the pavements, and placed their inviting chairs and little tables under the green and shady flicker of the trees; but these smart little buildings are on the increase, and have a sort of affinity to the world's fair that has been such an attraction in Paris this year. We will describe one of them. It is for the sale of newspapers. The materials em-

ployed are wood, glass, and bronze. It is of an octagonal form, and its height is divided into three tiers of panelled compartments, of which the lowest is entirely of wood, and the two upper ones are glazed. One panel, or one side of the octagon, is left open for communication with the person in charge within. A bronze cresting finishes the octagon, which is covered over with a small domed roof. The entire diameter is about 4 ft. and the height 12 ft. The *urinoirs* are more like very tall pillar-posts, with a small recessed sink provided with a drain at a convenient distance from the ground. There are, however, numerous designs in these accommodations, which are for the most part situated in astoundingly exposed and public places. The municipal government boldly deals with the subject of the necessary conveniences. An Englishman is not prepared to find so much provision of the kind; nor the sites of it so conspicuous, nor the forms so studied, and ornamental, as may now be noticed.

At the main entrance to the Hôtel de Ville the first bay to the left has been furnished with simple slate divisions between the buttresses at the plinth level, without any further shelter for, or disguise from, the passers by.

Within sight of the Tuilleries windows on that broad gravel-walk, where the prim orange trees with their twisted, gnarled, and knotted roots, stand in boxes, and the ornamented sentry-boxes are painted in dark green stripes upon a white ground, and the familiar statues stand out luminously white against a dark green foliated background, and all around is stately, palatial, and somewhat formal, we come upon two more conveniences of this description in a most public position. The broad flight of stone steps by which ascent is made from terrace to terrace has a retaining wall on either side, and in these retaining walls, close to the steps, are two arched recesses, made originally to relieve the blankness of the masonry, which are now each furnished with four urinal sinks, divided from one another by a slight projection, but in no respect partitioned off from the frequenters of these Elysian fields. And nearer than this to the Tuilleries, at a gateway immediately under the windows, a *café* has been permitted to establish itself, and place a convenience for the use of its patrons on the side nearest to the palace windows. Provision for ladies is also made. Among the shops in the main streets are, here and there, shop-fronts in which no goods are exposed for sale. They have announcements in the windows to the effect that there are *cabinets inodores* within. On entering the open door, further notifications point out which cabinets are intended *pour les dames*, and which are set apart *pour les hommes*. We know not which is most startling, the amount of provision or its exposure.

In the Place de la Madeleine there is a fountain, in which flowers and water are alternated with a charming effect. The margin of the large stone basin into which the fountain daintily splashes and sprinkles its waters is bordered with flowers. Half-way up its height are more flowers and moss, and its summit is formed by a gaslamp, with which the whole is lighted up at night. We must add, admiration of flowers as ornaments sometimes lead to curious associations. We saw, a few days' since, a geranium growing in a pot deftly inserted in the inside of a fatted calf that a butcher had recently killed, and suspended by a hook in his shop-window, and *boquets* and flower-pots indiscriminately garnishing the meat.

The *cafés* are more resplendent than ever. They made Paris a city of colonnades of awnings and loggias. We note an arrangement in which the front of the *café* is raised from the façade of the house, so as to leave room for a row of velvet-covered seats and ornamental slate tables beneath the protection afforded from the overhanging house. Beyond the slate-covered table is a cane-bottomed *dos-à-dos*. Persons sitting on one side of this face the velvet chairs we have mentioned, and those on the other face a second row of tables, which are in their turn bounded by another row of seats, over all of which flutters a smart striped awning. In the Palais Royal, between the piers of four of the arches of the arcade, which are made to serve as a base, a glass and iron *café*, called the *Rotonde*, on account of its form, has been permitted to encroach into the gardens. Still more covered space is cleverly contrived by the extension of the flat, ornamental, zinc roof, which is fringed on its outer edge by a cresting above, and cusped valance below, considerably beyond the Crystal Palace-like *salle*. It is supported at

intervals by light iron columns, and forms a sheltered colonnade, which at this season is crowded with visitors. It is furnished with chairs and small tables. Protection from the sun is obtained for the occupants of the colonnade by curtains, which are looped to the columns, or drawn at pleasure. The whole is painted in stripes of colour. A second encroachment upon the gardens from the arches of the colonnade, forms another *café*. This is not glazed. It consists only, we might almost say, of a rectangular roof, supported on light iron columns, to which curtains are also attached. The Parisians, like ourselves, jealous of their open spaces, would, doubtless, not eye these encroachments with toleration, if it were not that coffee sipping in the open air is part of Parisian life, which any one may enjoy who can pay for it. Notwithstanding this feeling, the French press is beginning to inquire how much further are such encroachments to be permitted.

In all the public places, on the boulevards, on the quays, in the gardens of the Palais Royal, Tuilleries, and Champs Elysées, there is an ample supply of double-seated benches with rails, so that people sit upon them *dos à dos*. These are free to the public. In addition to these there are tens of thousands of chairs provided by speculators, for the use of which a demand of two *sous* is made. The latest novelty in the form of a chair is that provided in great numbers in the outer circle of the Great Exhibition, concerning the monopoly of which there has been so much dispute. It has a spring circular seat, which is made of strips of thin metal, radiating from a flat central boss, each strip being narrower where it runs into the centre than it is at the outer edge of the seat, and rises up in a round cushion form. The novelty consists in the lightness yet strength of the chair, which is all painted metal, as well as in the elasticity of the seats. In noting these apparently inconsiderable sanitary and social accommodations, the improved roads, gutters, waterings of streets, newspaper-pavilions, seats, &c., we find the Government, while grasping with the greater features of public buildings and new streets, has not omitted attention to the minor matters that increase the convenience of the out-of-door public. In this respect our town authorities might well take some hints.

THE QUALITY OF IRON AS NOW USED.

At a recent meeting of the Society of Engineers, Mr. Ewing Matheson read a paper under this heading, wherein he showed the difference there is in the character of iron, and how very dear a low-priced article sometimes is. We quote a portion of the paper as of great interest to our readers:—

This paper in being addressed to engineers at any rate, appeals to those who can discuss the facts put forward, and, if they think proper, act upon them; but unfortunately a large proportion of constructive ironwork is not designed by engineers at all, but by architects, who, of necessity, have to usurp functions in the proper exercise of which they have not had sufficient experience.* The materials of wood and stone and brick they use in all the forms and dispositions which the accumulated traditions of centuries have proved to be the best, and they have on every side examples of what to copy or avoid; but iron is a new element to many of them, in its present numerous varieties of application. The demand for fire-proof building, for open spaces involving large distances between bearings,—in fact, for iron in most of its modern forms,—finds many of them quite unprepared for its proper treatment. There are, of course, many exceptions; there are those who have wisely given the subject special attention, as one which is paramount, and there are those who, in these special matters, show their discretion by asking the advice of an engineer. But while some architects have a large and happy belief in the capabilities of iron, they cannot get out of their mind's eye, or rather their architectural eye, the forms and proportions of bygone days. There is sometimes to be seen in London the most extraordinary strength given to ironwork in warehouses, where stanchions have been placed that would have carried St. Paul's almost; and this feeling, again, is another result of the utter uncertainty that prevails about

* This refers to what is rather than to what ought to be.—Ed.

the strength of iron. The matter ends with the architect, when, in a nest bill of quantities endorsed "Smith and Founder," his ironwork goes forth to the builders, and from them no one knows where, certainly, in most cases, all over Great Britain, directly or indirectly; and a contracting builder of the present day will obviously accept the lowest tender, unless something notoriously wrong appears in it. And naturally, therefore, the architect makes himself safe, and allows for a strength of casting which probably the vilest iron in England will give him. Architects often apply tests, but generally only to something higher than their working load, and no valuable knowledge is obtained. In the more conspicuous and ornamental ironwork an architect will examine critically the outside finish and appearance of his castings, quite unaware, in most instances, whether in strength or toughness the iron is twenty per cent. above or below a fair standard. What it is likely to be may be shrewdly guessed from the system under which it may be procured, it having very likely been purchased from the cheapest ironfounder, who cannot use good iron without loss.

In London, where space is valuable, where the skill of the architect is taxed to make the most of the ground, surely it would pay best to use the strongest material, and save in breadth and head room. Iron is simply iron in the eyes of a builder who does not care to make curious scientific inquiries into the material supplied to him; if it has a good appearance he is satisfied he has done the best for himself; but it is doubtful if the architect has done the best for his client. In the so-called fire-proof structures of the present day, the structures themselves may be so, but when filled with combustible goods, they are destroyed in spite of precautions. A warehouse composed of iron framing, of concrete floors, and stone staircases, is looked upon as invulnerable; but when, filled with hemp, and tea, and oil, it catches fire, what of the framework then? Then, indeed, the iron stanchions and girders are tested. With the intense heat, all their power changes; they bend, they break, they fall; floor crashes through to floor, and the fire-proof building is in ruins. Who knows how much turned the scale, and whether just a little more strength and toughness in the iron would not have stood the ordeal; but the building has fallen because of cheap rotten iron, and all the ingenuity that contrived the structure is baffled and defeated. One other small instance, though it may seem a trivial matter;—the lamp-posts of London, the most conspicuous and oftenest repeated objects in the streets, and which are a disgrace to this city. They are common, clumsy, and ugly to a degree. If elegant, they might give a character and finish to the thoroughfares, but there is no public censor of taste, and a local Vestry Board ask for the old, old pattern; and, having invited tenders, obtain their pillars, painted and weighted, into stores for something like 6l. 6s. a ton. When any one sees a lamp-post smashed by a passing wagon, let him look to the article that was supplied to the parish. Bad iron, and the core perhaps all on one side, will show what is done in open competition and rotten iron.

And if it be now asked, What is the remedy for this state of things? it would not be unfair to reply that this should rest with the professional engineer, who needs only to be acquainted with the deficiencies he has to deal with. But, at any rate, some suggestions or hints may be offered for consideration. The main thing to correct is the great uncertainty that prevails, and the more of which is removed the greater nicety can be given to calculations, and the greater reliance can be placed on them when they are made. At present there is no standard held up for imitation, and every one has his own notions on the matter. If an ironfounder is asked if his metal is "good," it would not be in his human nature to answer but in the affirmative; while, if he were asked if his iron would stand a specific strain named in exact figures, he would think twice before he said that which could easily be proved to be false. Again, an honest ironfounder would prefer to have this uncertainty removed. He would know then what was expected from him, and how far he could compete; while, at present, he may use irons the difference in the value of which may more than cover the margin between the highest and lowest in a row of tenders. And for the engineer how useful would this certainty be. Any experiments he might make, or experience he might gain, would be based on positive facts as to the quality of

material, and he would know that in any successive work the same results would follow only where similar construction was combined with the same value of iron.

Nothing has been said here of the morality involved in the manufacture of good or bad iron; but when it is remembered how often human lives depend upon the structures designed for public use, and when engineers recall the failures that have occurred within their own experience from defective material, it will be acknowledged that the subject is one of the gravest importance.

THE HEALTH OF SWANSEA.

THERE are certain groups of our large towns in which commercial prosperity, inducing a rapid growth of population, has resulted in excessive death-rates. The cotton districts of Lancashire, the woollen districts of Yorkshire, the black country of Warwickshire and Staffordshire, the coal districts of Durham and Northumberland, and the coal and iron districts of South Wales, are the most conspicuous of these groups. The towns in these several groups have increased in population more rapidly than their house accommodation; and till lately their growth has been unheeded and untended by sanitary precautions; as a natural consequence, the overcrowding and neglected drainage and sewerage have resulted in high death-rates, with their usual heavy proportion of sickness, and, in too many instances, a disastrous mortality from cholera during the epidemic which prevailed last year.

Not one of the above groups of towns suffered so severely from cholera during 1866 as that in South Wales, comprising Merthyr Tydfil, Bridgend, Neath, Swansea, and Llanelly. These towns had for some time previously considerably contributed to the excessive town death-rates in England and Wales; but the result of that epidemic stimulated a greater sanitary activity in many of these towns, the effect of which is already appearing in the periodical returns of mortality. We have before us the quarterly returns of Mr. Ebenezer Davis, medical officer of health for Swansea, for the three months ending the 30th of September last. The report itself is concise and unpretending, but the figures are conclusive both as to the amount of useful sanitary work which has been carried out by the Swansea Local Board of Health, and as to the present satisfactory condition of the health of the town.

The borough of Swansea contained at the census of 1861, a population of 31,461 persons; these had increased in 1861, to 43,606; and crediting the town with a similar rate of increase since 1861, the present population would not be far short of 50,000. The deaths registered during last quarter in this population, were 221, whereas Mr. Davies states that the average number of deaths in the third quarter of the four preceding years (omitting from the comparison last year, when the deaths from cholera alone exceeded the usual deaths from all causes), was 250. These 221 deaths give an annual rate of mortality for the quarter under 18 per 1,000 persons living. In the entire town population of England and Wales, the death-rate in the quarter was 22.4; in the ten large English towns furnishing weekly returns, the rate was 23.8; and the lowest rate enjoyed in any of these ten towns for the same period, was 19.2 in Bristol. Swansea, therefore, for last quarter takes a very high place among our most healthy towns for last quarter.

With regard to the causes of death we learn from the report that the deaths from zymotic diseases were only 38 in the quarter against a previous average of 75, and of these 19 were due to diarrhoea and choleraic diarrhoea. Swansea, like most other large towns, suffered severely from diarrhoea during September, but most of the deaths were of infants under one year. There were, moreover, five deaths each from fever and whooping cough. The deaths from zymotic diseases formed 17 per cent. of the total deaths, against 16 per cent. the proportion in London. Of the 221 deaths in Swansea, 68 were of infants under one year of age; a proportion due in some manner to the fatality of infantile diarrhoea.

During the quarter 66 houses have been connected with long existing sewers, 106 with recently constructed sewers, and 95 houses have been supplied with water. No less than 172 nuisances have been reported by the four inspectors. Such

facts as these are satisfactory evidence of the practical kind of sanitary reform which is being steadily carried out in Swansea, and which already appears to have borne fruit in the satisfactorily low death-rate last quarter.

We are aware that similar, if not yet quite so successful, sanitary activity prevails in at least one or two other towns of the South Wales group above alluded to: so we may fairly hope that these towns will not much longer contribute to the excess of town death-rates.

MODERN ART IN FLORENCE.

AMIDST the intense excitements and momentous questions that are now occupying minds and absorbing attention in Italy, we can hardly expect to find any interest awake for things pertaining to the serene sphere of art or intellectual produce. Yet in this city the claims in that order have not been forgotten, even at a period when all are convinced that a crisis involving the welfare and honour of the nation has arrived. We might describe some of the recent demonstrations in Florence as themselves presenting the most impressive subjects for modern art, especially one scene on the piazza "Della Signoria," where the dark masses of an angrily-excited crowd and long files of mounted troops, gleaming in war array, were at intervals made visible by flashes of lightning that threw lurid glows on the Palazzo Vecchio and the Loggia di Oragna, momentarily dispelling the darkness of a starless night, and showing what historic architecture formed a background to that apparently menacing scene. It must be added, however, for the credit of these good citizens, that Florentine crowds, however noisy and disposed to vent their feelings in terrible utterances, are, in the long run, far from dangerous, altogether docile and manageable, and little inclined to anything like brutality.

We still hear of the new projects for the façade of the Duomo; and lately has appeared a letter from one architect of note to another, in which the design by the latter, Signor Cipollo, is highly extolled by his correspondent, Signor Donna, and it is advised that all the designs prepared since the last exhibition should presently be made public, and that the artists should choose a point of view in which the façade is seen obliquely, instead of that immediately in front,—the oblique being the view presented in the drawing of Cipollo's composition. The design most generally noticed, and commended, among all recently made public, is that of Lassinio, now to be seen at all the principal printers' and bookshops in Florence; and the character of which, a richly-elaborated Italian Gothic, we have already noticed. Paying a visit to the Duomo the other day, we found it in a state of temporary desecration, to be entered by but one lateral door, and occupied by workmen with ladders and scaffolding, engaged in the process of a general cleansing, long wanted, and much to be desired for the venerable edifice. At various points of the exterior, the sharply-defined contrast between the white and green marbles lately inserted and the weather-stained surface around, shows the activity with which such restorations are now, as they have long been, progressing. At the Accademia were exhibited, till the other day, some sculptures, groups and statues, that excited attention, winning notice on the whole favourable from the press. Victor Emmanuel at the battle of Palestro, on horseback, with a dead soldier stretched on the ground, and three Zonaves addressing him to urge more regard for his own safety as he is dashing into the thick of the contest, is a group of statuette size by Corelli, marked by great spirit and truthfulness, scarce attempting any idealization, yet making the most of modern costume, and successful in the intelligible presentment of the moral interest. Raffaello, as a youth, seated whilst drawing, and Columbus, also as a youth, seated on a rock, with a book and chart on his knees, are statues about life-size, by Zocchi (both to be sent to commissioning parties in New York), the latter far surpassing the former, as it struck us; for the sculptor's "Raffaello" seems tame and conventional, but his "Columbus" satisfies by intensity combined with simplicity; the earnest gaze that seems looking into a far-distant future, with endeavour to estimate unknown possibilities, giving to that boyish face something accordant with the destinies, and with one's own ideal, of the discoverer of new worlds.

At the studio of Consoni—certainly one of the first among living Tuscan sculptors—a life-size statue of Victory, subscribed for by different Italian municipalities in order to be presented to the King, and eventually, it is believed, to find its place in the Pitti gallery, deserves more than common notice for the character of intellectual power and elevated repose distinguishing it: seated on a rock she is inscribing on a laurel-wreathed shield the glorious names of Montebello, Palestro, and S. Martino; her figure being nude in the upper, amply draped in the lower part; her attributes recognisable in the moral expression, without any help from such symbolism as at once explains them. A wounded Amazon, defending herself on one knee in the combat, is another statue by the same artist, which was chosen by the commissioners for the Paris Exhibition. More interesting is the monumental figure of the Countess Matilda, recumbent in regal costume, and crowned, on an ornate sarcophagus; an affecting presentment of the historic personage in death that sends the mind through the vicissitudes of the great drama she acted her part in during life; this also, chosen by the commissioners among Consoni's works deemed worthy of a place at Paris, was to have been, but was not, sent thither.

The fate of art-works in the cloister might be uncertain in consequence of the laws lately passed against that institution, but for the measures well directed towards the preservation of all that is valuable. A circular from the Minister of Finance to the prefects of provinces orders that report should be made to government as to all objects found on monastic premises of such character as to claim respect, in order that buildings as well as the works of art they contain may be properly cared for, and authorities decide what should be preserved intact, what churches should, together with their decorations, be maintained for worship. A committee has been appointed to provide for the preserving of all that possesses artistic character, in monumental and other forms, on the monastic property exposed to sale.

The new streets, and the new "Lung' Arno," on the left bank of that river, are progressing in a manner that promises well for the enlargement and ultimate transformation of the city that it is desired should not be the permanent capital of Italy.

METAL FONTS.

WÜRZBURG CATHEDRAL.

THE material used in modern fountains is generally stone, but we could point out examples in which costly marbles are introduced. We do not, however, know of a single example of a metal font, if we except one or two cast-iron abominations painted in imitation of stone, which are to be found in churches in the manufacturing districts of the North of England.

In the Middle Ages fountains were frequently made of bronze and brass. The examples to be met with in Belgium and Germany are very numerous and beautiful, and of every period from the twelfth to the seventeenth century. One of the earliest we know of is that in the cathedral at Hildesheim. This interesting work of art is in a most perfect state of preservation. It is bucket-shaped, and supported upon four feet, each of which consists of an allegorical figure representing one of the four rivers of Paradise, with the name inscribed upon it: on the first is the word "Phison," on the second "Gehon," on the third "Tigris," and the fourth "Euphrates." Each figure holds a water bottle in its hand. The basin of the font is ornamented with an arcade of four trefoil-headed arches, each arch of which contains an appropriate subject in low relief;—thus, the Israelites crossing the Red Sea, the Baptism of Our Lord by St. John, &c. The cover of this font is conical, and surrounded with a very beautiful finial: round the cone is an arcade. This font is a work of the earlier part of the thirteenth century.

A remarkably fine bronze font exists in the cathedral at Würzburg, and of this we gave an illustration in our last*, where, by a rare accident, it was made to take the place of a view of an ancient bronze measure of the fifteenth century, at Ochsenfurth, and is described accordingly.

The font is drum-shaped, and surrounded by six double niches, with crocketed gables, and separated by buttresses crowned with pinnacles.

* See p. 820, ante.

These double niches contain subjects in full relief; amongst which may be noticed the Crucifixion, the Resurrection, the Baptism of Our Lord, and the Annunciation. The figures are about 14 inches high, and very well modelled. The shape of the Cross in the Crucifixion is remarkable, and resembles the "Y cross" on the back of most ancient vestments. This font is cast in separate pieces, and then put together with bronze screws. Round the rim is an inscription, with the date 1279.

In the cathedral at Munster is a bronze font of the earlier portion of the fourteenth century. It is chalice-shaped, richly ornamented with statuettes, evangelistic symbols, &c. This is one of the earliest chalice-shaped fountains we know of in Germany. In the fifteenth and sixteenth centuries they are, however, by no means uncommon. A font of very singular design is to be seen in the cathedral at Louvain. It consists of three separate basins standing upon thin legs. The lever for raising the cover is a remarkable piece of metal work. The fountains are bronze. Five fourteenth-century fountains exist at St. Sibold's, Nuremberg, and the cathedral at Mainz. These fountains are also bronze. A remarkable font exists in the church at Ochsenfurth.

Bronze fountains of the latter part of the fifteenth century exist at St. Stephen's Church, Prague, and St. Mary's, Lubek; and a brass one in the church of St. Columba at Cologne. This font is chalice-shaped.

The churches of St. Maria in Capitolis and St. Peter in Cologne, contain brass chalice-shaped fountains of the sixteenth century.

In England, metal fountains were never much used; however, in the Abbey Church of Dorchester, Oxfordshire, is one cast in lead; it is probably a work of the earlier part of the twelfth century.

In the Great Exhibition of 1851 was a modern font of bronze, from the designs of M. Viollet-le-Duc.

ST. ALBAN'S NEW GAOL.

THE new prison at St. Alban's, Herts, was opened for prisoners on the 1st instant. It has cost about 14,000*l.* and is situated on the north-east side of St. Alban's. The building stands on an eminence, from which it may be seen for miles round.

The architects are Messrs. Martin & Chamberlain, of Birmingham, and the contractor is Mr. Young, of Lincoln; clerk of the works, Mr. Wilcox. The building is of brick, with facings of dark blue Staffordshire bricks and Bath stone. It is constructed on the same plan as the county gaol at Warwick, and several of our large modern prisons. It is in a castellated style of architecture. Over the gateway there is a porticulis. The governor's house stands on the right of the gateway, and the chief warder's on the left. The front, with its entrance of lofty proportions, is surmounted by a large air-shaft, which is 60 ft. high from the entrance steps. This shaft conveys fresh air to every cell and other apartment in the building.

There is a spacious central hall, with long corridors to the left and right. This hall is lighted by a lofty lantern dome, which rises about 64 ft. from the basement floor. The corridors run in a straight line the whole length of the building, or about 150 ft. Along these corridors run three tiers of cells, with galleries running in front of the two upper tiers. The two corridors are respectively distinguished as the "A and B" wings. There are seventy-eight cells for the male prisoners in the corridors, and each cell is numbered. A cell is 12 ft. long, 7 ft. wide, and 9 ft. high, with a small window, which gives a not too cheerful light. The cell is provided with two flues. A grating is provided, through which hot air is let in for warming the cell. The vitiated air passes out through a grating above the floor of the cell, up the walls, and along the horizontal flues in the roof, to the shaft, outside the building.

The cells are heated by means of hot-water pipes, which are let in at different points along the wall. Each cell is lighted with gas, the tap being placed outside the cell, so that the warder can turn off the gas without entering. In the centre of the cell door is a little trap about a foot square, called a ration-trap, opening from without by a spring. Each cell is provided with a cistern holding eight gallons of water, which is conveyed to the cell by pipes from the upper stories. The supply is so regulated that the prisoner can-

not be cheated out of his allowance of eight gallons per day, nor obtain any more than that quantity. In each cell is a washing bowl with a tap over it, and a water-closet with its trap. In the walls of the cells, about 12 in. from the floor on each side, are four strong staples, on which is swung the prisoner's hammock. The door closes with a spring lock, of which the warder has a key, and the governor a "master key." A cell locked by the governor cannot be opened by the warder, and by this means the governor can, when he pleases, exercise a personal supervision over any prisoner. In the cell door there is a glazed inspection hole, rather larger than an ordinary eye-glass, by means of which the warder can at all times overlook the cell and the inmate. It enables prisoners to communicate with the officials. The prisoner pulls a handle drawing out a spring, which strikes upon a gong at the end of the corridor. When pulled the spring at the time it strikes the gong throws out a square piece of iron on which is marked the number of the cell from which the gong has been struck.

Near the entrance-hall is the visiting justices' room, a retiring-room, a waiting-room, the offices of the governor and chief warder, reception cells, bath-rooms, an examining-room, and a visitors' room. On arriving at the gaol, the prisoners are placed in the reception-room. They then pass to the examination-room, where they are examined by the surgeon. After being divested of their clothing, which is placed in a fumigating oven, they are compelled to take a tepid bath. After this generally very needful operation, they are supplied with the prison uniform, and placed in their respective cells. There are two separate cells outside the entrance, for prisoners afflicted with infectious skin disease, and a dead-house also outside the entrance. Attached to the infirmary are a surgery and a room for the infirmary warder. The chaplain has also an apartment. In the basement story are the workshops for the prisoners, called "associated rooms," which are a modification of the separate system. The kitchen is a large apartment. The prisoners' food is raised from the kitchen by means of a shaft. The scullery adjoins the kitchen, and near it are the bake-house, potato store-room, meat store-room, ordinary store-room, and an officers' mess-room.

There are two punishment cells in the male prison, in which prisoners may be placed in solitary confinement for three days, for breaches of prison discipline. These cells are provided with double doors, so that no sound can reach the ear of the prisoners confined in them. There is a visiting room, where prisoners at rare intervals are allowed to see their friends.

The chapel, which is in the upper part of the north side of the prison, is a spacious structure in the Gothic style.

The arrangements of the female prison (which communicates with the other part of the prison on the ground-floor) are much the same as we have described.

The works in common with the new gaol were finished by Messrs. Kirk & Belstone, as sureties for Mr. Young, the contractor. The heating, steam, and treadwheel apparatus, with the pumps, were supplied by Messrs. Haden & Son, of Trowbridge, Wilts; and the works in connexion with the water-supply to the gaol were carried out by Mr. Whilworth, of Birmingham.

THREATENED DESTRUCTION OF THE GATEHOUSE (OR OLD PRISON) OF ST. ALBAN'S ABBEY.

THE inhabitants of once mitred, and now disfranchised, St. Alban's are in a divided duty "anent" what is now to be done with their old gaol, a genuine piece (in the main) of ante-Reformation or Dissolution Gothic, and a part (ere Henry VIII. and Thomas Cromwell were omnipotent and unsparing) of the great abbey itself.

This old gaol (now no more) was the gatehouse of St. Alban's Abbey, and very fine it is. Its central archway, with its great span and bold groings, cannot be forgotten by any one of taste who has seen it. Abbot Thomas de la Mare, of whom there is a fine monumental brass in the abbey, was the fortieth abbot of St. Alban's, was its founder, and (it is conjectured) its architect as well. St. Alban's has now got a new gaol of its own, at the London end of the town, close to the London road, high-placed, castellated, and baronial, with a prison look of

its own, compatible with security and architectural propriety. It is much admired.

Having of late newly restored the famous old clock-tower of St. Alban's, and turned the tower into a telegraph station (a most appropriate use for it), and added a new and excellent clock, let the authorities of St. Alban's turn their deserted gatehouse-gate into something useful and appropriate,—and at once. Touching the likely and to-be-deprecated fate of this interesting gatehouse, the *St. Alban's Times* has said what follows:—

"We sincerely hope that so venerable a relic of antiquity is not doomed to destruction. We feel sure that the magistrates of the Liberty will never suffer such an act of Vandalism to be committed. We would again remind our readers of the suggestion which has been made to convert the old building into a house for the Grammar-school, and the governor's house into a residence for the master, by which means the beautiful lady-chapel may be recovered from its present degradation, and restored to the Abbey Church."

There is in St. Alban's a "Young Man's Christian and Literary Association," with insufficient rooms; and there is, in the same place, a "St. Alban's Architectural and Archaeological Society," without any local habitation at all. Now, it appears to us that this noble Gatehouse of St. Alban's Abbey (it is the property of the corporation) might be applied with great advantage to the wants and purposes of both societies, while, what is so much needed is "A Museum of St. Alban's and Hertfordshire Antiquities," for the county is rich in early British and Roman remains,—witness Mr. R. Grove Lowe's collection,—and the town and bowels of the earth are both rich in treasures, relics of Roman Verulamium and of the civil wars of York and Lancaster.

Another seeming difficulty is distracting St. Alban's. The Abbey parish wants a cemetery. The present burial-ground on the north side and west end of the Abbey is crammed with the dead, and buried architectural ruin. It is here, on the north, that men in authority would have the new St. Alban's Cemetery. We hope not,—it would be too near the church, too near to human habitations, and would eminently disfigure one of the noblest abbeys in the three kingdoms of Queen Victoria.

The most celebrated "gate-house" in Great Britain was that which was once a part of the mired Abbey of Westminster. Sir Walter Raleigh was led from his last prison, the Gatehouse at Westminster, to the scaffold in Old Palace-yard. Sir John Eliot was taken from it to the tower. Here Colonel Lovelace sang and wrote his divine poem, "To Althea from Prison,"—

"Stone walls do not a prison make,
Nor iron bars a cage;
Minds innocent and quiet take
That for a hermitage."

No traces of it are now to be seen. We remember in early days to have had pointed out to us some architectural remains of it, which did little more than mark the site and call up miscellaneous memories of other days.

WORKS IN PARIS EXHIBITION. THE ARCHITECTURAL ASSOCIATION.

The usual meeting of members was held at the House, in Conduit-street, on Friday evening (the 8th inst.). Mr. R. Phene Spiers, president, in the chair.*

Mr. J. D. Mathews (hon. secretary) stated that Mr. Haywood, the architect of the Holborn Valley Viaduct, had kindly offered to allow the members of the Association to inspect the very interesting works in progress in connexion with

the improvements now taking place in Farringdon-street; and that the visit would be paid on the afternoon of Saturday, the 16th inst. He also announced that a proposition had been made for the election of honorary members of the Association, and that the suggestion would be taken into consideration on a future evening.

The Rev. C. Bontell then proceeded to make some observations in connexion with the archaeological collections of the Paris Exhibition. He regarded the latter as constituting the culminating point to such exhibitions. It was in the year 1797 that the first great exhibition of art and industry ever took place, and it was held on the site of the present building in the Champs de Mars. In each subsequent exhibition a development was observed which made the last more important and interesting than its predecessors. The exhibition just closed was, in many respects, the most important of its race. The arrangement of the building itself (a concentric oval, with a garden in the centre, and curves leading to it) was admirable, and not the least interesting portion of its contents were its archaeological illustrations. The idea of including archaeology originated with the Emperor himself, who wished to show what mankind had done in all generations, and thus to form what might be termed a history of labour. In his opinion England was very well represented at the Exhibition; at the same time, he was bound to confess that we might have done much better, and that our contributions suffered in public estimation on account of imperfect classification and arrangement. The earliest specimens of human handicraft among all nations, such as articles formed of flint and bone, were characterized by the same features; but some degree of taste and feeling was to be traced even in the formation of the rudest implements and weapons, showing in certain instances a more skilful hand and a more observant eye. These early specimens of inventive art had been brought together from various countries, and were so typical of various primeval races, that it seemed a pity to see them dispersed. Among the most extraordinary objects exhibited in the archaeological collection were the crystal vases of Hungary, contributed by Austria. These were, he believed, without a parallel in the world. The collections of Italy, brought together under the careful superintendence of Signor Castelfani (including Ceramic ware and personal ornaments in the precious metals) were also most valuable for purposes of comparison. Most interesting, too, to architects were the drawings and models of architectural monuments in France. The preservation of those relics was declared by the Government to be a matter of public interest and importance, and he hoped the architectural body in England would take up the subject and bring its influence to bear on our own Government to induce them to follow the example set by France. If, however, this could not be done, he ventured to suggest to the Association the desirability of carefully examining, measuring, and drawing those monuments, so that an accurate record of them might be preserved to the country. The archaeology of the East was also extremely valuable, and amongst the most curious objects exhibited was a statue carved in wood of a human figure, which was supposed to be the oldest specimen of the kind in the world. It was found in one of the Egyptian tombs, and was believed to be of the period of Abraham. The personal ornaments found in the same locality were also very interesting. Nothing, he thought, was more remarkable in connexion with the Exhibition than the manner in which various works were reproduced. In Italian works, Signor Castelfani was satisfied with reproductions of the antique, and in this respect he was so successful that it was almost impossible to tell ancient from modern works. Eight gold medals were awarded for goldsmiths' work; and of these six were given to France, one to England (to Mr. Phillips, of Cockspur-street), and one to Italy (to Signor Castelfani). Had another medal been given to England, he believed it would have been awarded to Mr. Brogden. Illustrations of the application of ancient art to modern uses were not wanting in the Exhibition, and he was particularly struck by attempts by different persons to apply Egyptian and Etruscan art to objects of domestic utility. In the former case, an Egyptian tea-service was incongruous forms and unsuitable; while in another, Etruscan forms were found to be all that could be desired. In the latter case, the work was the production of M. Boucheron, of the Palais Royal, who had also exhibited the revival of an ancient art,—namely, translucent

enamel without any metallic back. Referring to the "democratic jewelry" exhibited at Paris, and purchased for the South Kensington Museum, Mr. Bontell observed that the design was so beautiful that the best consequences might be expected from its introduction into this country. This jewelry was in common use among the humbler classes in Italy, and he was sorry to say that it had been of late to some extent displaced by Birmingham work made from debased French models. Among other objects in the Exhibition important to architects were Signor Salvati's reproductions of glass for glass-painting. Referring in conclusion to the English contributions, and to the importance of the fact that much of the prosperity of the country and of its progress, in an architectural sense, depended upon the use made of the arts of antiquity, he observed that if the English collections were undervalued at home or abroad, there was this lesson to be acquired, that even if what we sent was as good as that of any other country, it was no better. This showed the necessity of study. We had great collections both at the British Museum and at South Kensington, but did they teach the public mind? It would not do for a country like England to suppose that, because she was strong, there were not other nations equally strong.

Mr. N. White called attention to some ornamental doors and door-cases from Norway exhibited at Paris, which were supposed to be of ninth or tenth century work. They were covered with Runic characters, and were probably originally used as the facing of some wooden construction. With regard to the statue of Mr. Bontell, as to the necessity of keeping pace with other nations in art-workmanship, he thought it would be vain for us to attempt improving upon the work of others until we were able to copy the best things of the past.

Mr. R. W. Ellis, although quite ready to recommend the careful study of archaeology, was not prepared to advocate architectural imitation, which he regarded as a great evil. He would give all the honour that was due to the works of the past, but he would regard them in the light of guides, and not as objects of servile imitation. He regarded it as in the last degree humiliating that we so seldom aspired to originality, and mentioned as an illustration of how not to do anything new, that when a gold box in which to place the liberty of the City of London, on its presentation to the Sultan by the Corporation had to be designed, nothing could be devised better than a monstrously covered with mosques, minarets, and crockets, with a space for the autograph of the Lord Mayor!

The Chairman, referring to the want of proper classification and arrangement in our national collections, observed that the visitor, when entering the museums of France or Germany, might go in comparatively ignorant and come out a connoisseur, while in England it would be necessary to go in as a connoisseur. The only specimens of English archaeology which he was able to discover in the Paris Exhibition were confined to Chobson China, Indian photographs, and some plate of the time of George I. He recommended the members of the Association to act upon the hint of Mr. Boutell, and during their vacation rambles endeavour to measure and sketch the most interesting historical monuments of the country.

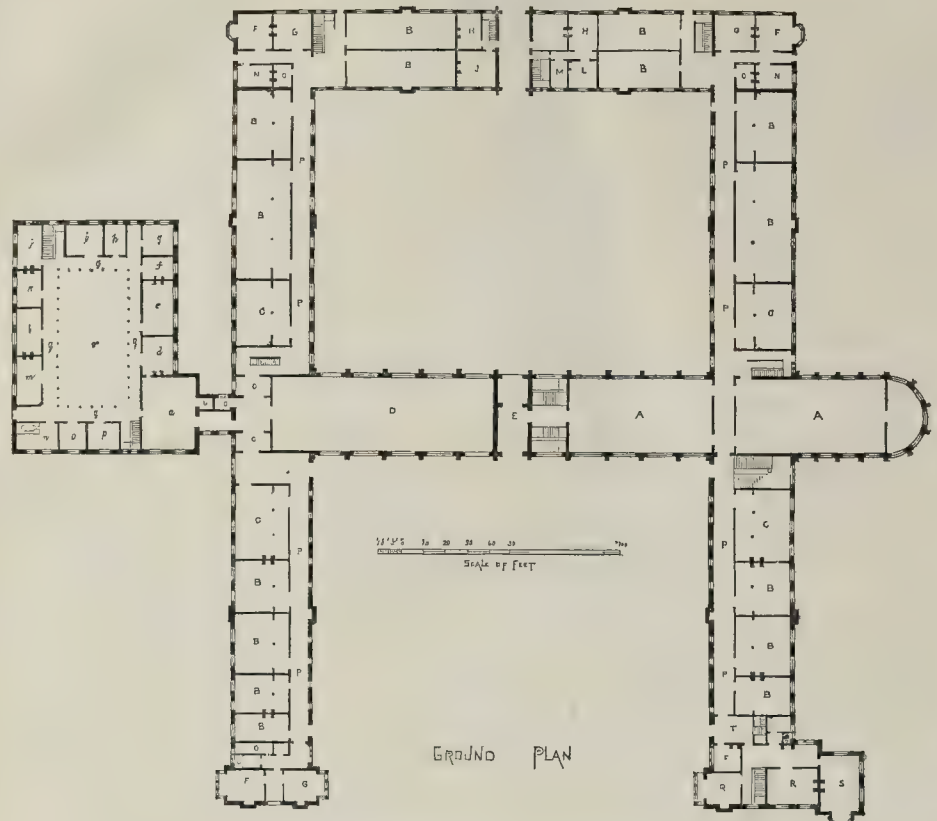
ST. SAVIOUR'S COLLEGE, ARDINGLY, SUSSEX.

ST. NICOLAS COLLEGE, LANCING, AND ITS SCHOOLS.

The third or "lower middle-class school" in connexion with the College of St. Nicolas, at Lancing, is being erected at Ardingly, in Sussex, on the slope of a hill overlooking the beautiful valley of the Ouse, and in sight from the great viaduct on the Brighton Railway between Hayward's Heath and Balcombe stations. A general view and plan of the school (or St. Saviour's College, as it is to be called) is given. It is designed to hold 1,000 boys of the superior artisan, or small tradesman class, and for the small sum of 144. per annum, to board and educate them thoroughly, the education being based on church teaching. It will be entirely self-supporting.

The first stone of the buildings was, as it may be remembered, laid by Earl Granville, on the 12th day of July, 1864, and since that time the works have been pushed steadily forward, and are now far advanced. A reference to the plan will show the general scheme. It consists of two large quadrangles, the lower one being open on the southern side. The two wings of the lower quadrangle have accommodation for 400 boys in eight dormitories of 50 boys each, the ground floors being occupied with class-rooms, with masters' rooms at the end. The head master's house joins on to the south end of the east wing. The cross buildings between the two quadrangles comprise the upper and under dining-halls, had the two great school-rooms which occupy the whole space under the chapel. A tower stands between the hall and the chapel which is reached by a staircase communicating with the ante-chapel.

* The following gentlemen were elected members of the Association:—Mr. S. E. Smith, Craven-street, Strand; Mr. J. Borer, Langdale-road, Peckham; Mr. Josiah Koss, Pittfield-street, Islington; Mr. B. W. Wang, Mr. C. Price, Argyl-street; Mr. F. W. Tucker, Argyl-street; Mr. N. K. Knapp, South-crescent, Bedford-square; Mr. J. Bull, Manor-street, Clapham; Mr. H. Negrove, Camberwell New-road; Mr. A. Smith, Cambridge-street, Finsbury; Mr. H. W. Saunders, Bill-street, Peckham; Mr. F. J. Alexander, Hornsey-road; Mr. A. Lewis, Harrington-street, Regent's Park; Mr. T. A. Adewinkle, Cleveland-road, Islington; Mr. J. T. Lacy, Guildford-street; Mr. Bernard Smith, Devonshire-terrace, Notting-hill; Mr. F. E. Thick, Camberwell; Mr. H. W. Wilson, Whitehall-place; Mr. Scores, Whitehall-place; Mr. J. O. Scott, Adelphi; Mr. O. Leonard, Wellington-square, Chelsea; Mr. F. Stalker, Finsbury-place; Mr. R. Wild, Highbury New Park; Mr. Harrison, Brighton; Mr. A. Bailey, Charing-cross; Mr. H. G. Furner, Gower-street; Mr. E. B. Burton, Craven-street; Mr. J. T. Dreyer, Waukeston; and Mr. C. F. Booth, Albany-street.



LOWER MIDDLE-CLASS SCHOOL, ARDINGLY.

The upper quadrangle has on its three sides double dormitories for 600 boys, with class and master's rooms, and separate school-rooms for the very young boys. The kitchens and offices stand westwards of the dining-hall, and form a distinct quadrangle.

The ground falls rapidly towards the south-east, a terrace will therefore be carried along the southern front and the quadrangles kept on one level; below the terrace is a steep slope with a lake at the bottom. The river Ouse forms the south-east boundary of the estate.

The style adopted is simple Early Pointed, with alternate two, three, and four-light cusped windows in the wings, and three-light traceried windows in the upper dining-hall. The material is brick, with red facing bricks from St. John's Common, Chailley, and elsewhere. The windows, arches, dormers, bands, and other architectural features are of the local sandstone of a light brown tone. The roofs are covered with brown tiles from St. John's Common. The fittings are of a very simple description, with iron frames and window casements. The estimated cost is about 40,000l.

The St. Saviour's boys are at present located in temporary buildings in the town of Shoreham, and will be removed to the Ardingly buildings as soon as they can be made ready.

Lancing.—Besides these schools the college have also during the last two years carried out very important works at the parent institution at Lancing. The great dining-hall, 100 ft. long and 38 ft. wide has been completed, and an open arched roof erected on it, surmounted by a lofty lantern of oak, with a shingle spire. A

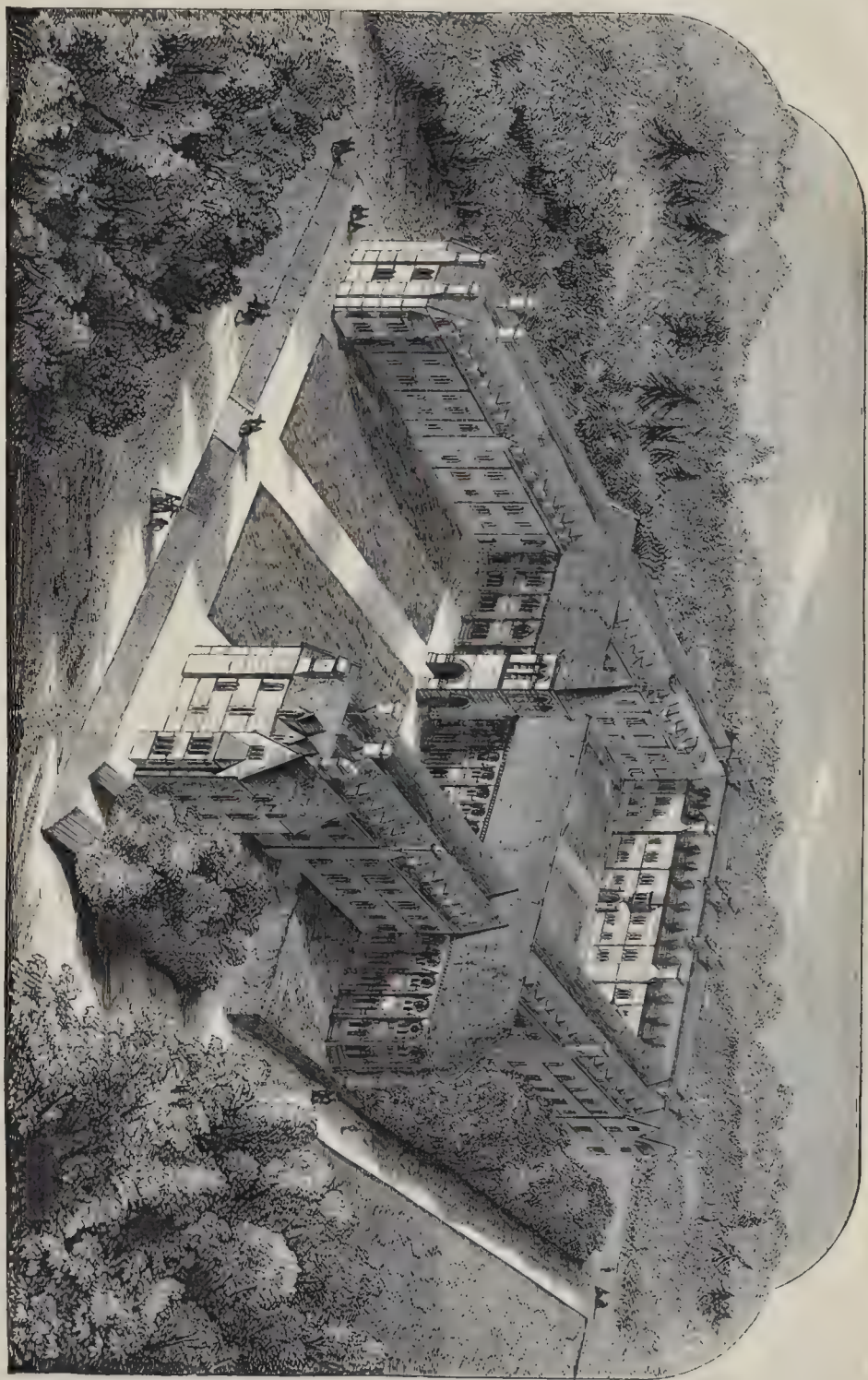
series of stone dormer windows is erected above the cornice to light the roof; they are 24 ft. high to the finial, and of two lights, with traceried heads, with richly carved pinnacles and crocketed pediments. An ante-hall of equal height and width, and 40 ft. long, is erected at the north end of the hall, and opens into its gallery by an arcade of three arches, with polished granite columns. An elaborately moulded and carved bay window of stone reaches the entire height of the ante-hall, of six lights, the angles being ornamented with canopied niches and shafts. The kitchens adjoin the ante-hall, and are now being commenced. The grand staircase is in course of erection which leads from the cloister to the ante-hall. It is groined with stone, and is of three double bays of vaulting, supported on two clustered shafts, the north end being filled with richly moulded two-light windows. Besides these important additions, a wing of the upper quadrangle has been built with four additional dormitories and master's rooms.

Denstone.—Steps are now being taken to commence at once the erection of a new school on the model of St. John's, Hurstpierpoint, at Denstone, near Ashbourne. It is for 400 boys, and will comprise chapel, hall, dormitories, master's house, &c. A site has been given by Sir J. Percival Heywood, bart., who also gives a large donation to the building fund. It is intended by the founder that this school shall be the first of a series similar to those in Sussex. The plans for this school, as well as for the other buildings at Lancing and Ardingly, are by Mr. W. Slater & Mr. R. Herbert Carpenter, architects.

It is also in contemplation to commence next year the great chapel at Lancing, which will be on a scale sufficient to serve for great gatherings of all the schools, as well as for the college itself. It will have an apsidal choir and ante-chapel, with north and south aisles, groined for its entire length; a great western tower, 220 ft. high, and a tower on each side of the apse. The whole will have a lofty vaulted crypt underneath. The dimensions of the chapel will be 200 ft. long from the west wall of the ante-chapel inside, to the inside of the east wall of the apse. The width across the choir is 32 ft., and including the aisles, 62 ft. The height from the choir floor to the crown of the vault is 80 ft.

REFERENCES.

OFFICES.	
a. Kitchen.	A A. School-rooms, with chapel over.
b. Lift.	B B B. Class-rooms.
c. c. c. Serving lobby.	C O C. Wardrobes.
d. Scullery.	D. Lower dining-hall.
e. Servants' hall.	E. Tower.
f. Pantry.	F F. Under-masters' sitting-rooms.
g. Knives.	G G G. Under-masters' bedrooms.
h. Vegetables.	H H. Kitchens.
i. Dairy.	J. Matron's room.
j. Women servants' room.	K. Porter's room.
k. Housekeeper's stores.	L. Scullery.
m. Coals and wood.	M. Store-room.
n. Bake-house.	N N. Servants' room.
o. Bread store.	O O. Pantry.
p. Store.	P P. Corridor.
q. Covered way.	Q. Head-master's study.
r. Yard.	R. Head-master's dining-room.
	S. Head-master's dressing-room.
	T. Hall.



ST. SAVIOUR'S COLLEGE, ARDINGLY, SUSSEX.—MESSRS SLATER & CARRINGTON, ARCHITECTS.

COLLIERY EXPLOSIONS.

WARNING was lately given in the *Builder* that the season was approaching when, from atmospheric causes, explosions and other accidents in collieries might be anticipated where the most care was not taken to prevent them. That season seems now to have begun, and as before with several almost simultaneous accidents. At the Ferndale Colliery, in the Rhondda valley, no less than 200 colliers (less or more), have been killed, it is believed, by an explosion. And yet this is said to be one of the best managed collieries in the district, with a good system of ventilation for such deep and fiery workings.

Twenty-one men have been seriously injured by an explosion at Homer-hill Colliery, near Courbridge, in Staffordshire. All the men were seriously injured by burns, and three of them, it is said, have since died. Explosions of fire-damp are of very rare occurrence in South Staffordshire, and at the time the explosion occurred between 2,000 and 3,000 cubic feet of air were circulating through the workings, in some places of which the draft was so strong that the candles had to be protected by a screen. It is considered that the fire-damp had been generated by a fall of material from the roof.

Three men have been killed by an explosion at Silverdale Colliery, also in Staffordshire. Mr. Wynne, Government Inspector, said at the inquest that he considered the mine was in an unsafe state, but the accident might not have happened if two of the deceased had not taken the caps of their lamps. The jury found that the deceased met their deaths by accident, which resulted from their own imprudence. They considered the workmen ought to be visited frequently by overlookers, and that the proprietors of the pit should as soon as possible effect a better state of ventilation in the mine.

At the Appleton pits of the Hetton Coal Company, near Durham, a serious conflagration has taken place, by which all the woodwork of the Jane pit has been destroyed, and the lives of about 200 men and boys jeopardized. No good fortune there was a way out through another pit. One man has died.

(The Shankhouse pit, at Cramlington, Northumberland, has been deluged with water, by a break from an old pit adjoining, and 150 pitmen have made a narrow escape with their lives, but a good many ponies have been drowned, and the pit property is much damaged.

ST. PAUL'S AND THE MAIN CAUSEWAY OF LONDON.

A PLAN, recently given in the *Builder*, for the widening out of the wide space surrounding the Cathedral, and the removal of the massive ironing, with its heavy and decaying stone base, having met general approval, an allusion to a few details may not be amiss.

Separation of the great torrent of traffic into two courses, by the north and south sides, would be a great public advantage, whilst it would benefit the side of Doctors' Commons, and restore St. Paul's Schools and the east end, which, from its stunted width, is wholly inadequate as a driveway; and the diversion of the spring tide of traffic to the north side, could in no wise diminish the great retail houses in St. Paul's Church-yard, whilst it must confer an inestimable easement upon the important wholesale houses on the south.

The great width which might be thrown in on the north, would allow at the narrowest part (only 6 ft.), a driveway of 40 ft., and a footway of 12 ft. here by an alteration of the circular base; and the opening out of the large space of Churchyard now blinded off, would give ample room for cab-stands at either end of the cathedral, leaving room for resting-places, to harbour the carriages of purchasers, and a footway for pedestrians at either side of the driveway.

As to ulterior improvement in surrounding spaces, that would necessarily follow, as in all other quarters when opened out. The widening of Newgate-street, now nearly complete, will give that line to Chesham; and then it will prove to any observer from St. Martin's-le-grand that there is one house, at the corner of Barnstaple-row and the Churchyard, which projects just 10 ft. beyond the street frontage, and blocks off the east end of the cathedral, whilst it holds to some extent obstruct the proposed new base. Remove this house, and the new line of

street would be in direct allineation, and would offer a noble canopy to the Bank well befitting this important position in the City's core.

The effect of wide open spaces round majestic buildings is evidenced by the Duomo at Milan, the Madeleine at Paris, and by the one-sided view of our own Abbey of Westminster. In the Strand, upon the same line, the church of St. Clement's Danes stands isolated in a very large space, with a wide street encircling an oval enclosure; the small church of St. Mary-le-Strand being similarly surrounded by driftways. In these localities great improvements will, doubtless, follow the completion of the New Law Courts; such as the clearance of Holywell-street and Temple Bar, and the withdrawing of ten houses between the Bar and Chancery-lane, at least 6 ft. backward. The traffic of the line will increase in a corresponding ratio, and, therefore, direct and commodious thoroughfares to the Bank and to London Bridge will become an inevitable necessity.

Such a route will give a better access to St. Paul's, which, although it has two portals, is entered only by that on the north side; if there be noise of rollage, the division of traffic, or diversion of a portion to either side, would rather diminish than increase it; and the removal of the heavy and invidious encumbrance of iron, whilst it gave freedom of circulation to the public, might make way for a ground or basement line more consistent with the dignity and freedom of the stupendous design.

THE YORK SCHOOL OF ART.

The annual meeting of the subscribers to this school has been held, in the large room of the institution, Minster-yard. The Rev. Canon Hay occupied the chair.

Dr. Procter read the report, of which the following is an abstract:—

During the past year there has not been much to distinguish the working of the school from that of former years. It has been with pleasure that the committee have had to refer to the steady advancement of the pupils, and the superior excellence of the works produced by them in each succeeding year. The number of pupils in attendance on the various classes during the year has been fifty-one. The committee have to acknowledge with thanks the gift of a carved Ionic capital from Mr. Wolstenholme, of this city. Mr. J. P. Pritchett also has given to the school a valuable collection of casts of modern ornamental and architectural details. The treasurer's account for the past year is not so satisfactory as the committee desire, showing as it does a balance due to him of 43l. 1s. 2d. Owing to the reduction in the Government grants, the income of the school is barely equal to the ordinary expenditure, so that any special expenditure has to be met by donations or special effort. No donations have been received during the year. A prize fund has been subscribed for by several gentlemen of the committee.

Mr. J. G. Fitch (Government Inspector of Schools) said he thought that the report, though it did not declare brilliant success, with regard to real and valuable progress, told a story modestly, and worthy of the recognition of the meeting. The report and the observations of Mr. Swallow, the head-master of the school, had called attention to a subject of considerable importance—the meant in reference to a deficiency in the matter of technical education. This had been a subject of many specific addresses which had been lately made to the Crown in connexion with the Paris Exhibition.

THE ARCHITECTURAL MUSEUM.

In consequence of the unexpectedly high amount of the lowest tender for the erection of the proposed new building in Bowling-street, Westminster, further efforts are needed to raise the required sum. The Council have received nearly the 2,000l. calculated on as necessary to cover the ground and to carry out the stipulations of the lease, which provides for that sum being laid out. 3,000l. were at first demanded, but through friendly intervention that sum was reduced to 2,000l., and the rent diminished to 80l.

The lowest tender, by Mr. Roberts, of Islington, is 2,970l., and to bring it to this sum he took 10 per cent. off the total. It is of the utmost importance that the Council should start free of any debt. Most of the members of this body have voluntarily promised 10l. each. At the same time, however, the Council of the Museum feels that for an object of such general interest it has a right to appeal to the public at large. The subscribers to the Architectural Museum have done well, but funds are still wanting for the completion of the work, and the Council has

no scruple in inviting them from all friends of architectural progress, without affixing any amount.

The profession have scarcely come forward as they might have done, though they have had more than one opportunity; but, judging from the inquiries that have been made about space to let in the new home, both Architectural Societies, and art-workmen, too, are alive to the privileges of being near such a collection as this well housed. Seeing how much the friends of the art have done, the Council may surely look to those for whose advantage the museum is intended for the further sum required.

THE WROXETER EXCAVATIONS.

The money subscribed being again nearly expended, the work has been brought to a close. Some of the walls lie so deep under a mass of earth, that, to uncover one square foot, it became necessary to dig out and convey away several square yards; the labour and cost were therefore very considerable. But they have succeeded to a great extent in laying open the arrangement of walls between the basilica and the adjoining buildings. A doorway has been discovered leading into the lairina, and the step, which is very well formed, is distinctly worn by feet. No exit has been traced from the drain; but a singular conformation exists underneath the outer wall of the basilica. This wall is the subterranean continuation of the great wall which has for ages marked the site of Wroxeter above ground. Under this wall, where the excavations have been going on, they have discovered a wide open space, or large drain, which is to the rabbits an underground means of communication between one part of their dwellings and another. It is considered likely that this was a cloaca maxima, into which the drain already mentioned, and that long since discovered in the hypocaust near the great wall, emptied themselves. The enameller's shop, or forge, or smelting house, and that adjoining, opened upon the great street (Watling-street), where we know there were handsome public buildings on both sides, and a considerable space of ground (perhaps the Forum) between them.

SITE FOR MANCHESTER NEW TOWN HALL.

A MEMORIAL on this question was presented at the meeting of the City Council on the 9th inst. from the Manchester Architectural Association. The memorialists say:—

"We, as architects, have never entertained a favourable opinion of the shape of the site as decided upon; but, after a careful examination of the competition plans, we are more than ever convinced of the unsuitableness of the site for the purpose of a Town Hall for this city; and our object in addressing you is to entreat you to reconsider your decision while it is yet time; in doing which we feel that we are only echoing the opinion of the majority of our professional brethren who supplied sketches in the recent competition; and we know of instances where men of talent and high reputation in the profession have thrown up the competition on account of the inappropriate nature of the site as regards its form. With its position no fault can be found, and in many respects it is admirably adapted for a fine architectural display. But we respectfully ask that the boundary line of the plot may be altered so as to form right angles, and thereby render the site more available for the production of a good and convenient plan."

From the general feeling which seems to prevail amongst the well-informed portion of the Manchester community, we may suppose it likely that the Council will reconsider their determination as to the shape of the site for the new structure, which a glance at the plan shows to be inconvenient and undesirable. The Corporation should use this opportunity of improving the street communication of the neighbourhood, and it would be well to adopt plans which would meet the probable requirements of the city for many years to come.

A correspondent writes, and with some force, matters having now so far progressed,— "Attempts are being made to induce the Corporation to alter the shape of the site, so as to make it rectangular; and the Architectural Association here has, *inter alia*, memorialised the Corporation on the subject. The Manchester Society of Architects has not yet moved in the matter, because, although I think they are pretty unanimous as to a rectangular shape being preferable to the triangular, yet they think it would be excessively unfair to the architects

now engaged in the second competition if their labour and the expense they have already incurred were thrown away. The mere 300l. each would by no means compensate for their loss and the loss of employment of their respective office staff. No; let this competition be decided on its present basis, the architect chosen, and then let the Council improve the site if they can. The architect who can design the best arrangement on the triangular site can surely do equally well on a rectangular one."

CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

The annual convention of the American Institute of Architects was held on the 22nd ult. Mr. Richard Upjohn, the president, made an address, in which he spoke of the interchange of courtesies which had recently taken place between the Institute and the Royal Institute of British Architects. Mr. Upjohn, as president of the American society, has been elected an honorary member of the Institute. The speaker referred to the evils of competition among architects, under the present system of proposals for plans. It was wrong, he said, for architects to submit their work without compensation, for the examination and rejection of a committee of business men, not one of whom probably knew as much of the subject on which he was to decide as any of the competitors. The proper way would be to appoint five commissioners of good repute, and three non-competing architects. The competitors should not exceed ten, nor be less than five, and should be properly remunerated. The plans submitted should be examined by the architects, and the best reported to the commissioners. The reports of several committees were read. The Committee on Education recommended the formation of a Polytechnic School by the Institute, under the management of a Board of Control. The following officers were elected for the year 1868:—President, Mr. Richard Upjohn; Treasurer, Mr. R. G. Hatfield; Secretary, Mr. Fred. C. Withers; Corresponding Secretary, Mr. W. E. Ware; Librarian, Mr. A. J. Bloor.

BRISTOL.

The Royal Infirmary.—This edifice has for some time been in the hands of the builders. The roof has been raised, and the height of the upper story rooms will now be 12 ft. There will be large dormitories for the use of the regular nurses, about forty in number, each of whom will have a separate sleeping-room. Large windows in the front, and a corridor between the dormitories and windows, secure ventilation. There are other improvements and conveniences. The cost of this portion of the work is 3,200l. The contractor is Mr. W. Baker; and the architects are Messrs. Popes & Bindon. In the rear of the building are being erected, on the pavilion plan, two new wards; the cost of which has been defrayed by Mr. T. W. Hill, of Clifton, who has given a donation of 3,000l. The new infirmary wards are now nearly ready for the roof. Each ward is 50 ft. by 25 ft., and 15 ft. high, and is designed to take twelve beds. The wards are cheerful and well ventilated, their floors will be of polished oak; the windows will be glazed with British plate-glass, and the walls and ceilings cemented. The two wards are built one above the other. The extra cost of other improvements, will be borne by the Infirmary Committee. There has been no attempt on the part of the architects to make an ornamental building, but rather to make it look like a portion of the old building. The firm by which the Hill wards were designed, is that of Messrs. E. Godwin & Crisp. The general contractor was Mr. E. J. Hatherly, the masons' work being done by Mr. J. P. Stephens. Mr. Tuckey did the plumbers' work, and Mr. Cowlin the plastering and glazing.

The New Lunatic Wards at Clifton Union.—These wards have just been completed by the addition of two wings, one for male and the other for female patients. They are built in keeping with the general plan of the workhouse. On the ground floor of each is a day-room, 70 ft. by 20 ft., and a spare room, 21½ ft. by 20 ft. Adjoining are a lavatory and water-closets. The first floor is approached by a stone staircase.

On this floor is a dormitory, 100 ft. by 21 ft., water-closets, and bath-room. The building has cost about 1,800l.

The New St. Philip's Police Station.—This building, which adjoins the Hannah More Schools, is a plainly-designed structure, 94 ft. in length. On the ground-floor are a charge-room, an inspector's-room, an inspector's retiring-room, a sergeants'-room, and a large mess-room, 24 ft. long by 17 ft. wide, with a room adjoining, and a kitchen, 20 ft. by 15 ft., and a scullery, 16 ft. by 10 ft. A corridor affords communication between the charge-room and the cells, which are eight in number. The place is warmed by Hayden's heating apparatus. Adjoining the station-house proper is a building in which the fire-escape is to be kept. On the first floor are four large dormitories for the men, calculated to contain eighteen beds. A lavatory and bath-room are attached. The premises have been built, at a cost of 2,700l., by Mr. J. Webber, from designs prepared by Messrs. Popes & Bindon, architects.

St. Augustine's Church, Montpelier.—A place of worship which is to bear this name, says our authority for these details, the local *Times*, has been erected by Brother Cyprian, on land adjoining the Home at Montpelier. The edifice, which consists of nave, chancel, and aisles, is designed to seat 500 persons. The exterior is of galvanized iron, and the inner walls and roof are of stained deal. Fifteen two-light Gothic windows in the front and sides furnish light. The nave and chancel are divided by a rood-screen. An organ of the value of 800l. will be placed in a chamber behind the communion. The main entrance in Richmond-road is surmounted by a bell-turret, with cross over. Below the chapel is a school-room for 300 children. The interior arrangements have been designed by Mr. Dundas, assisted by Mr. E. Grigg. The builders were Messrs. Tupper & Co., of London. The masons' work has been done by Mr. M. Kingstone, and the carpenters' work by Mr. Grigg. The gas-fittings have been supplied by Mr. Foley, and the paintings and decorations generally are by Mr. Ridley. The edifice will be heated by steam. The church is to be opened on the 6th instant.

New Chapel for the Penitentiary.—A new chapel has been erected on the premises of the Bristol Female Penitentiary, Mandin-street. The cost, about 2,200l., has been defrayed by subscriptions. The gallery has been entirely reserved for the inmates of the Penitentiary, who will be enabled to enter the chapel and take their seats unobserved. The public will be admitted downstairs. The edifice is intended as a mission chapel. The chapel and building have been set back, and give a clear space in front of 50 ft. The style of the chapel is Gothic of the early part of the fourteenth century. The architects are Messrs. Popes & Bindon. The chapel will be opened in the course of a week or two.

The new Ritualistic Chapel erected by Mr. C. A. W. Dundas, better known as Brother Cyprian, has been opened. The building is situated in Richmond-road, Montpelier, and has cost about 2,000l., the whole of which has been defrayed by Mr. Dundas. It is called a collegiate chapel, from its connexion with St. Augustine's College, an institution which also owes its existence solely to Brother Cyprian, and which was established by him in July, 1861, for orphan and other poor boys, whom he feeds, clothes, and educates. In addition to this he gives them a trade, that of printing. The chapel will accommodate about 500 persons, and connected with it are schools intended entirely for the secular education of the poor children of the district.

PROVINCIAL NEWS.

Smethwick.—The new Public Hall, at Smethwick, is at length completed, and inaugurated by a grand concert, for the benefit of the Smethwick Library and Reading-room. The new building comprises the hall, a large room, with seats for 1,000 persons, and the rooms for the local board of health; the whole being, in fact, a town-hall, with its attendant offices. The hall is about 75 ft. long by 50 ft. broad, and is approached by an entrance in the central block of buildings, and two side entrances. It has galleries on three sides, the fourth being occupied by the orchestra. The style of the interior may be considered as a free rendering of the Venetian-Italian, adapted to modern requirements. The ceiling is elliptical, and is enriched

with moulded ribs and ornamental intersections; the window architraves are groined into the ceiling. The galleries have pained floors supported by cast-iron columns, painted in wood colours, and the capitals gilt. The orchestra is similar in character, but the front portion is brought forward upon carved brackets, that heighten the effect. The whole of the woodwork is stained and varnished. The hall is lighted by star pendants from the ceiling, and warmed by Melling's apparatus. The remaining buildings consist of the Board-room, and rooms for the clerks, surveyors, and others connected with the local Board of Health. Externally the elevation to the road is a combination of brick and stone, of two stories. The principal entrance in the centre consists of an arched portico of four columns, with enriched capitals. On either side are two windows, with pilasters, with carved capitals supporting moulded arches worked with a combination of moulded brick and stone. The upper story and return side has corresponding windows, and the whole is surmounted by a millioned cornice, with pediment in the centre. Arrangements have been made for the erection of a clock-tower above the north entrance, but this has been deferred for the present. The cost of the whole will be nearly 4,000l.

Grantham.—The foundation-stone of the new Town-hall has been laid by the mayor. The site for the new edifice is "The Firs," on St. Peter's-hill. The design was by Mr. Watkins, of Lincoln.

FROM SCOTLAND.

Edinburgh.—A preliminary meeting for the consideration of resolutions to be moved at a public meeting on the 19th current, on the subject of the establishment of a Free Public Library for Edinburgh, has been held, and appropriate resolutions agreed upon in favour of the object in view. The united council of trades delegates of Edinburgh and Leith have also had a meeting promotive of the same purpose, and a committee's report on the subject was read and approved.

Glasgow.—A new dock, which has taken three years in its construction, has been opened at Glasgow. Its cost will be about 115,000l.

THE VENTILATION OF SEWERS.

HAVING for many years devoted much time to investigations respecting the cause and distribution of disease, I have long since come to the conclusion that, with the exception of bad water, more disease is engendered by sewer-gases from indoor water-closets and waste water drains (where such are in use), than from all other preventable causes together.

In reference to sewer-gases and the ventilation of sewers, the Registrar-general states, that "this is one of the serious complications of water-closet drains, as under that system every house is put into communication with every other house, so that the symmetrical stuff of disease has a chance to find its way from house to house through this artificial channel." Yet, great as the evils of that system are, as remarked in the *Lancet*, "where there are already expensively-constructed systems of sewerage, there is little probability of their being superseded, at least in our day." These quotations show the urgent necessity for some improvement in the ventilation of sewers, and any proposition for that purpose must be worthy of consideration; I therefore submit the following, hoping that its adoption might be found beneficial although I believe that no means for ventilation will ever render the water-closet system free from risk to health. The plan I propose has been submitted to the consideration of some who are well qualified to judge on such subjects, and they recommended a trial of it; but, as I am no engineer, I leave the decision as to the utility of the plan to those whom it may most concern.

The above quotation from the Registrar-general's report seems sufficient to prove that all means now in use are inadequate for the ventilation of sewers; still I know that many hold the opinion that open shafts, of the height of or higher than the neighbouring houses, would be sufficient for the purpose. In a pamphlet "On the Ventilation of Public Sewers," 1864 (now out of print), I suggested that a ventilating pipe should be inserted into all water-closet pipes, &c., below the trap, so as to allow the gas to escape into the open air above the bun-top, or where convenient; but I contended, and still hold, that no system of ventilation, merely by high shafts or pipes, can render houses connected with the sewers free from contamination connected with the sewer-gases. Gas can only escape from the sewers by the expansive force of the gas generated within them, and to do so in volume the expansive force must overcome the pressure of the atmosphere; I therefore hold that a gas pressure sufficient to force an escape at the height of 30 ft. or 40 ft., or higher, as the case might be, would be sufficient to force an entry into any house with defective water-closets, pipes, or waste-water drains connected with the sewers; and to such defects, from bad materials, failure of workmanship, or the effects of frost, every house connected with the sewers is liable. Even without such defects there would still be risk of contamination, as during severe frosts, when, from the exclusion of external air, and from respiration and combustion, the air within doors is more than usually vitiated—every house, from its greater heat, would act as an air-pump to suck in gas from the sewer.

The great point to be gained in the ventilation of sewers is to withdraw the gas directly from them, and thus keep the expansive force of the gases in the sewers less than that of the atmospheric pressure without; so that there shall be a constant pressure into the sewers in case of such defects as have been pointed out, rather than an expansive force of gas from the sewer wherever possible. This is proposed to do by air-pumps connected with the sewers, and driven by steam-power, so that the gases thus withdrawn from the sewer might be forced into a discharging pipe carried to any necessary height or distance, so as not to be a nuisance to the neighbourhood.

That pumping is more difficult to produce such effects could be applied cannot be doubted; the chief question therefore is, as to the expense of working such a plan. On this head I am informed that, in many of the condensed-air blast-furnaces in Staffordshire, upwards of 90 cubic feet of air, at atmospheric pressure, are discharged from a single cylinder at every stroke, and these at upwards of thirty per minute. On this calculation we have a discharge of gas from the sewers of 144,000 cubic feet per hour, or 3,456,000 per day; a quantity equal to the contents of a cylinder of one yard in diameter and more than thirty miles in length. What the working cost to produce similar effects on the plan I propose might be I cannot guess; but, as the gases to be pumped out would already give any resistance, it may be calculated that the force would be expended in merely working the engine itself, and therefore no very great steam-power could be required.

For ventilating purposes the pumping apparatus need not be placed at a great distance from the sewer, but at a convenient distance if connected with it by an air-tight pipe; or the pumping-chamber might be in such connexion with the sewers at various parts, so that the gases could be pumped at the same time from the sewers over a large area, or from either or any of the connecting pipes as required.

It has much been said of a risk from choke-damp in the underground railways of the metropolis, and from the expiration by so many persons, together with the constant combustion of so much gas and coke, carbonic acid gas is generated there in large quantities, and may become injurious; but I believe that ventilation in this case could be effected by the plan I propose; as separate pipes from a pumping-station could communicate with the underground tunnels, and lead to a very considerable distance; and by their being laid along the bottom, the heavy gas (carbonic acid) could be withdrawn, while the gases of lighter character could be drawn off by similar pipes along the top. Although on the proposed plan steam power would be necessary for ventilating extensive systems of sewers, or of like, other mechanical means, or horse or manual labour, could be applied as the motive power in carrying out the principle on a smaller scale, or where only occasionally required. By pipes, of the necessary size, distributed in a building on a plan similar to those for gas, every part, where brought into connexion with the pumping chamber, and the appliances for ventilation could thus be as ready at hand as gas for lighting purposes, and under similar control, as the communication or communication with each room could be more or less closed at will, and whenever the whole pumping power could be made to act entirely on any department, and could be applied to any other part, as required.

For the ventilation of crowded or over-heated mansions, or workshops, or other buildings, and, where the steam power is in use, the additional working cost for trying on the ventilation would be very little. The principle could also be applied in chemical and other manufactories for drawing off deleterious fumes or gases, and for the ventilation of vaults or stores where it might be difficult or dangerous to use fire for such purposes, and might be usefully applied for cooling or drying purposes in many trades and manufactories. An important advantage under the proposed system is, that the gases or whatever might be withdrawn in the case of ventilation, could be directed to the street, or into ordinary ventilation the discharge might be once into the air, but in the ventilation of hospitals the exhalations withdrawn from wards, for fever or other contagious diseases, could be directed to the heated pipes, or some distance, which would render them innocuous. In like manner noxious fumes, from chemical and other manufactories, might be brought into contact with absorbing or decomposing matter, so as to prevent injurious effects on them, or, at least, some mitigation of such evils. With respect to sewage gases, the most ready way to deal with them would be to pass them through fire; but, as a more than ordinary formation of hydrogenous gases, or an escape of carburetted hydrogen from the gas pipes, there would be risk of explosion, and, as already stated, sewage gases could be driven off to the least objectionable spot, even if at a considerable distance. However, the experiment might be tried as to how far sewage gases might be disposed of by underground discharging pipes, for, as vegetable odoriferous sewage matter, and has its growth promoted by it, it is possible that even sewage gases might be turned to economical purposes.

G. A. BOWELL.

THE STRENGTH OF CONCRETE WALLS.

DETERMINED to see for myself what had been accomplished with concrete, I visited the concrete houses at Gravesend; and, fortunately for the conviction, I arrived at the time of the examination by the committee of the Metropolitan Board. I saw a 9-in. concrete wall battered by a 14 lb. sledge hammer. Mr. Vallumy, a architect of the Board, said that with about the same blow a hole would have been made through a 14-in. brick wall. I cannot say what number of blows were inflicted, but certainly the wall was struck vigorously, the only perceptible effect being a slight crushing of the concrete on the surface of the concrete on the side of the blow. Mr. Vallumy tested the wall on the other side with a straight edge, and showed that not the slightest effect was produced.

ROBERT WHITELEY, Builder.

RYDE CHURCH COMPETITION.

SIR.—I enclose an extract from the *Isle of Wight Times*, regarding the competition for the proposed parish church at Ryde, and urging the desirability of selecting a local man's design. Upwards of sixty designs have been sent in, in accordance with the advertisement published in your journal, on the faith of the competition being a *bona fide* one. Comment would be superfluous.

ONE OF THE LONDON COMPETITORS. P.S.—After the appearance of such an article in a local paper, the only way to satisfy the public of the good faith of the advertisers, is for the committee to appoint some architect of eminence, unconnected with the competition or with the locality, to make the selection.

CONSPIRACY TO DEFRAUD ARCHITECTS.

At the Manchester city police-court, James Macmaster, master builder, and Adam Denning and James Slater, foremen in his employ, were recently charged with conspiring together to defraud Messrs. Pennington & Bridgen, architects, Manchester.

The evidence given for the prosecution was in substance as follows:—The prosecutors had been largely employed in the erection of villa residences in and around Manchester, and they had contracted with Mr. Macmaster to build them eight houses in Clifton-avenue, Fallowfield. A dispute arose between them as to the amount they were to pay Macmaster, and on Saturday, the 8th of February last, he came to their office about this dispute. When Macmaster left their office, he said he would find some way to make them pay the account without going to law. On the Tuesday, the 12th of the same month, the two defendants came to their office, and represented themselves to be a deputation from the Operative Joiners' Association, and that they had been sent to wait upon their firm in consequence of a complaint which Macmaster had made at a meeting of the society on the Friday previous. They had got two surveyors to measure the work for which they had contracted with Mr. Macmaster to build, and on the two defendants coming to them they showed them their own and Macmaster's account, which did not agree together. The cheque was given on the understanding that, although it was written for Clifton-avenue, it was in payment of all Mr. Macmaster's demands. The defendants stated that Macmaster was bound to agree to the settlement, as "He dared not make fools of them, because if he did all his men would be drawn out of their jobs."

The same account, and obtained if, for their expenses. David Foulkes, a joiner, and treasurer of the Manchester Lodge of the Operative Carpenters and Joiners' Society, held at the Cheshire Cheese, in Bridge-street, Manchester, stated that on 14th of February last, he had been secretary of the Lodge. Mr. Macmaster never brought the matter of his dispute with Messrs. Pennington & Bridgen before the lodge, and no deputation was ever appointed to wait upon them.

Sergeant Spibey, of the city police force, deposed that on Saturday, the 18th of October, he went to Macmaster's house in Mercer-street, Hulme, and there saw Macmaster. He told Macmaster that he had come to make inquiries respecting two men who had been to Messrs. Pennington & Bridgen, and had received on his behalf a cheque for 100l., stating that they were a deputation from the Joiners' Association. Macmaster replied, "No; it is not so. They were no deputation from the Joiners' Society; they were two men of mine. Pennington & Bridgen owed me 160l. and odd; I owed my men's wages, and I told them they might go and settle the matter for 100l., and I would pay them if they got the money."

Mr. Addison, on behalf of the prisoners, said he believed there was a good defence to the charge. He submitted that with regard to Macmaster, even assuming that the other prisoners did falsely represent themselves as a deputation from the Joiners' Association, there was nothing to show that he was any party to the conspiracy; or that his statement to the police officer was not strictly correct.

The prisoners were committed for trial at the Assizes, but were admitted to bail.

THE TRADES MOVEMENT.

General Builders' Association.—The annual meeting of the Birmingham branch of the General Builders' Association has been held. Mr. William Webb, the president of the branch, occupied the chair. The committee reported that the progress of the Association had been eminently satisfactory. This was mainly due to the accession of members consequent upon the amalgamation, in the spring of the year, of the late Master Painters' Association with themselves. They had now 112 members, as compared with sixty-three at the time of the presentation of the last report. For some time past the committee had been impressed with the necessity for some amelioration of the present system of contracts, agreements, and bills of quantities, and an effort had been directed towards the attainment of that object. At the end of last year a letter on the subject of the appointment of quantity surveyors and forms of contract, and bearing the signatures of sixty-one of the principal employers of labour, was sent to the honorary secretary of the Birmingham Architectural Association. A promise was given that the matter should be considered at the adjourned annual meeting of the Association to be held on the 21st of the present month. Until a settlement should be obtained, the committee recommended that a strike clause and provisions for arbitration in cases of dispute during the execution of a contract should be insisted upon. They would also advocate the incorporation of bills of quantities in the agree-

ment, and the adoption of a system of monthly payments on account. A scheme for the registration of non-union workmen had been originated. The committee regarded the proposed scheme as one of the utmost importance to the trade. The report was unanimously adopted. Mr. W. Briggs, jun., was elected president, and Mr. Cresswell vice-president of the branch for the ensuing year. Mr. Hardwick was re-appointed treasurer. A committee of twenty was elected.—The annual dinner of the Association took place on the day of meeting. Mr. George Dixon, M.P., presided, and there were about 170 gentlemen present, including the principal employers in the building trade of Birmingham and the neighbourhood.

Arbitration in the File Trade.—A monthly delegate meeting of file-smiths held at Sheffield has been considering the advisability of establishing a board of arbitration and conciliation in connexion with the file trade. The meeting adopted the following resolution:—

"That this meeting recommend the delegates present to consult with their several employers, and ascertain whether they are willing to co-operate in the formation of a board of arbitration and conciliation to settle any disputes that may from time to time arise in the trade respecting prices or other matters as between employers and employed, and to report the result of their interviews at the next delegate meeting."

Progressive Society of Carpenters and Joiners.—The annual dinner and entertainment of this society took place at Charlotte-street, Bedford-row. About fifty of the members of the society were present. Mr. George Potter presided. After dinner, Mr. Potter gave, among other toasts, "Success to the Progressive Society of Carpenters and Joiners," and took advantage of the opportunity to refer to the trades' union questions which have of late become a topic of much discussion throughout the country. He remembered, he said, that when he first came to London the joiners worked for 6s. a day, and had to work on the Saturday till half-past five o'clock in the evening. If he did not mistake, they now received 38s. a week, and left off work on Saturday at one o'clock. In addition to that they now possessed the great privilege of having their affairs published, so that the public might be able to judge as to whether what they asked was reasonable or not. The trades' unions were no doubt established in the interest of the working people, but they were perfectly legal, and had been, in his opinion, mainly instrumental in imparting to the working man that education which Government had up to the present failed to afford, and which had been the means of sustaining the character of England as a manufacturing country.

CHURCH-BUILDING NEWS.

Kennington.—The foundation-stone has been laid of a new school-church, which is to be erected in the Foxley-road, and which is designed to afford accommodation for some of the inhabitants of the thickly-populated district of St. Mark's. The design embraces a church and a superior middle-class school, which, for the present, are to be worked together.

Puckering.—Rillington Church spire has had a considerable portion of its top displaced twice during the last thirty years, on the former occasion by the great January gale, and on the latter by being struck by lightning during the present summer. The restorations on both occasions have been effected by contributions of the landed proprietors and others. Mr. John Bisby, of Leeds, has executed the work; and it is hoped that the application of a new lightning conductor will prevent the recurrence of a similar accident.

Amshy.—The old church at this village has been restored and re-opened for public worship. The Norman arches were covered over and whitewashed, but now they have been cleared of that and restored. A gallery has been removed from the west end, and the tower arch, which was blocked up, has thereby been re-opened. The south aisle has been rebuilt, and a new roof put on it. The walls have all been replastered. The chancel had a flat roof on very high walls; these walls have been lowered, and a high-pitched roof put up instead, with open timber. The seats in the church are of deal, and varnished; the floor of small red quarries with coloured bands. There are three memorial windows of stained glass—one at the east or tower end, given by Mr. Perkins; a small one on the south side, given by the architect; the third window given by the vicar, and is placed in the south side of the chancel. There is a new high-pitched roof put on the nave and aisles. Mr. John Loveday,

of Kibworth, was the contractor; and Mr. Millican, of Leicester, the architect employed.

Manchester.—The foundation-stone of the Stowell Memorial Church, situated at the junction of Cross-lane and Regent-road, Salford, has been laid by the Bishop of Manchester. It is estimated to cost about 7,000l. Mr. Mark Foggett is the builder; and Mr. J. Medland Taylor, Manchester, is the architect. The eastern end of the church is towards Cross-lane; and the tower and spire are at the east end of the north aisle, so as to show to advantage from every approach. The arrangement of the church on the ground plan comprises a spacious nave, with five arches on either side, marking it off from its north and south aisles. The chancel fittings will be of oak. The roofs will be covered with purple slates.

Salford (Bedfordshire).—The church of this rural parish having become dilapidated, as well as disfigured, has been under restoration in the hands of Mr. W. White. The tower has been removed and replaced by an open bell-cote, surmounting the western gable, and capped with a short spire, covered with oak shingles. The east wall of the chancel has been rebuilt, and also the arch opening from the nave. The roof has been reconstructed and covered with old tiles, relieved by bands of new. The chancel fittings are new. The nave roof has been reconstructed, and the western gallery removed. Whitewash has been cleaned off, and stonework renewed. Mr. A. Kimberley, of Banbury, executed the work done.

Hardwycke.—The parish church of Hardwycke, a secluded village, about four miles west of Wellingborough, has been re-opened for divine service after having been restored. The church was in such a dilapidated condition that it was almost ruinous. It was placed in the hands of Mr. W. Slater and Mr. R. H. Carpenter, of London, architects, and the work of restoration was at once proceeded with. The arches separating the south aisle from the nave were blocked up, and the aisle itself was in a ruinous state. The arches were thrown open, and the aisle was rebuilt on the old foundations. The porch on the north side is new, and the whole church, including the chancel, has been new-roofed. Originally the chancel was larger than it is now, but in the recent restoration it has been thought desirable to extend it. The old mouldings have been followed, and an old beam has been left at the west end of the nave. The windows are new, the east window being of the Early Decorated style, to which the original church belonged. The chancel is laid with Minton's encaustic tiles, the gift of Mr. Minton. There is a lantern-window at the west end, which now contains a picture of St. Leonard, to whose memory the church is dedicated. That was put in by Mr. Hall, of Northampton, by whom all the plumber's and glazier's work has been done. The contractors were Messrs. Clark & Heap, of Northampton, builders.

Nottingham.—St. Mary's Church, which has been restored at the cost of many thousand pounds, by Mr. Gilbert Scott, has been reopened for divine service. The following statement has been published by the committee. General works done:—Roofs, restored, 2,439l.; internal walls, recased, 1,010l.; floors, new, 790l.; gas-fittings, new, 475l.; windows, reglazed, 250l.; window-tracery in transepts, restored, 150l.; warming apparatus, new, 200l.; chairs, 150l.; organ, removed and repaired, 120l. Subscriptions to meet these items, 5,000l. General works to be done:—Oak seats, vestry roof and walls, buttresses, parapets, and the whole of north exterior, organ-chamber and organ, wall and fence of churchyard, porch. Special gifts suggested:—Pulpit, reading-desk, chancel-stalls at 40l. each, stained windows. The gasfittings generally are supplied by Skidmore, of Coventry, and the heating is accomplished by four of Garney's stoves, supplied by the London Heating and Ventilating Company, the old arrangement for hot air having become useless. The whole of the works have been carried on under the direction of Mr. Scott and the immediate superintendence of Mr. W. Cook. The contractor for the whole of the works is Mr. J. E. Hall, of this town.

Lee (Bucks).—The chief stone of a new church has been laid in this village. The plan consists of a nave 46 ft. long by 21½ ft. wide, and a chancel 21 ft. long by 16 ft. wide, an ample vestry, and south porch. The roof of the nave will be open timbered; that of the chancel boarded. The walls will be of brick and flint, with stone dressings and gable crosses. A bell-turret surmounts the western gable. The church

has lancet windows and buttresses throughout. The east window is a triplet. The contract for the first portion of the work amounts to 1,065l. The seats are open, and accommodation will be immediately provided for 182 persons. The builder is Mr. James Honour, of Tring, and the architect, Mr. Augustus Frere.

Malden.—All Saints' Church has been reopened. By removing the old pews, and erecting in their places the usual benches, additional accommodation is provided, the number of new seats thus obtained being 162; so that the church will now seat 1,000 persons. That is the chief alteration. The seats are free. The old pulpit has been replaced by a stone erection, octagonal in shape. A reredos, in Caen stone, has been erected, and the interstices have been filled by paintings from the studio of a local artist, Mr. Nightingale, the subjects being the chief sacrificial features in the life of Jesus Christ. The flooring of the church, which was of different levels, has been made into one, partly re-flagged with new materials, and the floor of the altar-steps laid with encaustic tiles. The alterations have been effected from the designs and under the superintendence of Mr. Wm. Adams, architect, of Malden, and of Newport, Monmouthshire, by Mr. E. Saunders, contractor. The cost of the new works will be about 1,200l.

Battle.—The parish church of St. Mary, Battle, is in bad condition. It dates from the twelfth century, and the stonework of the exterior is much worn and decayed by time; while the interior is not only defaced by injudicious alterations, but the area is wasted and encumbered by pews, which are as inconvenient in form as unsightly in appearance. Efforts are now making to restore and reset the church under the direction of Mr. Butterfield. The cost of the work will be about 4,000l.

Cottenham.—For some time past, the interior of the parish church has been in course of gradual restoration. The whole has been completed, with the exception of some of the more elaborate wood-carving, by village tradesmen and workpeople, under the superintendence of Mr. W. M. Fawcett, architect. The plastering of the walls, the stonework, flooring, roof, and woodwork, have all been restored. In the place of square pews, the church now has open-bench seats in oak.

Twywell.—The parish church of Twywell, a village about four miles from Thrapston, in Northamptonshire, has been re-opened for divine service, after having undergone a restoration. The tower was not safe, and had to be supported, and the whole edifice required almost to be reconstructed. The west end gallery has been taken down, and the arch opened. A new bay has been added at the west end to the south aisle. New windows and mullions have been put in. The whole interior of the church was plastered and whitewashed. This has been removed. The roof, even, was whitewashed; this has been cleaned off, and the rafters stained. The south porch has been partly rebuilt, and the chancel has been rebuilt, the north wall and the east end being entirely new. The old pavement remains. The old high pews have been removed, and open seats substituted for them. There is a new oak pulpit, carved, with a reading-desk also of oak. The carving on the pulpit was taken from an old low screen which was hidden from sight, and blocked up the high pews. The chancel has a pitched roof, which, like the flat roof in the nave, was whitewashed. The church is heated with Mariott, of St. Neot's, hot-water apparatus. The work has been done by Mr. S. R. Brown, of Kettering, builder, under the superintendence of the Rev. Mr. Elise, who has been his own architect and clerk of the works. At a luncheon after the opening, the bishop of the diocese, in course of some remarks as to the church, said there was a peculiarity in the work, which he would not commend to their imitation. The church had been almost re-built without either architect or clerk of the works. Now, there were some very excellent clergymen—men of great attainments in various ways, but he must confess that if a clergyman came to him and told him that he was about to restore his church, without having either an architect or a clerk of the works, he should hesitate before he gave him a faculty. He admitted, however, that in the present instance he could not find fault.

Sheldon.—The church here, which for more than a year has been undergoing a restoration, has been reopened for Divine service by the Bishop of Worcester. Whilst being dismantled many curious old relics were brought to light.

The walls were found to be covered with paintings, and in some places emperposed one upon another. Being rudely done in distemper it was impossible to retain them. The remains of a roof-loft and staircase were also discovered, and one or two pincinas became revealed to view as the old plaster was removed. Above the roof-loft was found a large cavity in the main wall 20 in. by 30 in., which was evidently used as a hiding-place for relics and church jewels and plate. There is an old inscription in the tower, now framed, with plate-glass front, recording the fact that the church was built in A.D. 1461. The roof, hid behind the plaster ceiling, was in good preservation, and remains now in the new church exactly as it was in the old. Twelve stained-glass windows, by Messrs. Ward & Hughes, have been inserted, and the cost of one of them has been entirely defrayed by cottagers, having the appropriate subjects of the widow's mite and the Mary "who hath done what she could" represented in the two lights. The architects were Messrs. Slater & Carpenter, of London; and the builder, Mr. Brownwick, of Rugby. A new organ is now wanted.

DISSENTING CHURCH-BUILDING NEWS.

Finsbury, London.—The Congregational chapel in Finsbury Circus has just been reopened, after having been decorated throughout. A considerable alteration has also been made in the internal arrangement of the chapel on the north side, the accommodation on the ground-floor having been somewhat curtailed to allow of the erection of a large lecture-room, with minister's and deacons' vestries. A deep gallery, which forms the ceiling of these rooms, furnishes a space for a large new organ, built by Messrs. Bishop & Starr, and contains, besides, two rows of pewing. A new heating apparatus has been provided, and a fresh system of gas-fitting adopted, consisting of starlights from the ceiling, and brackets under the galleries. Mr. W. A. Dixon was the architect employed; and the works have been carried out by Messrs. Staines & Son, of Great St. Helen's.

Hoxton, London.—The new Barbican Congregational Church has been erected in the New North-road, Hoxton, in lieu of the old one of the same name which stood for upwards of eighty years in Barbican, but which has been purchased by the Metropolitan Railway Company. It was opened on September 26th. It is of the Early Decorated type. On the basement, which is more than half out of the ground, there is a lecture-room, 64 ft. by 41 ft. 6 in., and 12 ft. high, with platform and two good entrances; two infants' class-rooms, with galleries for 100 infants; and two class-rooms, for forty senior scholars; all possessing excellent light. On the ground-floor is the church, 102 ft. by 41 ft. 6 in. and 38 ft. 6 in. high, having accommodation for 900 persons. In the front are two entrances, with corridors 25 ft. 6 in. by 6 ft., paved with ornamental tiles; and in the rear are ministers' and deacons' vestries, a lavatory, &c., with staircase to the organ gallery. The church is well lighted. There are no columns above the galleries, the roof spanning from wall to wall. The front is of Kentish rag and Bath stone, with appropriate carving. The cost of the whole, including lighting, warming, ventilation, cushions to pews, architects' fees, &c., will be under 6,000l. The architects are Messrs. Lander & Bedells, and the work has been done by Messrs. Brown & Robinson.

Chequers-alley, London.—The space between City-road and Aldersgate-street, especially that portion of it in the rear of Bunhill Fields, is occupied by a dense network of narrow streets and alleys. The houses composing these thoroughfares are of the worst imaginable style of construction, and are many of them in the last stage of dilapidation. They are inhabited by a most poor and squalid class, to whom dirt appears to be a necessity of existence, or to whom, at any rate, cleanliness seems to be impossible. In the midst of this mass of wretchedness, and it is to be feared of crime also,—a Wesleyan Chapel and schools have just been opened. Chequers-alley,—one of the narrowest and darkest courts in London,—affords a site for these buildings. Both this thoroughfare and Pump-alley, which intersects it at this point, are so narrow, that when a passenger in either of them extends his hands, he can touch at once the walls on each side. In such a situation architectural display would have been out of place, even if the limited

hands at command had allowed it. The structure, therefore, is of the plainest description, though commodious. The chapel will seat 60 persons, and is entered through a short corridor, designed to exclude the noise of any disturbance outside. For the same reason, and to avoid the risk of damage, the window-sills are kept up as high as possible. An infant school attached to the chapel. The remainder of the premises consist of a school-room of the same size as the chapel, with class-rooms, lavatories, &c., attached, and a house for the porter who takes charge of the whole. Bath stone and brick were the materials employed. Careful attention has been given to the lighting and ventilation of all apartments. Mr. E. Hoole, of Craven-street, was the architect. The whole cost of the premises has been about 1,500*l*. The foundation stone was laid by the Earl of Shaftesbury. The chapel and schools have recently been opened. Mr. Hobson, of the Adelphi, was the builder.

Sunderland.—The foundation-stone of a new chapel has been laid in South Durham-street, Sunderland. About thirty years ago a large mercantile, used by one of the Wesleyan Methodist ministers, was built in South Durham-street, and this has been found ill-adapted to the present day, and the United Methodist Free Church, who are busy erecting several chapels in the neighbourhood, determined to pull down the tabernacle, and rebuild it in more modern style, at a cost of 2,000*l*. The new place of worship will be capable of holding about 1,200 people. The architect is Mr. Joseph Potts.

Books Received.

Golden Sheaf: Poems contributed by Living Authors. Edited by the Rev. CHAS. ROGERS, LL.D. London: Houlston & Wright. 1868.

The composition of this very cheap and pretty book eighty-four writers have contributed, including, and we name those whose poems have received us most, the Rev. Goodwyn Barmby, C. Bennett, Fras. Bennoch, Sir John Bowyer, Mrs. Cowden Clarke, Mrs. Newton Cross, Canon Dale, S. C. Hall (a capital "Love-letter to his Wife"), Fanny Havergal, Mr. and Mrs. Howitt, Chas. Mackay, Eliza Ogilvy, Besio, &c., the late Miss Power, J. E. Read, Christina Rossetti (subtle and obscure), Charles Lamb, Martin Tupper, A. A. Watts, &c. The best work, with the exception of Mr. Edmund Spenser's "Battle of Hastings," and the one that belongs to our special subjects, is "Venice," by the author of "Blythe House." This is in charming verse a graphic account, and the only one, so far as we know, of the duties that attended the assumption of Venice by King Victor Emmanuel. The descriptions are evidently those of an eye-witness. Here are a few lines from it about—

Venice.

Venice gives a welcome, all her own,
No town in modern times could ever have shown.
Her world-famed citizen, Palladio, planned
Her an Olympian theatre. Death's hand
Removed him when his work was scarce begun;
But worthily 'twas finished by his son.
As amphitheatres the inner space
Is formed. The stage is upward sloped to face
The enlarged arena. Radiating thence
Five streets are seen, which—to the mingled sense
Of vision—seem to stretch far out of sight;
And these are crossed by others, left and right.
The stage-front a triumphal arch appears,
Where columns and tall statues rise in tiers
Up to the vault-like roof, beneath which a space
Is formed, where noble bas-reliefs have place.
The theatre is filled in every nook
By faces whose expectant, eager look
Seems almost pain."

Verona.

Verona, with the wondrous legacy
Bequeathed to her through many a century
By ancient Rome, her marvellous world-renowned
Old amphitheatre, herein has found
The grandest medium whereby to convey
Her sense of joy on this her festal-day.
With well-placed care she has contrived to keep
Her treasure almost perfect; save the steps
Across outer wall, the rest remains
As when the proud emperors and their trains
Of cruel courtiers came to gaze their eyes
On tortured Christians' dying agonies,
And scarce less brutal contests of wild beasts,
Which formed the crowning glory of their feasts.
Among the illuminations of the night
This world-old circus forms a startling sight.
Within the giant arches' yawning void
Throughout the evening, soldiers are employed
To tend each steady-burning deep red fire,
Whose floods of crimson smoke rise ever higher."

Departing thence, the king proceeds to—
Florence.

"—Forth from Verona's gates he's gone,
Through Virgil's native Mantua; and on
To his new capital, Florence the fair,
Where Brunelleschi's dome soars up in air;
Where Giotto's beautiful Campanile stands;
Where crowd the works of Donatello's hands;
Where Buonarroti's David rears its head;
Where Raphael's, Titian's works are richly spread
Where endless walls; where, from the plastic hand
Of Luca della Robbia, bold groups stand;
Where Ghiberti's unrivalled bronze gates rise,—
Said Michelangelo,—where Dante's Seat
Is still remembered; where dead heroes meet
In Santa Croce's fanes,—heroes, that is,
In the world's progress! Of a surety this
Is the most noble conquest!
Oh! God grant
The sons of Italy again may part
For glory such as this!
May they once more
Revive their schools of painting as of yore.
In sculpture, literature, sciences, and art,
And in all strident of mind take their due part;
Recalling the grand names which form their dower,
May they go forth with resurrection power,
To fill their post in heaven's wide-spread plan,
That man shall work, and aid his fellow-man!"

Heartily we re-echo the good wish.
The volume is introduced by a brief essay on the Poetic Art, by Mr. E. J. Reed, who, besides being chief constructor of the Navy, shows evidence of skill as a critic.

Miscellaneous.

SUBSCRIPTIONS TO BUILDERS' BENEVOLENT INSTITUTION.—The secretary writes,—"In error I omitted in the advertisement of last week the name of Wm. Tite, esq., M.P., a donation of 10*l*. 10*s*. Will you kindly assist me by taking notice of this in your publication of this week?" We willingly comply.

A NEW HOT-AIR ENGINE.—A number of gentlemen, most of them practical engineers, recently assembled at Edwards & Co.'s establishment, Oxford-street, to inspect their new patent hot-air engines. A one-horse engine at work, a two-horse engine not at work, and an engine in pieces, were exhibited and criticised. The engine consists of a large furnace, surmounted by a cylinder, through which the piston moves. The fire having been lighted, the piston begins to work, at first slowly, until it pumps in the fresh cold air. In less than a minute, the supply of air having become heated, the engine gains its full speed, which is regulated in the same manner as in steam-engines. The waste air escapes by means of a large pipe, which will also serve for the purpose of heating, as the pump through which the cold air is drawn in answers for ventilation. Difficulties and complications in the old caloric engine are avoided, we are told, and the cost is said to be exceedingly low.

HACKNEY BOARD OF WORKS REPORTS.—The eleventh annual report of the Hackney Board of Works, including the reports of their surveyor, Mr. Lovegrove, and their medical officer of health, Dr. J. W. Tripe, has been printed. There are also reports on the cholera epidemic appended. From that epidemic Hackney suffered comparatively little. Small-pox was the most prevalent of the ordinary diseases in course of the year, and want of vaccination is said to have been a cause of this prevalence. The general rate of mortality in the district was 229 per 10,000 inhabitants, by contrast with 264 in the whole of London. In respect to the very important subject of overcrowding, and the powers of the new Act as a remedy, Dr. Tripe says:—

"The 36th section, under which the regulations for lodging-houses have been framed, is one of the most important in the Sanitary Act, but so far as I have seen, requires much care in carrying it out. Before the passing of the Act, there was not any difficulty in obtaining convictions for overcrowding, under the Nuisances Removal Act, at some police courts, but I believe there was in this. The section has this great advantage, that the district authorities have been able to obtain a regulation stating what is, and what is not, overcrowding. The first district for which regulations were obtained, was Hackney, and the minimum space, viz. 300 cubic feet for each adult in a sleeping-room, may be summoned under the regulations for other districts. The Secretary of State objected to this space as too small, but he granted it as being the first application to him to fix the breathing space requisite for an individual, and expressed a hope that a larger number of cubic feet would be afforded after a time. I can scarcely agree with this hope, and find great difficulty in enforcing this regulation. We have not found it necessary as yet to take out any summonses under the regulations, inasmuch as the ordinary powers under the Nuisances Removal Acts, have been found sufficient. The great error, so far as overcrowding is, in framing the regulations has been, that no district has fixed a minimum penalty, while all have adopted the maximum penalty mentioned in the Act."

THE NEW LAW COURTS.—We do not find any grounds for a recent paragraph in the daily papers as to a decision in this competition. The judges have not met since their report was returned by the Treasury, and nothing whatever has been done.

PAPER FROM WOOD.—Many very interesting samples of paper manufactured from wood have been shown at the Paris Exhibition. The invention is not new, but the processes by which the fibres are treated, the method of whitening the material and converting it into a pulp for the manufacture of excellent paper, have only now been successful; and the factories in operation in France and elsewhere abroad are preparing daily from 1,000 to 2,000, and, in some instances, 10,000, kilogrammes of pulp per day from wood, for the production of white paper. Hitherto there has been great difficulty in producing paper from woody substances, on account of its not receiving ink and pressure without deterioration.

NEW MARKET, ACCRINGTON.—The new market in Accrington, the result of a competition which took place last year, and was duly noted in our pages, is now up to the level of the plinth course, and the upper portion is about to be proceeded with, under a fresh contract. The size internally is 60 yards by 40 yards. Warrend stone, in large blocks, is used up to the plinth, and local stone (white) of good quality is used for the upper portion. Patent glazed bricks are to be used for lining the whole of the interior. The roof is entirely of iron, and covered with blue slates. The lighting is by means of splayed clearatories, and the appearance is expected to be novel and effective. The architect is Mr. J. F. Doyle.

OPENING OF THE NEW RIFLE DRILL-HALL, GREAT YARMOUTH.—The new rifle drill-hall, recently erected for the use of the Yarmouth rifle battalion, has been formally opened. It was built from designs prepared by Mr. J. T. Bottle, of this town, architect. The style is Gothic. The hall is 114 ft. in length, by 60 ft. in width. From the base to the centre of the roof the height is about 30 ft. The roof is elliptic, and springs from the floor. The south front is faced with flint, with Bath stone dressings, and contains a residence and offices, an armoury, and other adjuncts. The edifice is constructed of red brick, with white brick string crossings. The total cost will be about 1,300*l*. Mr. Leggett was the builder, and Mr. Want the Carpenter. At the south end an orchestra has been erected. The hall is lighted at night with gas.

METROPOLITAN CEMETERIES.—A return, moved for by Mr. Berkeley, has just been issued from the Queen's Printing-office, which gives the number of licences and other particulars connected with burial grounds within the metropolitan district. By this return it appears that licences were granted under the Metropolitan Interments Acts, 1852, for new, or extension of old, burial grounds in the districts of Marylebone, Lambeth, Islington, Paddington, City of London, St. Pancras, Camberwell, Westminster, Charlton, Putney, Greenwich (Crooms-hill); Deptford, Sydenham, Hammersmith, Norwood, Battersea, Plumstead, and Willesden. Particulars are recorded as to twenty-one cemeteries, the largest of which belongs to the General Cemetery Company, Kensal-green. This burial-ground comprises an area of rather less than 80 acres, of which 73 acres have been consecrated, and 25,363 interments took place between the 1st of January, 1852, and the 31st of August, 1866. The Cemetery of St. Mary at the same place is used exclusively by Roman Catholics, consists of 30 acres of land, and between 1858 and 1866 inclusive, 12,561 interments took place. The Norwood Cemetery occupies 40 acres; that at Abney Park, 33 acres; the Brompton Cemetery, 38 acres; and the City of London and Tower Hamlets Cemetery, 25 acres. It appears from this return that the number of bodies permitted to be interred in one grave varies from one to five, and that at Kensal-green no restriction as to number is made, but that a layer of earth at least a foot thick is to be deposited between each coffin; so that under this regulation a grave 16½ ft. in depth will receive six coffins. Particulars are also appended as to drainage, with reference to brooks, watercourses, wells, and springs in the immediate vicinity of these cemeteries, and the return specifies also the number of houses situated within 200 yards of each burial-ground.

SOCIETY OF ARTS.—The opening meeting will be held on Wednesday, the 20th instant, when the opening address will be delivered by the chairman of the Council.

THE COLLIERY EXPLOSIONS.—Mr. Plant invites attention to the fact that the explosion at Oaks Colliery on the 5th occurred just six days after his letter of "Caution" was sent to us, which communication, however, was not published by us until the 8th. Others have since occurred, as elsewhere mentioned.

LEICESTER-SQUARE.—An action has been brought against the Metropolitan Board of Works for alleged trespass in dealing with the inclosed space in Leicester-square under the Public Gardens Act of 1863. The plaintiff is Mr. Tulk, who claims that the inclosure is his property, and not a public garden.

CLIFTON WORKHOUSE INFIRMARY.—Attention has been called to the uncleanly management of this infirmary by the *British Medical Journal*, and we are glad to see that the guardians have been aroused to the carrying out of much-needed amendments in that respect. The journal named suggests to the guardians, that not only is it necessary that their rules should be good, but that they should be thoroughly carried out, and not neglected as they were at the time their inquirer paid his visit. Without extreme cleanliness in an infirmary, it is not possible to prevent the spread of disease.

THE ALBERT INSTITUTE AT WINDSOR.—An influential meeting was held on Wednesday in last week, at the Town-hall, Windsor, for the purpose of furthering the erection of the proposed Albert Institute. Captain Bulkeley presided. Mr. Rawlinson read a statement and subscription list, from which it appeared that about 1,100l. had already been subscribed. Mr. Eykyn, M.P., Captain Bulkeley, Mr. W. R. Harris, Mr. Hall Saye, Mr. Darvill, Mr. Browning, Mr. Gordon Gyll, and other gentlemen, addressed the meeting, and a resolution that "it was desirable to erect the proposed Albert Institute in order to express, in a work designed for the public good, the respect of those present for the memory of the Prince Consort," was unanimously carried.

PLANT-HOUSE GLASS.—M. L. Cailliet details experiments on the influence of coloured rays on the decomposition of carbonic acid by plants. He observes that green light afforded unexpected results, whether this colour was obtained from grass, vegetable leaves, or solutions. Under its influence carbonic acid, he states, is never decomposed: a fresh quantity of gas seems, on the contrary, to be evolved. When a glass containing pure air and a leaf was placed in full sunlight, under a green glass shade, after a few hours a quantity of carbonic acid was obtained that was scarcely inferior to that which the leaf would have evolved in the dark. If correct, this should influence the glazing of greenhouses. Of course, for a plant-house a chief object must be to promote the decomposition of carbonic acid and the absorption of carbon by the growing plant, and hinder the evolution of carbonic acid, by day at least.

SELF-SUPPORTING PRISONS IN AMERICA.—The governor of the State Prison of Massachusetts (Mr. Gideon Haynes) forwarded a letter about nine months since to Mr. William Tallack, secretary of the Howard Association, 5, Bishopsgate-street Without, E.C., stating that the said prison receives about 120,000 dollars per annum for the labour of its inmates, and estimating that a clear profit of 20,000 dollars would probably be gained during the year. Mr. Tallack has just received from the governor a second letter (November, 1867), from which the following is an extract:—

"For the year ending September 30th, we have made a clear profit of 22,000 dollars. This has been accomplished notwithstanding that the Legislature has, since I wrote to you, increased the salaries of the officers of the prison to the amount of about 6,000 dollars per annum, which has been paid in the past year. This sum of 22,000 dollars is over and above all and every expense connected with the prison, viz., officers' salaries, clothing, bedding, and feeding the convicts, transporting them from the various counties where they were convicted to the prison, adding 200 volumes to the library, providing all discharged prisoners with a new suit of clothes and five dollars in money, and paying all repairs connected with the building."

The governor estimates 30,000 dollars (6,000l.) as the profit for the coming year. He remarks "Our records show that crime is most prevalent among that class who are ignorant of trades. A greater per centage of reformation is obtained through the agency of good trades being taught the men than in any other way."

THE CONCRETE GROUYNE AT BRIGHTON.—The works in connexion with the Concrete Grouyne, the construction of which has, from various causes, been long delayed, have been brought to a close. The top forms a promenade, gradually inclining down to the water. The total cost of the Grouyne (constructed by the Town Council itself) has been nearly 5,000l., or something more than double the amount of the original contract price.

THE SANITARY STATE OF LEICESTER.—A paper upon this subject has been read before the local Literary and Philosophical Society, by Dr. Buck, as president. The author of the paper passed in review the works which have been done and are now being carried out for the promotion of the public health. He has been for some years officer of health to the borough, viz.—from 1849 to 1854, a period in which the important sanitary works of drainage and water supply were established. Leicester, he said, had certainly done much during the last twenty years, had accomplished deep drainage and some forty-five miles of sewerage, had abolished intramural interments, and had obtained, by the aid of the Leicester Waterworks Company, a constant supply of the most excellent water.

WORKING-MEN'S COLLEGE BUILDING FUND.—A fresh appeal to the public is being made on the part of this college by the principal, Mr. F. D. Maurice, for contributions towards extending their building in Great Ormond-street, in consequence of the great increase in the number of the students. The principal says:—

"A site is already provided, the ground in the rear of the house (12,000 square feet in area) being the freshhold property of the college. We are advised that such a building as this can be well and substantially built in a plain but good style for about 2,000l., to 2,500l. Of this amount we have 1,000l. in hand and 200l. promised."

Financially the college is self-supporting. Contributions may be sent, amongst others, to the London and county Bank, Oxford-street Branch ("Working-Men's College Account"); or to Mr. Thomas Hughes, M.P., 9, Old-square, Lincoln's-in, or 33, Park-street, Grosvenor-square.

ECONOMY IN STREET-WATERING.—Cooper's patent for watering streets, &c., has been tried on roads in the district of St. George, Hanover-square; and the surveyor, Mr. H. T. Tomkins, says the trial "is most satisfactory, and far exceeds his expectations," and he anticipates its general adoption, both from its great economy and its doing away with the old annoyance of perpetual street-watering in dry weather. The materials, we understand, are dissolved in the water of the watering-carts, and are deliquescent: they are not only innocuous, but act as a deodorizer, and also as a consolidator of the roads. A single watering is said to last a whole week, so that the saving to the ratepayers, it is believed, will be of importance, as the ingredients are both cheap and abundant. The clearing of the streets from watering-carts is itself a great desideratum, both with the public and the ratepayers.

ANTIQUARIAN DISCOVERIES.—At the last monthly meeting of the Newcastle Antiquarian Society, Dr. Bruce laid on the table a paper impression of a stone found in the wall of Antoninus Pius, about eight miles from Glasgow. It was now in the possession of Professor McChesney, American Consul at Newcastle, who intends moving it to the United States. It measured 2 ft. 10 in. by 2 ft. 3 in., and bore an inscription, which was thus interpreted:—

"Dedicated to the Emperor Caesar Titus Aelius Hadrianus Antoninus Augustus Pius, the Father of His Country. The Veneration of the 20th Legion, styled the Valerian and Victorius, constructed three thousand paces of this wall."

A Portland cement cast will be taken of the stone for the Old Castle, Newcastle. Dr. Bruce then described an altar found near Wallsend, which had been presented to the society by Mr. B. Atkinson. When found, before 1848, it was surrounded by twelve stones. Dr. Bruce took the perforation in the centres representing the sun, and believed that twelve rays round it and the twelve stones had reference to the twelve months of the year. Much superstition was associated with such stones. Bargains made by shaking hands through the perforations were regarded as very sacred; and perforations were regarded as very sacred; and children were passed through them that they might be cured of any disease they had. A similar efficiency was supposed to belong to the passing of children through the cleft in a riven tree.

AN ANCIENT TREE.—A tree has lately been cut in Ohio which is declared by experts to be 792 years old. It weighed thirty tons, was more than 12 ft. in circumference, and made 7,000 ft. of inch boards, clear stuff.

ST. PAUL'S SCHOOLS, PORTWOOD.—The building committee of these schools have selected a tender for their erection from the numerous list sent in by the principal builders of the town and neighbourhood. Their choice, we hear, has fallen upon Mr. W. H. Brown, of Stockport. It is contemplated, we believe, to proceed at once with the building, so far as the weather permits.

BRIDGING THE OHIO.—Louisville will soon have a great bridge spanning the Ohio. The bridge is to be constructed with but one swinging span, or draw, which is over the Louisville and Portland Canal. The total length of the superstructure will be 5,220 ft., and of its graded approaches 2,500 ft., making the total length of the bridge, from the points where the ascent is commenced, 7,720 ft. The total length of the connexion between the Jeffersonville Railroad and Louisville and Nashville Railroad, including bridge, will be 3½ miles. Estimated cost, 1,500,000 dollars.

MONUMENT TO THE LATE MR. R. ASH, IN HIGHBURY CHAPEL.—A monument has just been erected in Highbury Chapel, to the memory of the late Richard Ash, of Victoria-square, by his widow. The design has been prepared by Messrs. Hanson & Son, of Bristol; and executed by Mr. Bolton, of Cheltenham (late of Worcester). It is 10 ft. high by 5 ft. wide, commencing at 6 ft. from the ground. The front is divided into three niches or compartments, the centre being double the size of the two side ones, each being finished by a sharp-pointed gable, crocketed, and surmounted by a carved finial. The centre compartment contains the inscription, on a white marble slab. Above the inscription is a coat of arms of the deceased, carved in stone. In the side compartments are two recessed niches, containing standing figures of angels, holding scrolls, on which is engraved, "Blessed are the dead which die in the Lord." The base is a moulded string-course, having demi-figures of angels in the centre and at each angle. The divisions of the three compartments are marked by small buttresses, having moulded bases and crocketed pinnacles. Interspersed in various parts are demi-figures of angels, carved capitals and spandrels, &c.

TENDERS

For church and school-buildings for the district of Christ Church, Somers Town, St. Pancras. Messrs. Newman & Billing, architects. Quantities supplied by Mr. Rickman:—

Howard.....	£13,590 0 0
Carter & Sons.....	13,480 0 0
Perry.....	13,317 0 0
Browne & Robinson.....	12,995 0 0
Coleman.....	12,880 0 0
Patrick & Son.....	12,825 0 0
Thompson.....	12,173 0 0
Dove, Brothers.....	11,825 0 0
Myers & Sons.....	11,830 0 0
Wells (accepted).....	11,850 0 0

For works at 34 and 35, Monkwell-street, for Messrs. H. E. & M. Moses. Mr. N. S. Josephs, architect:—

Condon.....	£4,818 0 0
Newman & Mann.....	3,993 0 0
Browne & Robinson.....	3,884 0 0
David King & Sons.....	3,768 0 0

For rebuilding and repairs to Brunswick Stable-yard and No. 122, and 122a, City-road; and Nos. 2, 3, 4, 5, and 7, Lewington's-buildings. Mr. J. M. McCulloch, architect:—

Dove, Brothers.....	£1,485 0 0
Manbridge.....	1,468 0 0

For building warehouse and stables at Rouppel-street, Lambeth, for Mr. F. Bowering. Mr. James L. Stewart, architect:—

Fawcett.....	£2,140 0 0
Shurmer.....	2,110 0 0
Smith & Son.....	1,986 0 0
Eustace.....	1,868 0 0
Cubitt, Brothers.....	1,801 0 0
Wilcox.....	1,876 0 0
Quennell.....	1,750 2 3
Golding & Son.....	1,745 0 0
Pierce & Booth.....	1,686 0 0
Pearce.....	1,647 0 0
Finner (accepted).....	1,508 0 0

For rebuilding No. 54, Broad-street, St. James's. Mr. B. Tabberer, architect:—

Prince.....	£1,099 0 0
Kerr.....	917 0 0
Messrs. Bawaters.....	897 0 0
Larke.....	886 0 0
Bostel (accepted).....	837 0 0

For the erection of a pair of villas at Chislehurst, Kent, for Mr. D. Chatfield. Mr. Joseph S. Mose, architect:—

Grover (accepted).....	£2,100 0 0
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The Builder.

VOL. XXV.—No. 1294.



The Legitimate
Audit of Railway
Finance.

ARVELLOUS it is how contentedly a people amongst whom time is actually convertible into money will put up with the waste of time when that waste is the result of a cherished system of red tape. In the fourth quarter of the year of grace 1867, the Board of Trade limps after the steady progress of Time, and smilingly offers to the forgetful public complete railway returns for the year ending 31st of December, 1865. In the paper submitted last year to the Statistical

Society by Mr. Dudley Baxter, into the subject of which we entered at the time with some detail, the Board of Trade returns were only available up to the end of 1864, when a total of £425,482,000. had been expended out of an authorised capital of £20,522,000. on the railways of Great Britain and Ireland. The paid-up capital at the close of 1865 stood at £45,478,143l., showing an actual expenditure during the course of that year of close upon fifty millions sterling.

The point which would be most desirable to elucidate by these items is one, however, on which they cast but little light. We are informed that the average dividend on the ordinary capital of open lines, amounting to £26,748,606l., was at the rate of 4l. 11s. 5d. per cent.—an average dividend which is greatly reduced by the low returns of the Irish railways, on which only 2l. 16s. 8d. per cent. was divided. The London and North-Western, the Midland, and the Great Northern, divide from 6l. 12s. 6d. per cent. to 7l. 2s. 6d. per cent., on capitals amounting to an aggregate of forty millions and a half sterling—a rate of dividend which, after the long Parliamentary warfare of these great lines, shows the elasticity of the railway system, and indicates what the property of the shareholders might by this time have become under sane and honest management. On the preferential capital, of debenture stock, and debenture loans, amounting in all to £19,598,196l., dividends or interest have been paid at the rate of from 4l. 2s. per cent. to 4l. 8s. 5d. per cent. The question we should like to have answered is, how much of the twenty millions or thereabouts distributed within the year to the holders of these various descriptions of “titles” came out of the fifty millions received from the public during the same period under the denomination of “capital”?

The question is neither unimportant nor unfounded. Many years ago, during the great inflation of 1845, a violent attack on the railway system made its appearance in the form of a pamphlet, in which parallel tables were given of calls and of dividends, the object of the writer being to show that all the money distributed with one hand, as dividend, had been contempo-

ranously collected with the other hand, under the name of capital. The idea was indignantly scouted by the financial authorities of the day. The pamphlet has probably long been forgotten; but it would be happy for the country if the view which it brought forward had been altogether erroneous and visionary. It is in this very confusion of two distinct branches of expenditure that the great evil and misfortune of railway finance has invariably lurked. Nor will public confidence either be bestowed or be deserved until satisfaction is given on this simple but vital point.

The temptation to anticipate profit, to make the readiest and the pleasantest use of money actually to hand, and then to disclose admirable reasons for raising more, is by no means peculiar to railways. “The glorious, pious, and immortal memory” of that great and good king whose name is enshrined in two such diametrically opposite toasts by Irish wit, is associated with a deliverance from brass money as well as from wooden shoes. But the brass money from which King William is said to have delivered us was a far less national evil than the paper money—or, rather, paper which is not money—for which we are in great measure indebted to his wisdom. Loans, more or less voluntary, had been procured from a long-suffering people by many kings and ministers before the time of the hero of the 6th of November; but his name is associated with the transformation of loan into permanent debt—a transformation very similar to that which railway debentures are now in the process of undergoing. If we might at all illustrate the case of railway finance by that of the funded debt of Europe, the prospect would, indeed, be gloomy enough. That great incubus on the industry of the nineteenth century amounted at the close of 1865, not including America, to the sum of two thousand eight hundred millions sterling, of which eight hundred millions have been “borrowed” within the preceding ten years. The annual demand of the public creditor, in 1866, amounted to 98,000,000l. Of this the surplus of taxation over expenditure supplied the modest portion of some 30,000,000l., the remaining 68,000,000l. of annual dividend being derived from an annual increase of loan. Such is the present financial position of Europe, in which two states alone, Holland and Great Britain, pay all the interest due to the fund-holder out of revenue.

The position of our railway property cannot be compared with justice to the insoluble, if not insolvent, state of European public debt. But it has made a notable advance in the same perilous direction, and it is an object of no little national importance that the tendency should be firmly and intelligently checked. For the £45,478,143l. which we have spent on our railways, we have, on a moderate computation, value in hand, in land, works, and plant, equal to at least three hundred millions sterling; and if between unearned but divided interest, secured by extortionate landowners, lawyers, and contractors, and waste by sheer blunder, we have thrown away the balance, yet we must remember that this large sum is not lost—it is only improperly divided amongst ourselves. The case is far other with the public deficit or irredeemable debt. The fleets, the fortresses, the dockyards, the arms, and the military stores of Europe would, if duly valued, form but a small set-off against the enormous per contra of more than 2,830,000,000l. sterling. Again, the railway capital is self-supporting. The income is not raised by a tax, but is a *bona fide* payment for work done, and done, moreover, at an enormous gain to the country. To estimate that gain in its money value is no easy task. Money, indeed, cannot represent it; for if we could conceive that, from any change in the physical condition of our world, steam were to lose its elastic force, no combination of horse-

power, at any cost, would replace the present method of conducting our enormous traffic by land and by sea.

The purchaser, then, of any description of railway shares or stock knows that he is so far possessed of a property which cannot deteriorate more than to some two-thirds of its original par price. The property is one essential to the intercourse of daily life, and to the maintenance of the phase of civilisation at which we have arrived. With care and prudence it must improve; under any circumstances but those of wilful blindness and mismanagement, he not only knows, but now experiences, the worst.

The holder, on the other hand, of what is called funded “property,” or a portion of the public debt of any country—but England or Holland, is the possessor of an acknowledgment of debt which, at the same time, is almost tantamount to an acknowledgment of insolvency. This property, under no possible contingency, can become productive or self-supporting. The annual dole must, on the most favourable hypothesis, be wrung from the pockets of an overtaxed people; and on the actual basis of fact, two-thirds of it must be begged as a loan from the speculative capitalist. In the former case it will be indispensable that the gross taxation of Europe, which now amounts to 334,000,000l. sterling of British money per annum, should be raised to the amount of 409,000,000l. sterling per annum. In the latter case it is necessary that the respectively responsible Governments shall among them borrow on the Exchanges of Europe an annual and an annually increasing sum of from 60,000,000l. to 70,000,000l. sterling for the mere maintenance of public faith by discharging the claims of the holders of *Rente*.

In the funded debt of Europe we can thus see an exaggerated condition of the same great canker that infests the English railway system, since the man who was once called the Napoleon of Railways, first found out the way to “make things pleasant” for shareholders. The disproportion, indeed, is great, and the character of the two properties differs as much as do the real and the fictitious. While the income of the fund-holder is derived, one-third from onerous taxation, and two-thirds from loans from year to year; the income of the railway proprietor is derived, four-fifths at least, from *bona fide* earnings, even if the remaining fifth be taken from one pocket to put into the other. But in this apparently harmless transfer lies the danger of his ruin. Directors have, for the time, ceased to throw the shareholders’ money broadcast, in order to fight one another. They have now to learn only to distribute what they actually earn.

It is not the case, as assumed by some of our contemporaries, that this distinction between capital and revenue is so clear and palpable in fact as it may be made to look on paper. With the information we now possess, that engineer is inexcusable who cannot and does not estimate exactly how much money should be spent on a new line of railway. In the commencement of the railway system it was far otherwise. The accommodation that would be required for traffic was as little imagined beforehand, as was the enormous traffic which the constantly augmenting accommodation would continually increase. For the same reason for which the originally estimated capital was raised, did increase of this limited amount become again and again necessary. The true rule was, that new works required new capital; that maintenance and repairs were chargeable to working expenses. Then arose questions as to how much was repair, and how much was extension. A line had to be relaid: experience suggested that the new rails should be heavier than the old ones; six-sevenths of the expense then should go to revenue, and one-sixth to capital. In this manner, even with the best intentions, accounts would be sure to become confused in the absence of

one necessary check,—a check which, judging from the constant reports of railway meetings, would seem to have been utterly abandoned from a false economy, if from no other questionable motive.

The check in question is the distinct, public, professional responsibility of a competent engineer. In the early times of railways, the production of the report of the engineer-in-chief was a prominent and most important part of the proceedings of the half-yearly meetings. It is true that it was more eagerly looked to as a guide to the future rather than as a record of the past; but it was, in principle and in fact, the exact professional record, the regular preparation and reception of which might have afforded a barrier against the tide of disorder from which we are now suffering. As the great names of the fathers of railway engineering disappeared, as Brunel, Stephenson, and their contemporaries and earliest pupils fell into the grave hollowed out by their own incessant and never-resting toil, their succession fell to men less known to railway proprietors, less known to the world. The temptation to economize a thousand or two per annum in the salary of the engineer—a miserable and false economy as it has turned out to be—was irresistible to secretaries and directors so soon as they had to deal with men with whom they could take liberties. Then, little by little, the control, or the efficient check, of expenditure on works and maintenance, has passed from the hands of the educated and responsible class of men to whom it naturally belongs. Amateurs have taken the place of the profession, and we see the result.

It cannot be denied that the regular formal report of a competent engineer would act as an audit on which reliance might be placed. In lines too insignificant to demand the whole time of a man of eminence, the same advantage would be obtained by the application to such a person for the sole purpose of preparing an annual report, in which the actual distribution of the capital and revenue outlay should be determined with that precision which scientific knowledge of the details of railway expenditure can alone give. An audit by an accountant is a totally different thing from such a searching audit as this. The accountant can tell you that so much money has been expended, and that there is such and such authority for its expenditure, and such and such vouchers for its disbursement, and he can tell you no more. The engineer can tell you how much has been wisely and how much unwisely expended; how much that revenue should support has been "cooked" into capital, and how much more revenue must expect to support for five or ten years to come.

It is, therefore, to the reappearance of the duly educated professional adviser in his proper position that the shareholders have now to look for an assurance, and thus for a restoration of the value of their property. If it once became the rule that no dividend should be divided without the formal sanction of the report of a responsible Engineer that it had been fairly earned, the great element of uncertainty which now, more than anything else, depresses the value of railway property, would be to a great extent removed. It is obvious that such a report would differ in its form, and, to some extent, in its object, from the reports commonly produced during the actual construction of a line. But the real object of both kinds of report would be the same, the assurance given to the shareholders, on the direct personal responsibility of the educated chief executive officer, of the due application of their money to its destined objects. At present no such responsibility exists. All that can happen, or all that ever *does* happen, to the individual members of a board which has been guilty of the grossest misuse of power, is—to be replaced. The man who, if he be fit for his post, is usually the real master of the enterprise, is not appointed by the shareholders at all. He is the nominal servant of the directors—responsible to them alone—the secretary of the board. With an executive responsible only to the shadowy and intangible personality of a board, and with the members of the latter under no sort of direct responsibility to the shareholders, all that bad system can effect towards the impoverishment of the latter would seem to have been providently and successfully carried out.

The contrast between this slovenly arrangement, a plan as unbusiness-like in its conception as it has proved disastrous in its general application, and the regular and formal responsibility of a competent executive chief, is as marked as can well be imagined. In speaking of the Civil

Engineer as the proper officer for restoring and maintaining public confidence, we make no objection to those cases where a tried and efficient manager, or even a properly paid and exclusively engaged chairman, may be looked to as responsible to the proprietors. Such instances, no doubt, may occur; but it is of the special nature of the education of the Civil Engineer (of which the post, and not only to fit him for the efficient discharge of the duty of a continuous and trustworthy audit, but to give to the shareholders and to the public the warrant that the work for which he is responsible is fitly performed. What would be the effect on the value of the shares of a company which should circulate, with its half-yearly accounts, such a report as the following, if signed by a known and respectable name?—"To the Proprietors of the—Railway. Gentlemen, I have inspected the state of the line, works, and plant of your railway during the past month, and I have also verified the application of the various sums stated in the accountant's balance-sheet, which I have countersigned, and, with due regard both to the accounts and to the immediate requirements of the line, I recommend the payment of a dividend for the last half-year, at the rate of so much per cent. on such and such descriptions of capital."

Absolute security is not to be hoped for in human affairs. But all that maturity of experience and reliance on personal integrity could effect could be brought, by such a method, to guarantee the real stability of railway property.

WINTER EXHIBITIONS AT THE FRENCH GALLERY AND THE DUDLEY GALLERY.

MR. WALLIS has mixed foreign with English pictures for his winter exhibition this year; but its greatest difference from its precursors is brought about by some foreign work from British hands, and such work as unfortunately is too foreign. Without indulging in the "cant of criticism"—whatever that may be; at any rate, critics were never better worth reading than with rare exceptions they are now, seldom more independent or better informed—it would be very remiss, even in those whose business is rather to note than to analyse a production of such special and particular interest as Mrs. Benham Hay's great picture, to leave its merits unacknowledged,—a great picture, not with reference to its size alone.

Processions have been favourite and favouring introductions to more than one painter. Mr. Leighton was ushered into celebrity by some such honour-conferring pageantry, and Mr. Calderon's election to the full dignity of R.A. was preceded like a Lord Mayor's to civic glory,—not omitting a suggestion of the "Watermen" (Salt) in the trip across the Channel, that proved so short a road for him. Mrs. Hay's "Florentine Procession" (conveying a collection of various articles of luxury, useless fantastic ornaments, immoral books, pictures, &c., to the burning of the "Vanities" during the Carnival of 1497), it is to be hoped, will bring for her an adequate compensation for the investment of much talent and the devotion of much time. The want of some such examples to our younger painters, to mark the repeatedly-expressed regrets that, with a vast amount of facility in producing, there should be so few instances wherein this facility is turned to a worthy account, is amongst the many considerations that secure for Mrs. Hay immense praise. It is undoubtedly an exceptionally fine picture, though the subject be one of the last that a lady in the nineteenth century might be expected to dilate on, as it advocates a contempt for all artificial adornments, with particular emphasis on those that are personal. The present discussions about vestments, and in vestries, may also add to the interest it is sure to excite; for it illustrates the influence of Savonarola's religious fervour and patriotic zeal. Boys were chosen and clothed in white to represent angels, crowned with olive wreaths, and badged with the red cross of their party; they were divided into little bands that paraded the streets and ways of the city, starting from the several points of it, and gathering "vanities" as they passed.

Some of the youthful disciples are beautiful enough to pass for angels at any time. Witness the child who carries the trinkets, and whose innocence has been a sufficient appeal to convert a damsel as lovely and innocent-looking as herself, for she has taken off her necklace to add her small sacrifice to the basket of jewels so

timidly held forth to receive it. A youth dressed in a deacon's vestment (consecrated for sacred service we are informed by the description in the catalogue,—an apology that can only be valid to the ritualists for not being burnt with the rest of the gauds), is already laden with volumes of such profane rhymes as might have been appreciated at the orgies of the Medici. Gorgeous drapery, vases of fantastic design, heathen statuettes, and all similar objects, with appliances of art that tend to no good and direct purpose, were the spoil of these detachments from the regiment of virtuous young foragers for food for flames, whose memory will not be much respected by "verru" hunters, collectors of "bric-a-brac," and of old curiosities in general. The mother of the maiden so readily converted, a florid specimen of a Florentine matron, is expressing contemptuous repudiation of the proceedings, and indignantly refuses any explanation of the use of a ball of rouge beyond what her unnaturally blushing cheek can tell a little fellow who has accosted her, and unconsciously reproves her endeavours to create artificial attraction. (Do little boys ask such pertinent questions in our days?)

It is a pity there were not more spectators introduced to witness the proceedings, and to give more apparent evidence of what effect they had on the community at large; but this is only one of the many little bands, and others may have been more inconvenient by the crowds; besides their absence here has enabled Mrs. Hay to make very much of an admirably selected and painted background, which is taken from the Piazza del Duomo,—and includes part of Giotto's Campanile, part of the Baptistery of St. John, and the Loggia del Bigallo. Fra Domenico, the enthusiastic friend and assistant of Savonarola, accompanies and directs this procession: the monk helps a young painter to carry a gilt banner, on which is depicted the Saviour as a child, with the Virgin Mother; the painter typifies aspiration towards the more elevating and purifying capabilities of art, making clear that the Reformer's purpose was only to destroy such as ministered to debased tastes and excited corrupt motives; the student indicates his reverence for nature and truth by wearing in his belt a few blades of common grass, and on his stamped leathern jerkin the pattern of a bird—an old spiritual emblem of the soul. Four young girls follow playing musical instruments: one represents a votary to the Ideal, absorbed in sympathy with the music she evokes and heedless of all that surrounds her; another, of the contrary or worldly temperament, more easily influenced by extraneous circumstances than by inspiration, accepting the influences of those around her rather than her own election. After these come a deputation of citizens to give countenance and authority to the proceedings, and who typify the degrees of regard that different constitutions or parties had for them. All the actors are invested with some significant attribute; in fact, symbolism has been a little too much relied on for conveying meaning, the need for which a more dramatic treatment would have reduced very much, but then it would have been a totally distinct method of enunciating the intention of the picture; and since the artist has chosen her own, preferring the typical to the real, it must be conceded that success has justified her choice, inasmuch as the result is a very remarkable and memorable production. Its chief defect is the one already alluded to,—the want of something to indicate the popular acceptance or reception of the ceremony,—as, in addition to the haughty ultra-fashionable matron and her charmingly modest daughter,—both very finely characterised and represented by the brush,—there are but the three *rouds* bent on their own evil courses, and on passing the Carnival in their own manner with cards and dice, the tradesmen who sneeringly ridicule those who would destroy their wares, and a vendor of the red crosses that distinguish Savonarola's adherents, to represent the people. The technical merits of the performance are of so high an order as to outweigh the few objections that may be taken to their entirety. We will take no more, and will stop at a note of admiration!

Mrs. Benham Hay has emblazoned her name on a title-deed that makes rare possessions hers patent. If history records this to be an effeminate age, it will be by reason of woman's own superiority, rather than by that of decadence on the part of the shavering sex,—by the strenuous and persistent efforts of our sisters to be recognised as men and brethren to help in what may constitute our claims of progress in mundane

maters. Time was when man swore by his beard; time it is that he never swore at all, for ladies are now his companions, and equals even. Given the Indian chief's taunt, "Your warriors are women, heugh!" may be stripped of its stilly disdain if the Adjutant-General's appeal for recruits should bring forth an army of amazons with rifles of precision and a very, very young range, warranted to kill anything before anything else had a chance of killing (a woman hits anything she aims at, and to become as effective a dealing wounds as hitherto in healing them).

The possibility is enough to make the shades of the late Mr. Fennimore Cooper's red-skinned heroes blush redder still through their warrant, if there was a chance of Reuter's telegrams reaching their "happy hunting-grounds," and more than enough to make superlative a pale complexion, that changes at the bare mention of even a baby in arms. No; let woman's acquaintance with gunpowder be limited to the shake of one hand that commingles it with the family loche, and the only arms she cares for those that shall be her shield,—never weapons of offence.

Mr. Hay's picture, though the chief, is not the only attraction at the little gallery in Pall-mall, for, as usual, there are plenty of clever, pleasant emanations to while away an hour or so in examining. Mr. F. Goodall, R.A., shows a delicately-natured and fair-faced Britanny girl, "At Prayer" (10); Mr. J. Sant, A.R.A., a splendidly-painted child-portrait (72), with the only "Query,—Fun or mischief?" about it for a title,—query, "What's the Difference at her Age?" excepted. Mr. T. O. Orchardson is another whose manipulation is extraordinary in its dexterity. His nobleman in fifteenth-century costume and an armourer's dusky workshop,—"Choosing a Weapon" (80),—will prove this. He has a most enviable ability: why does he not apply it to better purpose? Mr. J. Pettie, A.R.A., has seized an opportunity of contrasting his grim negro with something more sympathetic than the unlovely lady who has come to pay "A Visit to the Necromancer" (64); but how deftly now it is! "The Acrobat's Rehearsal" (65) might be by Mr. Pettie, too; but it is not, but by Mr. H. Roberts intimates in this that manner, some other physical affections, is to be taken. This is also very cleverly done, but the serious of the poor little girl on stilts having lost her too many sobs and tears—look at her lid eyes—makes the picture an unpleasant companion for long: the little tumblers, who appear like the worse for their tumbling, are very life-size in their resting attitudes.

"Prond Margaret" (86). Mr. F. Sandys has given very little room for brains, and separated her head from her heart by a very long neck; perhaps purposely. (39) "The Sick Rose," by Mr. G. R. Leslie, is very pretty; but from constant repetition of the same idea, this designation gives some hope of "the last rose of summer" being Mr. Leslie's next subject. His ladies are all delightfully elegant, and he is as prolific as profusion. "Polly Peachum" (61), another sick rose, is too pretty to pass by, and with the rest, and many more, may be classed under what may be called the perfume of the spirit of the late Mr. Lidderdale's "Happiness" (47) belongs to quite another order of things; its capital execution is as solid as the felicity it relates. In "The Morning Lesson" (52), by M. Gustave de Jonghe, is some beautiful drawing: the instance, the arm and hand of the child. This is a much more agreeable work than "The Mother's Whisper" (38), by M. R. Beyschlag, wherein what has been done from the life is curiously disjointed from what has been much better done from the lay-figure. Mr. Erskine Nicol, F.R.A., sends a clever study—something slighter but flatter than usual with him—"An Old woman flying Flies" (60); and Mr. A. H. Tourrier has especially painted interior, the figures in which, "The Rivals" (106), and the object of their rivalry, are spoilt by the ugly heads.

Mr. M. W. Ridley aids in the conclusion that peculiarities are the easiest of all things to copy. He has deferred maketh the Heart sick" (104) very luminous, broad, and honest in its execution, though the lady herself is very ethereal-looking and engaging: has she been "whistled by the wind by a Whistler?"

Both power and care are evinced by Mr. Long in his Italian episode of the (139) Christmas Speeches at the Church of the Caraccioli, Rome. A mite of a contadina, perched on the table, is reciting verses or making a speech to a large audience of the parents and other relatives of the monk's pupils. The expression of the little orator—as much as is

visible—is very suggestive of her being less impressed by the value of the words she is speaking than perfect in her past recollection of them. However, they have great effect with one open-mouthed listener, at least, whose delight and astonishment betoken him to be the father of the prodigy. The right-hand half of the picture is the better.

(133) "The young Smokers," by M. Daverger, have all the characteristics their origin promises for them; and although there are several that follow in the wake of M. M. Ed. Frere and Daverger, they remain unapproachable. Mr. Vincat Cole's "View on the Holmbyr Common: Storm approaching" (68) has enough probability attached to it to make one in a hurry to change quarters.

The managers of the Dudley Gallery, in their desire to utilize the premises during the interregnum of "The General Exhibitions," have done a wise thing to institute an independent exhibition of oil pictures. The first year's collection could scarcely have been expected to attain such a character as a more thorough understanding of the arrangement, and the consequent confidence of artists will secure for it presently, though it contains many noteworthy contributions.

Mr. E. Armitage, A.R.A., fills the place of honour very deservedly with a Babylonian interior that looks less apocryphal than the source from whence he derives his inspiration. In the story of Bel and the Dragon, the idol Bel is supposed to have a very large appetite, consuming every day twelve great measures of fine flour, six vessels of wine, and, what must appear more dreadful still in times of dear mutton, forty sheep; but everybody knows the story, and what a story it is. In the picture (128) Daniel is pointing out to King Cyrus the footmarks on the pavement left by the priests in the Temple, to prove that they were the real perpetrators of the gastronomic enormity. The work is very brilliant in colour, and the costume, with all the other accessories, most conscientiously studied and precisely given. Archaeological interest and precise realization are the great features in a similar production by Mr. E. J. Poynter. (65) "Adoration to Ra," though but a single figure of an Egyptian worshipper, from no opportunity being overlooked of making it thoroughly Egyptian, must be regarded as singularly interesting: even the tiger-skin, and most elaborate architectural ornamentation, are finished to a marvel, and nothing is left to be taken for granted. An exquisite "Daphne" (126) leaves all doubt out of the question that Mr. G. F. Watts, A.R.A., is inimitable in depicting nude studies of anything that can be hinted at as objectionable: it is the gem here, and a very covetable one. The portrait of the poet "Algernon Swinburne" (206) might be mistaken for a Rubens if it were not for the collar and the coat.

"Dorothy Vernon's Doorway, Haddon Hall" (187), is an instance in which painter-partnership has been carried on with mutual advantages; and the result in this venture wherein Mr. A. Elmore, R.A., and Mr. T. Creswick, R.A., had each but limited liability brings comparatively a very rich return.

In (77) "A Summer Forenoon," apparently by the seaside, Mr. J. E. Hodgson deals with more matter-of-fact materials than is customary with him. Two ladies, one busy at a sewing-machine, the other idling over the *Cornhill Magazine*, are seated in a parlour with the window open. It is evidently very warm weather, and the effect is cleverly conveyed.

"Wasted Away" (24), by Mr. F. B. Barwell, is a novel treatment of an old subject. Two women are leaving home, passengers in a barge; the younger is standing signalling her farewell, waving her handkerchief, but the elder is weeping piteously, her face buried in her hand, whilst the barge is being steered into the current, and, helped by the wind, will soon carry them out of sight of old, and within sight of new, scenes.

(21) "A Pastoral," is a clever landscape by Mr. George Mawley; (34) "Valley of the West Oakmont, Dartmoor," which resembles a bit of background by Velasquez, is another, by Mr. Henry Moore. "The Tinker" (51), plodding through the snow, by Mr. H. S. Marks; "Robespierre" (72), watching the guillotine and the carts going to it, from the window whilst he dined, by way of a zest, by Mr. Eyre Crowe; "The Thames, near Henley" (113), by Mr. Field Talford; "Pompeii, A.D. 67" (117), by Mr. F. W. Topham, jun.; and "Haymaking" (160), by Mr. F. Hall, we are obliged to be content with mentioning.

THE STORAGE OF RAINWATER: TOWN DRAINAGE.

THE sewage "difficulty" has become opprobrious. It is not so difficult to dispose of the sewage of towns as some people who raise the cry of difficulty would have it believed. Nevertheless there are some real difficulties to be overcome, and one of them is the excessive quantity of rain-water that is admitted into the sewers. To obviate this as far as we can the rainfall on all buildings ought to be arrested before it reaches the ground, and used for household purposes, and then sent into the sewers as sewage. If this were done, the quantity of water required to be supplied by the water-works would be sensibly diminished. In all towns supplied with water by pumps, the saving of even small quantities of exerted power would be considerable.

But the chief thing accomplished would be the lessening of the quantity of rainfall to be dealt with at the sewerage outfalls. Where the sewage is pumped at the outfall, there is again a saving of power to be made by reducing the quantity of sewage in wet weather, and, perhaps, what is of equal moment with the absolute reduction, a regulation of the quantity coming down to the pumps. This thing will never be carried out without a compulsory action of the Legislature. But legislative action is often taken upon questions of not more importance than this; and now that we have Rivers Non-pollution Acts actually in force in respect of the Thames, and prospectively of all other rivers in England, it becomes a question of serious importance whether action should not be taken at once to compel the storage of all rain-water that it is possible to store and use; and it is certainly both possible and easy to store all (or with very rare exceptions all) the water that falls on the roofs of buildings. The area of ground covered with buildings in a town is very great. It is as much as half the area of some parts of a town. It is in many parts of a town a third of the area, and if we go to the average it will still be considerable.

The capacity of the tanks required to catch all this rainwater may be estimated, in the absence of more directly applicable data, upon the basis of what is found in practice to be the proper capacity for storage reservoirs; that is, allowing for variations of atmospheric peculiarities in various parts of the country, from 20,000 to 30,000 cubic feet per acre of gathering ground.

Reducing this to the dimensions of a house, we will take an average house to cover 400 square feet; and if we do so, we find the capacity of the tank to be 200 cubic feet, if we take 21,780 cubic feet per acre to be an average capacity. This quantity is contained in a tank little more than 8 ft. square and 3 ft. deep. Upon almost any outhouse this can be planted without much inconvenience or expense. But if the expense or inconvenience should constitute a valid objection to the proposition, let a water-tight tank be made in the ground, and the water be pumped thence for domestic use. It simplifies the matter to state the capacity of the tank as half a cubic foot per square foot of roof area.

It may be asserted that such a tank would not cost more than every house-owner ought to be called upon to contribute to the general prosperity of the town in which he holds property and receives so much substantial benefit as owners of houses usually do from the mixed population of towns; for house building is, in general, in England, the safest and most remunerative speculation for any one who has money to invest.

We have heard of property having its duties as well as its rights: let one of its duties be to store and use the rainfall upon all buildings.

Incidentally this storage of rain-water from buildings will have a third good effect. It is too often the practice to connect the down pipes from the roofs of houses directly with the drains, whereby the effluvia of the drains are carried up to a too close proximity to bedroom windows, causing bad smells in the houses.

The management of house draining in towns is not yet in a state of perfection by a long way; and the practice is too often to entrust the drainage of houses to ignorant men,—men of no scientific knowledge whatever, and who seem to think they have hit upon a most happy idea by turning the rain-water into the drains; for, say they, see how it flushes the drains every time a shower of rain comes. But the bad effects of this system of connecting the

down-pipes of houses with the drains are sufficiently obvious. The drains and sewers must be ventilated, of course; but it is not by the rain-water pipes that they ought to be ventilated.

It has been shown in the *Builder* that house-drains ought to be ventilated by special arrangements, and not by the accidental proximity of rain-water pipes. We do not here touch upon the subject of the diversion of rain-water sewers; but in respect of that subject it may be mentioned that a good deal may be done in many towns to lessen the quantity of rain-water, to be dealt with by making use of the old surface drains to carry off the rainfall upon the streets, connecting, for that purpose, the street gullies with them. This is not of so universal application as is the storing of rain-water from the roofs of buildings; but is still of importance, and demands the attention of local authorities.

THE CASTLE OF BÔVES.

The castle and village of Bôves stand upon the left bank of the valley of the Noye, in the old province of Picardy, above and about a quarter of a mile distant from the stream. The Noye rises near to Crèvecœur-le-Grand, beyond Breteil, and flows across a district of chalk. Both a little above and immediately below Bôves, it insinuates with the Avre, which rises near to Crèvecœur-le-Petit, and the combined stream, flowing past Longeau, joins the Somme immediately above Amiens, which city is about five miles distant from Bôves. Both the Noye and the Avre exhibit the features which are still more strongly marked in the Somme. They flow sluggishly across broad flat tracts of peat and gravel, contained within steep and high banks of chalk. The peat has been extensively excavated for fuel, and the cavities are filled with dark peaty water. The supply of coal by railway and canal seems somewhat to have checked the demand upon these turbaries, and the uncut surfaces are highly cultivated as nursery gardens, which appear in patches amidst the pools, and are chiefly reached by boats. The poplar is the prevailing tree of these damp, gloomy districts, and it there attains a very considerable size. Below the peat, and at the base and up the sides of the chalk hills, the rock is more or less thickly covered up with beds of gravel and light loam, in which are found the flint implements which have been the subject of so much speculation.

The village of Bôves contains under 2,000 persons, whose chief employment is bleaching in the open fields the cotton cloths manufactured in the neighbourhood. The church, the only public building, is a heavy Doric temple, of modern date. The village is built at the foot of the chalk hill upon which stands the castle, and which has been quarried for building purposes into a cliff of 50 ft. to 80 ft. high.

The castle, now a mere ruin of no great extent, is chiefly remarkable for its earthworks. It stands upon a chalk ridge, perhaps 150 ft. above the valley, and has been isolated towards the south by a curved ditch, about 50 ft. deep by 60 ft. or 70 ft. broad, and about a furlong in length. This ditch works out upon the face of the cliff towards the village, and upon the natural slope in the opposite direction. The ground without, or upon its counterscarp, has not been disturbed. The contents have been thrown inward, and cause the scarp to be crowned by an elevated ridge.

On the highest part of the ground, just within the ditch and near its centre, is a mound or motte, with very steep sides about 50 ft. high, and a circular flat top about 100 ft. in diameter. This motte has a basis of chalk rock, which has been scarped, and the material added to the summit. The ridge proceeds from the mound along the edge of the ditch, and probably was connected with or covered the entrance into the work upon the motte. To the east and north of the motte the ground is tolerably level as far as the edge of the cliff, and of a deep hollow way ascending from the village. This space is now partially occupied by a public cemetery and some farm buildings. West of the motte is a sort of lunated platform, beyond which the slope is again scarped by art. Probably the principal buildings of the castle and its offices occupied these platforms under the motte.

The only masonry remaining stands upon the motte, and consists of the ruins of a tower and a fragment of wall. The tower stands at the

junction of the scarp ridge with the motte, upon the edge of the ditch. Its remains are quadrangular, with thick walls, of which only the north and south remain. It was of three floors, a basement, vaulted in round-headed barrel; a first floor, with timber ceiling; and a second floor, higher, and evidently a room of state. In the basement walls remain three rectangular loopholes, or small window openings, high up. The upper room may have been vaulted. Its walls show a round-headed gable, but this may have belonged to a coved plaster ceiling. Outside, against one wall, is a plain buttress, 3 ft. by 3 ft. The material is chalk rubble, without flints, and faced, within and without, with chalk ashlar, the stones being coursed, and about 9 in. long by 6 in. high, with rather open joints. This tower may have contained a small portal. From it extends a fragment of curtain, along the edge of the motte. This has one broken opening, perhaps a window, with a round head. It is difficult to form an opinion upon the age of this masonry. It may possibly be Late Norman.

There are marks of the foundations of a shell of wall all round the edge of the motte, and of a central rectangular court. At present the summit is planted with trees, and the slopes covered with brushwood.

The history of Bôves is probably that of Amiens. It is supposed to have been thrown up in the ninth century, for defence against the aggressive Northmen, and the character of the earthwork favours this view. Some of the Sieurs de Concy were lords also of Bôves; and Henry IV., whose wars brought him to Amiens, is said to have occasionally visited Bôves with Gabrielle d'Estrees. The lordship, however, was, during that reign, the property of Philip de Moray, son of that Du Plessis Moray whose name is so intimately associated with the career of Henry. At this time there is little in the castle to repay the trouble of a visit. The earthworks are seen to great advantage from the Bôves station, the second upon the Amiens Railway towards Paris.

1867.

THE WELLINGTON MONUMENT FOR ST. PAUL'S.

A RECENT paragraph in a morning paper, stating that "a monument of the late Duke of Wellington, which is now in the crypt of St. Paul's Cathedral, the work of Mr. A. Stevens, is nearly finished, and will shortly be ready for public exhibition;" and which then proceeded to give a circumstantial account of it, must have surprised those who knew anything about the matter, while it raised the hopes of a large number of persons who had begun to think there was to be no monument at all. Several have travelled to the cathedral in consequence, and we may as well save others the journey, by stating that there is not the slightest ground for the announcement. So far from the monument being in the crypt, the preparatory model is not finished, and what part of it is done is locked up and hidden away in the sculptor's studio. The affair is a scandal. Rumour says that a hard bargain with the sculptor, which keeps him out of money, prevents the completion of the work. Anyhow the exact position of the affair ought to be understood, and the blame laid on the right shoulders. We hope that immediately on the re-assembling of Parliament, some member will call for full particulars, and not be satisfied with the reply that the model has been seen by the Chief Commissioner, and is being proceeded with. A full history of the past proceedings in connection with it ought to be called for, and an explanation from the sculptor himself.

A REMNANT OF OLD WHITEFRIARS.

It is as well to be reminded now and then of the vestiges of our old London, a city with a long story, that lurk about us and bear witness to the truth of history. The site between Whitefriars-street (formerly Water-lane) and the Temple, Fleet-street and the Thames, was occupied, as every student of the city's history knows, by a Convent of Carmelites or White Friars, founded in 1241. The church here was rebuilt in the middle of the fourteenth century, the spire being added at the commencement of the fifteenth. The convent was surrendered at the Dissolution, and in the reign of Edward VI. (sixteenth century), the church was destroyed, and various

houses were built on the site. The hall or refectory of the convent was appropriated as a theatre, — Whitefriars Theatre, — one of the earliest we had in London. Every novel-reader, as well as the aforesaid student, knows that this Whitefriars, too, became a place of sanctuary, a place where arrest was not permitted, and figures as "Alastair" in the plays of an after-time. Well, between Whitefriars-street and the Temple run three or four courts, and our attention was accidentally directed the other day to the last house on the south side of one of these, called Briton's-court. Here, partly below the basement of the house, and used as a coal-cellar, is a portion of the Mediaeval building, a small space with stone groins radiating from a boss in the centre of the diameter. Some doorways, too, we were told, are to be seen when it is empty, which was not the case on the occasion of our visit. The groins are nearly black, and the vaulting is of a white stone, possibly chalk, but we had no means of trying. So few memorials remain of the ancient state of historical Whitefriars, that it would seem desirable to make some arrangement by which this interesting remnant might be preserved from rough usage well calculated to destroy it.

THE HOMES OF OUR ANCESTORS.*

The character of a dwelling, even in our advanced state of civilization, is influenced by the materials at the command of the builder; and if we look back to a period of barbarism, we shall find that the facilities of transport being at a minimum, the materials were limited to those in the immediate vicinity of the scene of operations. In districts where stone was not to be found, and wood abounded, it was used to the exclusion of other matter, saving mud or turf; and where stone was at command, the houses (if they are deserving of that name) were composed of the more durable material.

The most primitive style of house, however, is the cave or burrow; the latter excavated in the ground, and protected from the inclemency of the weather by boughs of trees, rushes, or turf; the former being either the work of nature, assisted by the handwork of man, or of entirely artificial formation. Burrows were usually in groups, and were circular or oblong in form, seldom exceeding 7 ft. or 8 ft. in diameter. In Barry's History of Orkney, a Pict's house is described as scooped out of the ground, built of large stones converging to within a foot of the top, and externally bounded by a wall 2 ft. high, the stones laid with considerable regularity, and jointed with clay, over which was a layer of turf or peat. The uncovering mound is about 110 ft. in circumference, and 40 ft. greatest diameter; internally it measured 5 ft. 9 in. by 4 ft. 8 in., and 6 ft. high. Some of these subterranean dwellings had several apartments communicating by narrow galleries. The entrance was small and low, and was formed by two stones converging to a point; the interior was generally dark, the door being the only aperture through which light was admitted, although occasionally a small opening was found opposite it for the exit of smoke.

At a later period a more fragile mode of building was adopted, scooped out of the side of a hill and roofed with timber. Dr. Daniel Wilson describes one at Inchtribill, Inverness, as containing seven circular chambers out in a steep bank, separated by partitions 12 ft. thick, the floors sunk 20 ft., and each chamber 15 ft. diameter; a long passage, 4 ft. wide, forming the ingress; and he says that similar abodes are occupied as summer shielings in the Hebrides to the present day.

Julius Caesar describes the dwellings of the Britons as similar to those of the Gauls; constructed of wood, circular in form, having high-pitched roofs of straw: they did not exceed 7 ft. or 8 ft. in diameter and 5 ft. or 6 ft. in height; the doorway was formed of matting or skins, and no other provision was made for light.

The Saxon hall consisted of one oblong apartment, around which were disposed the barn, cowhouse, piggery, and beer-cellar, the whole being surrounded by a ditch or palisade. The material employed in these structures was wood, sometimes plastered over with clay, and covered with thatch or shingles. The door was either of wood or plated osiers, and the windows, which were very small, were closed in a similar manner.

* By Mr. W. G. Shiells: read at a meeting of the Edinburgh Architectural Association.

ner, or by canvas frames, which admitted a feeble light. The hall was sometimes of considerable size, and served the purpose of kitchen, dining-room, and bedroom, which the heads of the family shared with their dependants, and the occasional guest. In the centre of the floor, which was composed of trodden clay, was placed the fire of logs, the smoke finding its way through a hole in the roof or gable. Sanitary arrangements there were none; an open gutter ran down the floor and debouched in a small opening in the wall. The furniture consisted of a rude table and benches, and the floor was the common bed, gentle and simple reducing themselves to a state of nudity, wrapping themselves in sheep-skins or furs, and seeking repose as best they might. In the dwellings of the superior class the upper part of the hall was screened off by a curtain, and in rare instances an additional apartment was added; but even in such cases shared by the lord and lady of the house, their family, and such guests, male or female, to whom they desired to show respect. The palace of the king differed little from this type, saving that to it were added a room or two, a chapel, and kitchen. Let any one of you picture himself the occupant of such an abode, courting repose after a day of toil, a dozen or two stalwart men snoring in consort, dogs barking at every symptom of disturbance from without, children crying, and add to the picture a fever-stricken fellow-mortal dying in a corner, and be thankful for the comforts with which he is surrounded. Such is not an overdrawn picture of an age of romance, the study of the history of our art corrects many false notions gathered from the works of those to whom "distance has lent enchantment to the view."

Sir Walter Scott gives an interesting description of one of the earliest kinds of fortifications upon the island of Mousa, near to the mainland of Zeland—

"It is a single round tower, the wall curving in slightly, and then turning outward again in the form of a dice-box, so that the defenders on the top might the better protect the base. It is formed of rough stones, selected with care, and laid in courses or circles, with much compactness, but without cement of any kind. The tower has never, to appearance, had roofing of any sort; a fire was made in the centre of the space which it incloses, and originally the building was probably little more than a wall, drawn as a sort of screen around the great council of the tribe. But, although the means or ingenuity of the builders did not extend so far as to provide a roof, they supplied the want by constructing apartments in the interior of the walls themselves. The circumvallation formed a double inclosure, the inner side of which was in fact 2 ft. or 3 ft. distant from the other, and connected by a concentric range of long flat stones, thus forming a series of concentric rings or stories of various heights, rising to the top of the tower. Each of these stories or galleries has four windows, facing directly to the points of the compass, and rising, of course regularly, above each other. These four perpendicular ranges of windows admitted air, and the fire being kindled, heat, or smoke at least, to each of the galleries. The access from gallery to gallery is equally primitive. A path, on the principle of an inclined plane, turns round and round the building like a screw, and gives access to the different stories, intersecting each in its turn, and thus forming a spiral rising to the top of the tower. On the outside there are no windows; and, I may add, that an inclosure of a square, or sometimes a round form, gave the inhabitants of the burgh an opportunity to secure any sheep or cattle they required. In Zeland there are several scores of these burghs, occupying, in every case, capes, headlands, islets, and similar places of advantage singularly well chosen."

In Gough's edition of Camden's "Britannia" the Saxon castle or keep of Coningsburgh is thus described:—

"At the corner of the area, which is of an irregular form, stands the great tower or keep, placed on a small hill of its own dimensions, on which lie six vast projecting buttresses, ascending in a steep direction, to prop and support the building, and continued upwards the side as turrets. The tower within forms a complete circle, 21 ft. in diameter, the walls 14 ft. thick. The ascent into the tower is by an exceedingly deep flight of steep steps, 4½ ft. wide, on the south side leading to a doorway, over which is a circular arch crossed by a great transom stone. Within this door is the staircase, which ascends straight through the thickness of the wall, not communicating with the room on the first floor, in whose centre is the opening to the dungeon. Neither of these lower rooms is lighted except from a hole in the floor of the third story; the room in which, as well as in that above it, is finished with compact smooth stonework, both having chimney-pieces, with an arch resting on triple-clustered pillars. In the third story, or guard-chamber, is a small recess with a loop-hole, probably a bedchamber, and in that floor above a niche for a saint or holy-water pot."

The Norman keep or donjon was a square tower of about 20 ft. or 30 ft. diameter, the walls being 8 ft. or 10 ft. thick. It was three or four stories in height. The basement contained a vaulted cellar or dungeon, having neither door nor window, the only access to which was from an opening in its roof. Access to the story above was obtained from without by means of a narrow stair or wooden ladder, and this story, consisting of one room, was lighted by a small loop-hole,

and constituted the guard-room. A narrow stair in an angle led to the room above, which served the purpose of the hall, and was lighted by one or two windows of small dimensions. In it was a fireplace, having a smoke-flue. The uppermost was probably the bed-room, was usually lighted by one window, and sometimes had a fireplace. A small recess is occasionally found, which served as an oratory. The roof was flat, and formed of slabs of stone, and protected by battlements. The keep stood at the angle of a courtyard, surrounded by high and massive battlemented walls, sometimes so thick as to admit of a narrow passage along the top. At the end of the courtyard, opposite to the keep, was the gate-house, with an archway through it, protected by a massive door, the whole being surrounded by a fosse or ditch. Within the circumvallation were erected the barn, stable, and cow-house, all of wood; and in case of attack the inhabitants of the neighbouring village, which was invariably a group of miserable wooden huts,—found shelter. The White Tower of London, the royal fortress of England, presents the same distinctive features on an extended scale, the oratory being developed into a chapel, having below it two chambers. The walls do not appear to have been plastered in those early keeps, but their great thickness must have excluded damp. It was not till a later period that tapestry came to be used, so that the interiors must have presented a rude and uninviting aspect.

Of the Scottish keep of a later period, Udry Castle, Aberdeenshire, is a picturesque example. An illustration of it will be found in "Billings' Baronial and Ecclesiastical Antiquities of Scotland." The peel towers scattered over the Border Counties were similar to the keep. Smallholm Tower, which I visited last summer, is entered from the ground-floor, its situation on a steep rock being probably considered sufficient security. It is three stories in height, the first being entirely dark, the second lighted by loop-holes, and the third having two windows. The roof is not flat, but gabled. It has the usual surrounding wall, gate-house, and fosse.

In the Middle Ages the clergy were the originators of almost every improvement in science or art; and the first departure from the stereotyped plan of the keep seems to have been caused by the call of the family priest for a separate chamber. It is obvious that there could be little opportunity for study and pious meditation in a room common to a whole family, and hence the demand for separate accommodation. In order to satisfy this demand, another building sprang up alongside the tower, having a cellar in the basement, and a priest's chamber and chapel above.

The superior intelligence of the clergy, and their more refined and peaceful habits, led them to study comfort and convenience in their dwellings. Accordingly we find that the monastery presents a marked superiority to the castle. In order, therefore, to understand the development of the houses of the nobles we must take a glance at those of the ecclesiastics.

Attached to the cathedral or church we find an enclosed piece of ground, surrounded by a covered walk, forming the cloisters, and around this were grouped a number of chambers. A large refectory, or dining-room, with a kitchen, pantry, and larder attached, occupied one side of the square, the story above being used as the library and scriptorium. A hall for the novices, with a dormitory over, a hall for strangers, almonary for beggars, and a suite of chambers for the superior clergy, occupied the remaining sides of the square. The taste displayed, and the ingenuity and skill shown in the erection of these buildings, are familiar to every student of architecture.

The improved castle of the twelfth century consisted of a condensation, as it were, of the features of the monastery. The basement, as formerly, consisted of cellars, a narrow, winding stair in a turret, affording means of access to the stories above. On the first floor was the hall, which now began to assume an imposing aspect, being of considerable size, and often occupying two stories in height. On the floor level of the hall were the chapel, kitchen, pantry, and larder; and the third story contained two or three bedrooms. Whilst the baronial hall was thus increasing in importance, another class of buildings were making their appearance on the lands of the smaller proprietors, and the vassals of the nobles, the distinctive features of which were that they possessed less of the fortified character, and were not so massively built.

They were generally of wood, two stories in height, and the dwelling-house occupied one side of a square, and the offices the other three sides, much in the same manner as we see exemplified in some farm steadings at the present day. Of course you will understand that I am compelled to restrict my remarks to the general features of the houses of the various periods; the arrangements varied, more or less, in different localities, and according to the requirements of the possessors, but a description of the most marked and general characteristics must suffice.

The castle and manor-house of the thirteenth century differed little in arrangement from those of the preceding one, except in the increase of the number of rooms and their greater spaciousness. Parker describes a manor-house in the time of Henry III., as having, in addition to the rooms already referred to, a buttery with wine and beer cellars attached, a pantry, chandlery, and wardrobe. The latter chamber served the purpose of a place of custody for the richer habiliments of the possessor, and also as a store for the family plate, preserves, and spices. It was occasionally used, too, as a workroom for dressmakers and tailors. Still, the plans even of Royal manors were very defective: one room served as a passage to another; and Henry III. complained that, in one of his manors, the only means of communication between his chamber and the chapel was by means of a trap-door. Withal, there was a considerable advance in refinement, as we find that royalty indulged in a bath, although it only consisted of a tub placed in a small closet, and the first attempt at underground drainage was made. Knives and forks had not as yet appeared; the practice at the dinner-table being for the servant to carry round the piece of roasted or sodden meat from which the male guests cut off a portion with their daggers, which they shared with the lady at their side. Linen sheets and blankets were a rare luxury, and nightgowns were not thought of, royalty itself seeking repose *in puris naturalibus*.

In the fourteenth century a marked advance was made in the elegance and refinement of the superior dwellings. Some of the halls then erected are still looked upon as models for imitation, and are in use to this day. To this period belong Westminster Hall and Crosby Hall, than which nothing finer has been produced by the modern Gothic revival. Part of Linsithgow Palace, which you visited last summer, belongs to this century, as also Falkland, Craigmillar, &c. In the last-named castle you have, within easy access, an excellent example,—take note of the south front as to the sanitary arrangements. There is no mistaking the use to which the corbelled-out closet in the third story was to be applied, and there is not the slightest trace of pipes having been attached to it. Large windows filled with glass now became a distinctive feature of better class architecture. The lady's bower, or boudoir, now appears for the first time, as also a small private dining-room, to be used in place of the hall, now reserved for state purposes. Bedrooms were multiplied; but even yet they were made to serve the purpose of day-rooms as well, and the bed was frequently used as a table. The hall still continued in use as a bedroom for the domestics.

We must now take a rapid glance at the state of domestic architecture in towns. In the thirteenth century the residence of the merchant was constructed of wood and covered with thatch. On the ground-floor was an open booth for the display of merchandise, with a room behind it, and an upper story which usually projected over the under one. In the fourteenth century the same arrangement was in vogue, with the addition of a third story. Specimens of this style of house are still extant in this city, one at the angle of the West Bow and Lawn Market, and others in the Cowgate. In these specimens the upper floor is reached by a turn-pike stair, lighted by small windows, which were originally devoid of glass, but were provided with a strong sliding shutter. The lower part of the windows of the house were not glazed, but could be closed in with wood shutters, the upper part only being filled with glass. In some of the later specimens an outside stair was preferred. Drainage was almost unknown up till the end of last century, and many amusing anecdotes are told of the dangers of the streets at certain hours; dung-heaps stood in many parts of the streets; and it is not many years ago that they were still to be seen in some of the more obscure alleys and closes.

During the reign of Queen Elizabeth domestic architecture flourished with remarkable vigour.

The confiscation of the church property by Henry VIII., and its distribution amongst the nobles afforded them the means, and a period of peace gave them the opportunity of meeting the increased demands of social advancement. Mansions were then erected which are still used with but slight alterations; comfort and convenience were now studied, and architecture became a subject of more general study and interest than heretofore. We now find, for the first time, works published on the subject, and that architecture became a distinct profession in place of a closed guild, and that the professors visited the Continent to improve their knowledge and to import the styles of other countries into their own. The increase in the number of apartments was marvellous, in some instances exceeding one hundred, and the mode of communication was rendered more convenient by the introduction of corridors and broad staircases of easy ascent.

The style of architecture then practised is familiar to you all. Thenceforward originality disappears, and comfort and convenience were sacrificed to a pompous imitation of foreign works quite unsuited for our climate and the habits of the people. The plan was now made to suit the elevation, not the elevation to suit the plan. In some examples, such as Blenheim, in Oxfordshire, and Stoke Park, Northamptonshire, the only means of communication from one part of the house to another was by an open piazza; an arrangement that may be as suitable for a climate such as that of Italy, but certainly not for ours. The arrangements otherwise are equally devoid of comfort and convenience. In Marlborough House, the town residence of the heir apparent, the kitchen is in one wing, and the dining-room in another, and both are on the ground level. The poor lacqueys had to descend one flight of stairs to a dimly-lighted corridor, and to traverse the whole breadth of the building, and then to ascend another staircase to the dining-room level.

We certainly arrange things better in our day, and if the Gothic revival had effected no other change than a return to common sense planning, it deserves commendation.

THE VIEWS OF MANCHESTER ARCHITECTS.

PRESIDENT'S ADDRESS, MANCHESTER SOCIETY OF ARCHITECTS.

At the commencement of the third session of our society let us very briefly refer to what we have done in the past, and what we have to do in the immediate future. Our profession demands in us a threefold character: we are more or less, as may be, artists, men of science, and men of business; but when we formed ourselves into a society we did so mainly in the last-named capacity. We combined, not specially for the study of art, nor the advancement of science, but to elevate the status of the profession, and promote the interests of its members; to consider and determine our position towards our employers or clients, towards those employed under our direction as contractors, and towards another as professional brethren. The result has proved the wisdom of this course, for, instead of discussing the question of the invisible lines of the Parthenon, or debating on the so-called "point of departure" for modern Medievalism, we were immediately brought face to face with questions of the present day, and affecting our every-day relations with the outer world.

Besides minor matters, four important subjects have occupied our attention. The first of these was the adoption and publication of a scale of charges for professional services; and the value of this step has been abundantly borne witness to by various members of our society. It has proved to be of use to ourselves and others in two ways. We are enabled to see more clearly what our charges ought to be in cases that are exceptional, and the public are informed upon them, and enabled to satisfy themselves that what we charge is in accordance with established rules.

The second subject taken up was that of the arrangements connected with competitions. The "Suggestions" we issued have borne fruit to some extent; but notwithstanding all that has been done by this and other societies to enlighten committees and awaken them to a sense of the extreme injustice of many of their proposals, and the grievous waste of time and labour and actual

outlay which these entail on the profession, advertisements which ever and anon appear show that the task is a hard and difficult one. Still, the arrangements connected with the Law Courts competition in London, and with that for the Town-hall here, have been so much in advance of former occasions that we may hope for an improvement in the future, as compared with the past. It would be much more so, would members of our profession steadfastly keep themselves aloof from every competition which does not offer terms that are at least honest, if not liberal. For my own part, I consider competitions in architecture to be the bane of art, and their action upon the profession to be cruel, as well as hurtful; and I regret also, that we did not add to our "Suggestions" a protest against the motto system, as being a delusion and a snare, as I believe this would have secured the unanimous consent of our society.

We had, thirdly, to grapple with a vastly more important subject, and our attention to it was compelled by the action of the master builders, who, having drawn up a form of contract and a code of rules for taking quantities, invited our approval of them. We found many things in these to be, in our judgment, so objectionable that we could not accept them as they stood, but we were led to give consideration to both divisions of the subject, and to draw up and issue—first, suggestions as to what a contract should contain; and, secondly, a mode of measurement of works in preparation for a contract. In the first we conceded to the builders such points as we considered did not imperil our own standing as architects, or the interests of our clients. We take, I may say, this position, that so soon as a contract has been entered into the architect becomes, by necessity, an arbitrator between the builder and the employer, and has to see not only that the latter gets what he has contracted for, but also that he does not require from the builder more than the latter has contracted to give; and upon any point arising under the contract, and covered by it, we claim to be sole umpire and judge. And we cannot see how our duties could be carried on, if at any turn our decision could be called in question, and a referee appealed to. The builders admit that with many architects they have no difficulty, and no occasion to require a referee; and we consider that if there be architects whom they cannot trust,—men who ignore their own orders for extra work, keep back certificates when due, increase the detail of the work as it proceeds, and in other ways do injustice to the builder, the latter has his own remedy in hand, by declining to give in tenders to such men; and I think I am justified in saying, that those architects who deal, to the best of their knowledge, fairly between man and man, will be only too glad if, by such a step, a more honourable practice can be forced upon the former, or failing that, their practice fail them. In the second matter, we found that all discussion upon items of measurement showed the desire to set aside, in every case, trade customs of "allowances;" and, by preference, to measure net work, and schedule all extra labour in distinct items; thus making a set of quantities fit to be understood in any locality, irrespective of local customs.

The last important subject was that of the corporation by-laws; but upon this question I will only remark that, having succeeded in purging from them much objectionable matter, while improving their efficiency, we may hope that we have benefited other localities as well as our own, it being very much the custom for officials of one town or district to obtain copies of the by-laws in use elsewhere, and to adopt them *verbatim et literatim*, so that the very typographical blunders are even repeated.

Passing over the subjects which come before us this day, I will mention two others which I think ought to claim our attention at an early date. Uppermost in my mind comes the question of the right of light as affecting adjoining properties. No law is in a more unsatisfactory condition than that which bears upon, but does not regulate or settle this question. Perhaps no law bears more fruits of injustice, and I do not think our energies could be better applied than in considering how this may be remedied, and what ought to be the provisions of the law as amended.

We have banded together for the purpose of raising the status of the profession. One important means of this is to see that our places are supplied, when vacant, by men highly educated and well equipped with professional lore. At present our pupils are educated with-

out system, and they are without a definite object in pursuing their studies,—such of them as do study, perhaps in truthfulness, I should add. Ought we not to have certain courses of reading prescribed, and certain examinations to pass, the honour and *clat* of which would inspire the youths, and the order of which would most beneficially guide their efforts? Taking a step beyond this, it might even be desirable, if it were possible, to organize a school of architecture, similar in constitution to the schools of medicine which are established here and in several important towns, each of a number of practitioners taking one branch of study, and giving to the class a course of lectures which would form the basis of the subsequent examination for a certificate. That we have members who could undertake to illustrate the several branches of study, I doubt not; but the exigencies of professional life bear already so heavily upon many, if not all of us, that here I apprehend might lie the chief difficulty.

More I should have liked to say upon some of these subjects, and upon others, such as the baneful effect of many of the workmen's regulations, not only upon our freedom of design, but upon their own handicraft-proiciency, and their own enjoyment in the work of their hands,—a gift from God which they are doing their best to put away from them and their children; but I forbear, knowing that we meet for business, and being desirous that I should not seem to abuse the privilege of the chair. I must, however, beg leave to refer to the loss we have suffered since our last meeting. The first breach by the hand of death has been made in our society, and the suddenness of the stroke, with the comparative youth of the member, adds to our sorrow. Your election of Philip Nunn to the council of the society in two successive years marked your appreciation of his character, and a business rapidly increasing testified to the satisfaction with which his work was regarded by his clients.

W. R. CORSON.

SCHOOLS OF ART.

The Cambridge School.—The annual meeting and distribution of prizes to the students of this School, took place at the Guildhall, in the presence of a large number of ladies and gentlemen. The Rev. the Vice-Chancellor presided, and there were also present the Masters of Christ's and St. Peter's Colleges, Mr. A. J. B. Baresford Hope, M.P., Professor Selwyn, Mr. C. T. Newton, of the British Museum, &c. Mr. Newton delivered a lecture upon "The Parthenon and the Art of Phidias." The report congratulated the school on the return of its master, whose health was restored. It stated that the influence of the school was extending. Of the success which the school has had the number of prizes obtained from Government was some criterion. The committee announced that twenty students had obtained certificates for passing in the Government examination held in March last, of whom two had obtained full certificates "for having passed in all the various stages; and one obtained a prize. Besides these, six had obtained Government prizes for works executed in the school during the year. Six works were selected for the national competition at South Kensington, five of them done by young ladies.

The Coventry School.—The third annual meeting of this school has been held in the large room of the school, round the walls of which were ranged statues, architectural mouldings, and other casts for the students to copy. The room was crowded with ladies and gentlemen and pupils. Lord Leigh, the president, occupied the chair. The report stated that the work of the school continued to show progress. The number of students had slightly increased, and the attendance in the advanced classes had been more regular. The number of pupils who had attended the afternoon and evening male classes during the year was 138; last year it was 136. The evening ladies' class was 17, against 15 last year; and the ladies' class 48, against 49 last year. The Department of Science and Art had this year awarded five book prizes for drawings in the elementary stages, and one received honourable mention. Sixteen works were selected for national competition, and of these one received a medal and three book prizes. The examinations in free hand, model, geometrical, perspective, and mechanical drawing were held in March last, and were conducted under the superintendence of the local committee. The number of

pupils who passed was 27, against 13 last year; the number of successful papers, 36, against 17 last year. The report said—

"A few presents have been received from the Department, but, for the most part, they are simply worthless. The circulation of such works as the 'Photographs from the South Kensington Portrait Gallery' cannot be supposed to tend to the advancement of art; whilst, if the provincial schools were allowed the money cost of such productions, to be applied to the purchase of examples, it would afford them very material assistance, which is greatly needed."

The Macclesfield School.—The annual meeting of the Macclesfield Society for acquiring Useful Knowledge was held in the Sunday School, Rostreet, Mr. Samuel Greg taking the chair. Productions of the pupils of the School of Art were exhibited in front of the platform, and along the fronts of the galleries. The attendance of members and friends of the institution was more numerous than could have been accommodated in the usual place of meeting in the Town-hall. The School of Art report for 1867 gave a favourable account of progress made and difficulties conquered as in previous years. The work of art-education had been steadily increasing, both as to numbers under instruction and proficiency of the pupils. Comparison with previous years showed that in elementary art-education the March examination stood highest in successful members since the formation of the school. The number of students who received instruction in the school during the year which terminated September 30, 1867, was as follows:—Ladies' morning classes, 27; general evening classes, 80; total, 107. In addition, 103 pupils were instructed in private schools, making the number who received instruction 270. At the annual local examination in March last, 36 pupils were successful in fifty exercises in the second or highest grade subjects; as freehand drawings, geometry, perspective and model drawing, 17 being marked excellent, 15 gaining guinea boxes of colours, boxes of instruments, &c., and the remaining certificate cards. Comparison of results:—1866, 16 successful; 1867, 50 successful. At the same time as the above local examination the year's works of 27 School of Art students were sent to the Department of Science and Art. The head master is Mr. James Ford.

CHURCH RESTORATIONS IN EAST ANGLIA.

ALTHOUGH the amount of church restoration going on during 1867 in the eastern counties has not equalled that of one or two former years, yet it has been considerable, and the following amongst others have either been completed or are in a forward state.

Cockley Cley (Norfolk).—This is a very interesting church, with a round tower, Decorated nave, and south aisle, and Early English chancel, and has been completely restored, and a new north aisle added, corresponding in character to the south, which opens with three arches into the nave. A high and ugly brick clearestory, built about eighty years ago, has been removed, and a new open roof of the original pitch substituted, the weather moulding of the old roof being still on the tower. The chancel has on each side five single-light Early English windows, connected internally by a hood moulding. The east window is of three lights, with shafted mullions, and is in detail not unlike the well-known one at Polebrooke. Three of the side windows had two-light Perpendicular insertions, and one had been cut down and formed into a modern doorway. These have all been restored to their original form. Three ambries were discovered in the chancel, and two piscinas in the south aisle, all in fair preservation, and are left open. A new trussed rafter roof of the original pitch, with curved braces, has been put on the chancel in the place of the modern low-pitched one with a plaster ceiling. A new south porch, of flint and stone, has been built, and the tower, which is 16 ft. in diameter and 48 ft. high, restored, and the belfry windows filled with slate louvres. There is no tower arch, but only a small door, a not unrefined arrangement in the Norfolk round towers. The font, a curious and rather rude piece of transition from Early English to Decorated, with a shafted pedestal and octagon top, has been refixed; the church benched throughout with oak benches; the passages in the nave and aisles laid with Penke's and the chancel with Minton's tiles. A new oak pulpit, prayer-desk, and lectern have also been fixed. The church is warmed with Gidney's

underground stove. The works have been executed by Mr. Burrell, of Norwich, and the entire expense has been borne by the squire of the parish, the outlay being about 1,500*l*.

Thorndon (Suffolk).—Thorndon Church consists of a wide nave, with chancel of the same width—no chancel arch, but the walls and roof run through at an equal height. There was nothing, in fact, to mark the nave from the chancel, except a step and the screen, the lower panels of which still remain. There are several churches of this type in the eastern counties; and they are, as in this case, generally of the flowing Decorated period; but at Thorndon some of the side windows have been filled in with tracery of a later date; and the large east window—the shafted jambs and moulded arch of which remain—was some forty years ago partly stopped up and a three-light window of Perpendicular design, all in cast-iron, inserted. About the same time, the Decorated trussed rafter roof was taken off, with the exception of the two western bays, and a rough, low-pitched common tie-beam king-post roof put up in its stead. This has now given place to a new roof, the detail of which is a copy of the old part which remained, the only difference being that the architect has introduced, as he has also done at Burgate and some other churches with no chancel arch, a moulded arched timber rib, carried on carved stone corbels, to mark internally the chancel from the nave, the roof running through level, and having an ornamental cresting on the chancel roof-ridge only. A new four-light east window, fitting the original opening, has been put in, and below it a rather elaborate reredos of oak, the centre compartment being filled with the Last Supper in *alto relievo*, very beautifully carved by M. Abeloos, of Louvain. The apostles are all represented kneeling, and the Saviour standing. The other chancel windows, together with the door, buttresses, and outside flint facing, &c., have all been made good where defective, but there has been no scraping of the old sound work. This part of the church has been seated with oak benching, and the passages and altar space paved with Minton's tiles. Several of the old poppy-head benches still remain in the nave; these will be preserved, and the rest of the nave benched to match them. There is also a very good Early Jacobean pulpit and lectern, the latter being rather a rare thing to meet with, both of which will be refixed. A modern west gallery is to be removed, and tracery and mullions inserted in the west window, which is at present mutilated and partly bricked up. Below the west window is a very good doorway. On the south side is a fine tower of Decorated date, which forms a porch to the church, and, with the exception of the battlements and belfry-windows, is in good preservation. The cost of the works up to the present time has amounted to about 800*l*., and about 400*l*. more are required to complete them. They have been executed by Mr. Grimwood, of Weybread.

Acle (Norfolk).—This is another of the round tower churches with a wide nave (having a thatched roof), and chancel: the latter was restored some years ago under Mr. Christian. The nave has now been benched, and the church heated with hot water, the windows restored, and the walls replastered. There is a good Perpendicular screen, which still retains some of its old painting, and a very fine font in the church: both have been carefully preserved. The round tower is 53 ft. 6 in. high, and 16 ft. 6 in. in diameter. The north porch is a good specimen of flint and stone work, and has a parvise or priest's chamber over it.

Mendham (Suffolk) is an Early Perpendicular church, the nave having originally a high-pitched roof and no clearestory; but shortly before the Reformation this roof was removed, and a high and disproportioned clearestory, with nearly a flat roof, the eastern bay of which retains its original colour, was put up. There are two aisles, a west tower, a good flint panelled south porch, and a very dilapidated chancel, which the lay improprator seems very unwilling to restore. The rest of the church, however, is being put in thorough order at a cost of about 1,300*l*., the work being let to Mr. Griuwood, of Weybread. The roofs have all been restored and relaid,—the aisle roofs being so rotten that they had to be entirely new; the windows and stone work inside and out, where defective, made good, but not scraped; the walls replastered; and the church benched throughout with carved oak benches. The passages are to be laid with Minton's tiles, and the church warmed with Gidney's

underground stove: the windows are glazed throughout with tinted cathedral glass. The prayer-desk and pulpit are of oak. Stone corbels are introduced to carry the braces of the old nave roof, which were left out square off. Their design is a series of angels holding the various emblems of the Passion, &c.; and they are carved with great spirit. A squint from the south aisle to the chancel has been found with its original sliding door, and two very nearly perfect piscinas have been opened in the south aisle.

Dickleburgh (Norfolk).—A Perpendicular church throughout, with nave, north, and south aisles, west tower, chancel, and south porch. This church has suffered in times past more by the hand of the restorer (?) than by that of time. It has poor modern chancel and nave roofs and battlements, all unfortunately in too good repair to induce those interested to replace them with some better work. The church has, however, this year been benched with some rather elaborate oak benching; the ends being square-headed, and filled in with many different tracery patterns. The chancel benches have poppy-heads; the old ones being reinstated. A new oak prayer-desk has been provided, and the old Jacobean pulpit refixed. The side windows of the chancel and the "priests' door" are restored: the former were so dilapidated that they had to be almost entirely new. Some huge brick buttresses have been taken down and rebuilt in stone and flint to match those in the other parts of the chancel. The outlay has been about 600*l*.; and the work has been executed by Mr. Bishop, of Diss, and Mr. Wells, of Dickleburgh.

Uggeshall (Suffolk).—The chancel of this church is being restored, and a new organ chamber thrown out on the north side of it, at the expense of the rector. The chancel is of Early Decorated date, and the removal of the outer coats of whitewash has revealed several consecration crosses both on the walls and the jambs of the windows. The heads of two figures are also traceable; but the painting is so far gone that it is impossible to make out the subject. There are also some good running ornaments in red and brown. The new roof to the chancel is a careful copy of the old one, which was of trussed rafter construction. There is no chancel arch, and an oak moulded arched rib has been introduced as a division between the two roofs. The nave has a very good Perpendicular hammer-beam roof, which has been restored and re-thatched. The chancel is to be benched with oak benches, and the floor laid with encaustic tiles.

Ormesby (Norfolk).—Ormesby is one of the few village parishes on the eastern coast that have increased in population, and the enlargement of the church has become absolutely necessary. This has been accomplished by the addition of a north aisle opening into the nave, with four large arches. The nave and chancel are of the flowing Decorated period, and the new aisle has been built in the same style. The church is being heated throughout in oak, and the passages are to be paved with red, black, and buff tiles. The windows are glazed with rough-plate tinted cathedral glass, worked in patterns, with a white margin. The chancel has also been restored, and a vestry built at the expense of Sir E. Lacon, M.P., who lives in the parish. There are two very good recessed canopied Decorated tombs on the north side of the church, both alike in design, to the Clero family, the builders of the church,—one in the nave, and the other in the chancel. The latter has been preserved intact, but the new aisle necessitated the removal of the former, and it has been carefully rebuilt under the east window of the new aisle. The cost of the entire works amounts to about 1,600*l*., and they are being executed by Mr. Cornish, of North Walsham.

Fressingfield (Suffolk).—The very elaborately carved benching and nave roof of this church are well known, and are, perhaps, of their kind unequalled, but both are beginning to suffer for want of attention, several of the carved bosses and creatings in the roof having dropped down and become lost. Plans have been prepared for the complete restoration of the church, and the tower at the west end, which stood in the most urgent need of repair, has already been restored. Subscriptions are being collected for the rest of the work, the architect estimating the total cost at nearly 2,000*l*.

Wickhampton (Norfolk).—Has a lofty nave and chancel, with a south tower, which serves as a porch, all of Early Perpendicular work. The roof of the nave is being restored, bay by bay, the decayed timbers taken out, and others of

equal size and similarly carved and moulded, put in their stead. The west gable, which was very unsound, is being rebuilt, and all the stonework of windows, buttresses, and doors restored, but not scraped. The external face of the walls throughout is rather unusual, being alternately a course of flint and thin bricks, which, now the whole has become grey, gives a very pleasing effect. There are two chambers in the tower, below the belfry, both of which contain fireplaces, and the lower one has also an oven. These are clearly coeval with the tower, the flues being carried up in the solid walls, and turned out just below the level of the string-course running under the belfry windows. There are low, side, narrow slit windows in both rooms, near the fireplace. A new north porch and vestry is being built, and the chancel will have a new east window. The church is to be benched in oak and paved with tiles. The outlay will amount to about 700*l.*; Mr. Cornish, of North Walsham, being the contractor.

The whole of the above churches have been or are being restored from the designs and under the superintendence of Mr. Phipson, F.S.A.

CHURCH OF ALL SAINTS, LITTLE MUNDEN, HERTFORDSHIRE.

The following appeal has been circulated:—

"The time has come when an effort must be made to repair thoroughly the parish church of Little Munden, and to restore it in some degree to its original condition, thus repaying to posterity what we owe to our forefathers.

The manor of Little Munden, it will be remembered, is very ancient. Domesday Book mentions the name of a vassal of Earl Harold, to whom it belonged in Saxon times, and how William the Conqueror afterwards disposed of it. The present church is for the most part due to the commencement of the fifteenth century, and is an interesting specimen of a parish church of that period, containing also some remarkable canopied monuments with sculptured effigies. The whole of the fabric has fallen into a bad state; the walls externally require refacing, the stonework generally needs repair or restoration; the woodwork of the roof has been disfigured by alterations, and is much decayed; drainage and paving must be attended to; there should be new seating throughout, and means must be provided to warm the church, at present so damp and cold as to be scarcely endurable in winter.

With the view of ascertaining what is really necessary to be done, Messrs. Godwin, architects, under whose direction various churches in the country have been restored (Ware, Standon, Great Munden), have been applied to, and these gentlemen report that the works required to be done will cost about 1,300*l.*, exclusive of architects' charges, and the wages of clerk of the works. Before commencing, however, precise tenders would be obtained from builders, and a contract made, so that the exact sum to be spent would be determined. The patron of the living is willing to assist liberally, and an appeal is now made for aid in this good and necessary work to all who, whether resident in the county or not, desire to see our churches properly maintained."

By the exertions of the rector, the Rev. F. A. L. Foster, and the liberality of Lieut.-Colonel Loyd, great part of the required sum has been raised, and tenders for the performance of the necessary works will be invited forthwith.

THE RE-OPENING OF CHICHESTER CATHEDRAL.

AN interesting service has been held in Chichester Cathedral, where a crowded congregation assembled last Sunday to celebrate the restoration of the structure from the ruinous condition to which it was reduced by the fall of the tower and spire in 1861. Into the history of that catastrophe we need not now enter: it was fully described by us at the time. Immediate steps were at once taken to rebuild the fallen tower. Mr. G. G. Scott, R.A., was requested to make a report, and, after the removal of the debris, the work of reconstruction was at once commenced, and under his and Mr. Slater's superintendence the tower and spire have been completed in all respects, an exact reproduction, it is asserted, of what was lost. The builders were Messrs. Beauland; the clerk of the works was Mr. Marshall; and the foreman, Mr. Norrice. The tower being finished, and the scaffolding removed, the suspended works in the choir,—which were going on under Mr. Slater's superintendence, it will be recollected, at the time of the fall of the tower,—were resumed under the direction of Mr. Slater. The whole of the stalls, with the exception of those for the dean and precentor, had been completed from Mr. Slater's designs, as were also the marble pavement and the altar. During the rebuilding they were temporarily deposited in the lady chapel. They are now fixed in their places, together with

the new throne, the dean and precentor's stalls, the steps, screens, &c.

The original scheme for the re-arrangement of the choir has been completed in most of its essentials, though the reredos, organ-case, &c., are yet to be erected. It was proposed at first to retain the returned stalls; but this proposal was abandoned, and the dean and precentor's stalls now face respectively north and south.

The ancient canopied stalls of Bishop Langton have been re-erected in their original position under the tower: they are thirty-six in number, eighteen on either side. They have been restored, as have also the chancellor's and treasurer's stalls, at the eastern end of each block.

The reredos has been designed, and is now being executed, by Mr. Forsyth. The principal feature in it is the sculpture of the Ascension. The structure is of various rich marbles: the figures of very large size.

The organ-case has yet to be designed, but the organ itself has been altered and re-erected over the stalls in the north arch of the tower, Messrs. Hill & Son being employed for this work.

The whole of the stall work and throne have been executed Mr. J. Forsyth, and the pavement was done by Messrs. Poole & Son. The stall-floors, marble plinths to stalls, grilles, screens, &c., have been done by Mr. Marshall.

Although the fabric has been restored substantially, there remains still much to be done to render the interior complete.

THE EXCAVATIONS AT JERUSALEM.

THESE excavations, at the instance of the Palestine Exploration Society, have now arrived at a point of singular interest. Shafts of great depth have been sunk, and walls and passages discovered which require further excavation and further means to explore them. The depth or height and extent of the Haram wall are scarcely less than astounding. In a letter which Mr. George Grove, of the Crystal Palace, the secretary of the Fund Society, has sent us, he says,—

"The funds of the society are all but exhausted at the moment that Mr. Warren's strenuous and able labours are beginning really to tell.

Briefly to sum up his discoveries, the details of which will be found in his reports, Mr. Warren has established by actual demonstration that the south wall of the sacred enclosure, which contained the Temple, and which was more than half its depth beneath an accumulation of rubbish—probably the ruins of the successive buildings which once crowded it; and that, if based to its foundation, the wall would present an unbroken face of solid masonry of nearly 1,000 ft. long, and for a large portion of that distance more than 160 ft. in height; in other words, nearly the length of the Crystal Palace, and the height of the transept. The wall, as it stands, with less than half that height emerging from the ground, has always been regarded as a marvel. What must it have been when entirely exposed to view? No wonder that Prophets and Psalmists should have rejoiced in the 'walls' and 'bulwarks' of the Temple, and that Tacitus should have described it as *moda arce constructum*.

The question immediately occurs, What does the lower part of the structure formed by this enormous wall contain, our present knowledge being confined to the existing level of the ground? Of this I can at present say nothing, though the passage discovered by Mr. Warren, 30 ft. below the 'single gateway,' and described by him under October 22, promises to lead to important discoveries.

I sum up by recording the important fact that the discoveries have completely changed the conditions of research in Jerusalem. They are nearly equivalent to the discovery of a new city. Hitherto we have explored the surface, or at most the vaults and cisterns immediately below it. We must now go far deeper, and penetrate those mysteries which the kind earth has entombed and preserved for centuries for the advantage of our generation. Exploration in Jerusalem is at present in the condition of a puzzle or joining-map, of which only half a dozen pieces are found out of sixty or seventy. Find the others, and the whole can be put together, and will then be intelligible enough. Extend to the other parts of the city the researches here begun, and the sites of the Temple, Calvary, the Holy Sepulchre, the Pool of Bethesda, will be problems no longer. I may, therefore, with good reason, beseech all who are interested in Biblical studies to give their aid to the Palestine Fund for this work. This society is no private enterprise. The Queen is our patron. The Archbishop of York is our president. The committee contains some of the most eminent names in science, literature, education, and religion.

In this work 3,527 have been expended—a sum which no one conversant with the subject will think extravagant. I entreat the public of England not to let it drop. Mr. Warren estimates his expenses at 200*l.* a month for six or eight months. 1,600*l.* What is this to raise in England from the very large number of persons who take an interest in researches bearing so directly on the illustration of the Bible? If Mr. Warren is obliged to relinquish his operations, not only will his shafts fall in and his trenches fill up, but the Arabs, who he has trained to work so well, will go back to their old habits of idleness, and the whole process will have to be gone over again, if, indeed, it is ever again attempted."

But it will not be relinquished. We cannot believe that an undertaking which has so many points of attraction to archaeologists and archi-

tecs, as well as the religious public, can be allowed to fall through.

The shafts alluded to by Mr. Grove (one is 85 ft. deep) are mostly actually without boarding or protection to the daring excavators from sheer want of funds; and they were thankful lately to fill up one that had some boarding in order to make use of it for more pressing need. This is like filling up the necessary trenches on the way to the attack of a city which is about to fall into the hands of the entrenchers. We cannot for an instant imagine that a few thousand pounds will fail to be immediately forthcoming on such an occasion as this.

SCULPTURE.

MR. LOUGH, one of our very few sculptors who aim at the ideal and find a public to encourage them in the high endeavour, has four statues and groups in different stages of completion. Two of these represent hunters of heroic size and type, and are in course of translation to marble. One has just killed a buck, which lies at his feet, and keeps back a dog with his right hand. The other hunter is about to despatch a boar, already speared, and which he bestrides—a dead dog telling of the previous struggle. In both these groups, the first of which we prefer, Mr. Lough's skill in the presentation of animal form is strikingly shown. There is no occasion to ask the name of the third statue, a nearly nude Bacchic figure trampling on grapes: with his right hand he holds aloft a laden branch of the vine, and with the other supports on his advanced left leg a vessel of classic form. The figure is full of spirit and movement, the pose and modelling alike demanding praise. Of the same character of art, and calling for equal commendation, is "The Lost Pleiad," already in marble, a fresh female form, half reclining on a sphere just struck down into the water. The hours personified around the sphere suggest her descent to the furies. It was satisfactory to hear that this charming work was commissioned for marble (by Mr. Henry) before it was finished in clay.

PUBLIC ROUTES AND GARDENS.

THE march of improvement in horticulture is now more evident than in the parks, squares, and open spaces of London. Some twelve years back, Sir Benjamin Hall (the late Lord Llanover) began the border decorations of the parks, at a period when the wild borders of the Kensington long walk was the sole floral resource of opidians. Since then Regent's Park has been laid out in gardens; Park-lane and Rotten-row have been adorned with an exquisitely beautiful arrangement of shrubs and potted plants; the squares have generally been more carefully tended; Paddington, Camberwell, and Islington greens have been raised in, laid out in flowering beds, and also, being provided with seats, have become, instead of repulsive wastes, pleasing and refreshing places of resort for residents or way-farers.

Even the churchyards, formerly bristling with tombs, have been levelled, sown with grass, and planted, and now wear a verdant and pleasing aspect, since interments having been discontinued, no disturbance of the soil interferes with perennial vegetation; and those once baneful and melancholy domains of the dead contribute their share to the solace of the living.

Observations frequently made in the *Builder* may, perhaps, have had their effect in stimulating these improvements, which promote much the health and gratification of citizens generally; references having been often made to the ornate condition of Firo la Chaise in Paris, to prove that the earthly abode of the dead need be neither unhealthful nor revolting.

Any one who walks the park borders and observes the groups of all ages occupying the frequent seats, and enjoying the exquisitely varied and planted flower-borders, must feel gratified at the expenditure of so much money, care, and skill, when he considers the solace such works of taste afford to the multitude, and the healthful recreation they bring within reach of London residents, who could have no idea of floral nature without them. Moreover, these displays have created a taste for floriculture that bedecks every window and forecourt, and fills even sunken areas with beauty.

There is yet, however, a square in the very centre, close to Charing-cross fountains and the gallery of national taste, which is suffered to smoulder in waste, the rails broken, the weeds in luxuriance, the central equestrian statue mutilated and whitewashed in derision. Is there no resident proprietary in Leicester-square; or is it given up to devastation and to wilderness since the Great Globe itself has vanished, and Wyld made havoc of its dome? A theatre or panorama can certainly feel no interest in external garden decoration,—but oh! Shade 'of the Sablonnière,—*bel esprit de Stag* & Mantle,—how can ye contemplate such desecration through your windows of British plate?

The fine causeways of Birdcage-walk and of Park-lane have been widened, giving more apparent scope, not only to the roads, but to the adjacent parks. It is to be hoped that the improvements assured by such skillful management may be extended to the great southern route, along Hyde Park, by Kensington-road, and that this, the grandest boulevard of the west, may be made worthy of the royal suburb and the city that London is to become, so soon as the river embankment shall be finished. Already it is bordered by open park on the left hand, or on the right, from Devonshire House, Piccadilly, to Knightsbridge; thence begins a range of squalid shop-houses to the cavalry barracks, which stint the road, and defile the finest site of the circumjacent West-end. Surely these defaults ought to be abated, and at least some of the tottering fabrics removed; then the Kensington and Piccadilly approach to London would be the most central, as well as the grandest, thoroughfare of the whole metropolis, and a stimulus might thus be given thereby to the recently-projected traverse road, leading in continuation from Cromwell-road to Buckingham Palace.

QUONDAM.

MALICIOUS DAMAGE TO MASONRY AT PADDINGTON.

On the night of the 11th instant some persons entered the mason's shop at the new Church of St. Mary Magdalene, Paddington, now in course of erection by Mr. J. D. Cowland, of Notting-hill, builder, and broke and defaced the moulded tops of two columns that were nearly completed. The marks were evidently those of a mallet and chisel, and the damage was done just where it could not be repaired. There were employed by Mr. Cowland five society and three non-society men, and the former had struck against the latter being employed. Mr. Cowland, determining not to discharge those who remained faithful to their duty, the union men were paid their wages and left accordingly, and next morning the outrage detailed was discovered. A reward of 20l. has been offered by the builder for the discovery of the malicious "rattener."

SANITARY MATTERS.

Guildford.—A fatal typhoid fever having broken out of a sudden in the highest and healthiest part of Guildford, and spread till there were 264 cases, not of a fatal type, however, a sanitary investigation was gone into, which has resulted in the discovery that the fever probably originated in the fact that the limited district of 330 houses in which this gastric fever broke out was precisely that part of the town which had upon a single occasion been supplied with water containing sewage, from a new reservoir, while the machinery ordinarily in use was under repair. Yet, although the fever broke out in more than one-half of the 330 houses almost simultaneously, a period of incubation for eleven days had transpired, during which the poison in the blood must have been at work before it issued in the recognizable fever. In course of the investigation it was made quite clear that the town drainage had got into a well from which the new reservoir had been supplied on the occasion referred to.

Epping.—A large number of influential ratepayers met recently in the Bench-room at Epping Police-station to meet Mr. Arnold Taylor, the Government inspector, who had been sent down to inquire into the advisability of acceding to the prayer of a petition from Mr. Clegg, surgeon, and about fifty other ratepayers of Epping and adjoining parishes, asking that an Epping Town District might be formed for sanitary purposes, to include portions of Theydon Bois, Theydon

Garnon, and Coopersale. At the close of the inquiry the inspector said he believed they wanted sanitary improvement in the town of Epping, and they would not get it until they had formed a sufficient district; but they must remember that even after the district was formed it would remain for them to consider to what extent they would go as regarded water supply and drainage.

PROVINCIAL NEWS.

Wolverhampton.—The New Town Hall Committee have reported in reference to the plans of Mr. Bates, the selected architect. The plans include a sessions-house, magistrates' court, police-barracks and offices, and prisoners' cells, together with the requisite offices for the Corporation. These buildings will occupy the site of the present Town Hall and of other premises. A street, 36 ft. in width, will also be made, leading from North-street to Red Lion-street. The principal entrance to the proposed buildings will be in North-street, and will lead into a vestibule and public hall. The public hall is centrally placed in the building, and at right angles to three of its sides are placed the sessions-house, magistrates' court, and council-chamber, respectively, which, together with the principal offices connected with the sessions-house, magistrates' court, and corporation offices, are placed on the ground-floor. The committee-room, mayor's parlour, recorder's room, and retiring-rooms are placed on the first-floor overlooking North-street. The prisoners' cells, fire-engine house, stable, and some of the inferior offices are placed in the basement. The police-offices and barracks are placed between the Town Hall buildings and Red Lion-street, and abutting on the proposed new street on the northern side, leaving a court-yard or parade-ground between them and the southern side of the site and Red Lion-street, containing about 900 square yards. The estimate, fittings inclusive, is 17,000l.

Dorchester.—The new Corn Exchange is nearly completed. The building, which has been erected immediately in rear of the Town Hall, is of brick, with Bath-stone dressing, each of the side walls being supported by four buttresses supporting the principals of the roof. The walls terminate abruptly with a kind of parapet, and altogether the exterior of the building is stunted, and of unimpressive appearance. The exchange-room is 80 ft. in length and 40 ft. wide, while from the floor to the summit of the arched roof is 40 ft. The roof is supported by five ribs of iron encased in wood, resting on corbels of Cosham stone. The cornice is of stained deal, pierced with ornamental scroll-work. The pillars supporting the iron girders at the south end of the roof consist of iron tubes with carved capitals of Cosham stone and bases of the same material. The carving was done by Mr. Benjamin Grasseby, stone-carver, Dorchester. The architect is Mr. Hall.

UNIVERSITY OF LONDON.

AFTER long endeavours a building is being provided for the London University, at the public expense. It occupies the northern portion of the ground in which stands Burlington House, and fronts in Burlington-gardens. Of this elevation we give a view, together with a plan of the ground-floor. The claims which the University put forth in the endeavour to obtain a building, will serve to show the position the establishment holds. The University of London—of which the essential function is the conferring of Academic degrees upon qualified candidates from all classes and denominations of her Majesty's subjects, without any distinction whatever—is in every sense a national institution, and as such it is entitled to claim that whatever is necessary for the most efficient discharge of the functions confided to it should be provided out of the national funds. It originated in an address from the House of Commons; it was created and is governed by charters of the crown; it is supported by annual grants of Parliament; and it is fast rising to a position of even greater importance, as the head of all the higher education of the empire not embraced by the older universities, than was contemplated on its first establishment. Its history during the twenty-five years which have elapsed since it came into active operation is one of continued progress, notwithstanding the embarrass-

ments which it has experienced from the want of an edifice suitable for the performance of its functions; and the rapid increase in the number of candidates for its examinations which has taken place since its functions were enlarged by the charter of 1859, is sufficient to show the hold it has acquired on the educational sympathies of the country.

The advantage of a National Institution so constituted as to be entirely free to carry out the enlightened object for which it was established, has been made evident not merely by the independence with which the University of London has been able to adapt its curriculum of study to the general requirements of the times, but also in especial by the advanced position which it has from the first been enabled to take in the improvement of medical education, and by its recent establishment of degrees in science. Its medical degrees have now confessedly attained the highest rank in public estimation; and it may confidently be anticipated that the same value will be attached to its degrees in science, the examinations for which are conducted by men of the greatest eminence in their respective departments.

In addition to the accommodation needed for the conduct of its examinations and for the transaction of its ordinary business, the University also requires for its public assemblages and for the meetings of its convocation a hall of which it can claim exclusive possession; and it cannot be considered complete without a library and other apartments which may be employed as a centre of union among its members.

That these requirements should be combined in a distinct and appropriate building has been from the first the strong conviction of the Senate; who have repeatedly urged upon successive Governments that only by this step can the University obtain that universal recognition which it is entitled to claim in virtue of the comprehensiveness of its constitution and the importance of its duties. When, after repeated displacements the University was put in possession of the apartments it now occupies in Burlington House, that accommodation was accepted by the Senate "on the distinct understanding of its temporary character;" and they took the opportunity afforded them in the spring of 1859, by an inquiry made by Lord John Manners, then Chief Commissioner of the Board of Works, to renew the representation of their claims, and this representation they kept up until their object was, recently, effected.

The design at first selected was objected to after the works had been carried on to a certain extent, and a fresh design, that now illustrated and which is being proceeded with, was made. The plan shows the arrangement of the building and the principal apartments. The accommodation provided will be as follows:—

Upon the Ground-floor.

	ft.	ft.
Entrance hall or corridor.....	33	by 33
Public staircase.....	72	by 56
Hall for conferring degrees, &c.....	72	by 63
Hall for public examination.....	61	by 32
Smaller hall ditto.....	61	by 32
Waiting-room for candidates.....	23	by 18
Two examiners' rooms..... each	26	by 18
General waiting-room.....	18	by 14
Clerks' room.....	18	by 14
Room for specimens and apparatus.....	26	by 18
Messengers' room.....	18	by 14

Upon the First-floor.

	ft.	ft.
Senate-room.....	43	by 27
Committee-room.....	26	by 18
Registrar's official room.....	26	by 18
Registrar's private room.....	17	by 12
Room for clerk of convocation.....	21	by 13
Library.....	35	by 33
Laboratory of chemical room.....	61	by 33
Anatomical room.....	61	by 33
Two professors' rooms..... each	16	by 12

Upon the second-floor will be apartments for the housekeeper, &c., &c.; and on the basement-floor rooms for the lithographer, for muniments, for stores, for the housekeeper, and so on.

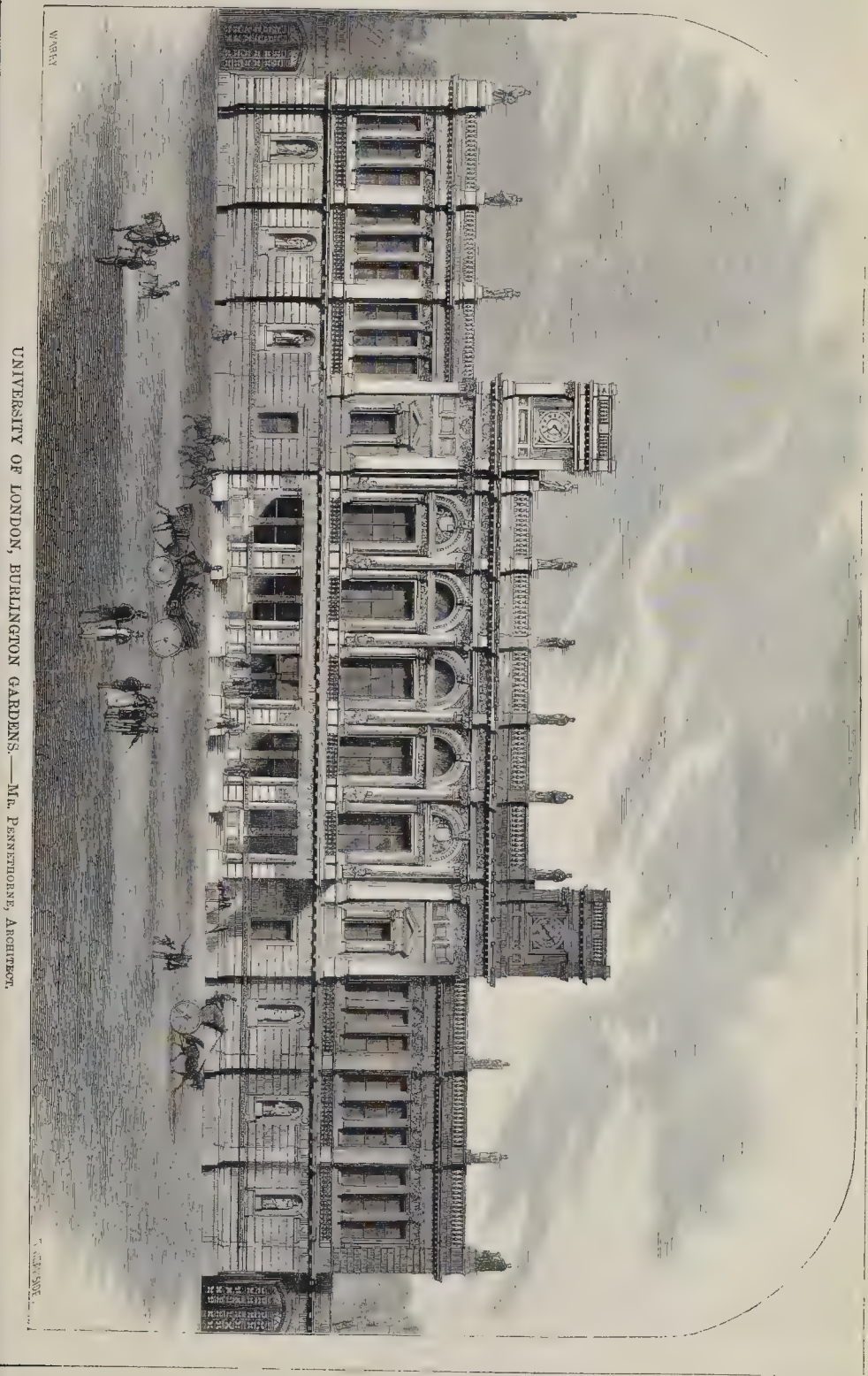
The principal front of the building is, as we have said, towards Burlington-gardens, and will be faced with Portland stone and red Mansfield stone intermixed, the enriched string-course being of Hopton Wood stone.

The work is being executed by Messrs. Jackson & Shaw, of Earl-street, Westminster, from the designs and under the superintendence of Mr. James Pennethorne. Mr. Warburton is clerk of the works.

The estimate submitted to Parliament for the building was 65,000l., exclusive of fittings; and this amount, it was stated in the House of Commons, will be considerably increased by the change of style.



UNIVERSITY OF LONDON. — Plan of Ground Floor.



UNIVERSITY OF LONDON, BURLINGTON GARDENS.—MR. PENNEY, ARCHT.

THE QUEEN AND A PUBLIC PARK FOR PORTSMOUTH.

UP to the present time the inhabitants of Portsmouth, Portsea, and Landport, a population numbering over 100,000, have been in much want of an open space suitable for exercise and recreation. With the exception of Southsea Common, which is in almost daily use for military purposes, they have had no place of the kind within a shorter distance than two or three miles from the most densely populated part of the district. Some time ago the civic authorities of Portsmouth represented those facts to the Government, and applied to the War Department for the appropriation, as a public park of a portion of the glacia before the old lines of fortification.

In consequence of a letter from Mr. Francis Fuller to General Grey, her Majesty the Queen was graciously pleased to interest herself in the matter, and the result has been the cession of the land for the desired purpose—a result for which the people of Portsmouth will doubtless feel duly grateful.

LONDON ORPHAN ASYLUM COMPETITION.

THE Board of Managers have awarded the premiums for the several designs submitted for the new asylum at Watford in the following order, viz.:—First, Mr. Dawson; second, Mr. Robins; third, Mr. Watson. The committee have gratefully acknowledged to each competitor the great talent and labour bestowed by the competing architects in their endeavours to meet the requirements of the charity.*

RYDE CHURCH COMPETITION.

THE exhibition of designs for this work having been kept open long enough for every one desirous to see and examine them, the committee, on Tuesday, the 12th inst., selected a design by Mr. Peachey, of Darlington, as the first in merit. The amount prescribed is 8,000l. The second in order bore the device "Trefoil;" the third, "Simpler;" the fourth, "Faith;" and the fifth, "Proportion." The new church will be 60 ft. wide and 115 ft. long, and 60 ft. high to point of roof, to the spire 37 ft. The tower and spire rise to the height of 177 ft. The church will accommodate 914 adults and 200 children, allowing 20 in. for each sitting, and with benches 4 ft. apart. The chancel will be 20 ft. wide and 4 ft. from the transepts.

THE INSTITUTION OF CIVIL ENGINEERS.

THE first meeting of the session, held November 12th, Mr. John Fowler, president, in the chair, was occupied by the reading of a supplement to and the discussion upon the paper, "Experiments on the Removal of Organic and Inorganic Substances in Water," by Mr. Edward Byrne, which was read at the close of last session. The author now gave an account of experiments he had since made on the well-known filtering materials, magnetic carbide, and silicated carbon; and, after recording the results in a tabular form, he proceeded to make a comparison between those substances and animal charcoal.

His experiments were to the effect, that the action of the magnetic carbide was exceedingly feeble as regarded the removal of organic and inorganic impurities, and that it did not possess the property of softening the water except to a very small extent; whereas, this property was possessed in a high degree by the two other filtering materials. Silicated carbon, however, quickly lost this power, and, after a short time, rendered the water positively harder than it was before filtration. Animal charcoal, in its filtering property, was not only more powerful than the silicated carbon, but more permanent in its action; and so far as the experiments went, continued to remove inorganic matter. After a short time, however, it commenced to give back a portion of the organic impurity which it had

previously removed. The silicated carbon, too, was found in an equally short time, to give back not only the organic, but also the inorganic matter which it had previously taken up.

The author expressed the opinion, that while filtration must ever be considered most valuable for the removal of matter in mechanical suspension, it was practically useless as a means of removing substances in solution. He argued that the deductions to be drawn from these experiments, though made on a small scale, would, by reason of the systematic manner in which they were conducted, be safely applicable to cases of far greater magnitude. He concluded by expressing a hope, that the result of these investigations would serve the purpose of pointing out the danger of depending too much on the system generally of filtration, as well as of exposing the inconsistency of bringing home foul water, to undergo a delusive method of purification; instead of adopting the proper and only satisfactory plan of procuring water which was itself naturally pure.

NEW HOSPITAL IN SUFFOLK.

THE foundation-stone of St. Leonard's Hospital was laid on Friday, November 15, by Major Parker, M.P.

The building is being erected on an eminence at the entrance to the borough of Sudbury, and will command a fine view down the valley of the Stour. It will afford accommodation for twenty patients.

The necessity of such a building has long been felt, as Sudbury is sixteen miles distant from any general hospital. The building is faced with red bricks, and the whole expenditure, including land, is not expected to exceed 1,100l., three-fourths of which have already been promised.

Mr. E. Salter is the architect. The hospital is named after a local charity from which an annual income of between 40l. and 50l. will be obtained.

FROM SCOTLAND.

Alloa.—The projected new Episcopal Church of St. John the Evangelist, alluded to in our impression of the 9th of November as having been designed by Mr. R. Anderson, of Edinburgh, architect, is to be built on a prominent site in the Broad-street, several houses having been pulled down to clear the site. The church consists of a nave, chancel, vestry on the north side of the chancel, and a tower and spire on the south side of the nave, the ground-floor of the tower forming a porch. Provision is also made for building at a future time a north aisle. The dimensions of the nave are 58 ft. long and 22 ft. 6 in. broad; the chancel 28 ft. long and 17 ft. broad. The tower and spire measure 108 ft. to the top of the stone-work. The style of architecture adopted is that of the Early Geometric Pointed. The nave is divided into four bays, each having a three-light traceried window and buttresses. The west gable has a large three-light window and a doorway. The chancel is separated from the nave by a moulded stone arch, and is lighted by side windows of two lights and an east window of five lights, with tracery in the head. The church will accommodate in the nave 165, exclusive of space for chairs; and the choir 80, exclusive of the clergy. The entire cost of the building is being defrayed by the Earl of Kellie. The contractors selected are—Messrs. Smith & Honeyman, masons; Mr. Keir, carpenter, Tillycully; Mr. Ferguson, slater; Alloa; Messrs. Melvin & Co., plumbers, Alloa; Mr. Lennie, plasterer, Kincardine. The contract amount is 2,600l., exclusive of boundary walls, the cost of the site, and incidental expenses. It is expected that the walls, the ceilings, and floors will be decorated with paintings and inlays, and the windows with the best class of stained glass.

Jedburgh.—The heritors of the parish of Jedburgh have at present under consideration the propriety of building a new church. The present church occupies the west end of the nave of the abbey, and it is the wish, says the *Scotsman*, of the Marquis of Lothian, the proprietor, to have all the modern buildings removed so as to show the venerable ruin to the best advantage. Should this take place, Jedburgh Abbey will be among the finest ruins in Scotland. The whole nave, with its three rows of pillars, is

entire. The marquis has intimated through his factor that, should the heritors of the parish assess themselves for the sum of 3,000l. or 4,000l. towards the erection of a new church, he will find the like sum, besides bearing his proportion of the assessment. The subject has been remitted to a committee, who have to report to a future meeting of heritors.

FRIENDLY SOCIETIES.

THE 10,678 friendly societies of England which have made returns of their accounts for 1866—societies with more than 1,672,166 members, and with funds amounting to 6,668,386l.—are very unequally distributed among the various English counties. The Lancashire returns show in that county no fewer than 985,914 members of friendly societies; the Yorkshire, 11,824; the Cheshire, 60,419. Thus these three counties, with only a fourth of the population of England, have more than half the total number of the members of the friendly societies making public returns. But if Lancashire is remarkable for the number of its friendly societies, it can make little boast of their wealth; the amount of their funds is returned at 673,153l.,—fewer pounds sterling than members. The Cheshire societies are able to report funds amounting to 171,697l., nearly 3l. per member; and the Yorkshire, 525,617l., a higher proportion per member. But in amount of funds the Middlesex is far above any other part of the kingdom; its returns represent friendly societies with no more indeed than 99,832 members, but with funds amounting to no less than 1,309,200l. 1-16th of the members of friendly societies have thus more than one-fifth of the funds. The metropolis is the home of the greatest of these associations. The London Friendly Institution, in Farringdon-street, has 24,539l. for its fund; the United Law Clerks, 35,720l.; the Hearts-of-Oak Benefit Society, in Great-street, 44,886l.; the Royal Standard Benefit Society, in Great Ormond-street, 71,544l.; the medical department of the Army Friendly Society, 78,578l., and with only 194 members. These figures are unmatched elsewhere. There are more than 500 friendly societies in England (including Odd Fellows, Foresters, Order of Shepherds, &c.), acknowledging that the amount of their funds is less than 20l.

THE STAGE.

Theatre Royal, Covent Garden.—With an excellent orchestra, a large chorus and corps de ballet, and admirable scenic appliances, Mr. J. Russell has produced Offenbach's Operatic Extravaganza (very extravaganza), "The Grand Duchess of Gerolstein," the book being Englished and adapted by Mr. Charles Lamb Kenney, a practised hand at such work. The extraordinary popularity enjoyed by this opera in Paris owed something to the exceptional fitness of Madame Schnieder for the chief part; but there is so much fun in the piece, and the music is so lively and striking, that it will have a certain duration of life wherever it is produced. The part of the Grand Duchess is filled by a lady new to England, Miss Julia Matthews, who, although it would be absurd to say that she will fully satisfy those who heard the piece in Paris, both acts and sings the part with great vivacity and effect. Several of the principal pieces committed to her were encored. Mr. William Harrison as Fritz has a part that suits him particularly well, and Mr. Aynsley Cook, Mr. Stoye, Mr. Frank Matthews, Mr. Fred Payne, and Miss Augusta Thomson contributed to what on the first night was generally felt to be a complete success.

The Lyceum.—This theatre has been opened, under the management of Mr. Ryder, partly, as it would seem, to introduce to the English public a German lady, Madlle. Vestvali, who is said to possess the remarkable capability of acting in the language of three countries besides her own,—French, Italian, and English. We must confess to having had almost enough of Shakespeare in broken English; but there is so much real earnestness and power shown by this lady in her presentation of the part of Romeo, in which she has just now appeared, especially in the latter and more difficult part of the play, that we are contented to overlook the occasional accent, and to invite playgoers to witness what is really a remarkable performance. Miss Milly Palmer has made a step in her pro-

*A review of the designs will be found p. 775, ante. The three selected competitors are the authors of the designs to which we indicated a preference.

fession by her representation of *Juliet*. It is much more than an ordinary performance. Mr. Hyder gives great importance to the part of the *Frar*, and with Mr. Walter Lacy for *Mercutio*, and Mrs. Marston for the *Nurse*, it will be seen that the new *Romeo* is not without good support.

HOUSES FOR THE WORKING CLASSES.

SIR,—The article in the *Builder* on the manufacture of "Roughs," stating "the cost of crime to be enormous, in fact it cannot be counted," with the engravings illustrating some of your former notices on the state of the homes of the people, the latter showing the cause and the former the effect, ought to be printed in large type, and exposed to view in every public building, market-place, town-hall, and parish vestry in the kingdom.

We should then have a general inquiry, and a remedy would soon be recognised and adopted; for, in addition to the four millions the machinery for the punishment of crime costs, there are upwards of one million poor persons receiving parochial relief; and it cannot be denied, as so often repeated by you, that the overcrowding of human beings, without regard to age or sex, is the cause of a fearful number of the deaths, and the principal cause of the demoralisation and debasement of the population, the heavy taxation and increase of parochial burdens, the separation, general dissatisfaction, and distrust of all classes.

One of the chief causes of the greatness of our country is the fact that we all feel interested in our national honour: we can send at the cost of millions sterling an Abyssinian expedition to release a few: we can issue special commissions to punish the murderers of our policemen, and every true man, whether English, Scotch, or Irish, feels personally interested in justice being executed; but if we read the Registrar-General's report for 1864 we shall see that our industrial armies are cut down by diseases which are generated by inadequate house accommodation, and the want of sanitary arrangement. And, again, in the same report for 1866, that between 8,000 and 9,000 deaths are registered arising from preventable diseases in the eastern districts of London only. I am at a loss to distinguish the difference to the victims between malicious deaths and preventable deaths: in one case it may be a hanging matter, but in the other it would seem a matter of no concern, either to the State, the Government, or any large section, except the poorest of the people, whose chief crime is they cannot help themselves: hence they chiefly form the number of the dead registered under the heading *preventable*, and are the chief cause of the four millions sterling it costs for punishing crime and "the cost of crime itself, which cannot be counted."

The Premier and the Secretary of State have both informed me there are no funds at their disposal to assist the object I have in view to improve the homes of the wage-classes; and I only applied for a public inquiry into the remedy I propose, but, by your kindness, I may obtain the same, by your insertion of this letter, as it cannot be denied that the architectural profession, and the nearly-defunct building trade, are very much interested in finding out and promoting plans by which such a great blessing can be obtained as profitable employment both for capital and labour in reconstructing and building proper and sufficient house accommodation for the people.

In the first place, the guiding star in this national movement must be individual self-interest. The Government cannot advance, and it would not be proper to accept funds to benefit a class: to supply one want: all their other wants would, of course, have to be supplied from the same source, if the principle be once admitted.

The Board of Works have been so much engaged in public London that private London seems to have escaped their notice, only when it is wanted to supply funds.

The municipal and parochial institutions cannot move, if they were united, without dipping further into the tax-payer's pocket; and the parochial brokers are now the only tradesmen that are driving a successful trade, with the exception of a few butchers and bakers.

Philanthropy and the model dwellings, as at present proposed, are not at all applicable; for in the Paris International Exhibition, as referred to in Mr. Chadwick's Report, Class 93, although

the best plans and models were exhibited, they were all passed by for further improvements; besides which the building trade have not in a single instance followed any of the models either for investment or speculation.

The plans I propose, and of which I have sent you photographs, are for separate dwellings of one, two, three, or four rooms or more, built and finished as first, second, and third-class, each having a separate front door, approached by public single or double staircases and bridges at the corners of the streets, or as often as may be required, and a public balcony or foot-pavement alternately fixed to both fronts raised to the level of each floor to be under the same regulations, and used for all purposes as the foot-paving in the streets.

Each dwelling to have a scullery and separate sanitary appliances. No gas, dust, water, sewer, or other pipes of any description to be allowed inside the dwellings.

On the ground-floor or basement, and in between the basement or shops, are workshops, with or without steam power; baths and wash-houses, &c., &c., covered over with a flat concrete roof, and tarred paving for public promenades; or the same space can be used either for drying or play grounds, or shrubberies and gardens, the same as West-end squares.

The separation is complete, the poorest tenant can, by leasehold, capitalise his or her rent, as on the Mulhouse estate on the Upper Rhine. The weekly wage is not paid more regularly than the weekly rent. Capital is not required to give credit, and the best security is obtained by their production, and the two great sources next to unproductive expenditure will be diverted, viz., the drunkenness of the people and the national savings banks, to make small purchases of real property, which labour as a class is entirely prohibited from under present arrangements.

As this letter may tend to ventilate the subject, I shall be happy to reply or give any further information required.

JAMES MORTIMER, Builder.

THE TOWN OF LUTON, BEDFORDSHIRE.

SIR,—I regretfully endorse the statement of your correspondent of Saturday last, signed "Cambridge Man," that the staple trade of the town and neighbourhood is suffering great depression through the change of fashion in bonnets, and should gladly welcome a return to the straw head-covering of early days; but in his zeal for our cause he has erred in his statement of the call for rates, which I think calculated to do an injury to owners of property, and shall feel obliged if you will correct the error in your next Journal.

As a member of the Local Board of Health and ex-chairman of the Board of Guardians, I can guarantee the enclosed schedule as a correct statement of the whole of the calls made upon property here, exclusive of the land, property, and assessed taxes collected by the Government.

E. O. WILLIAMS.

The schedule shows for Luton parish an average of 2s. 2d. per year, for five years, as assessed to the poor-rate for relief of the poor, county and town police, lunacy, valuations, and all other charges customary thereon. For Luton township it shows an average of 2s. 8d. in the 11. per annum, for five years, for purposes of the Local Government and Board of Health Acts, inclusive of interest and repayment of borrowed money for lighting the town, and for highways, pavements, and sewerage.

ARCHITECTURAL EDUCATION.

SIR,—In the opening address at the *conversations* of the Architectural Association, observations were rightly made as to the course that ought to be adopted in this country in regard to the study of architecture, in order that it might be enabled to compete with such countries as Germany and France.

There can be but little doubt that the system of education in this country (or, rather no system whatever) has been, and still is, very defective for those who are brought up as architects.

The very commencement of the study of the art for young students is quite erroneous. The youth, in the first place, enters an architect's office too often without the slightest knowledge of drawing, or what is at all required. The principal is either too much engaged in his own pursuits, or unable to lay down a system for the study of his pupils. This at once shows the necessity of some course being taken for the advancement of the art. For this purpose, it appears very desirable that schools should be established for its study, that no youth should enter an architect's office before he is well grounded in the rudiments of the profession,

either in drawing or surveying, and studying the best architectural works, either from taste, theory, or practical knowledge, of which, at the present day, there is no lack, when one reflects on the sad work about forty or fifty years since in this respect, when Ward's or Chambers's works were the only ones in use.

A student, when he has studied in schools and made himself rather proficient, should then undergo a certain examination to qualify himself for the architect's office: he would then be enabled to judge of what he might require in following his profession. It would prove of great advantage to any student if he were to take up a particular design, either in Grecian, Roman, or Gothic architecture, and carry it regularly through, commencing with the foundations, the whole general construction, the finishings, decorations, &c. After this to form a correct specification of the works; and after this an estimate of the whole, with the working drawings, &c. By adopting this course he would at once obtain a knowledge of what is required in the profession; and this system might be adopted before he enters an architect's office for any not a longer period than three years, as he would ere this have obtained much theoretical knowledge of his art. A SUBSCRIBER.

NEW LEW COURTS' COMPETITION.

SIR,—This affair seems to be at sea, and in imminent danger of foundering. And why? Surely not because there are certain craft about it, waiting upon its going down, even although "The Thunderer" and "The Heavy-pounding Quarterly" should be numbered amongst these. This is not the first competition in which the unsuccessful competitors and their friends have been dissatisfied, nor is it the first time that we have heard would-be competitors and unsuccessful ones demonstrate, each to his own entire satisfaction and that of his friends, that "an infinitely better design would have been obtained" had his been chosen. In this particular instance we have had, in fact, little more than the usual discontent. All that has been written, for that notorious attempt to transform the matter into a political question to the efforts of would-be competitors to attract a little notoriety to themselves, may be properly consigned to the waste-paper-basket; and it certainly will arrive at that destination, and remain there, if the judges of the design will give expression to their opinion in a firm and decided manner, as men who have honourably discharged the trust imposed upon them and who have made up their minds. There is a report, which I, for one, believe to be unfounded, that they have not made up their minds, and this is the real cause of the supposition, that the affair is at sea and in danger of foundering. It is this which gives courage to the malcontents. They hope for everything from indecision in the powers that be, which infers fear of responsibility,—that *bête noir* of English officialdom. Let the judges resist the devil, and he will flee from them. MELLY.

CHARGES OF ARCHITECTS AND ENGINEERS.

Will you allow me space in your valuable paper to touch upon a subject connected with the architectural and engineering professions, which I, with many others, consider requires discussion, viz., the scale of charges which architects and engineers generally adopt in these professions.

As this is a subject that concerns the public as well as those who gain a livelihood by these occupations, I think it right to start it in a public paper.

It will be granted that the professions in question require long study and stern application to become proficient in; in fact, our work is never done; we scarcely know what recreation means, except as connected with study; and yet what is our reward? While the builder, and others connected with building, are allowed a minimum of 15 per cent. profit on the outlay expended, the architect gets a miserable pittance of 5 per cent. as a maximum for the conception and supervision of the whole of the works. I ask, is this equitable?

Very few knowing anything of these professions will follow them as a pursuit owing to this proverbial bad pay. It is almost impossible for any but a few of the more fortunate to keep up a proper position in society, and it is well known that the clerks, the majority of whom are gentlemen with good educations, and who have served their apprenticeship to learn these professions at great expense, are paid less than artisans' wages. In fact, the remuneration is quite inadequate to the times; for while the value set upon labour in every other profession and trade has been augmenting, in these professions it has been stationary, and at the same time all the necessities of life have increased in value.

A great deal has been said of late of the state of art of the nineteenth century. I think it impossible that, at present, architects and engineers can be expected to do full justice to their clients, as, to live, they must take upon themselves to work the trade, for they have time to devote personally to the execution thereof, or can afford to employ fully competent persons to assist them in carrying out. I am sure nothing but a deep devotion to their professions would induce architects and engineers to pay the attention they unquestionably do, to the utmost of their power, for the furtherance of art; and I have no doubt, if they had more means at their disposal, it would add to the public satisfaction, and for the reason stated, conduce to the improvement of our national architecture.

I trust the Institute of Architects will give this subject their consideration, and that others will express their opinions in the matter. ZETA.

ACTION TO RECOVER ARCHITECT'S DRAWINGS.

MURRAY v. GILES.—LANGHAM HOTEL.

THIS was an action in the Queen's Bench, Mr. Justice Stree, brought by the plaintiff, Murray, of Portman-street, against Mr. Giles, of Craven-street, Strand, for the detention of certain plans, fifty-three in number, designed for the construction of the Langham Hotel, Strand-place.

It appeared in evidence that Mr. Giles was a successful candidate in a competition for the appointment of architect to the Langham Hotel Company, and was appointed accordingly in October, 1862; but the designs of Mr. Murray, the interior of the proposed building being liked, at a subsequent meeting of the directors, they arranged for the two to act as architects. The agreement appears to have been that Mr. Giles should receive commission on the first 75,000*l.* expended on the building, and Mr. Murray on the second 75,000*l.*, the commission on anything over 150,000*l.* to be divided into equal shares. The building in all cost 200,000*l.* After the completion of the building, all the plans, with but few exceptions, were returned to Mr. Giles, and Mr. Giles once claimed those which he had drawn in his own office, or those which had been done at his direction or his expense, out of his office, by persons in his employ. This request Mr. Giles refused to accede to, but offered Mr. Murray to deliver up the whole of the plans to the Company, or to refer the case to arbitration. The offers were refused, and the action was brought to recover these plans.

Mr. Hannay and Mr. Conolly (Mr. Williams) were counsel for the plaintiff, and Mr. George Wyke for the defendant. The judge throughout the case suggested that there was a matter for arbitration by some member of the architectural profession, but this the plaintiff declined; his lordship at the same time remarking, that he was quite willing to proceed with the hearing, as it was "a very interesting case," and it appeared to be "a case about nothing," both plaintiff and defendant having confessed that the plans "were not his."

Mr. Murray, Mr. Johns, a director of the Langham Hotel Company, the clerk of the works, and the foreman of Messrs. Lucas, the contractors, were called as witnesses for the plaintiff, to prove that the plans were those of the plaintiff, and that they were carried out by his direction. The examination of these witnesses took the whole of one day. Mr. George Wyke made a speech on behalf of the defendant, the case, and the profession of architecture generally.

At the following day Mr. Giles and a director of the Langham Hotel Company were called as witnesses for the defendant to prove that there was a partnership between plaintiff and defendant, and that the plans were the property of the defendant, till that partnership had been dissolved, and some arrangement had been come to between them as to the division. Counsel intended to produce as witnesses two architects to whom the custom in the case (?). As, however, the whole case turned on whether there was a partnership between plaintiff and defendant, no services were not required.

The counsel for the plaintiff endeavoured to prove that Mr. Giles and Mr. Murray were joint architects; whilst the counsel for the defendant said they were not only joint architects, but partners in the work.

After the several speeches of counsel, and summing up of the judge, the jury, having locked up some time, gave a verdict for the plaintiff, so far only as regards twelve drawings of the fifty-two claimed, and no damages. A sum of 50*l.* was asked for.

It seems desirable that on appointment of joint architects an agreement should be made, specifying to whom the drawings are to belong at the termination of the work.

CHURCH-BUILDING NEWS.

East Bergholt.—For some years past the parish church of East Bergholt has been undergoing gradual restoration and improvement. The last of the series (consisting chiefly of substituting open benches in the nave and aisles for high pews) having just been finished, the edifice has been re-opened for divine service, by the Bishop of Norwich. The church, which is dedicated to St. Mary, was built in the sixteenth century, and the style is Perpendicular. The cost of the restorations has been defrayed by subscriptions amongst the parishioners, and the east window, which has five lights, has been filled with stained glass, the upper part by the late Mr. Charles Douglas Halford, in memory of his wife, who died in the year 1860, and the lower by the son of that gentleman, in memory of his father. The five lights of the window are devoted to the depicting of five of the principal events in the history of our Lord, his birth, baptism, crucifixion, Mary Magdalen at the sepulchre, and Jesus showing his hands and his side to Thomas. The new benches are of pine, and will be stained and varnished, so as to conform with those already finished. The columns of the nave have been cleaned of the paint, with which they were formerly disfigured, and the interior of the church altogether improved.

Scarborough.—The corner-stone of a new church has been laid at Palsgrave, dedicated to All Saints. Of 6,000*l.* required for the work, above 4,000*l.* have been promised. The building was commenced a few weeks ago.

West Bromwich.—Christ Church, Oldbury, has been re-opened after undergoing renovation and improvement, at a cost of about 1,000*l.* The organ has been removed to the east end of the church, by means of which a hundred more free sittings have been added in the west gallery. The chancel has been lengthened, stalls provided therein for the choristers, and a new pulpit has replaced the old one. New and ornamental gas-fittings and a warming apparatus have been furnished, and the whole interior has been repainted and the ceilings and walls simply decorated. The whole of the work has been carried out under the supervision of Mr. G. Holmes, architect, by the following contractors, viz.: Mr. Bonser, of Oldbury, for the builders' work; Mr. A. Gee, of Stafford, for the painting and decorating; Mr. Averill, of Oldbury, and Messrs. C. Smith & Son, of Birmingham, for the gas standards and ornamental ironwork; and Messrs. Haden & Son, Trowbridge, for the warming.

East Moulsey.—The chief stone of the new tower to the parish church has been laid. Mr. Talbot Bury is the architect. The men employed in the erection of the tower were provided on the occasion with a dinner at the Bell Inn.

Polesworth.—The foundation-stone of a new church, to be erected at Dordon, has been laid. The erection is undertaken by Messrs. Clarson, of Tamworth, from a design by Mr. G. E. Street, and will be capable of holding 149 people. It is dedicated to St. Leonard.

Shottisham.—The parish church has been re-opened. In addition to repairing and restoring the old fabric, a new and supplementary north aisle has been built, the old pews have been replaced by benches, the old chancel-roof restored, and a new open roof added to the nave. The whole has been repaved,—the chancel with Staffordshire tiles, red and black, and the altar-space with Minton's tiles, in three colours. The alterations have been carried out under the superintendence of Mr. Hakewill, architect, the contractor being Mr. H. Luff, Ipswich, and the mason Mr. Frewer, of the same town.

Hereford.—During the past month Messrs. Bennett & Brown have been engaged in placing stoves in the cathedral, for the purpose of warming it. The stoves employed are those invented by Sir Goldsworthy Gurney, on the radiating principle, and are similar to those employed for warming the Houses of Parliament, St. Paul's Cathedral, York Minster, and other large public buildings.

Brecon.—Canterf Church, which is situated about three miles from this town, has been re-opened for public worship. The church and tower were in a very dilapidated state. The plans and specifications of the restorations were prepared by Mr. C. Buckridge, of Oxford, and the contractors were Messrs. Williams & Sons, of this town. There are restored five two-light windows in the nave, four single windows in the chancel, one three-light large window, surmounted by tracery, at the east end of the

chancel; plinth introduced around the nave and chancel, and an entirely new porch with plinth around. The coatings of whitewash on the outside of the nave and chancel have been removed, and the joints of the masonry raked out and pointed in uncoloured mortar. Coping is fixed upon the gables of chancel and porch with borders of apex stones, each surmounted with a cross, and a new buttress has been erected on each side of the church. The joints of the masonry of the west end of the tower have been raked out and pointed in Portland cement, and so many of the tower windows as were previously blocked up have been opened, and the stone-dressings renewed where defective. The oak work of the roof of the tower has also been restored, and the whole of the roofs covered with native stone-tile, with an ornamental ridge-crest of two patterns of red clay, supplied by Mr. Cooper, of Maidenhead. The roof of the chancel and nave is new. The timber in the roof is exposed to view, and is not stained or varnished. The rafters in the chancel are all curved or ribbed. The interior walls have been stuccoed, and the inner sills and arches of the windows chamfered. The floors of the chancel, the aisle, and the porch are laid with Godwin's encaustic black and red 4-in. tiles, those in the chancel being figured, glazed, and unglazed. The floor of the tower is laid with ancient memorial stones and slabs. The seats in the nave are of deal, stained and varnished.

Hayton.—The new church of St. James, in the village of Hayton, near Aspatria, has been consecrated by the Bishop of Carlisle. The total cost of the erection has been 1,800*l.* The church accommodates between 200 and 300 persons. It stands at the upper end of the village, and is built of red freestone, from the design of Mr. Travers, of Manchester, architect. The exterior view is at present somewhat spoiled by a low unsightly-looking schoolroom, which stands directly in front of the church. The interior of the church consists simply of a chancel and a nave. The pews are open.

Scraptoft (Leicestershire).—The parish church has been re-opened after restoration. The edifice consists of a chancel and nave, with aisles, and a tower at the west end. The restoration has included the whole of the roofs, with new chancel window, and two new west windows, north doorway, and north aisle windows, dry area round the outside where the soil had accumulated, and a general cleaning and pointing of the stonework. The old square high pews have been removed, and new open sittings substituted, in which the old oak has been re-worked with new framing, and a new floor of Whetstone's encaustic tiles has been laid. The two west windows are filled with stained glass, memorials of the late Mr. Sheldon Cradock, of Leicester, his wife, and son. These windows are by Mr. F. Preedy, of London. The chancel has been restored solely at the cost of Mr. E. B. Hartopp, who was also a large contributor to the general funds. Mr. W. Jackson, of Leicester, was the architect, and Mr. John Firm and Messrs. Sharp & Son, the contractors employed.

Ambush.—It is proposed to refit and rearrange the interior of the church here, which is a modern building of no architectural pretensions, and is in a state requiring considerable repairs. The principal features of the rearrangement are, dividing the ground-plan by a series of arches and columns in Bath stone (which at present is under one roof) into three compartments; the central compartment comprising the nave, the chancel, and entrance under tower; the northern comprising aisles to the nave and chancel, extended westwardly by throwing in a portion now occupied as a lumber-room below and a gallery above. The southern compartment is similarly treated. Messrs. Kennedy & O'Donoghue, of London and Bangor, are the architects employed.

Rhos-celyn.—It is proposed entirely to restore the parish church, increasing the accommodation by adding a chancel. Messrs. Kennedy & O'Donoghue have prepared the plans.

Llanymfory.—The present church here having become very dilapidated, the rector has determined to rebuild it, with the exception of portions of the south and west walls, which are still sound. Increased accommodation will be secured by extending the area of the church northwardly and eastwardly. The contract has been taken up from plans prepared by Messrs. Kennedy & O'Donoghue.

Bodelwydd.—The small and interesting parish church requiring extensive repair and rearrangement, the incumbent has determined to

LATE MR. CHAS. FOWLER'S DESIGN FOR LONDON BRIDGE.—It is regretted that no plan of this design, which was premiated, can be recovered amongst the architect's papers, unless the design itself is amongst the records of a committee by whom the competition was judged. The City architect, Mr. H. Jones, if asked, would probably be able to discover its whereabouts.

raise funds for the purpose; which, from the circumstances of the parish, will prove a difficult task. The plans have been furnished by Messrs. Kennedy & O'Donoghue.

Ross.—It is intended to restore the parish church at Linton, near this town, which has become sadly dilapidated. Plans are being prepared by Mr. Street, and upwards of 1,000*l.* have been promised towards the object.

Kirby Lonsdale.—Lord Kenlis, son of the Earl of Beotice, has undertaken to defray the entire cost of restoring the parish church. It is estimated that the work will cost more than 6,000*l.* The gentry of Westmoreland intend placing a memorial window on the south-east side of the church in acknowledgment of Lord Kenlis's gift.

SCHOOL-BUILDING NEWS.

Chelmsford.—The memorial stone of the Chelmsford Independent Sunday Schools, in course of erection at the corner opposite the Cloisters, New London-road, has been laid. The new building will be from designs by Mr. C. Pertwee, architect, Chelmsford, the builder being Mr. Gozzett, of Woodham Walter, whose tender of 1,910*l.* 10*s.* was the lowest sent in. The buildings will comprise a schoolroom, 70 ft. by 30 ft., capable of accommodating 400 children on the ground-floor, and 100 in the gallery at the end. Opening out of this room are five class-rooms for boys, each affording space for twelve to fifteen scholars; also a senior class-room for about twenty persons. At the end of the schoolroom are two class-rooms for girls, and an infant schoolroom, 22 ft. by 14 ft., for 100 children; also a kitchen or heating-apparatus room, and other conveniences. A stone staircase at the end of the schoolroom near the girls' entrance, will lead to four girls' class-rooms upstairs, accommodating from twelve to fifteen in each room; all these rooms open direct into the gallery. The large room will be 21 ft. high to plate, and about 28 ft. in centre, and will have a semi-open roof, with arched trusses, the timbers being stained and varnished. All the rooms will be lined round 4 ft. in height with dado boarding, and will be fitted up with seats, benches, and hat rails. Light and ventilation are provided throughout, and the whole will be heated with warm air by Mr. Allaway, of Manchester, engineer. The class-rooms will be lighted with starlight burners, and the large schoolroom by three corona gas-lights. The buildings will be of white brick, relieved with yellow bands and arches, the window and door openings having circular heads, the general character of the architecture being Romanesque. The works are being executed by Mr. Henry Gozzett, builder, Woodham Walter. The cost, including site and other expenses, is estimated at 2,300*l.*

Cambridge.—The new building of the Jesus-lane Sunday School has been opened. The cost of the building, which is situated in Paradise-street, has been about 2,300*l.* It includes one large school-room and a number of smaller class-rooms. The design was by Mr. W. M. Fawcett.

Burslem.—The new National Schools at Sneyd have been opened. The plan of the schools is in the form of the letter L reversed. That for the boys is 60 ft. long by 20 ft. wide, and for the girls 50 ft. long by 20 ft. wide. There are class-rooms attached to each. The schools will accommodate 400 children, and are divided by large sliding doors, which, when opened, make one large room for lectures or other purposes. The building is of a plain Gothic character, and is constructed of brick,—red pressed ones—blue brick for bands, &c., being used for the exterior, and white pressed ones for the interior walls. The roofs are covered with blue and red tiles laid ornamentally, and surmounted with a bell turret and spire. The roof timbers and other woodwork are all wrought and stained and varnished. The yards and play-grounds are enclosed by walls, and the front of the schools facing Nile-street by iron palisading. The total cost of the building, including fittings, &c., will be about 1,500*l.* The builders are Messrs. Bennett & Brindley, of Burslem; and Mr. Dain, of Burslem, was the architect.

Dedham.—The new grammar schoolroom here has been opened by the Bishop of Rochester. It has been erected by the present head-master, the Rev. G. T. Lermitt. The room is 60 ft. long by 30 ft. wide. The walls are 18 ft. high; and the roof, which is open and lined with deals stained and varnished, is 14 ft. high, giving a height

internally of 32 ft. in all. It is lighted by four windows on the north side, a triple window at the east end and two single ones at the west, besides two large skylights in the roof facing south, one fitted with ribbed plate-glass calculated to admit the light, but not the glare and heat of the summer's sun. The walls are 18 in. thick, of red brick and concrete, the splay course, piers, coins, and arches of windows, and the cornice being of white bricks. The roof, which, for its breadth, might have been pitched higher, is light and simple in its construction, covered with slates, but having between them and the deal lining a layer of Croggon's roofing felt, for tempering the cold of winter and the extreme heat of summer. The bell tower at one end contains a bell by Messrs. Warner, of London. There are two small class-rooms attached to the building, and the whole has been built from designs made by the head-master, aided by the practical experience of Mr. Downes, of Stonilands, Dedham, a friend of the school. The cost of the new building is nearly 1,000*l.*, and it will afford accommodation for 100 scholars.

Ringstead.—A new school has been opened, at Ringstead, by the bishop of the diocese. The school is a Gothic building, in keeping with the church, from which it is separated only by the churchyard. It consists of a large school-room, and a class-room adjoining, the other portion of the building forming a residence for the master and mistress. The material is the local stone, rough dressed, with freestone coins. The building is tiled, the roof being of timber, stained and varnished. The internal walls are composed of concrete, covered with plaster. The architects were Messrs. Sadmore & Baker, of Great St. Helen's; Messrs. Cosford & Co., of Northampton, being the builders.

DISSENTING CHURCH-BUILDING NEWS.

Lewes.—The opening service in connexion with the new Wesleyan Chapel, now rapidly approaching completion in Station-street, Lewes, has been celebrated. The total cost of the chapel, lighting, and fence, has been about 1,400*l.* The architects are Messrs. Pocock, Corfe, & Parker, of London; and Messrs. Ranger & Waghorne, of Lewes, are the builders. The chapel stands back a few feet from the level of the line of houses, and before it is a fence of brickwork with stone caps, iron palisades, and oaken gates. The edifice is about 37 ft. wide, and upwards of 40 ft. high. The masonry is of red brick, with black banding courses, and dressings of Bath stone. The principal feature is a window of stonework, 20 ft. high and 12 ft. wide, divided into four compartments, with a head of ornamental plate tracery, and carved corbels, representing birds, flowers, and fruits. On each side of the window are light columns, the shafts of which consist of red Mansfield stone, and the capitals of carved Bath stone. Beneath the chief window are four small windows of single light to lighten the space under the gallery. The north and south sides are divided into six bays, supported by massive buttresses, and this part of the interior is illuminated by eight windows of two lights each. The interior dimensions are 63 ft. by 34 ft., the height of the walls, 18 ft., and to the top of the roof, about 20 ft. more. The ground floor of the chapel will accommodate about 400, and the gallery at the west end about 125; the whole of the seats are open, and of stained and varnished timber. It is intended, as soon as funds permit, to rebuild a portion of the old chapel, which adjoins the new building, and to fit it up as schools.

Eastwood.—The foundation-stone of a new Congregational Chapel has been laid at Eastwood. The edifice is constructed to hold 600 persons, inclusive of the galleries. The architects are Messrs. Bidlake & Tait; and Messrs. I. & H. Herbert are the contractors, for the sum of 1,823*l.*

Ilford (Essex).—The memorial stone of a chapel and schools for the congregation of the United Methodist Free Church has been laid by Mr. George Axton, of Shepherd's Bush. The building is a brick structure, containing chapel on ground-floor, with seating for nearly 800 adults, and schools in basement. The works are being executed from the designs of Mr. M. A. Manning, architect, by Messrs. Hill & Keddell, of White-chapel-road.

Chard.—The foundation-stone of a new Congregational Chapel has been laid here. The edifice will be in the Early English style, and

built of native stone and flint, with Bradford stone dressings. The roofs will be covered with slates, the timbers inside being open, stained, and varnished, and supported with light iron shafts resting on gallery columns. There will be a tower at the north-west angle of the building, with stone spire, supported by eight circular columns, with carved caps and molded bands and bases. The entrances to the galleries will be on each side, and the principal entrance to the ground-floor in the centre of the west elevation, through a porch and vestibule. The organ-chamber will be at the back over the vestry, with arches opening into the chapel. All the seats will be open and of deal, stained and varnished. Mr. W. J. Stent, of Warminster, is the architect, and Mr. Hawker, of Chard, the contractor.

STAINED GLASS.

Rhosymedre Church, near Ruabon.—A large five-light window, in the Early English style, is about to be placed in Rhosymedre Church. The subject is the Ascension. It runs through the whole of the five openings, the figures being nearly life-size. In the lower part of the window are the Disciples looking upward to our Saviour, who is ascending to heaven, surrounded with angels. Above and below the subject is mosaic work, forming canopies and bases. The tracery of the window is filled with shields. The inscription states that "This window was erected, by subscription, in memory of the late Sir W. W. Wynn, bart., Wynnstay, who built and endowed this church." The glass is the work of Messrs. Done & Davies, of Carlisle.

The Collegiate Church, Wolverhampton.—A stained-glass window has lately been placed in the chancel of this church, in memory of the late Mr. Nesbitt. The motive or idea of the window bears reference to the calling of a physician. The design illustrates, in six groups, the sentence from the Gospel of St. Matthew, chap. ii. verse 28,—"Come unto me, all ye that labour and are heavy laden, and I will give you rest." The three upper groups, as subject, are intended to suggest "The Physician of Souls." In the centre is our Lord (our Hope), seated, with, at his feet, angels in adoration, who bear a scroll with the words "Come, ye blessed of my Father." On the right and left sides respectively the chief figures are St. Paul (Faith), and St. Stephen (Love), and with these are grouped figures representing sufferers, as the fatherless, the widow, the prisoner, &c. The three lower groups represent "The Physician of the Body." The centre subject is our Lord healing the lame man at the Pool of Bethesda,—on one side His healing Peter's wife's mother, and on the other His healing of a paralytic. All the subjects are enshrined within canopies of a pearly tone of colour, and in the tracery-openings, which are numerous, the emblems of Faith, Hope, and Charity,—the cross, anchor, and burning heart,—form the principal portion of the design. The groundwork is entirely of arabes, with varied tones of colour. Messrs. A. & W. H. O'Connor, of London, were the artists.

St. Peter's, Newcastle-on-Tyne.—A memorial window has been placed in this church. The window, which is on the north side of the nave, is of three lights with tracery, and is designed with special reference to the doctrine of the "Incarnation." In the first compartment is the Annunciation to the Virgin; in the centre is the Nativity of our Lord, and the subject is carried into the tracery by angels in the act of adoration and praise; the third compartment is filled by the representation of the Adoration of the Magi. The design has been divided by a text, and the lower portion of the window portrays acts of affection, viz.—St. John leading the Virgin to his own home from Calvary; our Lord as the Good Shepherd; and Ruth refusing to leave Naomi. The window is the work of Mr. Bagley, of Newcastle. The church now contains thirteen or fourteen stained-glass windows.

St. John's, Percy Main.—A stained-glass window has been erected in this church, as a thank-offering, by the father of the incumbent. The principal subject is our Lord giving Sight to the Blind. The other part is filled with angels and Early English foliage. The window has been executed by Mr. Bagley, of Newcastle.

Ulverstone Church.—A window has been put up in the parish church, Ulverstone, at the cost of the inhabitants of the town, as a mark of respect to the ancient family of the Braddys, of Conishead Priory. The window is Perpendicular in style,

and composed of seven lights divided by a transom. These divisions are filled with different illustrations of the life of our Saviour, and are enclosed within canopies. The tracery is filled with sacred emblems and foliated ornament, and at the base of the window a space is filled with the Braddly achievement, a shield of numerous quarterings. An illuminated brass at the foot of the window is inscribed with a record of the purpose for which it has been erected. This work is from the establishment of Messrs. R. B. Edmondson & Son, of Manchester.

Twistell Church.—The west gable of this church contains four windows and a quatrefoil, which have been filled with stained glass in memory of the wife of the Rev. Mr. Page, the minister of the church. The style is Early English, and the subjects contained in the four windows respectively are the Transfiguration, the Ascension, Christ teaching Humility, and Christ Blessing little Children. The subjects are framed by canopies and borders, and the quatrefoil contains the descending Dove. A memorial inscription is placed across the base of the four windows. Messrs. R. B. Edmondson & Son, of Manchester, were the artists.

Stoke Prior Church.—A new stained glass window has been erected in this church by Messrs. Clayton & Bell. The subjects are the Raising of Lazarus and the Healing of Jairus's Daughter. The window is given in memory of the late Mr. Watling, a medical man, and of other members of his family. It makes the fifth stained-glass window lately erected in this village church.

PATENTS CONNECTED WITH BUILDING.

MEANS OF CONVEYING SOUND FROM PREACHERS OR LECTURERS TO THE CONGREGATION OR AUDIENCE.—*F. C. Reim.* Dated 22nd January, 1867. The patentee makes a pulpit or tribune with an inner and outer casing, thus obtaining an intermediate space forming a conduit, through which the voice travels down to the pillar of the pulpit, &c., and may be led through fixed or flexible tubes to various parts of the churches, &c. Branch tubes with ear-cups may be provided for persons whose hearing is not good.

GLAZED STRUCTURES FOR HORTICULTURAL AND OTHER PURPOSES.—*W. Rickardson.* Dated 2nd February, 1867.—The patentee constructs such buildings or structures of glazed or other frames, or equivalent members, so placed and fitted together that an open space or open spaces shall be left between such frames or members, in order that, by means of such open space or spaces, ventilators for the interior of such buildings or may be obtained by providing such space or spaces with one or more glazed or other movable frames or members capable of being raised or lowered, as may be desirable, for the purpose of creating ventilation openings that can be closed or partly closed, as may be requisite, such movable frames when closed resting upon, against, or near the frames or sides of the open space or spaces, and, when open, being raised above these sides at the distance of a few inches, or other convenient extent, which distance may be regulated so as to be more or less, according to the amount of ventilation from time to time required, an open space being thus left for the admission or escape of air on every side of such movable frame or member, and at the same time a protection is formed against rain, wind, or a direct or downward current of air into the building or structure. The upper ends of two or more arms of iron or other material (such arms being of corresponding length one with the other) are fixed at a distance apart at or near one outer edge, and the same number of such arms at or near the other edge of the movable frame or frames, member or members, the lower ends of such arms being fixed to the sides of the first-named open space, at a suitable distance below the level of their upper ends, all such arms being parallel with each other, and the fixing of their upper and lower ends being in all cases with a movable joint. The position of these arms is in an oblique direction with the movable frame or member when closed, their shape being straight or otherwise, as desired, the said frame being opened for the purpose of ventilation by turning the arms in an upward direction upon the joints or axes at their lower ends, this being effected by one or more of the arms being extended below the joint at the lower end as a lever and handle, or by being fixed upon a rod or shaft in place of

the joint or joints before described, such rod or shaft being made to turn as an axis, and extended, if required, so as to open and close a number of movable rectangular frames simultaneously by handle, lever, or other arrangement for turning such rod or shaft.

Books Received.

MESSRS. ROUTLEDGE appear to have taken under their special care the Boys of Great Britain, and a very important part of the population they are,—the future governors, teachers, inventors, amusers, bread-winners of the State. A new edition of "Every Boy's Book;" "Archie Blake," by Mrs. Elliott; "The Boys of Beechwood," by the same author, an amusing story, inculcating the old saying, "honesty is the best policy" (both stories illustrated with wood engravings); and "The Boys' own Pocket-book for the Year 1868," are amongst the works most recently published by them. The pocket-book is just the thing for a school-boy, and includes some notes on the games that boys most love. As to "Every Boy's Book," it is a perfect cyclopædia, containing 768 pages and some hundreds of illustrations. A dozen years have passed since the first edition was issued, and things have so much changed since then that Mr. Edmund Routledge, who has edited the present edition, found it necessary to remodel the whole, calling in a number of well-known writers to aid in the work. It may be viewed as almost a new book. We may safely say it will be found by boys a never-failing source of amusement and instruction.—"The Purgatory of Peter the Cruel," by James Greenwood, illustrated by Ernest Griest, and issued by the same publishers, has for its object "to check thoughtless cruelty towards creatures that are dumb and helpless." Peter tumbles from the mast-head when endeavouring to maim a cockroach, and while insensible undergoes the life of a beetle, a blue-bottle, a snail, an ant, and a newt, and brings home to the young mind the several capabilities of these creatures for suffering. It is amusingly written, and the illustrations by Ernest Griest, thirty-six in number, are humorous and spirited.—"Our Four-Footed Friends," by Mary Howitt (Partridge & Co.), is a very charming book indeed; nicely written, capital printed, and profusely illustrated by Mr. Harrison Weir, who has the whole animal creation at his fingers' end. In a dedication to H.R.H. the Princess of Wales, Mrs. Howitt says,—

"Lady, a nation loves thy little ones;
And in that love would ask of thee a boon
That shall be blessed to them—
Teach them to love
All things that God has made."

And this is the object the author has had in view throughout her book.—Mr. Warne has published another series of cheap illuminated texts on card-board, most of them very well executed.—"A Key to one of the main Difficulties of English Orthography," by Henry Beadnell, Corrector of the Press. London: Sold by the Author at 75, Great Queen-street, Lincoln's-inn-Fields. Mr. Beadnell is the author of an excellent standard "Guide to Typography, literary and practical," which has been already noticed in the *Builder*. The present little sixpenny publication is an alphabetical compilation of nearly 3,000 words resembling each other in sound but differing in sense, spelling, or accentuation. In copiousness, lucidity of arrangement, and consequent facility of reference, it is superior to anything of the kind heretofore published, and cannot but greatly aid the student of English orthography, in relieving him from perplexity and annoyance as to the correct spelling of similar sounding but yet different words. To foreigners learning the language it must be invaluable.—"Thames Valley Outfall and Inter-ception of the Kingston District Drainage." Plan proposed by J. W. Grover, C.E., and E. Wragge, C.E. London: Longmans & Co. The authors of this pamphlet propose schemes for preserving twenty-three miles in length of the Thames from pollution on both sides by means of intercepting sewers, with river-crossing syphons, pumping stations, &c., between Chiswick and Chertsey, including all such places between the two as Barnes, Mortlake, Kew, Brentford, Isleworth, Richmond, Kingston, Hampton, &c. There are two plans, one extending from Chertsey to Richmond, and the other from Richmond to Chiswick. Sewage irrigation farms are proposed near Perivale for the lower portion of the

scheme, and near Bedford for the upper, with pumping stations for each. The estimated cost of the scheme between Chertsey and Richmond is put at nearly 130,000*l.*; and the other nearly 80,000*l.*—"The British Workman," 1867, and "The Band of Hope Review," 1867 (9, Paternoster-row), still remain distinguished by the admirable wood engravings they contain, as well as by the good advice they offer. The numbers of the year, put together in a cover, give, in one case for 18*d.* and in the other for 1*s.*, an illustrated volume of sound and amusing teaching of much greater intrinsic value. Not long ago the coloured cover of the *British Workman*, "The Protest of the Birds," drawn by Harrison Weir, would have cost the whole money. "The Children's Friend," vol. vii., and "The Infant's Magazine," vol. ii., from the same publishing office, explain their purpose by their titles, and are equally recommendable.

Miscellaneous.

HOUSE PAINTERS' AND DECORATORS' IMPROVEMENT ASSOCIATION.—A lecture was delivered before this society, on the 19th inst., by Mr. J. G. Grace, "On Colour as applied to Decoration." We will return to it.

THE COLOSSEUM, REGENT'S PARK.—Something is said about converting this building into a club for young men engaged in professional and commercial pursuits, and a large gymnasium. The scheme is at present, however, only in embryo.

PROPOSED NEW CHURCH IN WINDSOR, LIVERPOOL.—A committee has been organized to collect subscriptions in behalf of a fund now being raised for the erection of a new church, to be called St. Nathaniel's, in Windsor and Edgehill district. A site of 1,512 square yards has been purchased in Oliver-street. The total cost, including the endowment, has been estimated at 5,000*l.* Of this sum, 729*l.* have already been subscribed, and one gentleman has promised a donation of 250*l.*, on condition of three others joining him in giving sums of the same amount.

NAPOLEON'S WILLOW AT KEW.—Our readers will be sorry to hear that this historical tree has been cut down. Forty years ago it was taken from the willows surrounding Napoleon's grave at St. Helena and planted in Kew Gardens. At this time, and before the gardens became national property, so great was the curiosity to see it that one Sunday a crowd of people (on being refused admittance) broke open the gates merely to look on the tree. More recently it has been no uncommon thing to see French visitors bare their heads, or even fall upon their knees, before it.

BUILDERS' CONTRACTS IN 1726.—A document, dated 20th March, 1726, and titled "Articles of Agreement between Col. Hammer and Robt. Phillips for building his House and Offices, &c., in Grosvenor-street," has been obligingly sent to us for inspection. It is a stamped agreement, neatly and clearly written out, and has numerous endorsements on the back on account of partial payments made as the work went on; but there is nothing peculiar or special in it requiring notice. Mr. Phillips was a builder in "Great Queen-street, in the parish of St. Giles," and various of the endorsements are signed for him by one Edward Cock. The details as to quantity and quality of work are pretty full, and altogether the document more closely resembles one of the present day in all essentials than might be expected. It is specification and contract in one.

A MAN AND HIS WIFE SUFFOCATED.—A man and his wife, named Jacques, have met with a most untimely end, at Gainsborough. Their cottage had been recently built, and the wife, fancying the sleeping-room was rather damp, bought a small shop-stove, and had it put in this apartment. Although no pipe had been fixed, or other outlet provided, a fire was lighted in this stove just before retiring to rest. The consequence was that both persons were suffocated while they slept. Two dogs and a cat were in the room. The cat, when the room was opened, seems to have been not much the worse, but the dogs were nearly dead. Stoves without flues are most dangerous; and yet there are tradesmen who actually recommend and sell such stoves as "self-consuming." We have often had occasion to show the deadly nature of such stoves.

WRENHAM CHURCH.—The heating apparatus in this church was fitted up by Messrs. Rosser & Russell, London.

NEW LAW COURTS.—The competing designs have been removed from New Square to the offices of the Commission, and the Exhibition building, in New Square, is now being pulled down.

ARTIZANS' DWELLINGS.—In the House of Commons Mr. W. M. Parnes has brought in a Bill to make better provision for the dwellings of artisans and labourers in large towns, which has been read a first time.

SOCIETY OF ARTS.—The 114th session of this society has been opened under the presidency of Mr. W. Hawes, chairman of the council, who delivered the opening address, and distributed the prizes awarded by the society.

"CURIOSITIES OF LONDON."—We are glad to hear that a new edition of Mr. Timbs's "Curiosities of London," corrected and enlarged, in a library volume of 880 pages, with a new portrait, will be published early next month.

LIVERPOOL SCHOOL OF SCIENCE.—The introductory meeting of the seventh session of this school was held on Monday evening in the lecture-room of the Free Library, William Brown-street. There was a crowded attendance.

AN INK FOR GLASS.—M. Kessler, of France, has, by means of hydro-fluorate of ammonia, and hydro-chloric acid, properly thickened, made an ink by which, with any pen, ineffable characters can be traced on glass. This ink will be of service to the chemist and apothecary in labelling bottles, and marking gradations on glass.

THE LATE FALL OF HOUSES AT BATTERSEA.—At the meeting of the Metropolitan Board of Works on Friday, the 15th instant, the Building Act Committee presented a report, stating that they had considered the subject of the fall of two houses in York-road, opposite Price's candle factory, Battersea, the particulars of which appeared in the *Builder*; and that it did not appear that any blame attached to the district surveyor.

FALL OF A ROOF AT GREAT YARMOUTH.—A fatal accident has occurred by the fall forward of the roof of a large fish-office, in St. Peter's paved row, Yarmouth, through the roof of a cottage which it overlapped, killing a girl who was asleep on the attic, and breaking through the attic floor. Not in the timbers of the fish-office roof was considered by the town surveyor, Mr. H. H. Baker, to have been the cause of the accident. The coroner's jury found a verdict of accidental death.

TECHNICAL EDUCATION.—The Council of the Society of Arts, Manufactures, and Commerce have unanimously resolved to hold a conference in the third or fourth week of January next, at the Society's house, to consider and prepare an outline of measures requisite to be adopted for the promotion of industrial and scientific instruction among the various classes of the community. To that conference the Chambers of Commerce and Agriculture and other public bodies will be invited to send representatives. The two points on which anxiety may be felt are these:—Firstly, that extended and improved primary instruction be emphatically laid down as the necessary basis of secondary or technical instruction; and, secondly, that the latter should be declared necessary for all classes, and not merely for artisans and workmen.

NINE HOURS MOVEMENT AMONG THE MASONS.—A meeting of the operative masons was lately held at the Temperance Hotel, Broadway, Westminster, for the purpose of hearing the delegates' report respecting the adoption of nine hours working time during the winter season. Mr. Gray was in the chair. The delegates gave in their reports from several shops and jobs, and on the number being summed up it was found that there were 814 masons working nine hours. After some discussion, Mr. Connolly moved the following resolution:—"That it is the opinion of this meeting that a reduction in the hours of labour from ten to nine hours during the winter months would be a great advantage to the trade, and we hereby express our satisfaction that 814 masons are now working the nine hours, and that we hereby recommend to all who are working ten hours to use their endeavours to get the nine." After several opinions had been expressed the resolution was carried, and the meeting adjourned for a fortnight.

HUNGERFORD RAILWAY STATION DESTROYED BY FIRE.—The station at the quiet town of Hungerford, on the Great Western Railway, has been completely destroyed by fire. It is supposed that the fire originated in the flue of the booking-office.

GOLDCUTT'S DRAWING OF ST. PETER'S AT ROME.—The late Mr. J. Goldcutt, architect, made, while at Rome, a beautiful drawing of the section of St. Peter's, elaborately coloured, and with the enrichments picked out in gold as in the building itself. It procured him great credit and a gold medal from the Pope. An opportunity presenting itself for the Institute of Architects to become possessed of this memento of one who rendered essential services in its foundation, a subscription was set on foot, and the amount, some 80l. or 90l., having been raised in a fortnight, the drawing has been presented to the Institute by the subscribers.

TELEGRAPHIC.—Official intimation has been given of the introduction of a Bill into Parliament this session, from which it appears that the Government has decided on entering into arrangements with the principal telegraphic companies of the United Kingdom with the view of placing the various lines under the management of the Post-office department. This scheme, when carried into effect, will, of course, involve a thorough revision of the present tariff and system of management hitherto used by the private companies. The details of the plan will be under the superintendence of Mr. F. J. Scudamore, the assistant-secretary of the Post-office.—An American paper remarks that some of the editors are beginning to call a despatch by the ocean telegraph a cablegram. This is really too bad.

ALLEGED FATAL SUBMERSION OF AN ISLAND.—The curt telegraphic news across the Atlantic to the effect that the British island of Tortola, in the West Indies, had been submerged, and 10,000 lives lost, is not being authenticated by subsequent intelligence. The island did not contain more than 3,000 inhabitants, and it has since been reported to have been "submerged" for eight hours only. It could not have sunk and risen again, that is clear. It is a mountainous and volcanic island, six or eight miles long, and three or four broad, and its highest ground rises to the height of 1,650 ft. above sea-level; so that it must be understood to have suffered (if by water at all) by some extraordinary local rise of the sea; but how all the inhabitants,—"every living thing," as is sensationally alleged,—could have been drowned so long as there was high ground behind them, one cannot conceive. In all probability the hurricane which visited St. Thomas's, another island not far off, may have done damage by a rise of the sea to the town of Tortola, and have destroyed the town and drowned some people. The same thing occurred in October, 1819. It is now reported, however, that the town was destroyed by fire. What with island submersion abroad and mine explosions at home, not to speak of political disturbances, this is an eventful time.

GLASGOW ARCHITECTURAL SOCIETY.—At the last meeting of the Glasgow Architectural Society, Mr. John Honeyman, jun., president, in the chair, after the transaction of some routine business and the admission of members, Mr. Bromhead laid before the meeting a letter he had received from a firm in town who supply upholstery, &c., for houses, in which the following paragraph occurs:—"Well aware how frequently a recommendation from yourself has decided who should supply carpets and general upholstery, we ask the favour of your allowing us to send samples and estimates for any house furnishing in which you may interest yourself. We make an allowance in your favour of 5 per cent. on the gross amount of all accounts with which you may intrust us." Several of the members present said that they had sometimes received similar applications, which they had always treated with contempt. On the motion of Mr. Bromhead, seconded by Mr. Alex. Thomson, the meeting unanimously agreed in expressing their unqualified condemnation of the proposals contained in the letter. A discussion afterwards took place on the first part of the president's opening address, which treated of the present position and prospects of architectural art; the second part, which dwelt with the present position of sanitary matters, being left over till a future meeting. Among those who took part in the discussion were, Mr. Bromhead, Mr. Stevenson, Mr. Leiper, and Mr. A. Thomson.

METROPOLITAN FOREIGN CATTLE MARKET.—Notice has been given of an intention to apply to Parliament for powers to the Corporation of London, the Metropolitan Board of Works, or Commissioners, to construct a complete market establishment for foreign cattle. No particular site is named.

STATUE OF LADY GODIVA FOR COVENTRY.—A letter having been read in the local council from Mr. C. M. Marshall, R.A., offering the statue of Lady Godiva, sent by him to the late Exhibition, the letter was entered upon the minutes, the statue accepted, and the best thanks of the corporation conveyed to Mr. Marshall for the gift.

LEICESTER-SQUARE.—The Court of Queen's Bench have decided in favour of Mr. Talk, and against the Metropolitan Board of Works, who had intended to take possession of the open space, under the Public Gardens Protection Act of 1863. The judges say that the Act was never intended to divest owners of any of their rights, and that the open space in Leicester-square was only devoted by the owner to the use of the inhabitants of the square under their leases, and not to the use of the public at all.

EVENING RESORTS FOR INSTRUCTION AND RECREATION.—A Public Museums and Free Libraries Association has been formed, for opening the national collections on week-day evenings, and for promoting the adoption of the Free Libraries and Museums Acts. Among the vice-presidents are the Earl of Lichfield and Lord Ebury, Mr. Ewart, M.P., and other influential gentlemen. The secretary is Mr. J. T. Dexter; and the office of the association is at the Working Men's Club and Institute Union, 150, Strand. A prospectus has been issued asking the support and inviting the co-operation of all who desire the intellectual improvement and social elevation of the people. The association has our most cordial approval. The national collections are almost worthless to the majority of the working classes until they be opened in the evenings. As to free libraries, the position of the metropolis in that respect at present, by comparison with that of various provincial towns, is simply disgraceful.

ENGLISH HOSPITAL AT SUEZ.—With a view of obviating the expense and lengthened sea voyage incident to the conveyance of invalid troops from India to England, Her Majesty's Government have decided to build a hospital at Suez in the vicinity of a similar hospital already erected there by the French Government. The materials are being conveyed from England in three steamers, in the same way as the barracks at Barbadoes were built. The windows, fireplaces, and woodwork are got ready in England, and transported as portable packages, so as to be fitted together on arriving at Suez with the least possible delay. Captain Willoughby, R.E., is superintending the work on behalf of the Indian Board. The *Blonde*, a steamer of 1,300 tons, Captain Catmur, left the Royal Arsenal yesterday with the requisite War-office stores, having a further cargo of 95,000 bricks, timber, stone, iron pillars, &c., on board, belonging to the contractors. The new hospital is being built from designs by Colonel Collyer, R.E.

THE STALL-KEEPERS AND COSTERMONGERS.—A petition to Parliament is being signed by the stall-keepers and costermongers of Whitechapel and its neighbourhood, and ministers of religion, tradesmen, and others interested on their behalf, laying before the House "the terrible amount of want and suffering which they anticipate will be caused to not fewer than 50,000 of the poor of London, if the sixth clause of the new Metropolitan Street Act be carried into full execution." The cessation of their business, the petition also urges, would cause great inconvenience and loss to a large body of poor purchasers. The petitioners pray in their own behalf and in behalf of all their fellow tradesmen in London, that clause No. 6 of the new Metropolitan Street Act may be enforced only where the necessities of the traffic absolutely require it. It is to be hoped Parliament will prevent the utter ruin of these poor people by some modification of the objectionable clause in the Traffic Act complained of, and not leave the matter to the tender mercies of the police, who seem not seldom to prefer occupying their time in driving honest though humble tradesmen to thieving as a profession, rather than endeavouring to bring thieves under the influence of law and honesty.

LIVERPOOL FINANCE.—We have some astonishing figures illustrating the magnitude of Liverpool finance. The Mersey Docks and Harbour Board now owes somewhere about 18,000,000; and in the year ending June 24, 1867, the income of the Board was 851,811, while the expenditure was 848,311, showing a balance of 3,500, to be carried to the sinking-fund account. The Liverpool town council has borrowed on its water account 2,009,944; on its sanitary account, 623,755; on various improvement accounts, 591,243; and on the public parks account, 388,550; making a total of 3,613,543. Against this, however, there is a set-off of 286,434, invested in Consols and other securities on the sinking-fund account. The council has still unexercised borrowing powers to the extent of 1,000,000. A valuation of all the corporate real estate is to be made. It will be seen that the aggregate liabilities of the two great Liverpool public bodies amount to about 17,000,000.

THEFTED ARCHEOLOGY.—An ancient fortified Roman camp has been discovered at Thetford. Banow Hill, an ancient Roman fortified camp, is situated on the south-west side of the town, between the two old Roman highways, discovered here in the last century by Salmon. It is surrounded by a trench and ramparts, and from the south-east side of this hill runs an embankment for about 1,000 yards in the direction of the London turnpike. About midway down this embankment a deep walled ditch (mistaken by Blomfield and Thomas Martin for the foundation of a hermit's chapel) cuts off the communication between the road and the hill, and on the other side the embankment branches off in a south-westerly direction for nearly a mile and a half, parallel with the road where it ends in a mound now thickly covered with brushwood at the south-western extremity of the borough boundary. At distances varying from 200 to 700 yards along this bank, other ramparts and trenches of a more complicated kind support it in various directions, and it must have been completely defended the southern approach to the town.

THE ROMSEY PALMERSTON MEMORIAL.—Mr. Noble, by whom the statue of Lord Palmerston is to be executed, hopes to have it ready for erection by next Easter. It will be 8 ft. in height, and will stand on a granite pedestal 7 ft. high. Its site will be the market-place of Romsey. The church memorial has been undertaken by Messrs. Clayton & Bell, who say that they mean to use their utmost exertions to make it their greatest work. The cost, however, will require an additional 4000 to be collected. It is the west window, a triplet, that is to be filled. The central division will have a representation of Our Lord in Majesty, with angels, at the top, the Sermon on the Mount below that, and next the Judgment of Solomon, with a representation of Liberty in the lowest division. The dexter side of the triplet will have representations successively downwards, of angels, and apostles, Tribute-money, Daniel as Ruler, and War; while in the sinister there will be angels and apostles, Feeding 5,000, Joseph distributing Corn, and Peace. The arms and inscription will run across the window below the various subjects represented.

TENDERS

For alterations, &c., at 80, Fenchurch-street. Mr. D. Campbell, architect:—
 Ashby & Horner £360 0 0
 King & Sons 342 0 0
 Mann 310 0 0
 Piper & Wheeler 514 0 0

For the erection of timber stage, &c., for Mr. R. S. Moscor. Mr. H. J. Hammon, architect:—
 Henshaw £390 0 0
 King & Sons 338 0 0

For erecting a house, at Sutton, for Mr. J. Spencer. Mr. George Truett, architect:—
 Warner (accepted) £1,895 0 0

For four new cottages, at Wantage, Berks. Mr. J. P. Thompson, architect:—
 Kent £580 0 0
 Wheeler 460 10 0
 Haines 444 10 0
 Partridge 382 10 0

For villa residence, for Mr. Thos. Worthington, Haverock-place, Hanley. Messrs. Scrivener & Son, architects:—
 Matthews £1,177 0 0
 Collis & Hudson 1,100 0 0
 Rowden 1,090 0 0
 Woodriffs 1,068 0 0
 Bayley (accepted) 1,485 0 0
 Barlow 1,040 0 0

For building a house, at Beckenham. Mr. James L. Pedley, architect:—
 Verner £2,365 0 0
 Howard 2,193 0 0
 Brown & Robinson 1,887 0 0
 Breeze & Russell (accepted) 1,638 0 0

For the construction of a sewer, in Harrow-road, from Elgin-road to the western boundary of the parish of Paddington:—
 Whittick £1,438 0 0
 Thackrat 1,430 0 0
 Fossatt 1,357 0 0
 Messrs. Williams 1,250 0 0
 Wigmore 1,190 10 0
 Sawyer 1,189 0 0
 Scott 1,178 15 0
 Lacy & Flexman 1,088 0 0
 Dickinson & Oliver 1,050 0 0
 Walpington 1,050 0 0
 Goodair 1,040 0 0
 Faulkner & Cowley 1,008 0 0
 Brewer & Co. (accepted) 987 0 0

For alterations, to 17, Cork-street, W. Mr. George Truett, architect:—
 Longman & Burge £263 0 0
 Bywaters (accepted) 685 0 0

For alterations, &c., at 132, Leadenhall-street, for the London Clerks' Club (Limited). Mr. T. C. Clarke, architect:—
 Kelly, Brothers £1,070 0 0
 King & Sons 815 0 0
 Scrivener & White 558 0 0

For building the carcass and other portions of villa residence, at Paignton, for Mr. W. Ridout. Mr. G. S. Bridgman, architect:—
 Phillips & Murch (accepted) £275 0 0

For the construction of sea wall, promenade, &c., Paignton Beach. Mr. G. S. Bridgman, architect:—
 Bragg & Dyer (accepted) £1,089 0 0

For alterations, to 71, Milton-street, Cripplegate, for Mr. J. H. Macdon. Mr. R. Parris, architect. Quantities supplied by Mr. Shrubsole:—
 Eyle £279 0 0
 Lamprell 685 0 0
 Nutt & Co. 685 0 0
 Sharoon 686 0 0
 Miller 684 0 0
 Wilcox 684 0 0
 Crabb & Vaughan 639 0 0
 King 634 0 0
 Brauay 637 0 0
 Sawyer 633 0 0
 Brett 623 0 0
 T. W. Pearce 611 0 0
 Cubitt 597 0 0
 T. Pearce 584 0 0
 Hall 584 0 0
 Vincent 578 0 0
 Perry 577 0 0
 Schofield 570 0 0
 Capron 548 0 0
 Greenaway 547 10 0
 Mortice 540 0 0
 Waters 540 0 0
 Wat (accepted) 538 0 0
 Taylor & Son 495 0 0
 Aldis 330 0 0

For new workhouse, Hertford. Mr. Peck, architect:—
 Chappel £10,500 0 0
 Glasscock 8,500 0 0
 Moxon & Mutton 8,400 0 0
 Elkins & Son 8,373 0 0
 Paterson 8,200 0 0
 Smith 8,165 0 0
 Messrs. Savage 7,888 0 0
 Norris 7,847 0 0
 Perry 7,777 0 0
 Huddleston 7,714 0 0
 Bland 7,645 0 0
 Henshaw 7,320 0 0

For building new casual wards, for the City of London Union. Messrs. Treas, Purchas, & Willis, architects:—
 Wood £3,563 0 0
 Ramsey 3,840 0 0
 Holmes 3,651 0 0
 Garrud 3,500 0 0
 Stangle 3,336 0 0
 Martin 3,207 0 0
 Egg 3,140 0 0
 Lacey 3,110 0 0
 White 3,068 0 0
 Crabb & Vaughan 3,010 0 0
 Langley 2,987 0 0
 Turner 2,980 0 0
 Sheffield 2,989 0 0
 Hall 2,980 0 0
 Wyle & Sons 2,914 0 0
 Mote 2,913 0 0
 Perkins 2,884 0 0
 Cooper 2,880 0 0
 Bland 2,869 0 0
 Wyatt & Son 2,849 0 0
 Henshaw 2,768 0 0

For making new road, at New Malden, for Mr. John Gover. Eagle Cottage, New Kent-road. Mr. J. R. Gover, surveyor:—
 Tassell £240 0 0
 Coles & Co. 450 0 0
 Green 447 0 0
 Bentham 370 0 0
 Rutty 383 13 0
 Porter, James 374 0 0
 Harding 280 0 0
 Dean 255 0 0
 Carter 231 0 0
 Porter, Peter 200 0 0
 Strickson 185 10 0
 Clark & Davies 185 10 0
 Coker 160 14 0
 Goodaire (accepted) 158 0 0

For building six cottages, at Southborough, near Tonbridge, Kent. Mr. T. K. Green, architect. Quantities supplied:—
 Brett* £2,553 0 0
 Keys 2,453 0 0
 Lays 2,353 0 0
 Coker 2,020 0 0
 Strange & Sons 1,994 10 0
 Nightingale 1,865 0 0
 Wright 1,855 0 0
 Simms & Martin 1,899 0 0
 Capron 1,738 0 0
 Upchurch & Hanks 1,720 0 0
 May 1,637 15 0
 * Applied too late for quantities.

For the erection of a villa residence, at Paignton, Devon, for the Rev. T. G. Hall. Mr. G. S. Bridgman, architect:—
 Call & Pethick £1,944 0 0
 Bragg & Dyer 1,833 13 0
 Goss 1,800 0 0
 Evans, Brothers (accepted) 1,690 0 0

For public-house, at Lewisham, Kent, for Messrs. Courage. Mr. Lee, architect. Quantities supplied by Mr. Thos. Nixon:—
 Extra for plate-glass.
 Brett £3,200 0 0 £45 0 0
 Wright 3,508 0 0 16 0 0
 Bates & Lucas 3,500 0 0 46 0 0
 Gamman 2,483 0 0 43 0 0
 Winder 2,430 0 0 78 0 0
 Walker 2,437 0 0 68 0 0
 Kent 2,387 0 0 85 0 0
 Sawyer 2,363 0 0 64 0 0
 Charter 2,345 0 0 49 0 0
 Shummar 2,265 0 0 35 0 0
 Stower 2,258 0 0 38 0 0
 Nightingale 2,279 0 0 47 0 0
 Perry 2,240 0 0 38 0 0
 Wills 2,238 0 0 64 0 0
 Knight 2,187 0 0 48 0 0
 Henderson 2,130 0 0 25 0 0
 Bland 2,120 0 0 39 0 0
 Eustace 2,063 0 0 40 0 0
 Steady 2,070 0 0 37 0 0
 Crabb & Vaughan 2,060 0 0 45 0 0
 Harris 1,998 0 0 60 0 0

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 We are compelled to decline pointing out books and giving addresses.
 All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.
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The Builder.

VOL. XXV.—No. 1395.

Life and Works of Sir Charles Barry.



IT is quite rightly the relatives of the architect of the Palace at Westminster thought it desirable to place before the public some account of his life and works, and this has been done by his son, the Rev. Dr. Barry, in a handsome volume of 407 pages.* He has been assisted in it, to some extent, by his brothers, Mr. Chas. Barry and Mr. Edward M. Barry, but more so by the notes of Mr. J. L. Wolfe, the life-long friend of his father. One of the most enviable features of Sir Charles Barry's life, by the way, was the possession of such a friend as Mr. Wolfe. From the time that he first made his acquaintance in Rome, whence he wrote, February 20th, 1820,—“A Mr. Wolfe, an architect, and pupil of Mr. Gwilt, has just arrived, and I have made his acquaintance with great pleasure. He is an enthusiastic admirer of art;”—to the last hour of his life, Mr. Wolfe appears to have been always at his side in any difficulty ready and able to aid, encourage, or sympathise. In the list of subscribers to the statue which was raised to Barry after his death, Mr. Wolfe's name is given down for 200*l.*, or, as we remember to have heard at the time, for any amount that might be necessary to carry out the proposition satisfactorily, and not many weeks ago he came forward ready to protect with his evidence the fame that had been assailed. Thrice happy the man who finds such a friend! Immediately after first meeting Mr. Wolfe in 1820, Barry wrote,—“I saw immediately that he was a man with whom I could coalesce and become intimate; and the result is that I now reckon him among the few sincere friends that one can hope to obtain in the world.” Never were anticipations more completely realized; never were first impressions more fully borne out.

It is unnecessary now to give readers of *The Builder* an outline of the life of Barry. This has already been done at considerable length.† Illustrations of his principal works, too,—Bridge-water House, the Board of Trade, Cliefden House, Halifax Town Hall, his design for the National Gallery and the Royal Academy of Arts,‡ the Westminster Palace, including the interior of the Houses, the Victoria Tower, the Clock Tower, and many other works,—will be seen in our pages; and throughout his connexion with the Houses of Parliament it was satisfactory to us to find ourselves usually able, in the various discussions that grew out of the works there, to side with him in his views and defend his proceedings. What we have now chiefly to do is to give some idea of the volume before us. It contains thirty-nine illustrations in the shape of views and plans of his works and projects,

and a portrait, which is only moderately like. We are enabled to reproduce three of the engravings as examples. We have chosen Shrubland Park, Suffolk, as showing some of his best garden arrangements, made in 1848.* The old House had been improved by Mr. Gandy Deering in 1830, and on this Barry had to work. The chief glory of Shrubland lay in its gardens, and it was in that direction he made the greatest improvements. The upper garden near the house was re-arranged and enclosed with balustrades. A handsome flight of steps led from the upper to the lower garden. At the foot of the steps an open loggia was placed, and the adjoining ground was laid out with architecturally formed beds. These gardens at the present moment, we may mention, are being talked of, and the greatest praise has been given to the use made there of stonework and vases for gardenesque effect. “Some of them are urn-shaped, having no place for plants; others, such as the fine handsome ones in the balcony-garden, are flat, open-topped stone baskets, not furnished; and many more of the more common patterns are scattered about, planted and unplanted. These, with the beauty of the different walls, the richness of the balustrading, and the massiveness of the copings, give a sculptural character to the scene which adds dignity, grandeur, and the idea of value and costliness to the whole, such as is rarely met with. Seldom or never has dead stone done more, or better, to exhibit the beauty of living flowers than at Shrubland.”

The Birmingham Grammar School, the uppermost of our examples, was designed in 1833, and completed in 1836, and it was in connexion with this, Dr. Barry states, that Sir Charles first made the acquaintance of Mr. A. W. Pugin, “whose assistance he secured in making out some of the drawings for details.” Here, too, he lighted on Mr. John Thomas, afterwards so intimately connected with him at the Houses of Parliament, and who was then working as an ordinary stone-carver. A remarkable man was John Thomas,—too early cut off! The Birmingham school may be viewed as Barry's preparatory step towards the great work that was to follow soon.

The third illustration we give shows his design for the enclosure of Palace-yard, and the connexion of the two great features of his building, the Clock tower and Victoria tower. His proposal was to erect a line of building, occupying the site of the Law Courts and the western and northern sides of New Palace Yard, giving ample accommodation for all public needs. New Palace Yard was to be entered on its west side by a grand gate-tower, or triple archway flanked by towers, leading by a gentle slope to the present entrances. On the south side, Westminster Hall would form a grand centre with a range of buildings on each side of it; and on the north side, if a high range of buildings were thought objectionable, a cloister with one story above it, or an open arcade, might (he thought) mask the building from the high ground of Bridge-street. The great entrance gate-tower he had proposed to call the Albert Tower, in a kind of correspondence with the Victoria Tower, which is the royal entrance, serving like it to mark the date of the building, and to commemorate the lively interest which the late Prince Consort took in all that concerned its artistic decoration.

Such was the scheme formed by him, and again laid before Lord Palmerston's Government by his son, Mr. Edward Barry, in 1864. The annexed woodcut will show its general character. It has now some special interest, because the removal of the Law Courts must soon give the question a practical importance. All that is at present being done is to complete the Clock Tower on its western side, to enclose New Palace Yard by a handsome iron railing, and to construct an arcade or cloister along its eastern

side, with a subway at the northern end passing under Bridge-street to the Thames Embankment.

The volume furnishes at the commencement some interesting notes of Barry's early travels, and we are tempted to make a few extracts. The palatial fronts at Vicenza and Venice did not take the same hold upon him as those at Rome and Florence. “The Library of St. Mark at Venice, the greater Porto Palace, by Palladio, at Vicenza, and others of the same kind, had not only the cardinal vice of superimposed orders, but were offensive by the multiplicity and prominence of their details. . . . To engaged columns,—‘colonnades walled up’—he had a great dislike; and when, as at the Board of Trade, he had to employ them, he always relieved them from the wall by grounds or margins. Even then they never thoroughly satisfied him. The disposition of the windows (grouped in the centre) in some of the smaller Gothic and other places at Venice was noted by him with approval, and was not forgotten when he was designing the garden-front of the Travellers' Club. Of palace fronts, in which an order was employed, he was most struck with those of the public prisons at Venice, and Palladio's Thiene Palace at Vicenza.”

The Ducal Palace, magnificent as he felt it to be, did not satisfy him. Of the beauty of the arcaded stories he was fully sensible, nor did he object to arcaded exteriors in general. “But no consideration could reconcile him to arcades or colonnades supporting, as here, a heavy mass of building. Whatever might be the character of the superstructure, he required that the lower part of the building should be comparatively solid and plain: the reverse appeared unnatural. In the finest portico he was not satisfied unless the basement (or the steps) was equal in mass to the pediment above. Even in the river-front of his new Palace at Westminster he rejected the idea (once entertained) of introducing a cloister; and was so jealous of the solidity and plainness of his basement, that he grudgingly every window and would hardly enrich a gateway.”

In the study of details of arrangement he was somewhat discouraged by considerations of the great differences between Italy and England as to climate and life. “The open *cortile*, surrounded with arches or colonnades, was a feature which delighted him, and which he often longed to introduce. There was one in his first design for the Reform Club. But in England he felt that a central hall had the advantage both in convenience and in effect. He suggested in after years the covering in of the area of the Royal Exchange, and of the still more spacious area of the British Museum. This delight in a great central hall became a passion.”

The great staircases might have served more immediately as models; but he had peculiar ideas on this subject, which interfered with his admiration of those usually deemed most excellent. “Where scenic effect was given by various flights of steps, arcades, and columns, he seemed to think that space was sacrificed and a grand hall spoiled. He did not like to see ‘steps hanging in the air’ or supported by umbrous walls; and sudden changes in the direction of the flights annoyed him. His ideal staircase was a grand straight flight, the whole space, however great, being occupied by the steps; but if this were impossible, he required that all that could be seen at one view should be straight, and preferred the staircase, so common in Italy, where each separate flight is enclosed in solid walls.”

In Italy he first acquired that liking for visible roofs, which he afterwards showed, both in his Italian and Gothic works. He approved of them, because, being essential features, they ought not to be concealed; because, in fact, their visible appearance was the proof that the building was covered and was not a mere shell. In study and criticism he passed the last few months of his sojourn abroad. They were

* *The Life and Works of Sir Charles Barry, B.A., F.R.S., &c.* By the Rev. Alfred Barry, D.D., Principal of Cheltenham College. London: John Murray, 1867.
† See especially our volume for 1867 (xviii.), pp. 305, 321, 349.
‡ Vol. xviii., p. 417.

* See p. 872.

months of great enjoyment; for his spirits were buoyant, his disposition frank and genial. But they were also months of thought and study. "It was evident," (says his friend) "that the leading principles of composition which influenced him throughout his career were already rooted in his mind."

First came a love of truth. "The false in architecture he abhorred; and all external features, which did not at least indicate the internal design, he condemned ruthlessly. Even a blank window offended him. The showy but screen-like façades, so often applied in Italy to comparatively mean buildings, were to him impostures, worthy of contempt."

Next came a love of unity and regularity. "That he had an artist's eye for the picturesque was certain, from the happy choice he was sure to make of the best points of view for sketching. But actually to plan irregularly because it was picturesque, he thought unworthy of the dignity of art." Every feature, especially every ornamental feature, he would subordinate to the preservation of the main outline, and the main principle of the design, sometimes even at the cost of boldness and variety. Unity rather than multiplicity of effect, he thought the object of human art, — a lower beauty, indeed, than that which results from the unstudied harmony of nature, but the only one which seemed to him really attainable. This view he continued to maintain, and though he saw much beauty in works designed on the opposite principle, yet the observation of their general effect tended to confirm him in his theory.

Connected with this was his great love of the effect of spaciousness. Probably the next point most evident in his criticism was the love of perfection and completeness in detail. Nothing disturbed him so much as incongruity or want of keeping in the various parts of a design; the mingling of grandeur with pettiness, and of rich decoration with bare and unadorned features, seemed an offence against harmony; and he held that the hand of a master of his art was almost as much shown in the study and adaptation of every detail, as in the conception of a great general design. With this was connected his keen sense of symmetry and proportion. "The least offence against either, — a single feature out of scale, an opening too narrow, or even a moulding too heavy, — jarred upon him like a discord."

Early in his course he had an alarm. His churches at Manchester may be looked on as his first entrance upon a successful career. Soon after the opening of his church at Prestwich there came an express from Manchester, stating that one of the galleries had shown signs of falling during service, that the congregation had rushed out in panic, and that many were seriously hurt. By the time the long journey to Manchester was over, the report had grown into "Stand Church fallen, 300 killed and wounded." It turned out that a small hair crack had appeared in the plaster in consequence of too rapid drying. A man under the gallery perceived it, and fancied that it widened rapidly, whereupon he shouted out, "The church is falling!" The consequence of this proceeding was a sudden rush to the doors, at one of which the steps had not yet been fixed. Down went the temporary steps, and the congregation over them. Happily but few were hurt, and those not seriously; so the architect's reputation escaped.

Rather more than a fourth of the book is devoted to the Houses of Parliament, giving some particulars with regard to:—

I. The history of the competition, of Barry's success, and of the opposition with which that success was greeted.

II. The order and dates of the erection of the various parts of the building; the alterations made during the progress of design, and the notice taken of them by Parliament; the new elements introduced into the work by the appointment of Dr. Reid, to superintend the warming and ventilation of the building, of the Fine-Art Commission to direct its embellishment, and of Mr. Denison and Mr. Dent, to construct the great clock; and the assistance received during the progress of the work from other artists.

III. The controversy carried on with her Majesty's Government on the subject of the professional remuneration of the architect.

IV. The growth of the design, and the reasons which dictated its general scheme and details; and,

V. The general description of the plan and design, so far as such description is needed as a key to the observation of the building itself.

While offering praise to the author of the biography for the manner in which he has executed his doubtless agreeable task, we are forced to remark that we miss in the book much that we looked to find. The biographer says, and we have no doubt correctly, that Barry's mind was "singularly fertile in all kinds of mechanical contrivance;" but for an account of any such contrivance we look in vain. In fact, in those respects in which the volume would have been most valuable to the professional reader it is defective; and it is impossible to shut our eyes to the fact that the life would have been better written by a literary architect than by the most eloquent of divines.

A full account is given of some of the controversies in which Sir Charles Barry became involved. Difficulties, not wholly constructional, followed one upon the other; the heating, lighting, the clock, the bells, the drainage, brought each its share, and harassed him very greatly. On many occasions he felt these bitterly, and expressed himself equally so. Thus when objections were raised to the drainage he wrote us some stringent remarks on the course that had been taken by the late Mr. Austin in making his report:—

"As I have just reason to complain, not only of the matter of Mr. Austin's report, but of the manner, in which it has been made, I would remark upon the un-
lucky and uncooperative conduct of Mr. Austin in making his first examination and report. He has not only adopted and the state and condition of the works which were already incomplete, without giving me any notice of his doing so, or affording me any opportunity of explanation, but he has also proceeded to make his report. Some notice should also, I think, be taken of the exaggerated and highly wrought descriptions and ridiculous vignettes contained in his report, which are calculated only to appeal to the feelings rather than to the judgment and good sense of the country."

Intentions wrongly attributed to him also annoyed him. When it was said that he was about to take off the roof of Westminster Hall, he wrote to us thus:—

"There is not one word of truth in the report that the Westminster Hall roof is to be raised, nor have I made any application for authority for that purpose, although I think it would be a good job if it were raised, and the floor also, so that the latter might be well above high-water mark, which is it is the case at present. What would the conservative writer in the *Globe* say in justification of the liberties that were taken with Westminster Hall in the time of Richard II? or of the disregard of medieval architects in altering old buildings, of all that had been done by their predecessors?"

CHARLES BARRY.

Dr. Barry seems occasionally to be seeking excuses for the length of time the Houses of Parliament occupied, whereas he might have said justly, they were built not merely quite fast enough, but too fast. We combated, again and again, to the extent of our ability, the charges of "unnecessary delay," that were constantly raised by persons ignorant of art, though influential, and had the satisfaction of hearing on one occasion, from Sir Charles himself, that our observations read to a committee of the Lords had been productive of a better feeling, and much advantage.

The only allusion in the book to the claims recently made in behalf of the late Mr. A. W. Pugin, is contained in the following "Addendum" to the Preface:—

"Since this work was printed, the risk alluded to in page 116, as likely to arise from the employment of the late Mr. A. W. Pugin on the New Palace at Westminster, has been unexpectedly realized fifteen years after his death, by some extraordinary claims put forward by him. These claims, referring as they do to a question raised and settled in the life-time of those concerned, have not appeared to me to require any notice in these pages. I have therefore left the whole passage in pp. 114-116 precisely as it was originally written, without the alteration of a single word. It contains the exact account of the controversy which existed between Mr. A. W. Pugin and my father, and which, I repeat, so far as Sir Charles Barry is concerned, was settled long before his death, and before any dispute or entanglement took place when Mr. Pugin (then a young man of 23) was first employed on the drawings of the New Palace, until the day of his death in 1852."

The account here referred to we quote, —

"As soon as he [Barry] was appointed architect to the new palace, he immediately thought of his friend, and resolved to write to him to see if Mr. Pugin was at that time untried in his knowledge of Gothic detail, admiring his extraordinary powers as a draughtsman, carried away by sympathy with his burning artistic enthusiasm, he could wish for no other candidate. The invitation was accepted, and a connexion was established equally profitable to both artists. No man was more original than Mr. Pugin. He held strongly certain principles in the execution of which he greatly disagreed with

* May we be pardoned for printing a few lines he wrote us on the subject:—

Westminster, 21 Feb. 1848.
My dear Sir,—I accept my best thanks for your able and disinterested defence of my position as the architect of the New Palace at Westminster. I am very sorry that I cannot do more for you at present. I am, Sir, your obedient servant,
Charles Barry.

his friend: he was one whose name and genius could at all times command an independent authority. Yet for the furtherance of his art he was willing to accept a distinctly subordinate position, and to work under the superintendence and control of another. If acceptance of the post, the part in which he discharged his duties, showed the generosity and unselfishness which were his well-known characteristics. Nor, on the other hand, could Mr. Barry be unaware of the danger of calling in a too powerful coadjutor. He knew the most inevitable risk which he incurred of being supposed to wear other men's laurels, of having all that was good or spirited in the details attributed to Mr. Pugin, and of finding it difficult or impossible to control an enthusiasm which he put out, when an attempt was made to attribute to him more than he felt to be his due. The misapprehensions of others he could afford to disregard.

The first aid which he received from Mr. Pugin was under the pressure of shortness of time in making the original design. Working under Mr. Barry's own eye and direction, Mr. Pugin sketched for him in pencil a complete set of details, in a style perhaps bolder, less carefully proportioned, and less purely English, than would have been adopted by himself. In the design they differed *totally*. Mr. Pugin would have recommended irregular and picturesque grouping of parts, utterly at variance with the regularity and symmetry actually adopted. Except in details, he neither had, nor could have had, any influence whatever, and those who compare the details of his own buildings with those of the New Palace will readily see that even here his influence, however valuable, was chiefly indirect.

After Mr. Barry's appointment as architect, he still received the same aid in preparing detailed drawings; for the estimate, most of which, however, by changes in design, were afterwards set aside. Finally, at his recommendation, Mr. Pugin was formally appointed superintendent of the wood carving, and in that capacity he directed, first the formation of a valuable collection of plaster casts of the most famous examples at home and abroad, and next the execution of the wood-work, ornamental metal-work, stained glass, and encaustic tiles throughout the whole building. But in all cases it was thoroughly understood between them that the architect's authority was to be paramount. Every drawing passed under his eye and under his supervision, in every way for alteration. Mr. Pugin's originality and enthusiasm never interfered with this understanding: he would carry out successfully and bravely what he knew would not altogether approve. His suggestions and criticisms, freely given and freely received, were invaluable; and his enthusiasm, even in its exuberance, was inspiring and irresistible. For more than five-and-twenty years the intercourse between the two friends and coadjutors continued, unbroken by any differences except in taste, and when Mr. Pugin was struck down by his fatal illness, Mr. Barry felt that his loss was irreparable."

To the question that has been discussed we shall not here return. As every one now knows, Mr. Pugin personally requested us on all occasions to make it understood that he did nothing on his own responsibility, — simply assisted in carrying out practically Barry's own designs and views. We printed his letter to that effect in 1845, and repeated his statement in 1848 when commenting on a critical article in the *Westminster Review*, which contained the expression of a belief that the interior of the building had been committed to Mr. Pugin.*

Sir Chas. Barry was not a great letter-writer, and as no examples of his style are given in the biography, we print a letter written by him immediately after the burial of the late Mr. Pugin, —

Westminster, September 26, 1852.
"Dear Godwin,—I am much obliged to you for the post mention you have made in your memoir of poor Pugin, of the part he has taken in the decorations of the New Palace at Westminster. It relieves me of all necessity of contradicting the false reports that have been put in circulation on the subject. I would almost rather let it be supposed that the whole of my credit had been due to the work should be attributed to him, than that I should be obliged to put forth any statement of facts at the present time that might to an ill-natured world appear to be ungenerous and calculated to dim in some degree the lustre of his great fame."

I wish I could evoke your thunder in blowing up the design for the Crystal Palace, — a scheme, which, if carried out as proposed, will be a disgrace to the country and the arts of the age in which we live. I should much like to show you the suggestions I have made in vain for its improvement, which I have been induced to volunteer from a strong national feeling and a conviction that a really palatial edifice of glass on the glorious site it is to occupy, with a good outline relieved by domes and towers reflecting the dazzling lustre of a bright sun, would have such a striking and fairy-like effect as has never yet been witnessed in any mortal production hitherto created. Yours, very sincerely,
Charles Barry."

An engraving of his proposed design for improving the Crystal Palace is given in the Biography. We may not, however, devote more space to the subject, though two very interesting subjects are treated of in the volume to which we have not alluded, namely, a curriculum of architectural study proposed by Sir Charles Barry to the Royal Academy, and his plans for the improvement of Westminster. Suffice it that the book contains much to interest, and rightly holds up for admiration the character of our great artist-architect.

THE CONVERSION OF THE "ROUGH" MATERIAL.

"The Manufacture of Roughts" is a phrase well worth holding to till the repetition of it has done most of the good work it is capable of, and then it may cheerfully render up its place to another that, under such circumstances, cannot but be more encouraging. It is something to have been brought on our own way even thus far. The phrase of "the dangerous classes" has had its currency from mouth to mouth, but spoken too often in defiance, and at best prompted by repugnance, appealing to and aggravating alarm. It is well that we should be brought to bethink ourselves of a responsibility in the case, and confront an admitted evil with all its inconveniences and dangers under some sense that doings and misdoings and omissions of our own rise up in this form of threat and annoyance. The gods are just, says the old British Edggar,—

"The Gods are just, and of our pleasant vices
Make instruments to secure us;"—

Some of the severest knots in the thong are due to the carelessness that have little enough pleasantness to recommend them, and to others that are almost as disagreeable in themselves as they are ruinous to the body and the soul. That is the Rough at his best and his worst,—*that is the Rough*—outside and in? We have had our opportunities of seeing him as gregarious; and specimens of the habitually solitary meet us every turn of our best streets—at every step more degraded districts. *Rough*, is but a moderate word as applied to the external man; but the clothing, even when sufficient, is repulsively foul if only from unclean use, and that it is too often abundantly insufficient even in the better seasons of an uncertain climate, is but part of the account to be reckoned in the cumulative irritation that comes upon the clean and the unkempt. All this, however, is less distressing to remark than the under-lying air of the physical man that carries about him unsavoury surroundings. There is no single type—it is now the hulking frame that suggests how Rough may be but equivalent for a man, and now the small, light weedy growth that denotes the confraternity of *Pitch* in a "Beggars' Opera" rather than one of the drier or more enterprising followers of *Jack*. "Will it please you,—hear his bid now," at least as regards his growth, comparing the roughest congregations of the Rough with recollections of certain large Continental cities, we are bound to admit,—we had most said assert,—for our own, a freedom from the prevalent marks of physical degradation that have obliterated themselves elsewhere. Indeed, it is at once a depressing and a hopeful observation in how many of the class merely (judged as what the Greeks would call *κοῖται*, *κοῖται*—we discern still but merely a remains but even the materials of a recovered man. The gait is shambling, the whole body lacks not only tone but tension, the joints are infirm, the tendons unelastic, and yet it is an instrument out of tune and out of repair that we have before us, and not, in the majority of cases, the visible heir of a constitution ruined at its core by the most pestilential miseries vice or intemperance. We have seen different things in strata several degrees higher than the Rough among populations under happier skies. They are still at any rate "not less than" we do not say archangels, but "Englishmen indeed," which, if not saying quite so much, is, I think, saying a good deal. And whence, then, comes the ruin? What is the process of manufacture that has turned out as Roughts the men who were capable of utility and of enjoyment, certainly,—time enough to think about it. The roughness of the Roughts is not in that less vile but ever objectionable quality of all consciousness and loathsomeness and want of sympathy with anything but the most animal desires and excitements; and this, after all, is but the milder outgrowth of idleness and want of healthy consequence, and privation alternating with intemperance. There is but one way from the sublime to the ridiculous; and a good deal to it again that divides the condition described from one of reckless violence and intemperance, and all crime in all worse forms. But, again, we would say for the mental as we have said of the corporeal qualifications of the English Roughts, that, speaking of the mass, the deduction made for the necessary subsistence is on this level of all that is worst from all grades

of society, we miss the signs of essentially and irreclaimably vicious breed. They are to a large extent good things in bad places, and comporting themselves as good things under such inevitable disadvantages will.

And so the question comes round again,—Whence the mis-manufacture that has spoiled good stuff? How does it come that what should be the source of hardy labour, graduating from the coarsest upward to the skilled, and the sufficient capacities and fair dispositions that should find hearty exercise in the relaxations and in the domestic relations that are within reach of the humblest, should be a dangerous deposit of combustible materials at the very base of society; that the wasted energy should be ready at any opportunity and invitation to declare itself in enmity to society, to side with brutal assaults of policemen fulfilling duties in which all should aid them; that they should only have the use of language, like Caliban, as if to "know how to curse;" and that family ties should be unknown to them, or known only to be abused by unfeeling cruelty?

There is one deep black line that runs across society and cuts off an unhappy section invariably as the "deep gulf." The line is drawn by criminal conviction. The brand, and even more, the consciousness of the prison, clings to the unhappy, and the inscription over its gates might add a horror even to the fearful line of Dante,—for he who passes out of this gate again, even more surely than he who passes in, has forfeited hope for ever. Can hope be restored to any of these? As regards adults the question would open here too large a digression; as regards the younger, these pages have already pressed urgently the considerations that are most to the purpose. Already the success of the reformatories has been a reward to those who, like Lord Broughton when in the House of Commons, have dared ridicule in demanding the experiment. It is a curious peculiarity of the youthful mind that it is forgetful of the most agitating events in the very years that it is most receptive of lively impressions.

The skillful reprove grave faults of the young severely with mingled expostulation, and, when the heart is touched, immediately pass from the subject, and seem as though they entirely forgot it, as the culprit will as happily forget, even while by no means unprompted. The wound of conscience at this age fortunately heals under good treatment, and not even a cicatrice remains, or none at least can challenge it.

Education can do much to keep the poor from requiring even the saving help of the reformatory, but it must be education truly to the purpose,—to the purpose of starting the young with good chances of healthy minds in healthy bodies. The cheap gymnastic exercises should be as absolute requirements in a school for pauper children as copies of the alphabet or a black board; this sentence is somewhat dogmatical, but still one more go with it. In every school that is under public control, if music is taught in no other form, it should, at least, take the form of choral singing. Our theme is how not to manufacture Roughts, and the answer has been from all time,—by the careful instilling of the generous arts.

And then, what is to be said of instruction in the technical arts by which honest industry achieves a generous livelihood? Here the material that we manufacture into Roughts is in the presence of the possessor of industry's own field—the skilled artisan and trades-unionist, who claims it as his freehold, and hedges about the admission to it with restrictions more jealous than a lodge of Freemasons or a conclave of the Inquisition. And yet is the periclitant Rough a man and a brother. He is not excluded distinctly from consideration, either by the Bill of Rights or Magna Charta. It is the glory of England, and has been a main source of happiness, that the various classes of her society blend gradually into each other, no invidious limitations of race and descent and alliances exclude all classes but one from court; sons of peers sit down at a market table, and the debates of peers have been presided over from the woollack by the son of a man who shaved for a penny. Is the breach of continuity to come at the line between the hungry labourer and the highly-waged artisan? Is it—we will not say far—but is it tolerable, and shall it be tolerated, that those who are willing to give knowledge to those who most of all require it shall be hindered? that any class of society whatever shall enforce the law, "none that are lower than ourselves shall be as high as we are, and none that are as low as ourselves

shall get higher." There could be but one enhancement of the principle here involved,—"those who are higher than we are shall be brought down to our level, and those below us shall be kept down if not got down further." The country does not stand alone in the world; it will have to hold its own against others that are becoming relatively stronger daily, and such a repudiation of balanced organization would no more carry us through a crisis, of which assuredly we shall have more than one, than reducing all officers to the ranks and refusing recruits, would have carried our flag from Lisbon to Toulon.

But if the artisans are to be called on to give free chance to those who at present are manufactured into Roughts, to become competitors in skilled labour, are they alone to make a sacrifice? Whether a sacrifice would be involved may be a question; but, waiving this, we are not disposed to pass by other classes of society without making demands upon them, and not in the way of charity, but as a right.

The condition of our cities is disgraceful in respect of uncleanness, and of uncleanness in positions that properly fall to public responsibility. We have not to go far for illustration. Those whose route leads them from regions Mesopotamian to York-street, in quest of their Builder, will find illustration for themselves in the damp rough paving of St. Giles, and the revelations of underground conditions given by the tub of disinfectant powder awaiting the black contents of some evil sewer. From a public point of view we assert the right of such streets to be as well paved and sewerd and lighted as any. Streets pertain to the general public, not to the houses adjacent; and for their maintenance and cleanliness the community must be responsible—must pay. The demand upon the public purse, if the public recognizes its duties very scrupulously, is likely to be heavy. A cry comes from the children for some other space to play in besides the intervals between the tread of foot-passengers and the tracks of cabs,—some acre with a mound, if possible, for running up and down. So much for health, and for cheerfulness something more: no street of any length should be without green leaves visible in season. Trees flourish in Cheapside and plane-trees, at least, would grow in St. Giles's, Spitalfields, and the brick encampments of the East-end—time enough when these localities are provided, to restore them to Trafalgar-square. Here we might enlarge also on the provision of workmen's halls and such cheerful amusement therein as would enable them to give up their present resorts to the undesirable classes with whom they at present have to share them so incongruously.

In conclusion,—for the body politic to be purified, strengthened, refined, we must use to some better purpose the material we now mis-manufacture into Roughts; howbeit, all classes of society have to concede what, after all, they have no right to,—if skilled labour have to give up its aim at monopoly, and capital to perform the duties justly chargeable upon it, and be content with the balance only for profit.

AN EDUCATIONAL VIEW OF THE PARIS EXHIBITION.

There are many reasons why more than a cursory consideration should be given to the late Paris Exhibition, not the least important of which is the probability that, as far as France and England are concerned, it will be a very long time before we shall have the opportunity of criticising a similar display. The example set by our own country in 1851, by the International Exhibition in the first Crystal Palace, was followed in 1855 on a larger scale at the French Exhibition in Paris, and this in its turn was surpassed by the second English Exhibition in 1862, whilst the Paris Exhibition of the present year, 1867, exceeds all its predecessors either in France or England, both in the comprehensiveness of its contents and their excellence as objects of fine and industrial art. Other exhibitions of a somewhat similar nature have been held at intervals between the above dates, in different parts of Europe, though less of an international than of a national character. The frequent recurrence of displays on so large a scale, and involving such costly preparation and expenditure, has had the effect of making manufacturers and exhibitors scrutinise very closely the actual advantages to be derived from a participation in them. Where brilliant reward

have been received or distinction won by exhibitors, it may be considered that a return has been made for the great outlay expended upon individual displays; but when only moderate success has been achieved, or even no recognition of excellence obtained, then it is only natural that an adverse opinion should be formed of such costly competitions. It is in the nature of these peaceful contests that the few only meet with any reward, and, as a consequence, for a diminutive minority of successful exhibitors who are made contented and happy by their distinction, a large majority of disappointed ones must feel that their money has been nearly thrown away, or, what is still worse, expended upon making manifest to the world their own inferiority. Add to this a sense of the anxiety which has been felt by every extensive exhibitor, and the soreness arising from any instances of apparent injustice in the distribution of awards, and we have causes of dissatisfaction sufficient to account for the feeling that the present Paris Exhibition may be the last of its kind. Whether it will really be so it is impossible to say, though, judging from the present condition of the public mind, the probability is strongly against another international exhibition for a very lengthened period. This, as before said, confers an additional interest upon it, and the extraordinary excellence of much of its contents, serves to increase the importance of the lessons which may be received from their careful examination and through an impartial judgment upon them.

The Periodical Exhibition of Fine and Industrial Art.

That periodic exhibitions of fine and industrial art have an educational value cannot be denied; and that their influence, both personal and national, has tended towards a general and individual elevation of taste, is easily demonstrable. The progress in refinement of public taste, and the singular excellence of the productions of individual manufacturers or firms are to be traced almost directly to the periodical application of high standards of excellence in these international contests for superiority. There is, however, a dangerous as well as a beneficial tendency in competition—both and thorough in the industrial branches of manufacturing art, which can never baffle the more extended field of fine art. This danger is, that when unlimited pecuniary resources are available to the manufacturer, and a demand has been created for the costliest objects, excellence and fitness of design give place to mere extravagance of ornamentation, and the simplicity and refinement of true art are supplanted by a meretricious plastering of expensive details. When this stage of art manufacture is reached, the original use of an object becomes lost sight of, a pampered luxury takes the place of chaste design, costly materials become substituted for grace of conception, and instead of the cabinet or the vase being examples of the matured skill of the human mind in art applied to the necessities of the human being, they degenerate into mere indications of wealth or proofs of luxuriousness. Beauty of materials enriched and enshrined by the consecrating influence of true art-workmanship, and made harmonious by purity of style, will always have its place in the highest developments of industry; but, it should ever be remembered, that the mere money-value of the materials used may be made an apology for barbarous or frivolous art.

Another danger which may be engendered by monster exhibitions, where so much reputation may be won or lost, is the creation of an artificial and fictitious standard of manufacture, representing not so much the actual condition of various branches of industrial art, as the energy and resources of manufacturers, when pitted against one another. This produces a feverish condition, in which consistency and good workmanship are sometimes sacrificed to mere novelty and love of display. It is impossible to fix a limit at which sound workmanship or thoughtful and beautiful design shall stop; but there are well understood boundaries in the ornamentation of every object beyond which, having regard to the fulfilment of its actual use, elaboration becomes impertinence, and the application of art a frivolous waste of money.

The magnificence of the collective display of any nation is not necessarily therefore an accurate gauge of its general character as an art-producer, nor a true indication of the actual condition of industrial art among its people. In France, a country in which art appears a necessity, and its cultivation and enjoyment, through all changes of govern-

ment, have been steadfastly followed for many centuries, the Exposition at the French Department of the Exhibition is not regarded as being much, if at all, above the level of the ordinary condition of industrial production. But in many other countries, as well as our own, the works of the best known and most successful exhibitors are considered to be examples only of exhibition work, too costly for the possession of any but the affluent or the luxurious, and far above the standard of taste of the majority of even the middle classes; whilst, if we turn from these show-works to the objects which surround us every day in England, we are conscious of the great gulf which lies between our apparent taste in Paris and our actual taste at home.

Their Good Effects.

The good effects resulting from these great International Exhibitions would seem, however, to overbalance the evil ones. Each country may possibly, in the interchange of ideas, lose one or more of its cherished monopolies, but it gains also the advantage of remedying some of its known deficiencies. Thus in the Exhibition of 1851, France was far behind England in mechanical engineering; but in 1867 there is not much difference between the two countries; and the great lead which was taken by France in industrial art and design was not felt so strongly in 1862 by England as it had been eleven years before. This year, again, we feel that in many branches of art and art-manufacture we have fallen into the rear, and shall require to make some important changes in our means of art-education before we can regain the ground already lost. Some of our manufacturers have complained that the only result of their exhibiting the best of their works at an international display has been that foreigners have copied their designs or works, and, having better skilled labour than we have in England, been able to reproduce them at a cheaper rate, and thus taken away their foreign trade in those articles. This is, undoubtedly, an individual hardship, though it is easy to see that society may be a gainer even by such a result; for it is only by similar means that nations become educated, and civilization progresses.

Educational Character of the Exhibition.

In the Fine Arts, Painting, Architecture, and Sculpture, the works displayed by the various countries of Europe were sufficiently national to be full of valuable information to the educationalist, and to others they could not help being educational in the highest sense of the word. Even the History of Labour collections were so thoroughly characteristic of the several nations and people who exhibited them, that an analysis of the objects displayed, without a knowledge of the countries represented, would have enabled an educated man to determine the main features, with much of the details, of the history and character of the various races whose antiquities were there exhibited. The same may also be said of the different groups and classes into which the whole modern collection was divided, that, where the industry of any country was fairly well represented, it displayed to the educationalist almost all that was worth knowing of the condition and history of the nations themselves. An examination of the objects which give an opportunity for the application of design and ornament, either in form or colour, would have enabled us to ascertain with almost precise accuracy the state of art-education in the country whose works were being considered, even if there were no other means of arriving at a conclusion concerning it. Perhaps it is almost a fairer test of the condition and success of art-education in a country to judge of it by its results as seen in the application of art to industry, than to form an opinion from the exercises of the students in art schools, or from illustrations of complete systems of instruction. Happily, however, both sources of information were open to us in the Paris Exhibition, for not only could we see the results of art-education in the products of many nations, but the means by which instruction was given and the systems pursued in the Schools of Art and Design were also submitted to our inspection and criticism. Having regard to our own position in England in the matter of art-education, a consideration of the question broadly may be of some interest just now; and I propose, therefore, to submit the conclusions come to by myself after a long and careful examination of the Exhibition, and to make some suggestions as to the future development of art-education in England.

English Works.

With the experience derived from former Exhibitions it might have been expected that in some of the most essential features of fine art, the English School would be deficient, and that in many branches of industrial art our manufacturers would be surpassed by Continental rivals. This has proved to be the case; and though England may well be proud of several masterpieces of industrial art exhibited in the British department, we cannot, on a comparison of the entire English display with those of some foreign nations, congratulate ourselves upon the result. It is not that we cannot, under pressure, produce works of great excellence. The cabinet of Messrs. Wright & Mansfield, the pottery of Minton, Wedgwood, and Copeland, the locomotives and machinery of Kitson, Stephenson, and Whitworth; the paperhangings of Woolmans, the silver plate of Hunt & Roskell, and Elkington—all these prove that there is the power to do good things in us. What was most strongly impressed upon us in a general survey of the Exhibition was the conviction that from the contrast which existed between the best and the worst of the English works, the best were the result of extraordinary and exceptional efforts, under very great difficulties, and that the greatest of these difficulties was the absence of art-power, executive ability, and technical education, in the great mass of English workmen, who were the producers of the works. Whatever other great qualities may be possessed by Englishmen, the most patent feature in the Paris Exhibition was that, as a nation, in comparison with some other nations, we could not draw; and not being able to draw, we translated art-workmanship, as it were, into our productions, as though it were a foreign language, which we speak with but an imperfect pronunciation and an evident ignorance of its grammatical construction. This was observable in almost every branch of industry or fine art, in the practice of which the knowledge of form is necessary. If we compared the English architectural designs with those of the French especially, the former, with but two or three exceptions, appeared before us utterly marred by the feeble, poor manner in which they were drawn, and in which also the absence of the power of drawing was visible in their original composition. If, again, we examined the pictures of the great European schools, the sweet harmonious colouring, the human element and the truthful history of the English school, with its pleasing subjects and perfection of finish must have been acknowledged by all; but for powerful and majestic drawing we must go to the French and German schools. In architectural drawing the French works were pre-eminent, the same power and mastery handling being evident in them as in the paintings of the French school. In their tapestries and damasks, carpets, and paperhangings, furniture, pottery, metal work, the French, and some German nations, betray perfect facility in drawing, the freedom, and boldness with which form is represented, almost in some cases, and altogether in others, running into licentiousness. Indeed, the taste and principles of design displayed in many of the foreign works are vastly inferior to some English productions. This springs more from any other cause, as though the designers, conscious of their own strength, refused to be bound by nice degrees of subordination, or correct axioms of taste, and this is the most prominent failing in French design. The error is traceable to a deficient education in the elementary principles of ornamental art, which, though it gives a wrong direction to the taste of the ornamentist or designer, does not control his power of execution. The opposite fault is, as a rule, characteristic of English works,—the design of form, proportion, and enrichment being on the whole sound in principle, but the execution in many cases weak and feeble, as though the workmen aimed at the imitation of a design in a mechanical manner, without knowledge of art or ability to draw, and thus the original ideas, which may have been excellent, having to pass through an interpreting medium of weakness and ignorance become marred and powerless.

Influence of Instruction in Drawing.

This difference of feeling which is observable in both fine and industrial art, between the English and Continental works, is not difficult to account for, the explanation of it is to be found in the very different degree to which drawing is taught generally in England, and in France and

Germany, but principally is it owing to the superior system upon which the subject is taught, in France, at least, to what it is in England. Having examined somewhat minutely the exhibitions of the French schools of art and drawing classes at the Palais de l'Industrie in 1864, and seen some of the principal Parisian schools in operation both then and since, both of which sources of information convinced me that in ordinary schools for the middle and working classes, as well as in the special schools of design and sculpture, drawing is more generally and thoroughly studied in France than it is in England; the general superiority in art of the French, whether in industrial or fine art subjects, in the International Exhibition, occasioned me no surprise, but appeared rather the only possible and inevitable result of a wide diffusion of education in the direction which develops taste and makes art-power possible. If a whole nation is systematically trained to a knowledge of the beautiful, the higher and more refined will become either creators or appreciators of art, and will raise or maintain a high standard of taste by their works or their demands; whilst the naturally vulgar and tasteless have their coarseness modified and their eyes opened to the elements of beauty. Besides the general public, there are the thousands of professional men and working men to whom a knowledge of drawing, and a perception of good forms, make the difference between the artist and the machine; and in France the architect does not rely from choice or necessity upon the carver to design his sculptured details, or the decorator to supply his surface ornament; nor among workmen are there arbitrary lines between the art-workman and rough worker, but each is in a transition state from the latter to the former, or from the former to higher ground still, according to their length of experience or diligence in study,—all recognising the prime necessity of having truthful eyes and skilful hands, and knowing that the enjoyment of their work and its money value also depend upon their ability to incorporate their lessons in the schools of art with the work they have to perform, day by day, each in their separate calling. I was quite prepared, therefore, by this knowledge, for the display in the French Department this year, of such excellent workmanship, gracefulness, and fitness of form, and for the one prevailing strength running through all their works, viz., good drawing. The systems of study in the German states are not so different to that we are familiar with in England as to make them subjects of great interest; nor is their display so superior to ours as to make us curious about their art education. The French method is, however, so opposite, and the results of the instruction, as seen in painting, architecture, sculpture, and industrial art, so far beyond all that we have done recently in England, that it would be well for us, if upon the basis of our English school of art method, we could engraft that element in the French (if we can only discover it) which gives such extraordinary mastery over drawing possessed by both their artists and workmen.

Art Schools Exhibitions.

Having a desire to profit by the opportunities given of an examination into the several European methods of art education, with a view of seeing to what extent our own might be improved, I spent many days in comparing the students' works in various educational courts, and afterwards pursued the inquiry in some of the Paris schools. From the collections in the Exhibition alone an accurate comparison could not well be made, for whilst that exhibited by the Science and Art Department was an "illustration of the course of drawing, painting, and modelling, and studies for the improvement of manufactures, pursued in English art schools," the French and German studies (with the exception of those of Wurtemberg) only professed to be disconnected examples of students' works. The collection of studies produced by the students and exhibited by the master of the Lambeth School of Art, might have been fairly compared with the foreign examples of studies, because, in it no effort had been made to illustrate a system, few works having been shown, and those only of the most advanced kind.

United Kingdom.

The collection of drawings from Kensington illustrated completely every one of the twenty-three stages of art study, with their subdivisions and sections, into which the English school of

art course is arranged. It included fifty distinct branches of study, commencing with that of plane geometrical drawing, and ending with examples of designs for manufactures, architectural, surface, and plastic designs. For comprehensiveness of subject the collection was not equalled in the Exhibition; nor could it have been if all the other European nations had contributed a selection from all their exhibited works to form one collection. In point of excellence of individual works, it was perhaps only surpassed by a few French crayon drawings from the east, and by drawings of similar subjects from Wurtemberg. It is to be regretted that the whole of the drawings from England were not, as they might have been, from one school of art,—such as Kensington,—and that they were not the productions of *bond fide* students of art-schools, but principally those of students training to become art-masters. This would have enabled us to compare them fairly with other studies of the foreign schools by artisan students. As it was, they illustrated only the stages of study in which art-instruction is given, and this they did admirably. Quite as good illustrations might, however, have been obtained from the productions of the regular students in the art-schools, whether in London or the provinces, and then we should not have laid ourselves open to the charge that whilst other nations have exhibited their students' works, we have exhibited our masters' works. Should another opportunity ever occur for a similar exhibition, perhaps it would be advisable to bear this in mind; for, from an examination of the national competition works for this year exhibited at Kensington, I believe even better drawings were available from amongst them than were displayed as representative works in Paris.

Wurtemberg.

The only other collection which appeared to illustrate the system of instruction given in schools of art was that before referred to, viz., the Wurtemberg collection. This included freehand outline drawing, geometrical, perspective, mechanical, and architectural drawing, crayon, pencil, and charcoal shading from the cast and copies, and models in plaster. The system illustrated was very similar to, but far less comprehensive than the English; and the only works deserving of remark were the crayon and charcoal drawings, which were excellent. There are, however, indications of sound and sensible methods of study in these schools, as regards system. What is, perhaps, more interesting to us in England, just now, whilst we are on the look-out for some plan upon which art education, in common with other branches of technical education, may be more generally extended to the masses, is the wide diffusion of the means of art-instruction in the very little kingdom of Wurtemberg. I had the privilege of meeting, whilst examining this collection, with one of the royal commissioners of the kingdom, a Dr. Steinberg, who informed me that in a population of about two millions of people, they had in active and successful operation sixty-four schools of art; that the Government appointed and paid the teachers, the municipalities in each town or village providing the place for study. The payment for instruction from the pupils varies; in some it is wholly, in others nearly gratuitous; but in one instance, that of Stuttgart, the students pay a fee of eight shillings a year. The works of forty-five of these sixty-four schools were exhibited, or portions from the works of each; and, considering the scanty population of the country, and circumstances of the people, the display was a very creditable one. In common with the English, the Wurtemberg system commences with a bold outline practice of a geometric description, advancing to curves of a more elaborate design, and, though never pursuing the practice of outline drawing through all the subjects and sections of study which we do in England, yet it seems to make clearness of line, balance of form, and cleanliness of workmanship in the use of the medium, a required accomplishment in all pupils before advancing to more difficult studies. Much importance is attached to drawing from the cast both in outline and in light and shade, and a complete set of the casts used in the schools was exhibited. Some of these were ordinary reproductions of well-known subjects, used for purposes of study in all countries, but many casts were from conventional forms cut apparently in wood, designed especially as subjects to draw from, showing in their treatment the hard outline strongly relieved, almost detached from the background,

against which in England sculptors have so earnestly and so rightly protested.

Hesse, Baden, Wurtemberg.

The collections from Hesse and Baden, and the Wurtemberg drawings, served only to show us that art education is being very systematically pursued in those places, and that in the curriculum of their studies scientific drawing holds an important place. Much attention is evidently bestowed upon projection, solid geometry being a favourite subject, orthographic and perspective projection in the form of drawings and models, making a large proportion of the works displayed. In the German collections of works, as in the French, the absence almost entirely of coloured subjects, was, perhaps, to English art masters, the most striking feature. If exercises on colour, either from copies or natural objects, form any part of the study pursued in German or French schools of art, their importance would appear to be placed much lower in the scale than either scientific drawing, or studies in light and shade.

Darmstadt.

Educationally, the display of the Polytechnic Institute of Darmstadt, the models of geometric solids, details of machinery, and illustrations of the science of projection, was one of the most valuable collections in the Exhibition. Efforts have been made at different times in England to produce similar works for our own Schools of Art and Science, without very great success, and it would be most useful to us if this collection could be secured for the English schools.

France.

The most interesting study to an English art-master was the educational display in the French court. Here, if at all, could be detected the secret of that power of drawing before referred to which is the chief characteristic of applied art in French manufactures, as well as in the fine-art works in architecture, painting, and sculpture. After the elaborate *exposé* of the English art-school system, with its numerous stages of instruction and many sections and subdivisions, each differing from the other and all well represented, the German schools of design and art appeared to offer only a limited range of education. The contrast in this respect of the English with the German was however not so great as the German with the French, for the prevailing impression after examining the works of the latter is, that in France there are no stages, and no subdivisions, and no delicacies of system; one object is alone prominent,—drawing is the commencement of the course, imperfect and feeble enough sometimes, drawing is the middle, and drawing the end; as the accomplished draughtsman and possible artist ends, so the faltering, ignorant student begins, with the same medium, chalk or charcoal, on the same subjects as to kind, and with the one prevailing principle always in view, the absolute imitation in masses and contrasts of light and shadow, of forms presented to the eye. There are degrees of difficulty in the subjects used for study, and infinite degrees of success in the accomplishment of the object sought—precise imitation; but if the utter absence of stages of study and nice distinctions between the several mediums used to obtain expression, if the ignoring of systematising and subdividing art study constitute in itself a system, then we may say French art-education recognises as the basis of its system, drawing alone. The schools exhibiting in the French Court were by no means so numerous as those which were so excellently represented in the Palais de l'Industrie in 1864, nor were the works of the schools, which exhibited both then and in 1867, so many or so excellent. The insufficiency of wall surface and space generally in this year's Exhibition, was sufficient to account for the comparatively imperfect manner in which the French schools were represented. Though the number of works was limited, there were sufficient to display what are the aims of the schools, and to allow of a fair judgment concerning the success which meets their efforts. The aim is very humble, the success distinguished. It is refreshing after seeing the handsome drawings, nicely mounted, of the English and some German courts, to see here the rough and roughly presented studies of French students. Occasionally a moderately elaborate light and shade drawing from the antique, was elevated to a place of honour on the walls of the French court, but the great majority were in portfolios in the wooden bins, one of which was allotted to each school. Here upon common paper were numerous studies, some from

the most execrable flat examples of ornamental design; others from casts of the antique of ornament and figure; and others from the living model; all wrought in charcoal and crayon, rubbed and stumped in their general working, and many finished by spirited touches with the chalk-point, and enrichment of the deep shadows by the same means. The method of progression appeared to be from shaded flat copies to the cast, and from the cast to the living model. The first exercises were large details of ornament and animal forms, coarsely but effectively shaded in chalk, so that from the very beginning the student is taught that the end of his work is to get an effect of perfect realization in light and shade. This course of study I saw in operation in several of the municipal schools in Paris, both male and female, and can speak of it with the greatest admiration. Little boys, who with us would be languishing over outline drawing of difficult pieces of ornament, which they have to do for many weary months, in the French schools are working away deeply interested over their drawings in charcoal and chalk, studying the effect of roundness in their copy, and struggling hard to get it in their own drawings. Then I observed, that though a student in England might work for weeks over an outline which is only a bad imitation of another outline, done as it were by brute force, the French pupil either makes or mairs his study in three or four evenings, and it is more or less an effort of his own feeling, his own spirit and knowledge. If he is in a low stage of perception of form or effect, he does his best honestly in that stage, and goes on quickly from it to something higher, without stopping to affect in his work a refinement he does not feel, or waste his time in the mere mimicry of finish he cannot understand.

An excellent feature of the French plan is that within a few weeks, or months at the farthest from commencement, a student leaves flat examples and goes at once to drawing from the cast—that is in effect, nature. The drawings displayed in the French Court were principally in this subject, the works themselves varying from the roughest effort to the most refined. In the portfolios from the schools of M. Levasseur, M. Lequien, and others, there were also studies from the living model, showing excellent power of drawing and thoroughly artistic treatment. Having gone through both of these schools, I am bound to say the drawings exhibited in the Champ de Mars were rather under the mark of what the students usually produce than above it.

It appears to me that this French method of teaching drawing is the one lesson which may be learnt by an art-educationalist from the Paris Exhibition. We see in all the French productions of art and industry, without exception, intense power and perfect facility of drawing, and we see in French Schools of Art a simple, easy way of teaching drawing, differing totally from all other methods displayed in the Exhibition, or that we know to exist. I do not attribute the brilliant artistic powers of Frenchmen wholly to the way in which they learn to draw; but I do say there is a definite connexion between the two things, the unique method of instruction and the attainment of unique and perfect drawing power in art. For a curriculum of professional study to produce professional artists the French municipal schools are not intended, and are, therefore, not adapted. Their aim is to get the greatest amount of the common element of all art into artisans in the short time they are under instruction. For this they are adapted, and in it they are more successful than the schools of any other nation, tested by every standard, whether it be facility in drawing, design for manufacture, or applied art, or to form the basis for further professional art-study.

Compared with the English School of Art system, the French is deficient in breadth and comprehensiveness, and yet offers more valuable results than the English does. The latter is as well suited to professional artists as to artisans; but in trying to secure both objects it decreases its own usefulness to manufacturing industry. What we want in England is to engrain upon our system this French plan as to drawing, and then we should have asked, as it were, the soul of French art education. It is, I am prepared to allow, a very rough and ready method; all the more suitable, therefore, for students who begin their studies with taste and power at zero; but it has, on the other hand, capacity of development to suit the education of the most perfect taste and the maturest power. Some years ago the practice of working but a few shade drawings with leather and stump as instruments, using

chalk or charcoal as a medium, was entirely scouted in English Schools of Art. The examination and reports upon the French Art Schools' Exhibition by inspectors and masters of the English schools in 1864 drew attention to the excellence of the method, and its adoption was very strongly advocated by at least one master. Since then, both in London and the provinces, several masters have partially adopted the system, and it was well represented in this year's national competition in London. Anxious that we might have a fair opportunity of judging the style of work, I strongly urged upon the Science and Art Department the advisability of obtaining examples of French charcoal drawings, in my report on the French Schools in 1864. This does not appear to have been done; but in order that there might be specimens of such works in England, I ordered two specimens when in Paris, from, perhaps, the best school in Paris, a commission cheerfully undertaken by the master, and since carried out by two of his best students. These works are deposited, for the use of the students, in the Leeds School of Art; and I may add that I shall be happy to show them to any person interested in art education who may desire to examine them.

With your permission, I will conclude this "Educational view of the Paris Exhibition" with some suggestions concerning the development of our English system of art education, founded on observations upon the French and German methods, as seen in the Exhibition and in the schools, in a future number of the Builder.

WALTER SMITH,

Head Master of the Leeds School of Art.

SOCIETY OF PAINTERS IN WATER-COLOURS.

THIS is the sixth annual exhibition of sketches and drawings provided by the members of the Society of Painters in Water-colours, and differs very little from those of former years, excepting, perhaps, in its being more than usually corroborative of the ungratifying fact that figure-painting in this medium is an art that is gradually dying out, and that the few left who follow it show anything but a liveliness of imagination. There is this consolation, however, that there is no visible decline on the part of others whose worship of Nature includes everything that may be positively human; who deal with the lights and shadows of existence in their positive sense, and not in their metaphorical relativity to the prose—much less the poetry—of a living world.

As a landscape exhibition, the present collection is a very good one, with rather more distinctive evidence between sketch and finished drawing than has been the case when the white spandrel was or was not the only frame of excuse why either designation should or should not apply to the work; but even here exceptions may be found, and one of the most remarkable is by Mr. F. Walker, whose truthfulness has made it difficult to find a name for his picture; so he has given it none. 336 in the catalogue is number one in real precedence, and belongs to such effects as are not so easily described as appreciated. Two rustic gardeners—woman and boy—are tending rows of a violet plantation; they are apparently searching for the slugs and snails likely to lessen their blossom-harvest; with such unpromising assistance as a late autumnal approach of twilight; young tree-stems nearly stripped of their foliage and webbed by the spiders; fallow-fields for a background, and a cold yellowish sky, Mr. Walker has succeeded,—by rare power of imitating and a certain gift he has to make such things seem worth the imitation,—in commanding an extraordinary amount of interest and admiration for them. Mr. John Gilbert's forte is not that of imitativeness, and he himself is imitable; whatever suspicion there is in his style of Rubens's influence has long been recognised to be as much his own—inmate—as his great prototype's. His "Battle of the Standard" (26) is as full of action and as indicative of his well-known characteristics as any previous work; the sketch is resonant with the din of contest, and very suggestive of mortality to all engaged in it but the painter. A study for "Cardinal Wolsey" (199) discussing with himself the inexpediency of King Henry's impending marriage with Anne Bulen, is also by Mr. Gilbert, and as easily identified by its brilliant

colour and broad treatment. Mr. F. W. Topham has but one contribution, a large sketch of "A Spanish Letter-writer" (175), very forcible, and cleverly done. Mr. F. Taylor's studies for hunting and hawking subjects have all the old vivacity and dexterity of performance common to many hundreds of cognate specimens:—"Two Sketches of Hawking in one frame: 1. A Gallop; 2. A Flight over the Sand-hills" (170); and three others,—two "Hunting" and one "Hawking" (179); the last, a fair heroine on horseback, with a falcon on her wrist, is especially agreeable. More so than Mr. F. Burton's chalk "Study from Life" (199); for, though masterly in drawing, it will disappoint those who expect to find in it one of those beautifully idealized female heads so often exhibited by him: cream-colored high lights on a blue ground may have helped to give little charm to an ordinary set of features, of which a short nose and a long upper lip are the most striking. Mr. W. Goodall's Pyrenean peasant girls have the recommendation of being represented in a manner creditable both to them and to him, betokening improvement on his part and little need of it on theirs: whether, as "Prayer" (107), very like Mr. E. Goodall's picture at the French Gallery—"As the Roadside Cross" (212); similarly engaged, or just after being so employed (19), they are substantial and well-depicted figures. Mr. E. Lundgren's smaller studies of heads, such as those in (176), the two drawings occupying one frame, 1. "An Arab Woman," 2. "Norwegian Children," have better claim to attention, because they are more natural and unforced than (44) the larger, "Study of an Egyptian Woman," which is black and very artificial-looking. Mr. F. F. Shields is of the few who do more than copy their models; his actors are usually informed with some expression proper to their situation, and even when it seems less likely to be imparted; the child clinging to her sister's arm almost speaks the title (261), "Let me go with you," in the complete and well-studied little picture, which is the best of his four contributions. But where are Mr. Birket Foster's nicely washed and combed and cleanly-pinsored village children, who always bring such comforting assurance that bread-and-butter are no delicacies, and that soap is a widely-spread blessing; that fresh air is food, and dew the only cosmetic to be relied on? "Let me go with you," would be the loud cry of many a metropolitan boy and girl, if they saw such inviting playmates. But where are they? Have London Directors and Social Improvements Commissioners bought them all up to hide such hideously healthy disheartening examples: does Manchester still absorb as many of these contrasts to her factory tribes as formerly? Mr. E. K. Johnson's "Night-Studies" (228) having nothing to do with elucidating social questions, it is better to return to subjects that have had more light shed upon them: these heads are very brilliant, that of the sixteenth century cavalier particularly. A "Sketch of a Girl as an Organ," by the same, is very gray and graceful in appearance, and far better than that of "A Girl at a Birdcage" (365), wherein, with regard to fitter and finish, Mr. Johnson has been his own critic, and cut up his handiwork most unmercifully. Several studies of heads by Mr. F. Smallfield, amongst some eight or nine emanations, show delicate finish and careful observation, as well as the most indomitable industry, now frequently belong to those who, obedient to their call, pay deference to the nodding trees to nature out of doors, and listen to the sighs of the south or west breezes that whisper her loveliness under clear skies, or to the louder voice of the north proclaiming her cold and fickle, but still as alluring as most things catered under the feminine gender are always allowed to be: they follow their instincts and their mistresses all the more closely because her changes are as puzzling as charming.

Years ago (it behoves long memories sometimes not to be very precise as to dates) the late Mr. F. Danby, A.R.A., painted a splendid picture, and named it "The Painter's Holiday," wherein an idler in supine enjoyment of such a sun-bath for a landscape as he might only safely leave to his more industrious friend to paint, gave a pleasant intimation that there were intervals of rest available for the painter; but this was long before the institution of exhibitions of sketches and studies; and there are few now who would doze in fine weather, and in sight

such a fair prospect, for with the artistic quality there seems to co-exist a moral obligation to be always exercising it.

Mr. Carl Harg, who used to elaborate figure subjects once, and to show good academic training in all he did, seems now to devote himself entirely to landscape, unless "The Halk at the Pyramids" (6), with its camels and attendants, may be asserted in contradiction: "The Akropolis of Athens" (161), and "The Sphinx of Giza" (203), are the themes on which he loves so glowingly to dissertate. Mr. J. J. Jenkins, too, has forsaken his Britany first affections, and forgotten Watteau reminiscences in favour of homelier matters; and his transcripts, made "At Eashing, Surrey" (14), with that of "Goring Church, on the Thames" (22), are so rich in colour, and offer so strong an argument in support of his views, that the change is not to be regretted. "The Thames at Wargrave" (31), with green banks, a cloudy sky, and a narrow trailing along the smooth water, affords sufficient means for Mr. E. Duncan to provide a choice example from. Mr. G. A. Tripp proves himself an enthusiastic student as well as a perfect master: how carefully drawn are the "Oaks in Early Summer" (55), and how admirably conveyed is the idea of light, air, and space in Hayfield or Cornfield (180). Mr. Davidson's numerous items make him an instance in proof that painters can have every few holidays; (195) "Misty Moonlight, North Wales," is the more noticeable, because, unlike anything easily remembered of his, it is also very exquisitely done. Mr. George Dodgson, in his four choice little bits in one frame (58), looks to have added more finish to his method of production. "1. Village Gossip; 2. The Village Smith; 3. Interior; and 4. Evening in the Woods," are all remarkable for light and shadow effects and fine colour. Mr. Paul J. Naffel's "Junction of the Greta and the Tees, Yorkshire" (62), is an important study, but the use of body-colour is carried to excess in it, giving even in the foreground stones a wooden appearance; this objection is still more cogent in a sunset effect, "Near Wickham, Surrey" (74), with the sky made solidly opaque. Most of Mr. Naffel's drawings are forcible and attractive, but his manner is very confined. All the dozen contributions of Mr. A. W. Hunt have some peculiar charm to distinguish them; but the charms of all are culminated in (349) "Carrying Hay on the Thames," which is exquisite in its purity and variety of colour, and as nearly perfect as those who doubt the possibility of perfection will allow anything to be. "The Weir at Pangbourne: Windy Day" (340), will show, to some extent, that it is not only with such aids as dappled sky, pellucid water that clearly reflects surrounding objects in its depths, or the richness of hue proper to trees, and their shadows under calm evening influences, that Mr. Hunt succeeds; and that he is versatile in his extraordinary apprehension of natural facts. Mr. J. Holland and Mr. E. A. Goodall are still doing "Venice," and the latter has done a picturesque bit of "London, from the Thames" (277), well enough to compare with his Venetian scenes, which are known to be admirable. Mr. S. P. Jackson's "Scrapes on the Thames: 1. At Streathley; 2. Old Bridge at Goring; 3. Whitechurch Lock; 4. Streatley Mill," and a larger study of "Twilight" (298), bear witness to his careful consideration and great ability as a draughtsman, though even stronger evidence might be deduced from the seventeen opportunities afforded. Mr. H. Gastineau vigorously upholds his fame as a sketcher some twenty times in the course of the gallery; so does Mr. Collingwood Smith, if less often, not less well; and Mr. W. Collow, whether in landscape or marine, shows an equal facility in rendering either. Mr. H. B. Willis, whose art is sometimes in the Highlands, (284), devotes as much attention and apt dexterity to the portrait of "A Heifer's Head" (25), and again to a "Study of a Sheep's Head" (205), as if they had been commissioned by their respective family. (287) "A Sketch of Farm Horses," by the same, is very excellent, and these form but a small portion of what Mr. Willis exhibits. Mr. S. Read has a capital study of the "Tomb of Rubens, in St. Jacques, Antwerp" (227), and Mr. J. Nash several interiors. Besides a bold impressive drawing of a "Mountain Pass, Loch Katrine" (3), Mr. T. M. Richardson has, amongst other forcibly-executed sketches, "Two Studies in Charcoal: 1. Inverlochy Castle, Argyleshire; 2. A Highland Glen" (236), which are very masterly, and show what satisfactory

results may be expected from those who know how to use whatever most readily comes to hand. Mr. Brawnwhite is not to be deterred from following his profession under the most chilling circumstances; if "Winter Evening" (272) were studied out of doors, he must be one of Nature's most ardent admirers indeed; whilst Mr. E. Burne Jones's manual expressions lead to the inference that he does not know that lady, and does not want, since his designs are for Gothic decoration. Mr. T. R. Lamont exhibits several figure compositions of various degrees in merit; Mr. F. Powell some clever but mannered landscapes; and Messrs. A. Glennie, Whitaker, Collingwood, D. Cox, G. P. Boyce, J. Collow, and S. T. G. Evans, are ably represented. (346) "Near Soll, in the Tyrol," is Mr. T. Danby's most attractive contribution,—a very pleasing, brilliant little drawing.

THE DANGERS OF THE VIRGIN ISLANDS.

Our readers will observe in the public papers the account of the dreadful calamity that has befallen some of the Virgin Islands, amongst them that picturesque and charming little island, St. Thomas, "the gem of the Tropics." The fearful destruction of human life, amounting, it is said, to upwards of 500 persons, and property, both the houses at "Charlotte Amalie," and shipping of the harbour and neighbourhood, is perhaps unparalleled in the history of hurricanes.

The writer of this has had the advantage of being in two hurricanes, one on land and one on water, and he can speak feelingly as to the depredation and panics those dread convulsions of nature produce: the accounts that have usually been published (and probably the one in the present instance) fall very short of the actual reality: they must be seen and felt to be duly appreciated.

Those who have not experienced such stirring scenes, and live at home at ease, can scarcely form an idea of the horrible upheavings, oscillations, and vibrations of earthquakes, or the still equally dreaded hurricanes, when the blasts from heaven appear all concentrated in one fell roar and swoop, as if intended to sweep all living things from the surface of the earth and sea, and reduce all creation and created things to one inextricable and common ruin.

It is sincerely to be hoped that this melancholy catastrophe, coupled with the devastation that has taken place amongst the crews and passengers of the steam-ships belonging to the Royal Mail Steam-packet Company for some time past, from yellow fever, produced by that hot-bed of disease, the harbour of St. Thomas, will induce that company to seek some other station as the rendezvous for the Atlantic and intercolonial steamers.

The picturesque beauty of this fair isle, the exquisite and perfect character of the harbour, being securely land-locked, with the entrance opened to the south, the excellence of its geographical and commercial position, ought not to be taken for one moment into consideration against the weighty arguments that it is unfit for their station, in consequence of being more exposed to hurricanes than other places; and its unhealthiness is so notorious, that few like to land there, and the sailors of the steamships dread lying there, as many as thirty men having been lost of the crew of one ship in one fortnight, while the outward-bound steamer is waiting for the return or intercolonial mails.

Of late years St. Thomas seems to have been frequently visited by hurricanes: from 1827 to 1837 there were four hurricanes there, while there were only two at Antigua in the same period: they appear to take their rise near the Leeward Islands, and sweep towards the north-west, and therefore do not produce so much danger there as in those places situated in their course, when they have attained their concentrated force, fury, and impetus.

The distance from Antigua to St. Thomas is about 240 miles, and the former does not appear to have been affected by this hurricane.

In 1863, when the contract for the conveyance of the mails was about being renewed between the Royal Mail Steam-packet Company and the Government, the writer suggested, that the station should be removed to a more convenient and healthy place, and for that purpose he made a survey and report of Falmouth and English harbours in the Island of Antigua (an

English colony), for the Governor-in-Chief of the Leeward Islands, which survey and report were sent home to the Lords of the Admiralty, and were highly approved of by the late Admiral Washington, at that time hydrographer of the Admiralty.

The soundings of these harbours were found in the Admiralty charts to be incorrect, and accordingly Commander Parson, R.N., was sent out by the Admiralty to resurvey and sound the harbour, and prepare a corrected chart, with proper soundings, and other data shown thereon, and the harbour of Falmouth was found admirably adapted for the purpose of the packet station, requiring only slight alterations and improvements, and it is quite large enough to accommodate the whole fleet of the Royal Mail Company, with their attendant colliery ships.

It was suggested to dredge and deepen the entrance to Falmouth Harbour; throw out a breakwater to protect the shipping while lying there from the effect of hurricanes, to which it is not often exposed; and to connect the two harbours, English and Falmouth, together by cutting a ship canal through a narrow neck of land that separates them, and thus to make English Harbour as well as Falmouth available for the service of the Company.

English Harbour is now a naval station of the Admiralty, and part of our West Indian fleet occasionally shelter there during the hurricane months (from July to November), the first-class frigates of which draw from 22 ft. to 28 ft. of water,—quite as much as the largest West India steamer when fully laden.

It is to be hoped that this awful catastrophe will produce a good effect and open the eyes of the Government and the Royal Mail Steam Packet Company to the desirableness of carrying into effect the suggestions thrown out; as, apart from the terrible hurricane calamity, our Government ought not to be a party to a contract with a Company who, by a perverted and short-sighted policy in pertinaciously adhering to this station (St. Thomas), thereby inflict such a deadly injury upon a valuable and indispensable body of men like our true British tars, who can be ill spared at the present moment.

PARKFIELD, PERSHORE ROAD, BIRMINGHAM.

This house has been built by Mr. Cranston, of Birmingham, architect, for his own occupation, and is constructed entirely of bricks, the great bulk of the work being in red bricks, relieved with blue bricks for the sills, and Maw's tiles, in bands, under the eaves and round the entrance doorway.

The house stands upon a terrace, and is raised up several feet above the general level of the site, which measures an acre in extent.

The labels over the windows, and the caps to the piers between the windows, are all formed in red bricks, cut by hand, this being found less expensive than having moulds made and bricks burnt to the required shapes, as well as producing much greater sharpness of outline. The drawing, dining, and breakfast rooms, with the entrance-hall and staircase, have ornamental wood cornices and ceilings, each being different in detail, but of uniform character throughout. This woodwork is cut, pierced, and slightly treated with colour, and in the two principal rooms the ceilings are broken up, each into three divisions, by beams and cornices running across, carried by cut corbels, springing from brick pilasters in the side walls. The bricks in these pilasters are decorated in colour, and midway up in each is a marble bracket, placed to carry the gaslights, made for these positions, and arranged with a bell-shaped consumer over each movable arm of the lights, so that the ceilings are protected from the effects of the gas.

The conservatory, of construction as patented by Mr. Cranston, is placed between the drawing and dining rooms, and is common to both by plate-glass windows in the rooms, as well as being a very agreeable feature in the hall, from which it is screened by a glazed partition and doors.

The fireplaces in the living-rooms are large and open, with chimney-corner seats, and are constructed with bricks, iron, marble, and Maw's tiles. Grates of the ordinary kinds are not used, but octagonal solid fire-clay lumps, 18 in. in diameter and 6 in. thick, with iron spikes round them to keep up the coals, are placed upon the hearth-stones. The fires upon these



WORKS OF THE LATE SIR CHARLES BARRY, R.A.

(See p. 665, ante.)



PARKFIELD, PENSCHORE ROAD, BIRMINGHAM. — MR. GRANSTON, ARCHITECT.

solid clay blocks answer well, we are told, every particle of coal being consumed and the heat radiating effectively into the rooms.

The drainage of the house is purposely made independent of the public sewers, the plan adopted for the water-closet being to convey the soil by iron pipes into a dry-brick tank in the garden. This tank is 6 ft. in diameter and 3½ ft. deep, and in the centre of it is a second tank, 3 ft. in diameter and of the same depth, this inner tank being closed in at the top, and having holes all round it a few inches below the lid. Into this smaller tank the water-closet soil flows; and, as it fills, the liquids percolate through the holes into the outer tank, and are taken up by loose turfy soil and peat placed there to receive them. The whole is covered over with 18 in. of garden-mould; and, when the tanks are fully charged, the gardener removes this soil, and takes out the contents of the tanks to apply them to his crops.

In addition to the conservatory attached to the residence, there are vinerias, greenhouse, mushroom and cucumber houses at the top of the garden, built upon Mr. Cranston's patented principle of construction.

REFERENCES.

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| 1. Porch. | 8. Back Stairs. |
| 2. Hall. | 9. China Pantry. |
| 3. Staircase. | 10. Kitchen. |
| 4. Breakfast room. | 11. Kitchen Pantry. |
| 5. Drawing room. | 12. Back kitchen. |
| 6. Dining room. | 13. Terrace. |
| 7. Conservatory. | |

ON COLOUR.*

Form and colour are the great elements of beauty: colour gives spirit and life to form, which it develops by contrast. Like the harmony of sweet sounds, one of the greatest enjoyments nature offers to the mind is colour; colour, as nature gives it, with all her beautiful varieties of hues; in flowers and foliage, in the plumage of birds, in the varieties of butterflies, in the glowing sunset; and, above all, in the radiant arc which spans the heavens when the sun is reflected on falling rain. When the direct rays of light are intercepted, as by a prism, they give out a series of brilliant colours, known as the Solar Spectrum. These colours are presented in the following order:—Violet, indigo, blue, green, yellow, orange, red. To obtain this result, it will not be difficult to make the following experiment, the one originated by Sir Isaac Newton: make a narrow slit in a shutter of a darkened room, facing the sun; let the rays of sunlight strike through the prism, held at a proper angle, and the spectrum of vivid colours will be thrown on a screen suitably placed. To carry this experiment out more perfectly, the following plan has been contrived:—In a box about 16 in. square, adapt a lens through which the rays of light must be thrown through a narrow slit, about 6 in. from the lens. Then place another lens about 12 in. beyond the small opening and the prism about 6 in. beyond this second lens; the rays of light passing through these lenses and prism will throw the coloured spectrum vividly on a screen, placed at a suitable distance to receive it. If used by sunlight, a mirror will throw the rays through the lenses on the prism, but if at night the electric light should be used. The effect of light on various colours is curiously exhibited in photography, where blue objects are taken as if they were white, and those which are yellow or red, as if they were black. Thus a lady in a blue dress, with yellow ribbons, would be represented in the photograph as in a white dress with black ribbons. Modern philosophers deny that there are seven distinct colours in the spectrum; they declare that there are only three so-called primary colours,—namely, blue, yellow, and red; and that the other four are produced by the blending of the primaries. If you look at a sheet of white paper through the prism, you will find that the warm rays verging from orange to red are on one edge, and the cool rays green shading to blue are on the other. There is no line of separation between yellow and red; it is impossible to say where the one ends and the other begins. If the sky is clear the sun appears bright yellow; when obscured by fog it becomes deep red. It may be that in light there are only two fundamental colours,—orange representing

essentially light and heat, and blue coolness and shade. These phenomena of light are specially interesting; they are, in fact, the foundation of the whole theory of the harmony of colour, and a knowledge of them will simplify the study of those principles to which I will now direct your attention. Perfectly pure light may be represented by white; the total absence of it by black; between these range the tones of grey, which are combinations of colour. There are three primary colours, so called because they cannot be compounded of other colours. These primary colours are yellow, red, and blue. In shades of white light the three primary colours exist in the following ratio:—Yellow, 3; red, 6; blue, 8; and, if mingled in these proportions with white, they produce grey exactly the same in tone as by the admixture of black and white.

The Secondaries.—By mingling any two of the primary colours together, the secondary colours are produced. Blue combined with yellow produces green, yellow with red produces orange, and red with blue produces violet. Thus green, orange, and violet are the "secondaries."

The Tertiaries.—If the secondaries are combined any two together the tertiaries are produced. Green and orange produce citrine, orange and violet produce russet, and violet and green produce olive. Thus citrine, russet, and olive are the tertiaries.

1. Contrast.—Every primary colour has a complementary composed of the two remaining primaries; and every secondary has a complementary formed by the remaining primary. Thus every arrangement of colour demands in some shape or other the presence of the three primaries; the eye expects them, and without them remains unsatisfied. For example, take three circular pieces of coloured paper; place them separately on three larger pieces of very light grey paper. Look fixedly on each for a time in a rather subdued light, and you will notice that the red is bordered by a halo of soft green, the yellow by one of violet, and the blue by one of orange. The secondaries again, violet, green, and orange, if placed in the same way, will be found margined by their relative primaries; thus proving that these colours are in fact complementary to each other. They are also essentially contrasting colours, being those which most strongly oppose certain qualities in each other. Thus, red is hot and glaring; green is a quiet, cool colour; yellow is bright and advancing; violet retiring; blue is a cold, orange a fiery colour. This in a few words briefly explains the basis of the whole theory of the laws of contrast in colouring. Nor must I, while speaking of contrasts of colour, omit white and black, the most powerful and most concentrated of all. White reflects light, black absorbs it; and from this cause a white object will appear larger than a black one of the same size.

On Simultaneous Contrast.—When two contrasting colours are brought into contact, they are each affected by the complementary of the other: this is called "Simultaneous Contrast." Allied to this is "Successive Contrast." When the eye has looked fixedly for some time on a coloured spot, each as a large red water on a greyish-white ground in a shaded light, if that object is suddenly removed the space lately occupied by it will be tinted with the complementary of it, which in that case would be green.

And, again, there is "Mixed Contrast," where the eye, having looked at a particular colour for some time, suddenly transfers its sight to another object of a different colour, carrying with it the complementary of the first colour, to the injury or advantage of the second, as the case may be. Several men of high attainments have written upon this subject, more particularly Goethe, who published his interesting work on "The Doctrine of Colours" in 1810, and it has since been translated by Sir Charles Eastlake, who added to it notes of great interest and usefulness. It is also treated of by our own countryman Field, who published most practical and valuable works on colour in 1816. And, lastly, Monsieur Chevreul, who, in his work published in 1838, illustrated the question of simultaneous contrast by a series of experiments of the utmost importance. This subject of contrast and the complementaries deserves very careful consideration; for they affect materially the relative value of colours juxtaposed. Those who have not considered the subject can scarcely estimate how strongly the complementaries occasionally influence colour. Some years ago I was on a hazy morning walking with a friend over Waterloo Bridge, when my attention was directed to the two towers carrying the Hunger-

ford Suspension Bridge. These were stone colour, with projecting roofs, covered with red tiles. The cornice, in shadow under the roofs, appeared as if painted the most vivid green. When I returned an hour afterwards, the day had cleared, the mist had passed away, and with it the bright green cornice I had so lately seen. In one of the rooms of a club recently decorated by me, where the woodwork is painted warm vellum colour, and the windows are covered with red blinds, the mouldings of the door opposite these blinds, especially where they are most in shadow, show a bright emerald green, there being no green in fact. I was lately in a church where a stained-glass window threw strongly-coloured lights upon the floor. I placed my umbrella on each colour, one after the other, to try what effect the shadows would have upon them; and was delighted to find that in each case, the shadow interrupted the reflected colour and gave the complementary, so that when placed on yellow it became violet, on red it became green, and on blue it became orange. Goethe gives an example of "Successive Contrast." He says, "I had entered an inn before evening and as a well-favoured girl, with a brilliantly-fair complexion, black hair, and a scarlet bodice, came into the room, I looked attentively at her, as she stood before me at some distance, in half-shadow. As she presently afterwards turned away, I saw on the white wall which was now before me a black face surrounded by a bright light, while the dress appeared of a beautiful sea-green." Here I may as well mention that by tones I mean variations of depth of any one colour; and by hues I mean varieties of colours. I will now call your attention to a series of examples showing the effect of simultaneous contrast on various combinations of colours. Our first illustration shows that when a dark colour is placed near a light, one of the same hue, at the point of contact the light will appear lighter, and the dark darker. The succession of shades, though perfectly flat, has the appearance of fluting through this cause. If you look carefully at the illustrations, you will remark in the contrasts of green and red, or orange and blue, or yellow and violet, how powerfully these colours are acted upon by contact, how they intensify and brighten each other; how orange, by its complementary blue, makes each colour next to it of a bluer tone; how the red renders them more green, the yellow more violet, and *vice versa*. Others give examples of primary and secondary colours juxtaposed with white, which will be found to heighten the tone of these complementaries; that grey and white and black and white are each intensified by contact; that grey in contact with other colours adds to their brilliancy, and is itself affected by their complementaries. These illustrations of simultaneous contrast follow upon the theory explained by M. Chevreul with great precision and ability in his work on colour. Though I highly appreciate and admire his theories, I do not always agree with him when he regulates decorative effects of colour. There is another subject of contrast which, although similar to the preceding as to the laws which regulate it, is different in its application. It relates to the effect produced upon one colour when applied upon the ground of another colour. The changes thus caused are most startling to those who have not experimented upon them. You will find that what looks blue on one ground is green on another; what is yellow in one case becomes orange or green in others. In fact, there are no colours of any positive tone; they are only what they are made to appear.

On Harmony.—I have endeavoured to explain how the various colours act upon each other when contrasted. I have now to consider how they may be brought into harmonious combination. Beware of confusing the laws of contrast with those of harmony, of using in equal proportions contrasts of bright red and bright green, bright blue and bright orange, without such modification as will neutralise one or the other. I speak the more earnestly of this because I believe it to be a popular delusion that contrast is harmony. To arrange satisfactorily various modulations of colour, so that they may mingle together and form an agreeable whole, demands careful study, practice, and taste, and is often a work of great difficulty. Nothing is so charming and refreshing to the eye as a harmonious arrangement of colours. They are "like a sweet chord of music to the sense." I have often been delighted and surprised to find how wonderfully

* From Mr. J. G. Crace's lecture to the House Painters' Association. Although necessarily elementary, a section of our readers may be permitted to attend at the evening lecture.

the laws of harmony in colours are expressed in flowers. The hand of nature never errs, whether it brings together in rich full harmony the tones of blue contrasted by yellow and orange in the Garden Iris, or the blue passion flower with its fibrous coronet of deep maroon, and its greenish yellow stamens, the *lancifolium* lily of pearly white dashed with spots of intense carmine, or in defiance of all rule brings the crimson bloom on the glowing scarlet cactus, or the scarlet petals round the violet centre in the fuchsia: the most delicate and difficult combinations in each flower are perfect and beautiful, and even its leaves are of the tone of green most suitable for its colouring. Who that has travelled over the Yorkshire moors in August, but must have gloried in the magnificent prospect before him—a bold undulating expanse, thickly covered with rich red purple heather, broken at intervals by patches of feathery ferns, their green intensely bright by contrast with the surrounding heather. I cannot too strongly urge any man who seeks to improve himself in decorative art to study carefully from natural flowers: both for gracefulness of form and freshness, richness, and harmony of colour, they are the very best school for the artist in decoration.*

STEAM POWER AND ELECTRICITY IN AGRICULTURE.

OUR prediction, of a good many years' standing, that the time would come when steam-power in agriculture would vie with that of those other branches of manufacture whose expansion had done so much for this country, is on the fair way to accomplishment. Already steam is largely employed in farming operations, and every day its use is on the increase, and improvements and new uses are being discovered and applied. One of the most recent novelties is the application of steam-power to the drying of crops in wet seasons by hot-air blast, patented by Mr. Gibbs, of Gillwell Park, Essex. The plan is simple. It consists in attaching a gigantic iron fan, or blast, to the ordinary agricultural steam-engines, such as are already used on many farms, and still more extensively hired out for thrashing grain and other purposes. This fan is so arranged as to draw the waste heat from the furnace after it has passed through the tubes of the boiler and generated the useful power for the engine, and to apply and utilise this great volume of hot dry air in the various ways most suitable to the different crops to be dried. Of course coke or mining coal is used in the furnace, so that no smoke is produced, and a guard of maling-wire is interposed at the inlet of the fan to intercept sparks. In some recent experiments wet hay was carted to the engine and pitched on the cart, in quantities of about 2 cwt., on the ground before the mouth of the blower, and each lot was thoroughly dried in about seven minutes. In this way a two-horse load was dried in rather less than one hour, so that 12 acres of land might thus be cleared of hay in 24 hours. Wheat was also completely dried, but in a somewhat different way. Each sheaf was spiked upon a hollow conical tube in a small portable shed, and dried by the hot air rushing through the tube. In 15 minutes 32 sheaves were effectually dried. Farmers examined it, and declared it to be in perfect condition for threshing out on the spot. Some amusing experiments in sending hay and wheat through a shaft by the fan-blast to the top of stacks followed. Sixteen sheaves of wheat per minute were thus stacked, or at the rate of 20 acres in 12 hours.

Some new machinery for steam cultivation has been successfully tried on the estate of the Duke of Buckingham. The principal feature was the non-stoppage of the cultivator at the headlands, which is spoken of as one of the greatest novelties in steam cultivation. The machinery (a set of Haye's of Stony Stratford), was set to work, ploughing with a Beard's plough, which, notwithstanding heaviness of soil from previous rains, did its work well, ploughing from 6 in. to 8 in. in depth, and at a rate of from three to four miles an hour. One of Smith's ordinary cultivators was attached, in the place of the plough, on which a man sat in the same manner as a driver on a Hansom cab. The implement, at a rapid pace, made its way to the headland, and without the slightest check in speed ran within a yard of the turntable, and turned round

back into its work without the slightest stoppage; and it continued to do so throughout the remainder of the day. This novel feature was produced by a peculiar self-acting windlass. Mr. Haye is the patentee. The peculiarities and advantages of this windlass are thus summed up:—

1st. By its use there is no stoppage at the headlands in cultivation. 2nd. No checking the speed of the cultivator at the headlands. 3rd. One man superintends both engine and windlass with ease. 4th. No wheels are put in and out of gear. 5th. The anchor man at each headland can stop the implement at the headland or any other part of the field without stopping the engine. 6th. The work can proceed in fog or by moonlight, as we were told had been done. 7th. An ordinary ten-horse power portable engine, with one cylinder, is all that is required, as it runs continuously, and the steam is never shut off.

Messrs. Howard write to us in reference to the article, "Engineering and Agriculture," in the *Builder* of the 9th, saying, "Your correspondent, 'W. H. W.,' gives no description of the latest mode of working tillage implements by steam-power, and evidently supposes that our productions in this branch are confined to the stationary or 'roundabout' system, whereas we manufacture four different kinds of machinery for steam cultivation." Of these they give detailed descriptions, but it is unnecessary for us to occupy our space with these details.

"This new power in tillage," they add, "is destined to work great and important changes. Steam has supplanted every other power with which it has been brought into competition, no matter whether in the mine, the factory, on the road, or in the stackyard; and we believe that it is to the same powerful agent we must look for increased fertility in our fields, and the means of producing food for an ever-increasing population."

M. Blondeau has sent in a paper to the French Royal Academy explaining the action of electricity on the muscular and nervous system of plants. The scientific world has long been acquainted with some of the facts communicated, but others are curious, and perhaps new:—

"It seems from these experiments of M. Blondeau," says the Paris correspondent of *Land and Water*, "that an induction current only produces a destructive effect on the organs of plants when they are flabby and their tissues filled with liquid matter: on solid tissues it produces but little effect. Nevertheless, by increasing the intensity of the current and applying it for a considerable length of time, the tissues of ligneous plants may be disorganised to death. When the current acts on fruit it hastens its maturity. Electric seeds germinate much quicker than others, the stalks and leaves being greener and stronger. Beans appear to have been so astonished at this process that the roots wither away after being electrified, and branched into the air."

If proved not to be unwholesome, remarks our authority, we shall soon see our farmers ploughing by steam and raising crops by electricity, and the faculty recommending a loaf of electric bread in cases of rheumatism.

TECHNICAL EDUCATION.

THE Committee of Council on Education have under consideration a scheme for the formation of museums of patterns used in trades and manufactures, designed to improve the technical knowledge of workmen and employers.

Mr. Doulton recently gave notice in the Commons, that, on the 29th instant (this day), on going into committee of supply, he should call attention to the report on technical education by the Schools Inquiry Commission, and should ask whether the Government intended to carry out the recommendations of the Commissioners by instituting a special inquiry into the state of education abroad.

The Committee of the Macclesfield Useful Knowledge Society, with which is connected the local School of Art, draw our attention to the fact that the subject of technical education is now engaging most of the minds of the silk manufacturers of Macclesfield. The local Chamber of Commerce has taken up the subject, and formed a separate committee on it, and the question is about to be investigated. The Useful Knowledge Society itself, and its able Art Schoolmaster, we need hardly add, are also promoting this very important movement. The Macclesfield Council have unanimously resolved,—

"That this council is deeply impressed with the necessity which now exists for a national system of education in this country, particularly with regard to technical education in the manufacturing districts, and that a representation to this effect be made to the members for the borough and county."

The mover of the resolution, Mr. Alderman Bullock, said he was inclined to think, with Mr. Brocklehurst, that this technical education would not only improve the country generally, but Macclesfield in particular. Mr. Bury had spoken

about the introduction of new trades. He thought that, with the great improvements which were now being made in manufactures and the throwing trade, the silk trade would yet again flourish in Macclesfield. The mills of Messrs. Brocklehurst were going when other people's mills were standing. He believed that, if they were to thoroughly educate their youth, they would not have the turnings-out as at present, and that the operatives would not be ruled by low demagogues, as they were now.

Mr. Alderman Jesper said that the resolution seemed a little foreign to the business of the Council, but it was a most important one. The ex-mayor, Mr. Wright, at the recent meeting of the Useful Knowledge Society, pointed out the necessity for such an education as that referred to, and showed that on the Continent, where they had labour of a much more scientific character than ours, there were many advantages which we did not possess. He also showed that care was taken to educate even the poorest. That could only be done by a proper system of government support and inspection.

The Macclesfield *Advertiser*, in allusion to the designs exhibited at the late meeting of the local School of Art, says,—

"Many of the designs, we understand, are well adapted for being wrought in silk. It is very desirable that the French plan should be adopted, of providing in the school not only the means of drawing patterns, but all that is necessary for showing how they may actually be adapted to the loom. For this purpose it would be necessary to connect with the school a reeling machine, a carding machine, and a loom, and thus to localise art by completely adapting it to the requirements of the town, instead of adopting another part of the French system, that of centralising instruction in art, like everything else in that country."

We hope the school will soon be enabled, by better support than it has had, to do all that is requisite; and that for the future the inhabitants of Macclesfield will set a higher value than they have heretofore done upon their School of Art, where the proper technical education of its silk manufacturing artisans will require to be carried on.

SCHOOLS OF ART.

The York School.—The annual meeting of the subscribers to this school has been held, in the large room of the institution, Minster-yard. The Rev. Canon Hey occupied the chair.

The report said:—

During the past year there has not been much to distinguish the working of the school from that of former years. It has been with pleasure that the committee have had to refer to the steady advancement of the pupils, and to the superior excellence of the works produced by them in each succeeding year. The number of pupils in attendance on the various classes during the year has been fifty-one. Some of the works of the students have been exhibited in the Yorkshire Fine Art and Industrial Exhibition, and a medal has been awarded to the school for several artistic designs by the pupils. The committee have to acknowledge with thanks the gift of a carved Ionic capital from Mr. Wolstenholme, of this city. Mr. J. P. Pritchett also has given to the school a valuable collection of casts of modern ornamental and architectural details.

Mr. Swallow, the master of the school, addressed the meeting. He said that,—

During the past year the progress made by the pupils had been satisfactory. The number of prizes from South Kensington had not been so great, owing to fewer prizes being now awarded, and those principally to artisans—a class to a certain extent incapacitated from taking any part in the competition. The standard of success was also comparatively high, and, being of an arbitrary nature, entirely in the hands of officials, could be increased or decreased at pleasure; and, as the tendency has lately been in the direction of decrease, it was not much a matter of surprise. . . . A noticeable feature in the working of the school has been the addition to the artisan class from the railway, and the loan of machinery from the company's works. Technical instruction was exceedingly valuable to the various trades and callings. It enabled a master or foreman to lay down ideas on paper with precision, and the workman, with his cultivated intelligence, to carry out the same. It spoke much for schools of art that they could be so practical in their work. Among the various branches of art, a knowledge of which is capable of imparting the key to sculpture and carving, is the gold medal of the Royal Academy, and John Adams, one of the foremen to Mr. Riddock, of London—a native of York, and one of the best, if not the best, decorative carvers in stone at the present day. He (mentioned another student labouring away at a bas-relief of the Resurrection, something like the one over the gateway of St. Giles-in-the-Fields. That student afterwards received the gold medal of the Royal Academy, and John Adams is now keeping up our country's credit as a clever and successful sculptor in Rome. This teaching must have a great value, for Walter Crispier, another of their students, is disseminating the benefit of art-education at Chester, as master of its School of Art, and at Crewe, where there is a branch school.

At present this school is in debt, and an appeal is made to the local public on its behalf.

The Oxford School.—A public meeting was held in the town-hall, on Thursday last week, for the distribution of the prizes gained by the pupils in this school. The attendance was very

* The conclusion is our next.

numerous, and for a considerable time before the hour announced for commencing, several persons, including members of the University and citizens, were present to inspect the prize-drawings and other drawings by pupils of the school, which were exhibited, together with pictures lent for the occasion by the Department at South Kensington, and by Mr. Combe, the Rev. R. St. John Tyrwhitt, Alderman Spiers, Mr. James Wyatt, Mr. Rymon, Mr. Macdonald, and Dr. Acland. The chair was taken by Mr. T. D. Acland, M.P., supported on either side by the dean of Christ Church, the rector of Lincoln, the Rev. C. L. Wingfield (hon. sec.), the mayor, Alderman Spiers, &c. In the body of the hall there were several prominent members of the University, and members of the city corporation and others, who take a deep interest in the progress and success of the school. Amongst those who addressed the meeting was Mr. Macdonald, the head master of the school, who stated that this year they had forty-nine passes, eight certificates, and fourteen prizes of the second grade to be distributed. In the third grade the result of the elementary works was, that four prizes were given, and two were honourably mentioned. Four were selected for national competition, and one silver medal and a prize of books were awarded. At first sight, in comparing the present with the previous year, it might seem that they were going backward, but if they compared the drawings on the walls, that would be explained; and the conclusion he came to was, that the department had exercised the right they claimed of raising the standard of competition. Considering that this was only the second year of the existence of the Oxford School, and that some of the works against which they had to compete were sent from schools of twenty years' standing, he considered they had done well.

TRADES COUNCILS.

The London Council.—This council has recently held its monthly meeting. The following trade societies were represented:—Iron-founders, carvers and gilders, zinc-workers, boot-closers, plasterers, men's and women's boot and shoe makers, basket makers, &c. Mr. Wood, iron-founder, was called to the chair, and read a letter from Mr. Alfred Walton, of Brecon, in which the following proposition is made to the trade societies:—

"I expect to be in London shortly, and purpose employing my time in something like the following manner. As the building trades appear to me to be about the best suited to form a building company, I intend to devote five nights to the five principal branches of the building trade, beginning, say, with the carpenters the first night, the bricklayers the second, the masons the third, the plumbers and glaziers the fourth, the plasterers the fifth, and submit resolutions in favour of co-operative production."

The secretary was instructed to inform Mr. Walton that the trade societies took great interest in the question of co-operative production, and would call the attention of the trades to the subject, as proposed by him. The president then read the Bill which had been prepared for presentation to the House of Commons, for the purpose of placing trade-unions on the same footing in the eye of the law as other associations. This Bill, after some deliberation, was unanimously approved of.

The Wolverhampton Council.—Seeing that capital and labour are not on quite such friendly terms as they ought to be, and also that there are distinct associations representing each, but no association representing both, the Wolverhampton Trades Council wrote a letter to the Chamber of Commerce, suggesting some kind of union between that body and the trades council, for the mutual benefit of masters and men. The council of the Chamber received the communication in the spirit in which it was written. They appointed a deputation of their body to meet an equal number of members of the trades council to settle preliminaries. Mr. Rupert Kettle, who has already done much towards the settlement of labour disputes in Wolverhampton, is one of the gentlemen appointed to represent the Chamber of Commerce. The local *Chronicle* suggests that perhaps something like the Nottingham plan may be hit upon—a standing council of masters and men, in equal numbers. The plan has been in existence six years, and during the whole of that time there has been, not only no strike, but no serious labour dispute of any kind.

WORKMEN'S REPORTS ON THE FRENCH EXHIBITION.

In the course of the presidential address at the Society of Arts, on the 20th inst., Mr. Hawes, referring to the steps that had been taken to send a number of English workmen to Paris, to study the French Exhibition, on the condition that each workman should write a report, to be sent to the Society, on the special industry to which he belonged, said,—

The sum subscribed amounted to 1,020l. which enabled your council to assist about eighty skilled workmen, representing the principal industries of the country, to visit and examine the quality and cost of the work executed in their respective trades by the best workmen of foreign countries. So eager were the workmen of London and of other seats of industry to avail themselves of this assistance that selection sometimes became difficult; and I believe I may state that not one man was so assisted (for the committee did not pretend to pay their entire expenses) who did not bring a recommendation from his employers, or from a number of his fellow workmen, and in some instances from both, assuring the committee of his fitness to undertake the task assigned to him. The endeavour of the committee was to select men whose intelligence and knowledge of their particular trades, and whose position among their fellow workmen, were such that their reports on their respective branches of industry would not only be good in themselves, but would command the attention of their fellow-workmen.

The reports, nearly all of which have been received, are now in the press, and, with a few trifling literal and grammatical corrections, will be printed exactly as they have been delivered to the Society. They will be ready for publication before Christmas, and the council believe they will form an interesting volume, and that the result of the inquiries made by these artisans will convey a great deal of useful information to their fellow-workmen in this country.

The men were received in the most friendly manner by the French workmen. They had access to many workshops, and, by means of the very intelligent body of guides and interpreters provided for them, and with the assistance of several of their own body who spoke French, they were able to obtain a very good insight into the quality of French work and the habits of French workmen. I regret I cannot illustrate these remarks by extracts from the reports, but any attempt to do so would occupy too much time.

It is gratifying to find that the conduct of the men whilst in Paris, and the intelligence they displayed in their inquiries, were so appreciated by the French authorities at the Exhibition, that they have applied for permission to translate the reports for circulation among French workmen.

The committee received valuable co-operation from the members of the Chamber of Commerce at Birmingham, who subscribed liberally to the fund, and selected twenty-five workmen and foremen to represent the various branches of trade carried on in that district. The Chambers of Commerce of Bradford and Nottingham, and the mayor of Sheffield, also afforded considerable assistance.

The success of this attempt to improve the acquaintance of our artisans with the work of those engaged in the same branch of industry abroad has been so marked, and the aid afforded has been so gratefully received by the workmen themselves, that the Council hope, ere long, to submit the report of another committee, just appointed, to consider the best mode of continuing this inquiry by working men into the state of the industries of their competitors in foreign countries generally; the intention being, if funds are forthcoming for the purpose, to send annually a small number of artisans, carefully selected, to one or more of the capitals of Europe, to study the productions of their respective trades, and report upon them. The plan is not yet matured, but is one which I have every reason to hope will tend to continue to English industry the benefits which an intelligent study of the French Exhibition by our workmen of the present day must certainly have conferred upon it.

The Council hope that the reports of the artisans sent to Paris to study the French Exhibition will induce their fellow-workmen to appreciate the importance of the cultivation of that pure taste which characterises most foreign work, and that trade societies will thereby be

brought to see the necessity of co-operating in the work begun by this Society, by applying a portion of their funds, as we have done, in assisting their members to obtain a knowledge of foreign industry, its capabilities and its cost, instead of applying them to the maintenance of trade regulations, the tendency of which is often to cramp the energies and intellect of their members, and to foster ideas of native superiority quite inconsistent with the efforts which must now be made if we are successfully to compete with our intelligent and industrious foreign rivals.

The Council have every reason to believe that the reports, when published, will be interesting not only to the writers' fellow-workmen, but to all interested in the progress of industry; they will be found to contain a singular unanimity of opinion upon the deficiency of artistic education in this country,—upon the want of the opportunities enjoyed by foreign workmen to cultivate their taste, and upon the superior position workmen hold in Paris to that held by the same classes in England; and, considering that they are written by men most of whom have never before attempted to write a report on any subject, and all of whom are actually engaged in industrial occupations, they will be found, I venture to think, in most cases, creditable to their authors, and will, I feel satisfied, be received with the consideration they deserve. They will show the public that working men do not fear fair criticism, and that they are not unwilling to admit superiority when and where it appears to exist; and they will be specially acceptable and useful to working men as emanating from members of their own body, selected only with reference to their fitness for the work they undertook.

MONT CENIS TUNNEL.

THE Italian Government have published their usual monthly statement of the progress made in the Mont Cenis tunnel. According to this an advance of 131.85 metres has been made during the month of October, of which a length of 71.20 m. was excavated on the Italian side at Bardonnèche, and 60.65 m. on the French, at Modane. At the Italian end the tunnelling proceeds more rapidly than at the other. Up to the 31st October the length of tunnel excavated was 4,640.10 m. at Bardonnèche, and 3,024 m. making a total length of tunnel executed of 7,664.10 m.; deducting this from 12,220 m., the total distance from Modane to Bardonnèche, there remain 4,555.90 m. of tunnelling to be done. From the satisfactory manner in which this important work proceeds, there seems to be little doubt that it will be completed in 1870, if not earlier.

During the present year 1,829.56 m. of tunnelling have been done, whilst during the whole of last year the progress made was only 1,024.99 m.

ST. MARY-LE-BOW CHURCH, CHEAPSIDE.

The re-arrangements of this church, which are now completed, have been carried out by Messrs. Browne & Robinson, the contractors, from the designs and under the superintendence of Mr. James L. Podley, architect. The alterations consist of the removal of the north and south galleries, organ loft, and organ, pulpit, desk, high square and irregular pews, and strong-closet. The large oak screen at the north-west entrance has been taken away, and trued round to face the south. The large monuments which formerly blocked up one of the west-end windows have been taken down, cleaned, and refixed at the end of the north and south aisles, and all the ironwork which formerly guarded these works of art (one by Banks) has been removed. The pulpit is lowered, and stands upon a moulded Caen stone base at the north side of the nave. The prayer-desk, which is made of the old wainscot and carving, is placed on the south side, and there is a lectern provided. The pews are all open, and reduced to a uniform height and width of 3 ft., with sloping backs, and are made of the old wainscot as far as practicable, and to accommodate 400 adults.

The organ (which has been reconstructed, considerably enlarged, and improved by Mr. G. M. Holdich) is placed on the floor of the church at the east end of the north aisle. The additions made to the case have been ornamented with

perforated panels; the aisle flooring has been taken up and relaid—the centre aisle and space in front of the altar-rails with tile pavement in black, red, buff, and white quarries in a pattern, by the "Architectural Pottery Company." The ceiling has been cleaned and slightly tinted. The lighting of the church is by five stars of twelve lights each, and suspended by brass rods from the key-stones of the arches; and two gaseliers, each 6 ft. diameter, having eight branches, each containing three burners, making a total of twenty-four burners in each gaselier, and a total of 108 lights. This department has been carried out by Mr. Geo. Benkett, Finsbury. Nearly 2,000l. have been spent. The windows require a little stained glass, and the walls some colour.

THE PROPOSED NEW METROPOLITAN CATTLE MARKET.

The intention of the Government to apply to Parliament for power to establish a cattle-market for foreign cattle is meeting with opposition. The Corporation of London have sent a deputation to the Privy Council-office, objecting to it on the ground that the market in Copenhagen-fields is already a losing concern, which the new project would utterly ruin, and that the corporation had intended to have devoted a portion of that establishment to the reception and slaughtering of foreign cattle. The president of the Privy Council promised to consider the matter. The butchers have passed condemnatory resolutions on the proposal, on the ground that it will compel them to slaughter all foreign cattle imported into London in the *abattoirs* adjoining the market. Correspondents of the *Mark-lane Express* urge the slaughtering of foreign cattle at the port of debarkation, and also object to the building of additional slaughter-houses at the present cattle-markets. The object is said to be to secure a constant and certain supply of dead meat at the new Smith-field Market; but it is considered that by slaughtering foreign cattle in London, our English herds will never be safe from devastation.

CITY RAILWAY IMPROVEMENTS.

Sir,—May I venture to appeal, through the medium of your columns, to that board of directors whose recent railway improvements have cast such a lengthened shadow over the street that is called "Sun," believing that the partial collapse of business caused thereby will shortly pass over, if the following public improvements be carried out. It is true that the long waste piece of ground at the side of the Broad-street Station, extending from Liverpool-street to Sun-street, be thrown open, thus relieving the traffic of Liverpool-street (which, by the bye, itself looks very poor), and the ground of further railway improvements, opening up a "short cut" for those who have to return along Bishopsgate-street, relieving the present approach to the station of a considerable number of people, and relieving, as a matter of justice, the traffic of Sun-street to something like its normal condition, and completing the arrangements of this very handsome and commodious station. The appearance of the waste ground alluded to is at present in striking contrast with the elegant terminus, and would require little or no outlay to render it useful in the manner described. I trust that the above suggestion will be favourably received.

VICTOR.

ENGINEERING AND AGRICULTURE.

THE LAND DRAINAGE ACT.

This article signed "W. H. W." in your number of the 9th instant, and under this title, has attracted my attention. It relates to a subject in which I have taken a special interest, and in which I am sure all your correspondents affirm as to its very great importance, and its being one in which engineers may be profitably engaged, whilst at the same time they may confer great benefit upon the country.

There can be no doubt that arterial drainage, irrigation on an extended scale, reclaiming land from the sea or from salt water, and the like, are all subjects in which the profession can be engaged to, not alone as national, but as safe and profitable commercial undertakings.

It is already an enormous amount of talent and industry at work in producing mechanical appliances, which are used for every possible purpose in the different operations of the agriculturalist; but the civil engineer has not hitherto been enlisted in the cause, or he has not considered it worth his attention to practise in the branches connected with the subject, although there is a very wide field open to him.

I cannot agree with "W. H. W." that there is not want of spirit in the landed proprietors in not undertaking improvements on an expensive scale which he attributes to them; and we should consider the difficulties that many of them labour under, either in the want of spare funds, or their having only a life interest in their properties, or their lands being subject to leases or agreements which prevent their dealing with them, and many other impediments; but I know that they are generally fully alive to the value of such improvements. One of the

difficulties in their way is the occupying tenant, who is frequently averse to improvement because it increases his annual charge, notwithstanding that it is really, for the time being, by far the greatest gain.

I fully agree with "W. H. W." as to the mistake committed in the money that has been expended in the works more particularly those of drainage, being designed and executed without the aid of the skill and experience of the engineer, and, above all, the limited and half-measure views which so frequently prevail in designing these works.

"W. H. W." seems so fully to have discussed all the questions relative to agricultural engineering which are the basis of all the minor operations, for the purpose of extending the productions of our island, that I need not occupy more of your space, but proceed to point out, which is the reason for my troubling you with this letter, the means by which arterial drainage and outfalls, and reclamations of land from the sea and rivers, can be carried out.

The difficulties that have hitherto stood in the way of those who may have been willing to effect these objects, have arisen from the want of unanimity and mutual co-operation of all the parties concerned; for the owner of ten acres of land could, till lately, prevent the improvement of 5,000, and this obstruction could only be overcome by the tedious, uncertain, and expensive process of procuring a special Act of Parliament. In 1861 was passed an Act, called "The Land Drainage Act, 1861," 24 & 25 Vict. cap. 133. I was engaged by the late Sir G. Cornewall Lewis, then at the Home Office, to assist in drawing it up. This Act gives powers under two forms to enable landowners to combine to carry out the works of widening, deepening, straightening, and otherwise improving all rivers, and reclaiming lands by embankment from the sea and rivers, and to tax the areas in proportion to the benefit conferred.

Engineers and others will see in this Act that there are ready and simple means of effecting these objects. As inspector under that Act, I have held about twenty meetings, and have seen in many cases, some of which have been carried out to the great advantage of the promoters, some are in progress, and others are in abeyance.

I shall be glad at any time to explain the working of the Act, or to give any information to those who may require it. I make this offer as I am fully assured of the good that would result from the extended application of the Act, and on Saturday previous to my commencing its operation, but can hardly expect, except under certain circumstances, undertake works.

RICHARD B. GRANTHAM.

STOP-COCKS IN HOT-WATER PIPES.

Sir,—Will you allow me space in your columns to warn the trade, especially hot water men, of the danger caused by pipe stop-cocks in the flow and return pipes of hot water apparatus by which the boiler can be, as it were, hermetically sealed. Out of several instances I will mention one that came under my notice on Monday, the 4th instant. The job (new boiler and pipes) had only been finished on Saturday previous by a first-class London firm, in which a stop-cock, with spanner screwed on, was fixed in both flow and return pipes leading from kitchen boiler next the hot-water cistern upstairs for supplying baths, &c. I was told they were placed there for the water off, should the boiler or pipes leak at any time; a very little advantage that for the risk incurred.

It appears the gentleman had misunderstood the use of them, for on Sunday night, finding but little water in the cistern for supplying the above, he turned off boiler, &c., thinking to avoid an accident through an accident on Monday morning, an unusual hissing noise in the boiler and pipes, and some of the joints commencing to leak, so frightened the butler that he had the fire raked out immediately, so that there would have been an explosion, and most likely loss of life. I hope this will be the means of condemning so dangerous and at the same time useless an addition to hot-water apparatus.

E. FISHER.

THE AMERICAN SYSTEM OF SINKING PIPES FOR WATER.

Sir,—Can any of your correspondents inform me in the above system of sinking pipes for water (which is to be tried for the Abyssinian expedition), whether it is necessary to take any steps to prevent the pipes from being stopped up at the bottom in the act of boring. It is supposed that five or six small pipes might prove sufficient where there is a probability of coming to water.

W.

VENTILATION OF SEWERS.

Sir,—Under the above heading I have read Mr. G. A. Rowell's letter in the *Builder*. Before the principle which he suggests could be applied extensive structural alterations would require to be made in sewers and their attachments.

At present, both brick and pipe sewers are ventilated by means of air shafts, built at intervals along their course, the tops of these necks or of the *debris* pipe connected with them, being covered with iron gratings.

Before an exhausting engine could be set to work it would be necessary to close these openings effectively, and to provide for the more secure trapping of street gullies, water-closet pipes, and kitchen sinks, otherwise the power of the engine would be spent in pumping atmospheric air through these and other openings, whilst the lighter and more deleterious gases would still lodge unmoved in the summit or highest parts of the sewers. I am doubtful of the success of any such plan of ventilating sewers to a useful extent; but, if practicable, furnaces in connexion with openings to the sewers and tall chimneys would perform the requisite work as efficiently and much more economically than steam power. Any contemplated damage from explosions could be comuted by making the parts exposed to this danger strong enough to resist. That "the gases to be pumped out would hardly give any resistance to the air passing in and out," and that the engines at the blast furnaces in Yorkshire and Staffordshire run up to very high powers, as much as 600-horse

nominal, the expense of which I leave you to judge. The real difficulty to be grappled with would be the length of the main sewers and their numerous ramifications not air or water tight on their first construction, to which must be added the numerous openings and connexions, and the imperfectly trapped gully-shoots connected with the street gullies, these latter occurring on both sides of the road, at intervals never or seldom more than 200 ft. apart.

As I have stated, the power of the engine would be spent in pumping atmospheric air through these openings, whilst the radical danger of accumulating gases in the summits of the sewers would remain unchanged.

I have faith in the method of ventilation often suggested of carrying up pipes by the sides of chimneys above the level of the roofs, in connexion with the method in present use. I regard the common bell-trap to kitchen sinks as a source of greater danger than properly-placed and properly-constructed water-closets. In this opinion I think I am justified by facts, as well as in the danger existing at the summits of sewers. This latter could be diminished, if not effectually prevented, by the pipes carried above the level of the roofs.

It appears to me that any plan of ventilation, to be efficient, must be simple, constant, and self-acting, and not violent in operation. This constancy and simplicity, without taking the cost into account, could not be maintained by engine-power. I could offer a suggestion to improve traps generally; and should like to offer a few remarks on the ventilation of chemical works and factories, but must leave these for a more convenient opportunity.

JOHN BULNAY.

A THIRTEENTH CENTURY FOUNDATION.

At the village of Boughton, in Nottinghamshire, a new church is being built, and part of the stone is obtained from the old church, which is only distant a few yards. When the foundation of the old building was reached in the progress of demolition, a number of large unquarred stones were found thrown together *à la-mêlée*, one over the other, in a very unusual manner. On these stones being taken out for squaring and use in the new church, singular concreted masses were found beneath them, presenting at first sight most puzzling characters. On careful examination, however, I have found these masses to consist of the large stems of the great bull-rush of our ponds, mingled with the stems and leaves of the yellow water-flag, the whole enveloped and concreted together with the thirteenth century cement, now nearly as hard as stone.

The district (which I know well), is eminently boggy, and it seems probable that the old church was built on a site where marsh and bog plants grew. To get a sure foundation it would appear that large stones were thrown in, and cement thrown over them. The cement naturally trickled through the interstices bound the bull-rushes and flags together in one stony mass, and has thus preserved them in a state fit for recognition for eight hundred years.

W. G. S.

A SUGGESTION FOR THE CRYSTAL PALACE.

Now that the Paris Exhibition is closed, and the buildings in the surrounding *Parc* are, I presume, to be taken down, according to agreement, will you allow me to suggest through your columns to our Crystal Palace Company, that several of those buildings are well worth transporting to Sydenham for re-erection; and would, in some measure, compensate to England—and, indeed, to the world, for the collection was unique—the painful losses occasioned by that most disastrous fire, which can never cease to be a subject of sorrow to all lovers of the beautiful.

The Champ de Mars' Turkish Mosque may not be comparable to Owen Jones's exquisite Alhambra, but it is a very lovely thing; and the Egyptian Temple, with its avenue of conchoidal and handsome flight of steps—to say nothing of its interesting interior, would worthily fill a space, if not in our despoiled Crystal Palace, at any rate in the grounds.

There were, too, a Turkish Kiosk, very beautiful, in which the blending of colours was most charming; the Palace of the Bey of Tunis; and a handsome Egyptian building, with a fine bold gateway at the end of an avenue of ten large concrete sphinxes painted to represent granite, and which was used for a museum. This and its contents—arranged in glass cases raised on large square plinths of exquisitely made woodwork, inlaid in bands of a darker colour—would be a most desirable addition to the Sydenham collection.

Ask Mr. Grove, if he be not too much absorbed by his interesting and arduous task of assisting in the Palestine exploration proceedings, to urge this matter upon his directors before the objects are cleared away and lost sight of. Want of

funds will, I suppose, be the great difficulty; but something will have to be done to restore the Crystal Palace to a nearer approach to its pristine beauty than it now exhibits; and the objects I have named, being so unavailable to the general public, and, therefore, unsaleable, might doubtless be secured for infinitely smaller sums than would be required to recreate them.

R. F. H.

STRENGTH OF CONCRETE WALLS.

I LIVED many years in the county of Suffolk, where, from the scarcity of strong clay, this kind of wall was common, and most of the old walls are formed (though not with so strong a flux) in this manner, occasionally faced with split flints. One of the finest church towers of the kind, St. Peter's, Ipswich, has been erected nearly 400 years, of concrete, faced with split flint and stone dressings. The tower has an area of 140 square yards, and a height of 100 ft., as perfect and substantial now as when first built. This affords the strongest proof that can be required of the simplicity of those who talk about the instability of concrete erections, and the necessity of bonding them throughout. Clay in Suffolk being so scarce, the early builders, even so far back as the thirteenth and fourteenth centuries, turned their attention to this compound substance: the idea was roughly worked out, I admit, but true, in principle, and in pulling down such buildings, the men have far more difficulty, and it takes an infinitely longer time with pickaxes than a dozen brick ones would. I have seen the bricks which have been embedded in the concrete of these old buildings smashed to pieces before the concrete would give way. Some of the walls of the old Grammar School, Ipswich, 300 years old, I saw pulled down myself. The men could not pick them down, but were obliged to mine with gunpowder before they could level them.

Putting aside the known great porosity of bricks, and therefore their great susceptibility to disintegration, and the necessity of some profit to the builder, which the high price of land almost prevents, I trust that I have given proof of the advantage of such concrete erections.

THOS. C. BINGLEY.

MURRAY v. GILES.

Srs.—As attorneys for the plaintiff, we trust you will allow us to correct a slight inaccuracy in the report of the above case in your last week's paper. In the last paragraph but one it is stated that "The jury, having been locked up some time, gave a verdict for plaintiff, so far only as regards twelve drawings out of fifty-two claimed, and no damages." The jury simply gave a verdict for the plaintiff. In the course of the trial it came out in evidence that many of the drawings claimed had been sent to the contractor's office, or to a Mr. Messum, and that the defendant had only fifteen drawings in his possession. By consent, a nominal value of 6*l.* was set upon those drawings, and the value, upon the verdict of the jury, ordered, those fifteen (not twelve) drawings to be given up to the plaintiff, and certified that he was entitled to costs.

BOWKER, PEAKE, & BIRD.

REMOVAL OF HISTORICAL MONUMENTS

A CORRESPONDENT writes,—"I want to enter an indignant protest against the sale of the inscribed stone from the Roman wall to the American consul at Newcastle (*vide* p. 844). Why should "a Portland cement cast" be taken "for the Old Castle, Newcastle," while he carries off the original? When he has moved it "to the United States," it becomes merely an object of antiquarian interest; but while it remained *in situ*, "about eight miles from Glasgow," in the wall of Antonine's Pines, recording the erection of the 3,000 paces, it was an invaluable portion of irrefragable history that the surrounding inhabitants ought to have felt too proud of having had bequeathed to them, to have ever allowed it to pass out of their hands. Inquiry ought to be made as to by whose permission this inscribed stone was taken from the wall and delivered over to Professor McChesney. It would be wiser even to take some Roman monument out of one of our museums, and give that to the Professor. The suggestion, doubtless, seems a barbarous one; but it is not really half so barbarous as parting with this link from the chain of our national history. I am quite furious about it."

We fully agree with our enraged correspondent, and must express our surprise that the Newcastle Society of Antiquaries received the state-

ment so coolly. Some endeavour should be made to buy it back from Professor McChesney, that it might be deposited, at any rate, in the neighbourhood of the wall it labelled. We refer this suggestion to Dr. Bruce to see it carried out.

CHURCH-BUILDING NEWS.

Oldbury.—The church here has been re-opened for divine worship, by the Bishop of Worcester. The edifice, which originally consisted of nave, with north and south aisles, and galleries, had a shallow chancel formed by one bay, which has now been materially lengthened. The front portion of the western gallery has been removed, and benches, which previously occupied that part of the ground-floor under the west gallery, have been replaced by modern open seats with bench ends. An organ-chamber has been provided on the north side of the chancel, with choristers' vestry in the rear. The chancel has been lengthened inwardly. The church has been thoroughly cleaned, painted, and decorated. The ceilings and walls have been simply decorated. The whole of the work has been carried out under the supervision of Mr. G. Holme, architect, the entire cost being under 1,000*l.*, and by the following contractors, viz.:—Mr. Bonser, of Oldbury, for the builder's work; Mr. A. Gee, of Stafford, for the painting and decorating; Mr. Averill, of Oldbury, and Messrs. C. Smith & Son, of Birmingham, for the gas standards and ornamental ironwork; and Messrs. Haden & Son, Trowbridge, for the warming.

Worcester.—The interior of St. George's Church is now undergoing a partial renovation and repewing, under the direction of Mr. Hopkins, architect; contractors, Messrs. Cox, of the Butts. The ground-floor has been entirely re-seated, the seats being of varnished deal, with leaning backs, and no doors. Godwin's encaustic tiles have been laid down in the chancel and aisles. New windows, with frosted glass, and stone mullions and transoms, have replaced the old ones in the lower side walls. The walls and ceiling have been coloured. When the east window is removed, and the galleries made to harmonise with the arrangements on the ground-floor,—improvements which can only be effected by the accession of more funds,—something will have been done to render this poor and unsightly church less objectionable and more convenient in the interior.

Madresfield (near Malvern).—By the liberality of the lord of the manor, Earl Beauchamp, another church has just been completed and opened for the use of the inhabitants. The new edifice is situated near the Court, and is in the Decorated style. It contains a chancel, nave, tower, and spire. The building is of grey stone, with bands of red, and facings of freestone. North of the chancel are vestry and organ-chamber. The roofs are steeply pitched, and of open-timbered work. In the east window are three lights, as there are also in the window at the west end: the other windows are chiefly two-light. The tower opens into the nave by a lofty arch; and the church is approached through a stone porch, and through a wooden lych-gate. There are six bells and a set of chimies. The interior is decorated. At the east and west ends there are some coloured windows. The architect was Mr. Preedy, of London.

Liverpool.—The erection of the mortuary chapel, "owing to circumstances of a painful character," says the *Albion*, is now suspended. It has reached an advanced stage, and in places is almost ready to receive the roof. It would be a boon to the inhabitants of the poor and crowded districts of Scotland-road, where it is being erected; and it must prove a matter for sincere regret if, owing to the commercial disaster of a gentleman who purposed being its sole donor, it should not now be completed, and its uses put fully and fairly to the test. The corporation should take the building in hand and finish it at the public cost; or, failing that, a public subscription should at once be organized to carry out this desirable object, by completing the building without delay.

Hoylandswaine.—The chief stone of a new church now in progress of erection at Hoylandswaine, about two miles from Penistone, has been laid by the Bishop of Ripon. A site has been given by Mr. F. W. T. V. Wentworth, and the parsonage which is nearly completed, has been erected at the sole cost of the Stanhope family. The church, which is being erected from designs furnished by Mr. W. H. Crossland, of

Leeds, architect, is estimated to cost 3,000*l.*, and will seat 308 persons. The plan comprises nave, with north aisle and chancel, with chancel aisle, to be used as a vestry and organ chamber. At the west end will be a tower, rising to the height of 70 ft. The height of the nave is to be 30 ft.; length of the church, 87 ft.; width 38 ft. 6 in. The style is Decorated. The roofs are open, and are, together with the sittings, stained in oak. There are 308 fixed sittings, including 80 seats for children, and all the sittings are to be free.

Blackheath.—All Saints' Church has recently been improved by the completion of the upper portion of the tower, and by a broach spire. As the church stands on the Heath, these additions are conspicuous for some distance around. The tower is 14 ft. 6 in. square internally, and the spire is about 133 ft. 6 in. to the apex stone. The materials are similar to those used in the body of the church, namely, Kentish rag for the main walling, and Bath stone for the quoins, dressings, &c. The cost has been about 1,200*l.* Mr. Ferrey was the architect employed, and Messrs. Dove, Brothers, carried out the work. The tower stands at the south-west angle of the church.

Saunders Nethergate (Norfolk).—The church here is about to undergo restoration, and also to be considerably enlarged. The present church consists of nave, chancel, south porch, and west tower. These are to be restored (the porch to be rebuilt), a new aisle, equal in size to the present nave, is to be erected on the north side, and a new vestry on the north of the chancel. The works have commenced, the builders being Mr. Rust for bricklayers and stonemasons' work, Mr. Burrell for carpenter and joiner's work, and Mr. Devereux for plumber, painter, and glazier's work. The whole church is to be seated in oak, with bench-ends and carved poppy-heads; there will also be a carved oak roof-screen, decorated and gilded. The present contracts amount to 1,328*l.*, exclusive of restoring and rehanging the bells, of which there are six, of beautiful tone. The architect is Mr. James S. Benest, of Norwich.

Halvergate (Norfolk).—The parish church here, the nave and tower of which underwent entire restoration some years back, is now to be completed, by the erection of a new porch. The chancel, which is a very primitive structure of red brick, will also shortly be restored. The architect is Mr. James S. Benest, of Norwich.

DISSENTING CHURCH-BUILDING NEWS.

Sheffield.—A memorial-stone has been laid by Sir Francis Lycett, ex-Sheriff of London and Middlesex, at the Methodist Chapel, in course of erection on Ellemere-road. The chapel,—the architects of which are Messrs. Wilson & Crossland,—will be in the Early English style, and will almost join the Methodist schools which were erected some little time ago. It will be capable of accommodating 1,000 persons, and the cost of the erection will be about 3,500*l.*

Malmesbury.—A new Congregational chapel has been opened here. The building stands in the Westport of the borough, near the place where the celebrated Hobbes once lived. The means to build the chapel have to the extent of 1,000*l.* been promised. Mr. Stent, the architect, supplied plans, which were adopted. The structure is hid from view by a mass of small tenements and farms. The style of architecture is Anglo-Lombardic. There are two entrances from Church-street, which forms the frontage of the church, leading to the body and gallery, which latter runs along two sides of the building. The front contains a centre circular window, filled in with stained glass of simple design. One of the entrances spoken of is under a turret which rises on the south-west side, and to the top of the spire which surmounts it, *nearly* about 70 ft. The church contains sitting accommodation for about 260 on the ground-floor, and about 200 in the galleries. The roof is partly open-timbered, being a semi-wagon-head roof. The pews are all open, and all the joiners' work is of deal, varnished. The chapel is lighted by a large central corona light, and brackets under the galleries; and it is heated by apparatus supplied by Messrs. Haden & Son, of Trowbridge. At the rear there are an assembly-room, vestry, and other rooms, over which there is a school-room with separate approach. The chapel was erected by Messrs. Light & Smith, of Chippenham.

St. Peter's Wells.—The new Congregational chapel here has been dedicated. The edifice

is in the Early English style, and capable of seating about 700 persons. The architect was Mr. John Wimple, of London. Standing as it does on one of the highest eminences in the town, its tall white spire may be seen for many miles. The roof is arched, and supported by groins and light iron columns. A gallery is erected at the eastern end, capable of seating some 200 or 300.

Victoria Park, London.—Mr. Samuel Morley has recently laid the foundation-stone of the new Victoria Park Congregational Church, situated in Approach-road, Victoria Park, immediately adjoining Bonner's-road, in the presence of an immense concourse of spectators. The new building has been designed by Mr. Poulton, architect, of Reading, for the accommodation of some 3,000 persons, at an estimated cost of about 8,000*l.*, and will be a plain, but commodious, structure.

York.—The chief stone of a new Wesleyan school-chapel has been laid on a site between the south end of Pilgrim-street and Charles-street, Clarence-street. The total cost of the ground and the buildings to be erected upon it has been estimated at upwards of 2,000*l.*, and towards this sum between 900*l.* and 1,000*l.* have been subscribed. The buildings will cost about 1,200*l.* The school-chapel will consist of one principal room, 61 ft. 6 in. long by 40 ft. wide, and 30 ft. high. It will be divided into bays by the roof, and principals partially exposed to view. The room will be lighted by six large windows on each side and five at the end. The entrance will be by a porch in the side transept. The inside of the building will be lined with white brick, relieved by red and black brickwork in arches, strings, &c. The outside of the building will be faced with red stock brickwork, relieved by arches and strings of white and black brick. The transept gable will be finished by an ornamental bell-turret. Mr. Edward Taylor, of York, is the architect; and the contractors are Mr. Joseph Walker for the brickwork; Mr. R. Slater for the joiner's work; Mr. H. Brumby for the mason's work; Mr. H. Young for the plasterer's work; Mr. W. K. Hartley for the plumber's and glazier's work; Mr. H. Sanderson for the slater's work; and Mr. J. Thomas for the painter's work.

Bollington.—A new Congregational chapel has been opened here. The site is on the north side of the main thoroughfare, Great High-street, at the corner of Beeston Brow. Space has been reserved on which to erect a minister's house. Externally the building presents the appearance of a nave and transepts, the former being the chapel and the latter the school building, the whole being so planned that without any disturbance of the external walls, the transept may be added to the chapel whenever circumstances require its enlargement. The axis, or centre line of the building, forms a considerable angle to the line of street; but owing to a bend in the latter, the south or front gable directly faces the spectator as he ascends Great High-street, whilst on approaching the village under the canal aqueduct a view is obtained of the west side, including the school gable and the tower and spire at the south-west angle. All the external walls are faced with Kerriege parpoints, set in regular courses, the masonry of the quoins, jambs, buttresses, and other dressings being in Bollington stone. The front gable is terminated by a wrought-iron finial, and the spire has a weather-vane. The roof, which has a steep pitch, is covered with slating, formed to a geometrical pattern, in three varieties of tint. The chapel is internally 65 ft. 6 in. by 36 ft. wide, and including the small gallery at the end, opposite the pulpit, will seat 460 persons. It is lighted on each side by five double lancet-headed windows, glazed with cathedral tint glass, having a coloured border. There is also a large geometrical window at the back of the gallery. Perhaps the main feature internally is the inner roof or ceiling, which is in the form of a pointed arch springing from the side walls, groined over the window heads, and intersected by bold ribs, moulded in plaster. The seats are low, with slanting backs, and are without doors. The floor has a slight longitudinal rise from the communion. The school building is of two stories, and comprises on the ground-floor an infants' room, three or four class-rooms, and a minister's vestry, the upper story being in one large room, 57 ft. long, 25 ft. wide, and 25 ft. high, with an open-timbered roof. It is lighted on three sides, and will accommodate upwards of 400 scholars. The whole premises are heated by steam. The style is Early Decorated, according to the designs and

superintendence of Mr. Williamson, architect, Manchester. The contracts have been undertaken by local tradesmen in separate portions,—viz., masonry, Mr. Thomas Allman; wood-work, Mr. S. Handford; plumbing, &c., Mr. W. Halliwell; plastering, Mr. John Mellor. The total cost, exclusive of land, will be about 2,800*l.*

PROVINCIAL NEWS.

Worcester.—New premises have been opened by Messrs. Badger, ironmongers, at the corner of the Foregate and St. Nicholas streets. The building was constructed from the designs of Mr. Johnson, of this city, architect; but owing to legal difficulties the original plans were not adopted, and instead of its being four stories it is reduced to three. The building consists of a shop, show-rooms, store-rooms, and all necessary offices required in the trade. The shop-front contains the largest panes of plate-glass in the city, each containing 100 superficial feet. The exterior of the building has been ornamented, the sash-panels to the arched windows being filled with wood carvings. The interior is lighted at night by sun-lights on a new principle. The wood-work was executed by Messrs. Hemming, the brickwork by Mr. Beard, the stonework by Mr. Hiron, the plumbing and glazing by Mr. Tomlinson, and the carving by Mr. Forsyth. The Messrs. Badger gave a supper to the workmen who had been engaged in the erection of the premises, as well as to their own workpeople and a number of friends, to commemorate the completion of the house and to inaugurate the opening of the new shop. About 100 sat down to supper at the Holly Bush Inn.

Miscellaneous.

THE COSTERMONGERS.—Mr. Gathorne Hardy has brought in his Bill to modify the operation of the Streets Act so far as the costermongers are concerned, and it has been read a second time.

A PEOPLE'S PARK FOR LUTON.—At a large public meeting of the inhabitants, the offer made by Mr. J. S. Crawley to the Moor Committee, of forty-three acres of land on the old Bedford-road portion of the moor, containing about eleven acres, and a sum of 2,400*l.*, has been accepted. He will also give up the tithe on the land, amounting to more than 9*l.* per annum, and present the committee with 50*l.* to help them to fence the park, on condition of its being laid out by some competent person.

Mrs. Gladstone's Convalescent Home.—An influential meeting has been held in the London Tavern, to promote the object in view in the establishment of a convalescent home at Snarebrook. Mr. and Mrs. Gladstone were present on the platform, as also the Bishops of Chester and Rochester, Lords Cranbourne and Hay, Mr. Hepworth Dixon, and many others. Appropriate resolutions were unanimously passed, the enlargement of the Home being the chief object in view. Committees are to be formed, and subscription lists opened for the purpose. The object is an excellent one, such as we have long advocated, and we hope that abundant means will shortly be forthcoming to ensure the desired enlargement.

OUR SCIENCE AND ART COLLECTIONS.—In the House of Commons, Mr. Layard asked the Chancellor of the Exchequer whether it is his intention to propose any measure for the better administration of the British Museum and other institutions in the United Kingdom connected with science and art. In reply, the Chancellor of the Exchequer said he was not prepared to bring forward so extensive a measure as that suggested, but he was engaged with a more limited measure, which, if accepted, will effect such a separation of collections as he promised to give his attention to last session. Mr. Layard also asked whether the sum of 15,000*l.* voted by Parliament for purchases of objects in the Paris Exhibition, in consequence of a report of the select committee appointed last session, has been expended? and if not, why not? In reply to which Lord R. Montagu said, that it was the opinion of the House that we should only expend for this purpose the sum saved out of the fund; and as that did not exceed 4,775*l.*, no more could be expended.

ALL SAINTS CHURCH, YORK-STREET, LAMBETH. This church has been re-opened. From being one of the gloomiest churches of all London, it is now one of the brightest. Colouring has been used, and the seats have been thrown open.

WALKING ON WATER.—At Holyhead nearly the entire population turned out the other day to witness a gentleman walking on the water in the harbour in large shoes, like snow shoes. He did not at any time sink below the knees and went along at his ease, smoking a pipe. Between forty and fifty years ago, a person traversed the harbour of Leith in a somewhat similar way, only in that case the "shoes" were air-tight tins, three of which were affixed to the three feet of a tripod, on which the water-traverser rode. He had paddles attached to his feet, by which he rapidly propelled himself.

DESECRATION OF A CHURCHYARD.—At the Arches Court judgment has been given in the case *Adam v. Coulthurst*. The promoter is one of the magistrates of Somerset, and the defendant churchwarden of Chew Magna, who had caused soil and human bones to be removed to improve a pathway to the church, and had placed them in a field. Mr. Adam instituted proceedings before Dr. Lushington, and the defendant was ordered to replace the soil and bones and to pay 100*l.* costs. He alleged that he could do neither—that he was a bankrupt, and that the field was in the possession of trustees under a marriage settlement of his daughter. The present application was a commitment for contempt. Sir Robert Phillimore gave judgment, and dwelt on the sanctity of a churchyard. A serious offence had been committed, and he pronounced the defendant in contempt. He would withhold the proceedings for six days, in the hope that the bones would be restored, otherwise the order would go to the Court of Chancery for contempt.

THE INITIALS F.S.A.—The secretary of the Society of Antiquaries, Mr. C. Knight Watson, wrote thus to Mr. Le Neve Foster, the secretary of the Society of Arts:—"Would you have the kindness to call the attention of your governing body to the following resolution, passed at the last meeting of our council, Earl Stanhope, president, in the chair:—"It having been represented to the council that several members of the Society for the Encouragement of Arts and Manufactures, &c., have appended to their names the initials F.S.A., and thus led to a confusion between the 'members' of that society and the 'fellows' of this, the secretary was instructed to call upon Mr. Le Neve Foster, secretary to the aforesaid society, and invite his attention to the inconvenience of this practice.' Hoping some measures may be taken by your council to deter your members from adopting initials to which they have no title, I am, &c." Mr. Foster has accordingly informed members of the Society of Arts that, "neither by the charter, by the bye-laws, nor by custom, is there any authority for their placing the letters 'F.S.A.' after their names."

COOKHAM BRIDGE.—A new iron bridge over the Thames has been recently opened for traffic, at reduced tolls. The tender accepted for the work was that of Messrs. Pease, Hutchinson, & Co., of Darlington, and London, whose estimate was 2,520*l.*; and premiums were awarded for the two next best designs, those of Messrs. Peto & Co., and Mr. John Pinchbeck, of London. The length of the new bridge over all is 335 ft., and its length between abutments, 300 ft. The clear width of the roadway is 20 ft., and the height of the bridge at the centre, from the bed of the river to the top of the handrail, is 30 ft. The superstructure consists of a wrought-iron continuous girder supported at intervals of 40 ft. upon piers formed of iron piles. Ornamental cast-iron brackets are introduced at the angles formed by the piers and girders. The platform is of Memel planking, 3 in. thick, and is covered with a thick coating of asphalt before the metal-laying was put on. The abutments are of red brick, with ashlar caps and string courses. The contractors are large iron manufacturers as well as bridge builders. The solidity and strength of the new bridge was lately tested when immense vans containing Mander's menagerie passed over it. There were three of them upon it at one time, the first of which weighed about 14 tons, exclusive of its nine draught horses. The work was carried out under the superintendence of Mr. W. G. Fosswick. The bridge was erected under the inspectorship of Mr. William Atkinson, of Westminster, C.E., who acted as the representative of the Cookham-bridge Company.

CAMBRIDGE ARCHITECTURAL SOCIETY.—On Thursday evening last, Mr. William M. Fawcett gave some account of a tour in Belgium, which he illustrated with several photographs.

PASSENGERS AND GUARDS.—It is said that Government is about to impose an order upon the railway companies for the adoption of a uniform system of intercommunication between railway passengers and guards, and between guards and drivers. The Duke of Richmond, President of the Board of Trade, has met the engineers (telegraphic and general), and the managers of the principal railway companies, for a conference on the subject.

NEW NATIONAL SCHOOLS AT BULWELL.—These schools have been inaugurated. The building, together with the master's house, is of Bulwell stone. Mr. R. C. Sutton, of Nottingham, was the architect; and Messrs. Dennett, of Nottingham, were the builders. The cost was about 2,000l. There is a boys' school, 80 ft. by 24 ft., and girls' school, 70 ft. by 20 ft., separated by a movable partition. The building is surmounted by a bell turret. There are separate playgrounds, on a large scale, for the boys and girls, adjoining the schools.

SOUTH LONDON WORKING MEN'S COLLEGE.—This college is intended to offer to working men in South London an education of a high character, by means of classes in languages, mathematics, and physical science, together with lectures on history, politics, moral and social science, &c. There will be also, in connexion with the college, a night school (for men only), a day school for boys and girls, and afternoon classes for women. The college is to consist of six classes of members. The college is expected to open immediately after Christmas. Particulars of the classes, school, &c., may be had from the Hon. Secretary, Mr. William Rossiter, Tottenham, N.

NEW THEATRE IN LAMPHAM PLACE.—It appears that we are likely to have a comic opera in London, Mr. German Reed having taken St. George's Hall, Lampham-place, for the purpose. The project could not be in better hands. The hall is undergoing the necessary alterations, in the construction of private boxes, and the enlargement of the stage for the production of opera and extravaganza. An undertaking like this interests all classes; and it has been intimated to us that the prices of admission will be within the range of the poorest amateur. A new operatic extravaganza will be immediately announced, from the pen of Mr. F. C. Burnand, and Mr. A. S. Sullivan, a rising composer. The Gallery of Illustration will be unaffected by Mr. German Reed's connexion with the St. George's Opera House.

IMPROVEMENT IN THE SANITARY CONDITION OF LIVERPOOL.—At a meeting of the Liverpool Health Committee, the chairman stated that the mortality during the past year, as compared with the two previous years, showed a satisfactory decrease; and in comparing the years 1866-7 with 1865-6, there was a saving of between 4,000 and 5,000 lives, the death-rate having decreased from 36 in the 1,000 to 29·4 in the 1,000. During the year the corporation had expended 10,000l. in connecting the drainage of poor property with the main drains, 1,800l. in opening courts, and upwards of 45,000l. in the improvement of poor dilapidated property. In reference to the sub-letting of houses, the medical officer of health said that there were 1,867 houses registered under the Act of Parliament, which he considered was one of the most salutary that could be formed.

BUSTING OF A RESERVOIR AT PRESTON.—A very alarming accident has happened on the premises of Messrs. McGuffog, cotton manufacturers, Preston. The establishment of the firm named has at the rear of it two lodges or reservoirs for warm water. One of the lodges is a new one, and about six weeks ago, when it was being filled, it burst through the breaking of an iron pipe. Since then the contractor has repaired the breach, and steps were again taken for filling it. The lodge is about 57 ft. long, 37 ft. broad, and 7 ft. deep. When the water had got about a foot from the top, the northern wall of the lodge, which is about 14 ft. high, 5 ft. 6 in. broad at the foundation, and 3 ft. at the top, gave way in the centre; an aperture about 18 ft. wide, and reaching from the bottom to the top of the wall, was made, and through it all the water rushed with great impetuosity, deluging houses and streets in the vicinity. There were no buttresses to the wall which gave way.

SUPPER TO A FOREMAN.—On the evening of the 20th inst. a complimentary supper was given by the farmers and tradesmen of the village of Stratton Audley, at the Plough Inn, to Mr. Copping, foreman to Mr. Simpson, who has recently completed Cotmore House for Mr. W. W. M. Deever, as a mark of the good opinion he has won in connexion with the building of this mansion.

LIBRARY FOR EDINBURGH.—A meeting for the establishment of a free public library in this city has been held in the New Assembly Hall, the Lord President in the chair, supported by Lords Neaves and Ardmillan, and other gentlemen on the platform. Various resolutions in favour of the object were passed by acclamation, and a subscription list is to be opened at the banks and public places, the proceeds to be devoted to the purchase of a free public library building to be handed over to the town council. Bailie Skinner was appointed to act as honorary secretary.

POLLUTION OF RIVERS.—The Pollution of Rivers Commissioners, Mr. Robert Rawlinson, C.B., Mr. John Thornhill Harrison, C.B., and Professor J. T. Way, with their secretary, Mr. S. J. Smith, have paid a visit to Bolton, for the purpose of inspecting the Crol and its tributaries, comprising the river Tong, the Bradshaw Brook, and the Middle Brook, and their tributaries (which are numerous), and the water-shed to which streams embraces an area of about 50 square miles. Mr. Rawlinson explained to the mayor and other local authorities, that his colleagues and himself had come to make proper preparations for the official inquiry to be hereafter held. The commissioners were entertained to luncheon by the mayor.

NEW CONCERT HALL AT BRIGHTON.—A new hall for concerts, &c., is about to be opened at Brighton. It has been built by Mr. William Childs. The concert-hall will be approached by four entrances,—two in West-street and two in Middle-street,—8 ft. each in width. At the former will be a stone staircase leading to a gallery, 35 ft. in width, capable of seating 300 persons. The front of the building is intended for dining-rooms and other purposes. In Middle-street rooms will be set apart for cloak-rooms, &c. The hall itself is 200 ft. in length, 46 ft. 6 in. wide, and 51 ft. 9 in. in height. The design of Mr. Childs, and the builders under his direction, has been to make the building fire-proof. There are also many means of convenient egress. The architect is a townsman, Mr. Horatio N. Gouly. The floor is composed of rolled iron joists, filled in with 6 in. of concrete, the flooring being laid upon the top thereon, and able to support 3 cwt. of every square foot of surface. The construction has been supervised by the Town Council authorities, and the requirements of the Local Act are adhered to.

SANITARY STATE OF NOTTINGHAM.—The annual report of the local sanitary committee is more satisfactory than usual, and the tables are more comprehensive. The death-rate now is 19 per 1,000, and has been gradually reduced in consequence of the formation of new and wide streets in the old and densely populated part of the town; the new sewerage system, which has been very extensive and not yet complete; the extermination as far as possible of cesspools; the regular disinfection and removal of all refuse and decomposable matter; the ventilation of the sewers; and, above all, the regular, systematic, and complete washing and scouring of the courts and alleys from the water mains, aided lately by a steam fire-engine. During the past eight years the expenditure of the corporation on new streets, sewerage, subways, opening out courts and alleys, sanitary work generally, paving with granite, and flagging with Yorkshire flags, and in new buildings, houses, and other works of construction appertaining to sanitary and municipal welfare, has been about a quarter of a million; while the total borrowed money is only about 140,000l. The rates for the works referred to, i.e., those imposed under the Public Health and Sanitary Acts, are after all no more than 1s. 6d. in the pound. The rateable value of the town proper is about 170,000l.; the population of the town proper, 85,000l.; and the population of the true urban area, which is, in fact, Nottingham, is about 130,000. The report contains meteorological and rainfall tables by the able surveyor to the corporation, Mr. Tarbotton, C.E. Mr. Richard Townley is the sanitary inspector of the borough.

WORKING MEN'S COLLEGE.—We understand that it is determined to proceed at once with the meeting-hall, museum, and studios at the Working Men's College. The committee have 1,200l. subscribed, and are endeavouring to raise another thousand. A design for the new buildings has been furnished by Mr. Webb.

LABOURERS' DWELLINGS IN LIVERPOOL.—The seventy designs submitted in response to advertisements offering premiums of 100l. and 200l. for the best plans of labourers' dwellings, are to be exhibited publicly from the 28th inst. to December 12, in the Exhibition-rooms, Post-Office-place, between the hours of three o'clock and nine p.m.

THE LAKE IN REGENT'S PARK.—Mr. T. Chambers asked the First Commissioner of Works the nature of the alteration proposed to be made in the ornamental water in the Regent's Park. Lord J. Manners said it was proposed to drain off the water, and level the bottom of the lake to a uniform depth, so as to avert any such calamity as occurred last winter.

TOWN-HALL FOR EAST GRINSTEAD.—At a meeting in the Public Room, at East Grinstead, it has been resolved to erect a town-hall. There was a good attendance. The sum required has been estimated at 1,500l., and it is proposed to raise the money by shares of 14. or 2l. each. There is a difference of opinion, however, as to whether one floor be enough, and two floors it is calculated would cost 2,000l. The chairman of the meeting, Mr. C. Cheval Tooke, spoke in favour of two floors. It would be unwise to build less.

THE LINCOLN ART TREASURES EXHIBITION.—The number of visitors to this interesting collection of pictures, objects of art, geological and other specimens, has been very considerable since it was opened, but not to the extent that could have been desired. The committee have been working during the last twelve months to bring together this collection, their object being that skilled artisans and tradesmen's assistants should have an opportunity of enjoying for a time such an exhibition the equal of which could only be seen by a visit to London. Each evening instrumental music has been provided.

CO-OPERATING AND COMMINGLING.—The employees, on opening the extensive retail grocery department of the Bacon Co-operative stores one morning lately, found the place piled up with broken ironmongery, earthenware, bacon, broken timber, a large quantity of bags of flour in all directions, parcels of groceries mingled in confusion with heavy wringing-machines and such like articles. It appears that during the night the store-room, which is above the grocery and general shop, had fallen in, in consequence of the great quantity of goods stored in it. The building was erected in 1862. The damage will be considerable.

INDUSTRIAL EDUCATION OF FOREIGN AND ENGLISH WORKMEN.—An excellent speech on this subject by Mr. Samuel Smiles has been printed. It was delivered at the Huddersfield Mechanics' Institute in October last. Mr. Smiles thinks, with others, "it is every year becoming more clear that it is not only in the school of practice, but also in the school of science, that the advanced workman must be trained." He dwells upon the sad inferiority of our workmen in general and technical education by contrast with foreign workmen. "While the working class organizations of this country," he remarks, "are exacting regulations for the limitation of skill, so that the standard of work shall be not that of the best but of the most ordinary workman, the foreigners are stimulating the skill of their workmen, rewarding those who excel in it, and in all ways actively promoting the industrial education of their people." These are, indeed, serious facts, which can no longer be ignored.

TENDERS

For the erection of six houses at Lower Norwood, for Mr. George Nightingale. Mr. Albert Bridgman, architect.—

Cumming (accepted) £1,400 0 0

For the erection of a house at Notting-hill, for Messrs. Lawrence & Venning. Mr. Albert Bridgman, architect.—

Millard £330 0 0

Cumming (accepted) 325 0 0

For house at Sydenham-hill. Mr. George Truefit, architect.—

Stimpson (accepted) £4,000 0 0

The Builder.

VOL. XXV.—No. 1296.

The Ninth Crusade.—Recovery of the Site of the Temple.



AMONG the wonders of the nineteenth century the future historian will remark the re-appearance on the scene of active life of names long since consigned to silence, if not to oblivion. A military emperor,—not a long-descended sovereign bearing that august name, but a soldier who arrived at supreme command from the rank of asubaltern,—has again overawed the Government of Rome by legions raised in Gaul. A second of the name, if not of the blood, of the Corsican Emperor has restored in Western Europe

the personal mode of rule of the Cæsars, and has claimed the inviolability attributed to the perpetual Dictators of the Augustan series, on the ground that they were Tribunes of the People. Eleven centuries after the death of Desiderio, the last Lombard king, the title which the Gothic and the Lombard chieftains bore has been assumed by a Savoyard prince, who (if we disregard mere titular sovereigns who played a brief part during the decadence of the Carlovingian monarchy), is the thirty-third king of Italy. In the presence of a Gaulish emperor, and of a northern-bred king of Italy, it seems not incongruous to speak of the origin of a ninth crusade.

Whatever changes the past eight centuries may have witnessed in European society, it is clear that one of the most remarkable phenomena of social life, namely, the liability to sudden and violent gregarious impulse, in the form of a panic or a mania, has been of repeated occurrence during the whole of that lengthened period. The currents of human thought have changed their direction no less than the aspect of the great centres of European life has altered, since the date of the consecration of Westminster; but no modern instance of violent contagious impulse has exceeded, if any has equalled, the force of that which, during the last years of the eleventh century, and on several succeeding occasions, buried the chivalry and the piety of Europe against the walls of Jerusalem. Fantastic as they may appear, to our colder reflection, the confidence that all crimes were secure of pardon at the price of so much infidel bloodshed, there can be no question of the deep and fervid religious feeling that prompted and fed those crusading expeditions the indirect results of which have had so much influence on the national life of the Europe of the Middle Ages.

To speak of a crusade in the nineteenth cen-

tury may, at first, provoke the smile which greets an anachronism. But it is a positive fact, however incredible it may appear to many, that during the time of trepidation and of change that marked the last few months of the reign at Naples of Francis II., when the regulations fettering the press were relaxed, and when the revolution was making headway in Sicily, fly-sheets were issued and sold at the price of a Neapolitan farthing, calling on the youth of Naples to rally for an actual crusade for the recovery of the Holy City from the Turks. It is more than probable that this ill-timed exhortation was intended as a forlorn hope to divert into a channel harmless to church and state the hot blood that was beginning to seethe in Southern Italy. The defence of one holy city from revolution, by occupying in another direction the ideas of those who were disposed to rise, or, at least, to shout, for some cause or for some cry, was probably much more present to the minds of the authors of those crude and absurd appeals, than was the rescue of another and a more ancient city, begirt with a far loftier sanctity, from the disciples of Islam. However that may be, so it was that in Southern Italy, in the full blaze of the nineteenth century, an attempt was made, simply and literally, to revive the teaching of Peter the Hermit, and the cry of *Dieu le veut*. Certainly there is a school to which Time fails to impart wisdom.

While such warlike outbursts as the South of Europe witnessed in 1860, and again in 1867, have been directed to the secularising of Rome instead of the Christianising of Jerusalem, there has been in our own land, and among a class of persons not ordinarily swayed by ignorant impulses, quietly organised, and not only organised, but commenced, an actual crusade. Nay more, the success of the crusaders of 1866 has hitherto been as marked as their enterprise has, in its commencement, been unpretending. If we can hardly say with propriety that our late guest, the Caliph, has struck his flag to them, his Highness has, at all events, ceased to oppose their progress. By sap and mine they have attacked the very walls of Jerusalem, and the siege is so well and skillfully ordered that, if the column of attack be only duly supported, there is military reason to count upon complete victory. Over the hosts that have hitherto kept such invaders at a distance a signal advantage has been recently maintained. The howling dervishes, who were wont to excite the fury of the mob if a Frank dared to profane the Sacred Precincts, have been silenced. The natives appear to have lost their hostility to the strangers who came to dig for the buried treasures which alone would instigate, it was thought, their activity. The very Governor of the beleaguered spot, the Pasha of Jerusalem himself, has been awed or persuaded into non-resistance. Her Britannic Majesty's Government has contributed an auxiliary force of the ablest and most distinguished corps in the Queen's service, and an officer of the Royal Engineers is in command of the attack. And from time to time the public is made aware, through the press, of the proceedings of the sap of Jerusalem.

The results already obtained are of no light importance. The final result of this most liberal and enlightened crusade can hardly fail to be the rolling back of that dense cloud of oblivion and of ignorance that yet shrouds the storied localities of the most famous spot on earth. Besides that general interest which appeals to many educated men,—to most children who have attended to the instruction of a Sunday school,—to all women who ever listen to a verse of the Gospel,—a special and peculiar interest exists for several distinct classes of thoughtful readers and leisurely investigators of history. The archaeologist has a field of unrivalled fertility opened to his research by a labour that lays bare the long-buried remains of so many massive re-

constructions of the structures and defences of the Holy City. The architect has vexed questions to solve of the traces left by his predecessors in the times of Constantine and of Hadrian; by the magnificent builder king, Herod; by his more renowned, if not more marvellous, predecessor, the first builder on the spot yet held sacred under the name of the Haram. Further back than the reign of King Solomon, more than 4,000 years before the date at which we write, we have the earliest historic mention of the "City of Peace," and indications may be traced here and there that the enormous bulk of the stones prepared by Solomon, and yet to be found *in situ* and in quarry, was the consequence of the resolution of the wise king that his structure should not be dwarfed by comparison with the fresh remains of the earlier builders, the giants, whose name yet lingered in his times in the valley of Bephaim.

To the engineer many questions of extreme interest are presented by the system of water supply of ancient Jerusalem; the tanks, wells, and conduits; the course of the brooks; and the aid rendered to, or the constraint enforced upon nature, in that series of pools, culverts, and subterranean arching of which so much remains in high preservation. We will not speak of the ecclesiastic; but the primate of the English Church encourages by his authority and example not only his own clergy, but those of other communions and denominations, to aid by voice and hand, not forgetting the *obolus*, in the illumination of the cradle of Christianity. Nor is it possible to foresee with accuracy the great advance, in the true comprehension of both the Greek and the Hebrew Scriptures, to which the removal of the topography of Jerusalem, from the dominion of doubt and dispute to that of accurate survey, may give rise.

We have seen the recovery of two cities of Campania from beneath the accumulated lava and ashes of Vesuvius, which not only overthrew, but to a wonderful extent preserved them; and we have thus acquired a familiar acquaintance with much of the Latin life of the Imperial times which we could never have derived from literary sources alone, copious as they are. We have heard, some years since, of a proposal to divert the course of the Tiber, in order to search its bed, paved as it is with fractured marble, for relics of art which must have been so freely committed to its tide during the successive assaults on Rome, and its capture by Goths, by Vandals, and by Christians. But it is only very recently that we have become aware how much there is of ancient Jerusalem in buried, but actual, existence, needing only the quiet maintenance of works that are now really being carried on, to bring it to light. The survey and disinterment of Jerusalem will do as much for the student of the Old or of the New Testament as the excavation of Pompeii and of Herculaneum has done for the classical scholar.

Very much has already been placed within the reach of the English student by the researches of the Palestine Exploration Fund. Much of Palestine has been accurately mapped and levelled. A plan of Jerusalem itself, on a large scale, has not only been completed, but contour lines are drawn upon the map. The numerous and excellent photographs that are published with the two above-named maps are calculated to answer many a curious and important question, and to transport the imagination to the sacred scene. The men of the present time look like dwarf scales by which to measure the thickness of the enormous courses of the ancient wall. So much has been already done that no lover of the subject can rest content until the buried city gives up her yet hidden stores of information. The researches actually in progress show that the rude demolition of Titus was to some extent, like the lava and pumice of Vesuvius when poured over the

doomed cities at its base, preserved in a violently-made grave very much of the architecture of the past that would otherwise have gradually, but certainly, mouldered beneath the touch of Time. We have not space at this moment to enter minutely into the subject of the course and aim of the excavations, but we will refer to a single instance of the manner in which the enterprise of the present explorers bids fair to throw light on the history of the most famous spot on earth.

There exists in Jerusalem a spot held sacred both by Jew and by Moslem, and venerable to both Latin and Greek. An oblong area, of some 1,800 ft. by 900 ft., surrounded by a massive wall, and within the nearly bare plane which surmounts it, is adorned by famous mosques, and covered with earth, which the piety of a former caliph purified from infidel defilement by the expenditure, it is said, of seventy-five camel-loads of rose-water. Here stands the mosque of Omar, one of the most famous sanctuaries on earth; here stood the yet more venerable sanctuaries raised by Herod, by Zorobabel, and by Solomon. Vast galleries and lofty piers beneath the present surface show how, in accordance with the description of Josephus, the level of the highest part of the mountain was carried on towards the south and east by colossal masonry, the original work and design of Solomon having been augmented by later additions, most especially by those of the magnificent Herod, shortly in their Christian era. The southern wall before the Christian era. The southern wall of this terraced mountain reached a sheer height of 150 ft.

Now it is upon this sacred spot Mr. Ferguson supposes that the Church of the Holy Sepulchre was built by the Emperor Constantine. Tradition, on the other hand, in which there seems no room or opportunity for any break to have occurred, sends the Latin and Greek pilgrims to pay their devotions in a building situated in an entirely different part of the city, and long known by that name. The subject has been previously discussed in our pages. The thorough investigation of the whole structure of the Haram wall, when complete, enable a competent judge to distinguish with certitude the masonry of Moslem, of Crusader, and of Roman, from that of Assyrian times, and to trace beneath all the mighty relics of the work of Solomon. It will then be no longer matter of doubt whether it was possible for the scene of the entombment to have been so near the site of the Holy of Holies; nor can we fail to expect that the position of that sanctuary itself, of the Tower of Antonia, of the subterranean passage connecting the latter with the Temple, and of the four gates leading from the Temple inclosure to Zion, and to the lower city, will all be distinctly recovered and determined by excavation. For the Crucifixion to have taken place within the limits of Herodian masonry, is of course impossible.

There is one point connected with the exploration of Palestine to which, so far as we are aware, attention has not as yet been directed. The chief records which we are now slowly learning to decipher in Egypt are sepulchral. Temples and palaces exist in that unchanging climate, as they have done in the Mesopotamian cities, rich in sculptured records of their builders, engraved in pictorial representations and in long inscriptions on marble slabs that lined the stately apartments. But our chief knowledge of Egyptian history and manners has been derived from the tombs, from the sepulchral rites, from the Book of the Dead, and from the papyri enclosed in the mummy cases. In Palestine this source of information, if it exist, is as yet untouched. We are, indeed, aware of a remarkable series of sepulchres, called the tombs of the kings, which can in no way be plausibly connected either with the Assyrian dynasty of Princes of Jerusalem or with that of the House of David, and which, therefore, if the title be appropriate, must have belonged to the ancestors of the Jebusite Arahah, who "did as a king give unto the king" whose sword had won the city of Zion, the site of the opposite hill Moriah, or to the kindred of that earlier "King of Peace" whom Jewish tradition identifies with the patriarch Shem. We have no record of any violation or spoliation of royal sepulchres either by Nebuchadnezzar or by Titus. In the latter case, from the full account which we possess of the siege, we are justified in assuming that no such event occurred. In the former instance it is no less unlikely, as the entrance of Herod into the outer part of the sepulchre of David and Solomon is mentioned by Josephus (Ant. xvi.

7.1). There is, then, a fair probability of the existence, not under the Haram but in Zion, of the undisturbed sepulchral vaults of David, and of many of his successors, in which copies of the Sacred Books and other contemporary records of the utmost interest may yet await the search of those who may be undeterred by the awe that fell on Herod himself, or by the mysterious buffet that is said even now to greet any who venture to enter the last dwelling-place of David's progenitor, the patriarch Isaac.

We have spoken of the claims which the supporters of the Palestine Exploration Fund have upon special groups of scientific or professional men. These claims are not alone for admiration and for praise, but for that free contribution of money without which the task of the actual labourers in Palestine is indeed ungrateful. A good and generous example has been set by the President of the Royal Institution of British Architects, who has not only written to give the weight of his personal and official support to the enterprise, but has added to his letter the no less practical document of a cheque for a hundred pounds. To the tens of thousands of persons able to aid in the work, and who will not be unwilling to do so when addressed on the score, if not of religious principle, at least of religious sentiment, it is not our special function to appeal. There is another, and a very extensive class, each of whom will so well understand our meaning, that it is unnecessary to be more explicit in their description, which we may well and unhesitatingly address. Bound together by the common tie of a brotherhood in works of charity and of mercy, they can turn no deaf ear to a call for aid in a work of illumination. The recovery, in the quarried interior of Mount Moriah, of the yet unobliterated masons' marks of Solomon and of Hiram; the determination of the exact dimension of the sacred cubit; of the measurement, in English feet and inches, of the porch and the altar, and the symbolic brazen columns; the illustration of a site and of a structure second only in its venerable antiquity to that of the earlier wooden symbol of a universal church: these are objects which can never be abandoned for want of pecuniary support, if they are clearly set before the attention of those who would think any sacrifice small if it led to the recovery of a "lost word" hidden beneath the secular foundations of the Temple. We do good service to good men in calling all within reach of our appeal to aid, by voice, and hand, and purse, in the crusade of the nineteenth century.

THE ARCHÆOLOGIST'S HANDBOOK.

THE popular notion makes an antiquary a grey-headed old gentleman, "with spectacles on nose and pouch on side," like Mr. Oldbuck of Monkbarrow, one who has generally mounted more than half the rounds of the ladder of life. Perhaps the reason is that the information, the possession of which constitutes the antiquary or archæologist, is spread over so vast an area, and is therefore so difficult of attainment, that it is not usually attributed to any till years have given them leisure and inclination for its pursuit. A very useful volume has been compiled by Mr. Henry Godwin (of Newbury), for the purpose of placing a large quantity of this information, in a condensed form, in the hands of the students of archæology. No one need wait, now, till he can attack the Record Office and the British Museum, or ponderous county histories, or visit our exhumed cities, to commence the fascinating study of archæology. Beginning with pre-historic times, this new guide steps through the centuries claimed by the Ancient Britons, Romans, Saxons, Normans, and English of the Middle Ages, placing upon his page as he goes strings of the most prominent facts appertaining to each. These facts are for the most part such as it is indispensable to be familiar with, generally, before selecting any particular branch which choice, or facilities, may render an inquirer anxious to pursue further. "The experience of some years of irksome and humiliating though unavoidable ignorance," as a silent but not unobservant Fellow of the Society of Antiquaries, has guided him, he modestly says, in the selection of the information that is most requisite. This, as any

one knows who has taken a single step in search of it, has to be sought in tomes of price and weight, and, more frequently still, in public documents only to be viewed by journeys to the place where they are kept; and as often in local museums, private collections, or by means of examination of buildings and objects in different parts of the country. In the handbook before us we have the pith of many volumes, the results of many journeyings, the proceeds of much observation. Besides a chronological account of our antiquities, the author gives us a number of lists and tables that will save even the accomplished archæologist much more tiresome references, such as a list of the Roman emperors, and consuls, of the Roman governors in Britain, of the British princes subsequent to Roman domination in England, of the kings prior to the Heptarchy, of the kings of the Heptarchy, and a table of the establishments of bishoprics in that age. Coming down the stream of time, he gives chronological tables and alphabetical lists of most of the events and objects which it is necessary for the archæologist to have within immediate reference, if not indelibly engraved on his own memory, such as the geographical divisions of the country under the Romans, Saxons, and Normans successively; Danish antiquities; tables of the births, marriages, and burials of the sovereigns of England, in the Norman and Mediæval period, their badges and supporters, the architectural works executed in their reign, and so on. Then, again, he gives a list of mitted abbeyes, of monasteries, and of religious orders; an alphabetical list and history of English castles, of royal licences to crenellate; a chronological table of armour and arms from the eleventh to the seventeenth century; a list of the places appointed for holding tournaments; and a quantity of miscellaneous information as to brasses, bells, ecclesiastical symbols, representation of saints and their emblems, tombs, seals, and other objects of antiquarian interest. As we have said before, this is a very useful collection, condensation, and classification of facts hitherto scattered over a large area, in costly forms, and often in inaccessible places.

Without wishing to be thought as difficult to please as the clergyman who was not satisfied because there was one vacant seat in his otherwise crowded church, we must regret the loss the work has sustained in the absence of a few woodcuts to make the information precise that it is impossible to convey without illustration. As in old time pictures were the books of the simple, so they will ever be the assistants of the learner. No language is graphic enough always to give precise realizations of minute and important distinctions in objects to some minds, while a few strokes of the pencil bring in a fresh faculty to aid the task and secure the performance of its aim. In descriptions of the differences in architectural mouldings and other ornamentation which mark the transitions and perfections of various periods of art, what can compensate for the absence of the representation of specimens? It seems to us that it would be as easy to describe the differences in archaic numerals, letters, and abbreviations, without examples, as to convey to students a swift, just, and discriminating appreciation of architectural distinctions without outlines of them.

A little more fulness in other respects would have improved the work without taking from its handbook character. The author suggests that it should also form a companion to the English tourist. If so, the tourist must confine himself to a line of wanderings almost exclusively south of the Humber. Except in some of the lists and tables, the great store of northern antiquities is untouched. The Archaeologia Eliana of the Society of Antiquaries of Newcastle, and the carefully-kept proceedings of the Surtees Society, would afford many additions; so that to a great extent the archæology of the north is not represented. To begin with the beginning, we observe that our author deems it inexpedient to give more than "a passing notice" of pre-historic relics and epochs. This is a matter of regret, because any one consulting the handbook would be sure to expect mention of the leading terms and views relating to each period of antiquity. Thus Sir John Lubbock's classification of the Palæolithic, Neolithic periods and ages of bronze and iron is quoted without reference to the views of some of the leading Scandinavian antiquaries of the day, who divide the stone age into two long-enduring periods. In the matter of Celtic earthworks, there is no mention of the existence of extensive remains of

* "The English Archæologist's Handbook." By Henry Godwin, F.S.A. Oxford and London: James Parker & Co. 1867.

ancient British towns upon the Northumbrian hills, nor of the wonderful lines of mounds and ditches upon the Yorkshire wolds, one of which runs along the edge of the chalk escarpment for some twenty miles, and, with a similar line running along a corresponding ridge of oolite on the north of the Derwent, doubtless served as boundary-line between the possessions of tribes; and again, in the slight reference to the bearing of ethnology upon the identification of the races of this remote period, there is a somewhat vague statement that the skulls found in very early barrows are generally of the Dolichocephalic type, unaccompanied by the information as to what kind of skull is found in the exceptional cases. Now, Mr. Greenwell's recent and long-continued explorations in the wolds have placed a great many facts at our command relating to the ethnology as well as customs of these early peoples with which every student of the subject should be acquainted. From these we may conclude that the long-headed people were the makers of the long barrows, and the round-headed people were the builders of the round barrows; that the long-headed people were the earlier of the two; and that it was the round-headed people who brought with them a knowledge of bronze. More than this, it appears likely that the long-headed people were cannibals. Barrows have been opened in which as many as eighteen remains of bodies have been counted, with all their bones broken and separated, as if for the purpose of eating the flesh upon them more conveniently. One of the skulls examined by Mr. Greenwell, found in such a collection, was broken into six or eight pieces with two blows, the marks of which were distinctly visible. This violent death, taken in connexion with the dismemberment of the bodies, leads us up pretty closely to the inference that cannibalism was a feature in pre-historic feasts. It is worthy of note, too, that in the heap of chalk and flints piled upon these bodies are found quantities of pieces of pottery and chippings of flint, as though they had been thrown in in accordance with the custom indicated in the Welsh saying, *Karn ar dy ben*, equivalent to our "I'll hold thee," but literally "A heap be upon thee."

In the Roman section of the work there is a quantity of valuable information. Among other lists that must have taken considerable research to compile, is a list of the Roman altars found in different parts of the country. It so happens that the explorations at Rochester, Brementium, executed at the cost of the late Duke of Northumberland, led to the discovery in a vault there of a fine altar, inscribed with the following dedication: "To the genius of our Emperor and of the standards of the first cohort of the Varduli, and of the detachment of pioneers of Brementium, Cornelius Equatius Lucilianus, the Imperial Legate, Proprietor, under the superintendence of Cassius Sabinianus, the Tribune, erected this altar," an example which should be included in this list in any subsequent edition. And a short time ago the *Builder*, in a notice of Dr. Bruce's work on the Roman Wall, gave an illustration of a fine altar to the unknown god Antenocivius, which may be added. In this same list, which is alphabetically arranged, we come to Rochester, Northumberland; and subsequently, after the intervention of mention of nine altars found at Rixingham, we come to Rochester in Northumberland (Bremetium), as though it was a different place, but in reality Rochester is merely the name given to Rochester by some of the old antiquaries. The superb silver lance, nearly as large as a modern taser (1 ft. 7 in. by 1 ft. 3 in.), found in one of the supporting stations south of the wall, deserves a word for its impressive suggestiveness of Roman magnificence. In the Saxon section we do not find any reference to the Saxon crosses that form so considerable a part of the scanty architectural remains of that period; on the other hand, upwards of 120 churches are mentioned that contain remnants of Saxon work. Mr. H. Godwin gives the localities of 100 Saxon cemeteries. The old Anglo-Saxon poem "Beowulf," likened by Longfellow to a piece of ancient armour, "rusty and battered, and yet strong," is quoted by our author to show the Saxon skill in goldsmiths' work. We have but to peruse more of the adventures of that Viking in his successful fight with the giant Grendel, and ultimate discomfiture of the monster's mother, ending in the release of her soul from its "bone-house," to pick up sufficient mention of Saxon folk-lore, ale-revels, beer-carouses, wine halls, bracelets, bright ornaments borne on the naked breasts of chieftains, shields, axes, swords, and other war

gear, to stock a mental museum; and it has always seemed an oversight to us that archaeologists have not made more use of the fragments we possess of Anglo-Saxon literature. We commend our author's taste in this respect. Hereafter notice may be given of the existence of the Basale houses, which were a later kind of fortified dwelling in the oft-disturbed North; of Early English bridges, of which there are several beautiful examples in this country; and wayside chapels. Among the houses of the Knights Hospitalers, we miss Chibburn, in Northumberland. This building stands about half a mile from the sea, facing Druridge Bay, surrounded by a moat. The ground plan forms a parallelogram, having a courtyard in the centre. It is mentioned in the return made of the goods of the Hospitalers in the year 1313, preserved in the register of Bishop Kellaw, at Durham, as well as in the volume accidentally discovered on the removal of some plaster-work in the house of the Knights of St. John, at Malta, which contained a survey of the possessions of the Hospitalers prepared by themselves, and which record has been printed by the Camden Society.

Our author goes systematically through the reign of every monarch from William the Conqueror, mentioning a large number of the ecclesiastical buildings executed in each of them. Of the seventy examples of Norman architecture, fifteen belong to the reign of the first William, beginning with Bury St. Edmund's Abbey; eight to William II., out of which five are the cathedrals of Lincoln (west front), Gloucester (crypt), Carlisle (north transept and pier arches), Durham (choir), and Norwich, Lindisfarne, Hurley Priory, Berks, and Christchurch Priory, Hants, making up the number; twenty-two to Henry I., amongst which are further portions of cathedrals, such as the choir of Canterbury, and the superb priories of Rievaulx, Fountains, Buildwas, and Furness; fourteen classed as Later Norman to Stephen; and eleven as Transition Norman to Henry II.,—a goodly array. The successive styles are still more numerously illustrated by mention of churches, colleges, and a few hospitals, houses, and halls. Our cathedrals are also treated alphabetically, the name of the builder or designer of its various parts being given with the date of the works. Thus, in the Cathedral of Canterbury, the works of "Lanfranco, Prior Ernulf, William of Sens, English William, Prior Henry de Estris, Prior Chillenden, Prior Goldstone, and Thomas Goldstone," are pointed out in the order in which they are said to have been executed.

Of course, in so long a list, there are little points which examination will enable him to rectify. Mr. Scott, for example, is not yet "Sir G." but this will be all right in time.

The author says of Arabic numerals that they were introduced into England about 1253, and the plate at the end of the volume gives one date in such figures as 1154! There must be some little mistake about this. We know of no date in Arabic figures in England earlier than the fifteenth century.

The author gives in a note the table of the dimensions of our cathedrals and principal churches which appeared in the columns of the *Builder*. As he regrets that he is unable to make the usual acknowledgments to the writer who took the pains to gather these together, having mislaid his reference, we may note for him that the table in question was compiled by Mr. Denison.

The number of alphabetical lists give the work somewhat of the character of a dictionary. An old lexicographer called his labours a world of words, and in the same figurative way we may call this gathering of antiquities a dictionary of archaeological objects. We have heard it made a matter of complaint sometimes that everybody who can read an archaeological work sets about writing one. Such butterfly writers will rejoice over this dictionary, where so much matter is cut and dried ready for use. They have but to fix upon their period, for our author has done everything else for them. Suppose they select that of the great war-smith, Edward I. In this book, easily held on the palm of one of their hands, they may see when the monarch was born; when he married Eleanor of Castile; when, whilst some of the crosses erected on the places where her bier rested could have been scarcely more than completed, he married Mary of France; where he was buried; the sort and shape of the armour he and his knights wore; the kind of helmet; the pattern of spur; the chain-mail caparisons of their horses; their poitrails, chanfrons, and fan-crests;

the heraldic devices on their high-pomelled saddles; the arms they bore, the form of falchion, anelace, stabbing-sword (*épée à l'estoc*), and dagger (*miséricorde*); the varieties of their pole-axes; their triangular pennons charged with heraldic devices fluttering on the points of their lances. Then they have but to turn over a few pages to see what castellated work was executed in his reign; a few more, to see how our cathedrals progressed under his auspices, and what churches were built; a few more, to see whom he favoured with licences to embattle; and others, to be reminded of the kind of tombs in which he, and his nobles too, found their long rest. The descriptions of the varieties of armour may be useful to the architect in assisting in arriving at conclusions as to dates of effigies. A summary of the changes in armour groups all that is "rustred, ringed, trelliced, tegulated, maseled," and edge-ringed, as belonging to the twelfth century; complete mail, with the exception of pieces of plate for the knees, to the thirteenth; mixed mail and plate, with a preponderance of the former, to the fourteenth; that which is all plate but the gorget and gussets, and sometimes that which is all plate, to the fifteenth; fluted armour to the sixteenth; and half-armour to the seventeenth century. For all the wearers of these varieties of armour there were but five places in which tournaments could be held for the display of their prowess, viz., between Sarum and Wilton, Warwick and Kenilworth, Stamford and Wallingford, Brakeley and Mixberg, Blie and Tickhill. A knight of the reign of Henry VI. was not fully equipped without fifteen pieces of war-gear, beginning with his sabatines, or steel clogs with long rowelled spurs, counting the greaves, cuisses, breeches of mail, tulleets, breast-plate, back-plate, vambraces, rebraces, tabard, and basinet, that gradually covered his legs, body, arms, and head, and including his naked sword hanging on his left side, and his dagger on his right, and the pennoncelle put into his ganteleted hand as a finishing-stroke. In one example given by our author, this last was "pointed with Seynt George or our ladye to blisse him with." But have we not said enough to show the attractiveness, as well as usefulness, of this collection of Medieval word-pictures?

LABOURERS' DWELLINGS COMPETITION, LIVERPOOL.

In response to the offer of 200l. premium by the Liverpool Corporation, seventy-four sets of plans have been sent in. These plans are now being exhibited to the public in the old Academy's rooms, Post Office-place, and on the whole are exceedingly well hung, both as regards light and level. This may seem, at first sight, but a trivial advantage; but those competitors who, in other competitions, have had their plans piled up in heaps behind doors, while others more favoured were hung in the line, will fully appreciate the advantage.

The whole of the plans were placed in the hands of the borough engineer for him and the town clerk and medical officers of health to report upon with respect to their accordance with the Local Building Act and Sanitary Bye-laws. We do not hear that the latter-named officers have had anything to do with the report, which has not been published; and we do not see in what way they could be expected to interpret bye-laws that are practically enforced only by the borough engineer, who is also the building surveyor. As far as we can remember, the plans must have been in the engineer's hands for about three months; and as we understand he has gone through them carefully one by one, they ought to have been pretty well turned over by this time. The Building Act seems to have been the great difficulty with most of the competitors—the rock upon which they have split; nor is this to be wondered at, for though a few of the later bye-laws with respect to width of streets and courts, distances between backs of houses, &c., were printed and supplied to the competitors, the Building Act, of which it is impossible to obtain a copy now, being out of print, was a sealed book, a Liverpool Talmud, to most of the competitors. We are informed by the local papers that many of the best plans have been thrown out through their want of conformity to the Building Act. It really would seem to be a right question whether the mere deficiency of thickness in a wall, or depth, or distance apart of joists, a clerical error that could be remedied,

should be visited so heavily upon those who have given time, trouble, and expense to the solution of an interesting problem, without even the solitary satisfaction of knowing in what they are defective. The Liverpool Building Act may be termed pre-Adamite, and its inconsistencies and anomalies can, we are sure, be only fully appreciated by those professional gentlemen who practise in Liverpool, and have constantly to conform to it, and so in many cases weaken their constructions by adopting the antediluvian notions of the half-educated inventors of the code. But, enough of this at present; we may have to return to it.

In consequence of the special study and knowledge this said Building Act requires, it is not surprising that most of the plans selected as being in conformity with it, are by local architects well known to have gained sad experience from the submissal of plans for cottage property. In fact, taking the terms of the competition not as given in the instructions, but as exhibited by the interpretation put upon them by the authorities, the restrictions and the limitations enforced, and generally the putting every difficulty in the way of obtaining a good plan, it would almost seem that the friends of the jerry builders who are in the council, have had the ordering of everything. Indeed, this must be true; for the engineer's own plans were overthrown in consequence of their not being able to withstand this crucial test—this trial by fire.

Three plans, we are informed, have been selected by the sub-committee for the investigation of the council, and the final selection of the favoured one for premium. They are as follows—No. 52, marked with three triangles; No. 38 b, "*Pro Bono Publico*," and No. 59, by W. & R. Duckworth. We shall confine ourselves this week to an account of these three only.

Before entering into a description of any of the plans, it will be necessary for their elucidation to give our readers an idea of the site and the conditions of the competition.

The site selected by the council as the most favourable for the experiment they are about to try is situated in one of the lowest districts of the town between two streets named respectively Ashfield and Sylvester street. The former is 10 yards wide, and the latter 20 yards wide. Ashfield street being only 10 yards wide, but constructed before the bye-law regulating the height of the buildings by the width of the street came into operation, the competitors were informed that the bye-law did not apply to this case, and the buildings facing that street might be carried up the full height allowed by the Building Act, viz. 65 ft. to the eaves or cornice. Now herein lurks the fallacy that runs through the whole of the proceedings, the letter of the bye-laws seeming to possess some cabalistic charm to the official mind. Either the bye-law referred to is of use, or it is not. If it is not of use, the sooner the restriction is repealed the better; if it is of use, the council should have insisted upon the spirit of it being observed when the opportunity was in their own hands; for, if there was no legal obligation, surely a moral one existed.

The frontages to Ashfield street and Sylvester street are respectively 248 ft. the sides of the parallelogram being formed by adjoining properties east and west, and being each 119 ft. The land inclines to the west and to the north—a fact that is taken little notice of in most of the sections.

The competitors are told that the premium will be given to the design that provides the largest number of convenient healthy dwellings at the smallest cost, and that if the tender for the selected design exceeds the estimate by 5 per cent., the council has the power of withholding the premium. We hope this latter part will be carried out, for there are some flagrant violations of truth in the statements of the *probable* cost. The usual demoralising effect of the competitive system in this particular is painfully apparent.

No. 52, marked with three triangles, consists of six blocks of dwellings, arranged in three rows, with a central transverse street, 10 yards wide, intersecting them, and running from Ashfield to Sylvester street. Two longitudinal courts are thus formed, 25 ft. wide, and the central row of buildings is only four stories high, while the two outer blocks facing Ashfield and Sylvester streets are five stories high. The dwellings are arranged one on each side of the staircases, which are eighteen in number, three to each block. The water-closets are on the landings. The lowest story is in the base-

ment, the floor being sunk 6 ft. below the level of the streets and courts. The total number of dwellings is 146. The smallest dwelling, containing living-room, bedroom, and scullery; and the largest, living-room, scullery, and three bedrooms. The largest bedroom, we notice,—and there are but few of them,—is 12 ft. 6 in. by 9 ft.; but the great majority of them are but 9 ft. by 8 ft. 6 in. The dwellings in the basement range from 2s. 6d. to 3s. 6d. per week, and ground-floors from 3s. 3d. to 6s. 6d., and the others above in proportion.

The estimated cost is 15,200l., and the annual return to be expected is stated at 7 per cent. A great deal of space appears to be lost in the roofs of the two outer rows.

The cubical capacity is about 800,000 ft. No. 59, by W. R. Duckworth, local architect, are arranged upon what is known as the balcony system. There are only two blocks of buildings, five stories high, facing respectively Ashford and Sylvester streets, each containing a central staircase only. The space between is reserved for a playground. All the dwellings contain not less than two or three bedrooms, in addition to living-room, scullery, water-closets, closets, &c. A bath-room is placed on each landing of the main staircases. The lowest rentals are 3s. 6d. per week, and highest, 6s., the majority being 4s. 6d. The estimated cost is 10,462l., and the yield per annum stated at 9½ per cent. The water-closets are all *internal*.

The cubical contents are about 700,000 ft. The total number of dwellings is 110.

No. 38 b, "*Pro Bono Publico*," consists of three parallel longitudinal blocks, the centre block being the full length of the land, excepting 4 ft. passages at each end, and the outer blocks shorter by 50 ft., leaving accesses 25 ft. wide to the two internal courts from both ends.

The total number of dwellings is ninety-four. The staircases are arranged similarly to No. 52. The lowest rental is 4s. per week; the highest 5s. The estimated cost, 9,500l.

In all cases we have stated the estimated cost, exclusive of land.

The cubical contents are about 600,000 ft.

The principle of the arrangement of No. 52 and No. 59 is almost identical, the greatest difference being that the openings to the inner courts are in one case at the ends of the blocks, in the other case in the centre.

As regards ventilation of the dwellings, No. 59 is capable of being made the best, but to effect this some openings must be broken through from the street into the inner enclosure: as shown it is a mere basin. Nos. 52 and 38 a we consider far too crowded. Courts only 25 ft. wide, with five-story buildings on one side and four-story on the other, and not directly open at both ends, are extremely undesirable in a sanitary point of view; and the cellar dwellings common to all ought not for a moment to be countenanced. But, while No. 59 is best in the respect named, it does not meet the requirements of the case at all. The lowest rentals, even in the basement, are 3s. 6d. per week. Now, if the dwellings are to meet the wants of the lower class of labourers, the rents are far too high. The accommodation provided is far beyond their means. The estimate is ridiculously low. The cost of the buildings, at 6d. per cubic foot, which is a fair price, including everything in the shape of fittings and architect's commission, would be 17,500l.; and the two others would cost not less than 20,000l. and 15,000l. respectively. No. 52 provides dwellings as low as 2s. 6d. per week, but the bedrooms are far too small, containing only from 600 to 700 cubic feet, and the land too crowded with buildings for efficient ventilation. Moreover, the number of staircases will make them difficult of supervision, for which the balcony system is the more fitted. The internal water-closets of No. 59 are questionable as bringing the sewers into direct connexion with the dwellings.

On the whole we are afraid none of these plans will be found paying or satisfactory speculations when the tenders come in; and we cannot see even how Nos. 52 and 38 a are even in accordance with the letter or spirit of the bye-laws; the backs of the five-story buildings not having the prescribed 150 superficial feet exclusively belonging to each dwelling substantially front, that is, the external wall faces the inner courts. Now, the bye-laws say that no house in a court must be above 30 ft. high; and if we stretch a point, and call them streets, we find that the houses must not be erected of greater height than the width of the street; so that in either case they are out of court.

It would be a mere quibble to say the outer block does not *front* the courts, because the entrances are at the other sides.

We should not have dwelt so much on these points had they not been made such a stumbling-block to most of the competitors. We shall return to the subject.

THE NEW LAW COURTS.

We cannot conceal from ourselves when we read the latest account of the progress towards a decision respecting the new Courts of Law,—that we stand on the brink of a great architectural misfortune. Various delicacies towards various susceptibilities are involved in speaking out a very strong opinion; we fear that punctilios must be left somewhat aside. A work that is to be before our own eyes as long as they last, and then to be either a credit to us or an opprobrium with our posterity,—to be to them, as it had been to us before, a constant delight or an annoyance that is not to be escaped from, is a matter of something more serious than even what is ordinarily meant by business. We have many of us been reading lately how a time came in the career of Napoleon when none ventured to tell him the exact truth even about the movements of an enemy, without qualification to make it suit in some degree with his predilections; but no architect at present claims, as none ever ought to claim, to be allowed indulgence so destructive to his own fame and the just expectations of those from whom he at least accepts employment. Moreover, the very fact of a competition implies an admission that no one who joins in it asserts exclusive and irresponsible consideration. Where out of six only one can be successful five must be disappointed, and each of these is certainly entitled to persist in his preference for his own design and vindicate his complacency as he may; and if he succeeds in making a convert, there is no reason why the friend should be in any degree more reticent.

Criticism, therefore, will come up sooner or later, and the sooner it comes, if it be worth anything, the better;—nay, if it come must, let it come at once, though it be indifferent; and so let us get it over, and be all the more satisfied from the conviction that *pros* and *cons* have been fairly argued, or might have been, had two opinions really existed.

It must not be concealed that we do not live just now our architectural lives through fair weather times. We have escaped, and are thankful to have done so, from stagnation,—and it is well. We are out of the zone of calms; but the probabilities of the trade-winds are conjoined with those of a hurricane, and the well-found vessel must be prepared for either. Wherefore this preamble? It is far, indeed, from being intended as an apology preliminary; it is intended as an assertion of right on the part of whosoever has a strong opinion on a public question, and believes he can justify it, to take what chance may be allowed him of bringing others to his point of view for the general benefit.

Of the strength of the opinion in the present case the writer would be sorry to leave an uncertainty, or of its scope and purport. His justification of it is open to individual appreciation.

The opinion in question regards the official approval that has been notified of the exterior designs of Mr. Street for the new Courts of Justice. Upon the evidence before us in the architect's own engravings, we can only anticipate that a building erected according to them or to the principles and predilections that they involve, and that indeed are stated, will be a deformity and an eyesore for all time.

So much for the purport of the opinion and the strength of it; they are both derived from the case in its greatest simplicity,—the published designs,—and, it may be added, are not affected in any degree by regard to any of the designs, or designer, that stood, and may even yet stand, in the relation of competitor.

The justification is the matter next to hand. It is the great misfortune of Somerset House that its façade is on the wrong side of the Strand in every respect; it is in all but constant shadow, and the daily flow of population passes close to its walls, and spares but few to pass and repass along the opposite side of the way, whence alone it can be seen at all, not to say seen to advantage. The façade of the Courts of Justice will have the better position; but whether this will be to them the good fortune

it should be, depends on the worthiness of the aspect they present. As the matter stands we suspend our congratulations.

The front extends from at least the entrance to Holywell-street westward, as far as Bell-yard to the east, beyond Temple Bar,—a noble, an enormous, or a preposterous extent, accordingly as it may be treated. The question will arise to the economist,—what necessity was there for such costly consumption of frontage in the main line of a great thoroughfare,—frontage of secondary value hitherto, but not to be so under the conditions of the reconstructed neighbourhood and its approaches. On the other side, it is to be said, that frontage, as valuable, means trade, which will not fail to find its place. To supersede one station only transfers it to enhance the value of another. It is from the main thoroughfare that the busy occupants of the interior of the building have to be drawn, and on what are called higher grounds, and not without reason,—the concentrated Courts of Justice, the palace in which law is to become the instrument of obtaining justice, and justice is to be occupied with holding its own against the obscurities, the indefiniteness, and technicalities of law, is in itself a symbol of such a leading and dignified interest of society, that it claims a public presentation only second to that of temples of religion.

But in the very interest of this dignity we demur to the excessive proximity of the basement line of the façade to the footway. The architect may reply that he is himself even more discontented,—straitened and pinched as he has been in every adjustment, by the restricted area relatively to requirements obliging him to cover every square foot available in any way. We acquit the artist, but do not acquiesce in the design. Our magnificence that intends so extensive a display is so stunted then at last of necessary space as to be unable to withdraw itself to some moderate degree from contact with all that is crowded, common-place, and noisy. What, then, becomes of the solemnity of the subject,—nay, of its tranquillity? Practically, these are well cared for; for the courts are withdrawn into the heart of the building, and the rooms that face the Strand are, for the most part sale-rooms, spare rooms, &c.; but then, in fact, it is the side or the back of the grand structure that turns itself towards us in the Strand, and we must go elsewhere to find a true façade. At best we have before us only a screen, utilised it may be, but for very secondary purposes relatively to the grand purpose of all. That a side of the building, which is not the front, should press thus unceremoniously on the footway, is fair enough; but then it would be well that it should not be the most elaborated side facing the most important approach.

The advance conceded to a central portion, and to the returning westward end, only makes matters worse.

The qualified preference that has been given to Mr. Street's designs does not include his interior distributions, and in case of joint operation with another architect the Strand front might be differently occupied and some of these objections vanish. Nay, even some yards of vacant space between the wall and the walking public might be allowed. But a more serious objection touches the very principle of the distribution of the façade, and characteristics which it is clear that Mr. Street has far too clearly at heart to sacrifice under any transformation,—characteristics that make us mistrust the connoisseurship of judges, be they who they may, who could overlook them, or only recognise them to be indifferent or to admire.

Be it said plainly that the irregularity and asymmetry of this front evince notions as to architectural composition that are something more, and much more unpleasant, than extraordinary; that may sit comfortably with a theory adapted to suit them; but that to the architectural sense of nine-tenths of the world will be intolerably vexatious, and to the other tenth, also, as soon as it has outgrown the dominating influence of fashion—and awakes in torment.

The line of the front is broken on plan by an advance of a central division, and by the double-gabled ends of the returned sides of the grand quadrangular building; but the western of these advances is cut off from view by a heavy prolongation of a Gothicized Temple Bar that bolts into the main façade just at the angle,—with the inevitable effect of obliterating entirely one flanking projection, while itself as inevitably appears an afterthought, built up against a building with which it vainly attempts to assume an

air of articulating. On this eastern side a barrier is carried along at about the line of the projection, and seems to terminate with a return uncomfortably enough against the centre. Had it been continued along the entire front, there would have been less to say against it; as it is, it houses a cab-stand, and enhances the overcrowded pressure upon this unfortunate angle by an enclosure in a corner.

When we look to the "General Conclusion," at page 32 of Mr. Street's letter-press, we find certain enunciations that convict these and various other eccentricities as committed of theory preposse. "I have taken occasion, as far as was reasonable, to make all my façades tolerably regular in their arrangement; so I have made distinct centres to the north and south front, and have also made the other main fronts equally uniform in their general character. With all this uniformity, there are, however, very often of necessity features where uniformity was unnecessary, and irregularity a virtue, and I have gladly availed myself of them in all cases. So that I hope my design has sufficient picturesqueness not to be tamely uniform and yet enough uniformity to prevent the building looking trivial or frittered away."

"I am glad to observe," said the military squire to his curate, "that you kept your discourse to the twenty minutes." "I think it best with a mixed congregation to avoid being tedious,—I do it on principle." "Ah, yes—yes," said the squire, half reflectively,—"but you were tedious."

Tediousness is not excluded by cutting off the odd ten minutes, and uniformity—"So vast a building," says Mr. Street (p. 31), "is necessarily, to a certain extent, the victim of uniformity"—uniformity may be given up without anything that approaches to genuine picturesqueness being acquired in exchange.

Anything more irregular and, indeed, less picturesque than most of the distributions of the façade, it would not—as it seems to us—be easy to conceive. Synopsion is doubtless an elegance elegantly applied; but persistent neglect of the recurrent places of accentuation can only generate disorder and clumsiness. The centre is treated with a certain moderation; but even here the wall-curtain on either side the gable is divided disproportionately by what seems to be a huge polygonal buttress oppressing adjacent windows on either side, answering no visible purpose, and suggesting only such tubular applications as had better not be expressed so prominently. They enhance the weak appearance of certain flat strips of buttresses between them that for themselves suggest nothing but the infancy of the art of keeping walls perpendicular.

In the centre, however, and in the west gabled end, there is an admission of allegiance to symmetry such as it is; and, such as it is, it renders more glaringly inconsistent the studied neglect of it in the intermediate wall curtains. Neither of these has a symmetry within itself or an agreement with its fellow. Anarchy reigns—section after section seems to do what seems good in its own eyes. Architect and clerk of the works must have been spirited away to Dream-land; and the masons, tired of waiting for them, have evidently got the working drawings into confusion and finished the undertaking somehow—anyhow. Do we look, we ask, at a new building made up by matching old fragments not very cleverly, or at an old building that has been altered and adapted, broken into tenements, and then recombined with as little disturbance as may be to the several tenanted improvements of their own portions. Some pinnacles are allowed, but sparsely, and even they do not subserve their ordinary function of defining the commensurable. There are two on one side emergent from the parapet that is as long as the church opposite; on the other, not corresponding side, there are three; all marking divisions that are all at odds with each other.

As regards windows, we have on the ground-floor of the western half of the front, eight Decorated Gothic windows of magnificent size, and indicating apartments of the joint height of the ground-floor and floor above in the rest of the front. They are the windows of the sale-rooms, ominous surely in their conspicuousness and emphasis. But this is a moral consideration,—architecturally, they reduce to the insignificance of pigeon-holes the smaller windows above and around them; and by the lightness natural to such large openings they give an odd impression that the building is wrong-side upwards. Then the difference of spacing is caprice—not

picturesqueness,—and perversity were an apter word than either;—we have two of the set opening by an interval equal to the window opening; between three the intervals are contracted to about a third of this; and between three others there is no blank interval whatever, the intermediate mullions being confluent. Then there are small pairs of windows nestling together here and there like love-birds, and door openings ranging in elevation with nothing at all.

As to the distribution of openings, and the ordination of divisions in the eastern wall curtain, suffice it to say that it does not match the western in any sense whatever, and has even less self-consistency. To attempt to give particulars of these differences and discordances would be like essaying to describe accurately a comminuted fracture of the shin bone. The best success would only try patience and jeopard temper.

Enough, and more than enough, and let us be thankful that we have not to observe further on the ventilating towers growing up out of the enclosure,—even these not regularly,—than to quote three lines that after what has been said will tell the story:—"So vast a building—necessarily to a certain degree the victim of uniformity—requires some decided vertical lines to break its monotony, and I am not sorry to have to vary it, therefore, by the erection of the Ventilation and Record Towers, &c." (p. 31).

We have not here to discuss the questions that may be opened between trabeated and arcuated architecture, or as between round and pointed structure; the value of symmetry is a matter that sublimates the theory of architecture on a grand scale, of all styles whatever. It is strange to hear repeated and parroted,—the freest departure from symmetry. It is quite intelligible that idlers or sentimentalists in search of impressions, and with no particular knowledge whatever, should bring away such a notion from Peterborough or Gloucester or Ely, or almost any English cathedral; but what shall we say of those who should know, and must know, if they bethink themselves, that a Gothic architect's design for the cathedral as he hoped and intended to finish it, was ever symmetry embodied. The elements of his composition may have been far more varied than those involved in the design of a Greek temple,—that is a different consideration,—but his elements, multifarious as they were, were ever marshalled with as strict regard to bilateral symmetry; and the strictness was the more conspicuous from the very fact of the multifariousness it was applied to. From Westminster Abbey, and earlier, to Cologne Cathedral, a symmetry obtains in the master works of Gothic art that emulates not merely the Greek, but the very works of nature,—the two halves and two sides of the chapel repeated each other as manifestly as the two halves of the buck that was destined for the abbot's table.

Invention may find itself hampered by such requirements, but it will be such invention as if turned towards musical instead of architectural composition, would be sorely shackled by the exigencies of counterpoint. Buildings have special purposes, which according to their dignity require, and in unsophisticated ages seem naturally to generate, expression of like grade of dignity. A purpose so defined has its own coherency; it is itself a combination of primary and subsidiary purposes; and a balance and unity are thus its very essence. It is on this account that a structure that is apt to accommodate such a complex but still congruous purpose, will itself bear the visible impress of congruousness and subordination. In this our day at last the confused disorder of English law is being reduced to the happy regularity of a Digest,—shall we choose this very day to house it in a structure only fitted to symbolize the very wilderness of obsolete craze out of which at last is proceeding our hopeful exodus? W. WATKISS LLOYD.

DOUGLAS HARBOUR, ISLE OF MAN.—At the Manx Tynwald Court the following resolutions have been adopted:—1, That breakwater accommodation is requisite in Douglas Bay; 2, That a sum of not less than 175,000, shall be expended in providing that accommodation; and 3, That should another answer of equal eminence approve of Mr. Coode's plans, the court will agree to their adoption.

AN ITALIAN BATTLE-FIELD.

THE impressive solitude of the Roman Campagna often recalls to us, through certain vague analogies not easily explained, the lines in which Wordsworth asks the subject of the Highland girl's song in the fields,—

"Of old, unhappy, far-off things,
And battles long ago?"

But an interest quite novel for this region is a battle among the things of yesterday; and this one more association of historic tragedy with the characteristic scenery around Rome will henceforth give attractiveness to a site little frequented by residents, scarcely known to tourists at this capital. Leaving the city by the Porta Pia, and pursuing the Nomentan Way, after crossing the Anio by the picturesque towered bridge, Ponte Nomentano, which was destroyed by Totila in the Gothic War, rebuilt by Narses, and castellated, as we see it, by Nicholas V., we first pass under the "Mont Sacer" of historic renown; further on reach the ruins of the disintegrated basilica of S. Alexander; and thence continue for several miles through one of the most desolate among the almost desert tracts of uncultured land in these parts; a few large farm-houses—grey, dismal, and dilapidated—the sole human habitations in sight, except those villages high perched on the mountains, which, eastward and southward, form majestic boundaries to the wide landscape. Some ruinous square tower, lofty and grim, reminds us also where man dwelt and combated in mediæval periods; one of these, strikingly conspicuous, and built of brick and stone in different colours, called "Torre Lupara," being supposed to mark the site of Ficulnea, one of the cities founded by the aborigines after they had driven out the Siculi;—the Civitas Figlina mentioned in "Acts of Martyrdom." Several mausolea in highly picturesque ruin,—one popularly called "sediaccia," from a fancied resemblance to a great throne,—rise near this road; and at intervals we pass over remains of massive antique pavement, reminding that we are still in the track of the Via Nomentana. Near the eleventh mile stands a column marking the limits between the "Agro Romano" and the territory now called "De Lamentana," from the name of the ancient town, now modernized as Mentana, whence this road also takes its designation. A change comes over the wild solitary scene as we descend, after a long gradual ascent south-eastward, into lower and cultured regions spread to view in fair varieties of hill and dale, gracefully undulating or abruptly sinking, so as to present distance beyond distance; the slopes being either cultivated with grain, clothed with vineyards, or overgrown by woods of oak and ilex—a romantic and pleasing contrast to the waste Campagna. In the midst of that prospect appears, first descried from the high ground where the road winds through the skirts of a forest, the village of Mentana, and about two miles farther on the same perspective line westward, Monte Rotondo, crowning an isolated and peculiarly rounded knoll, whence its name—both insignificant places as to size, but with external array of towers and walls, and the prominent feature in each of a ponderous baronial mansion rising high above the humbler dwellings; so that in those instances (as usually the case with Italian town and village, especially in these mountain districts) the distant gives a notion of dignity and importance far from corresponded to by the nearer view. Mentana is but an impoverished village, of about 540 inhabitants, whose sole street stands on the high road, extending from the stately, though now decayed, mansion founded in the thirteenth century, by the Orsini, once feudal lords of this place, but now belonging to the Borghese family. The primitive Nomentum was one of the most ancient colonies founded by the Alban kings in the Sabine territory, and from still earlier date peopled by aborigines afterwards subjected to Rome by Tarquinus Priscus, and engaged in the Latin league that waged war on behalf of Tarquinus Superbus; its site probably on the hill side that dominates over the modern villages at the east, and, admitting the modern to be the representative of the antique, we may regard the actual Nomentum, under its Italian name, as the only one among those seats of the "Prisci Latini" still inhabited. At mediæval periods the place had some importance; Ughelli (*Italia Sacra*) gives the series of its bishops from A.D. 415 to 984, after which its rank in the Catholic episcopacy was lost, how, or at what

precise date, is unknown; and at the opening of the ninth century it must have been not insignificant among Rome's dependencies to have the honour of receiving Charlemagne and Pope Leo III., as rendezvous where the Pontiff met and dined with the Emperor elect before the state entrance of both into the capital, in the November preceding that Christmas, 800, when Leo so astonished the world by crowning the Frankish king as Emperor of the West at St. Peter's. In the next century Nomentum meets us again in the historic page as birth-place of Crescentius, the dauntless consul, who long defied both Papal and Imperial power from the Castle of St. Angelo. In classic times this town, so pleasantly situated near the Sabine hills, was noted for its fertile and salubrious neighbourhood, frequented by Roman patricians for summer residence; and it is certain that Ovid, Martial, and Seneca had villas here,—the latter inhabiting such a home or territory mentioned by Columella with reference to the amazing quantity of wine produced from its vineyards, often at the rate of eight *culei* for every acre. Nomentum wines, commended by the same writer and by Martial, still maintain their reputation among the many from the hills and villages around Rome. Sundry marble fragments have been found here, but no distinct traces of remote antiquity; a high-relief figure, life-size, now seen on the *piazza* (if such dignified term can be given to any part), is called by the inhabitants *San Giorgio*. Beside the gate of the Borghese mansion we see a togged statue, obviously antique Roman; and under the tower of the church, several epigraphs on marble from some vanished tomb, with the names of the *gens Erennia* and *Bruttia*. The more prominent Monte Rotondo (fifteen Italian miles from Rome, and peopled by about 2,400 souls) is supposed by Gell and other writers to occupy the site of the ancient Crustumium, where an Alban colony settled long before the founding of Rome; this population proving a faithful ally to that dominant city in after ages, but exposed to frequent assault from the Sabines, who besieged the town in the year 260, and devastated its territory, which seems to have extended as far as the Nomentum bridge,* 297 U.C. (Dionys. l. ii, 53). Its fertile soil is noticed by Ling as inducing many Roman families to establish themselves here; and we are told that its neighbourhood was known for the abundant growth of pear-trees (the *Crustumina pyra* mentioned by Servius); as to this day (see what Gell observes in support of his theory) the Monte Rotondo district is overrun by such trees, bearing a wild fruit, small but well flavoured, that form testimony in favour of its claim to represent the Latin Crustumium.

No antiquities are found here; and perhaps the erection of the cincture of walls and round towers that fortify the place, led to the demolishing or concealing of the remains previously visible. Once a duchy that gave a title to the Barbarini, after being first held as a fief by the Orsini family, the feudal residence of the former passed successively into the possession of the Del Grillo and Piombino families, the last its present owners; and the finest object in the town is that castellated mansion, now in picturesque decay, and almost unfurnished, with a lofty tower commanding a magnificent view, itself conspicuous from great distances around. No fitter locale for an Italian ghost-story could well be chosen than that vast and melancholy, and long all but deserted, tenement of Monte Rotondo. Compared with Mentana, the aspect of this town, though streets be dismal and tortuous, houses out of repair and comfortless-looking, has something aristocratic; and at the present day, while a strong French garrison occupies it, the place receives life and movement from such stranger population.

It is not our purpose to give statistic report of the battle that crushed the attempt against Rome and the Papal Government, leaving associations of such tragic interest to these hitherto quiet scenes; an encounter kept up, with great slaughter, during about four hours on the afternoon of Sunday, the 3rd of November; the immense clouds of smoke from cannon and musketry during which hours we had distinctly seen from the tower of the S. Lorenzo Basilica that eventful evening. Suffice it here to state that the forces on the Pontifical side were (according to official report) 2,913; on the French about 2,000; of the army of volun-

teers under Garibaldi, opposed by these allied troops, about 6,000 (though as to this amount it is difficult to decide among various statements); that, in the result of that momentous action, the loss on the French and Roman side was 32 killed, and 139 wounded (General Ranzler's report); on that of the Italian volunteers, above 600 killed, wounded in proportion, and 1,600 prisoners (General de Failly's report); though popular rumour, full of discrepancies as usual after such stirring events, has raised the mortality among the Papal Zouaves alone to 300 or 400; and it seems certain that the number of prisoners brought into Rome is at least 1,760.

On the second day after this decisive battle was a concourse of visitors to the field, in public or private vehicles; and there were witnessed sights of ghastliest description, though the work of interment had been to a degree accomplished. We had not opportunity of going till the third day, yet even then was enough to leave painful and lasting impressions. On the high ground, where is first seen the view of the lower valleys, with the two towns so picturesquely standing amidst cultured uplands, lay beside the road, in the shade of oak trees, several corpses, evidently of volunteers in the humbler class, for the scanty garments they wore had no resemblance to regular uniforms; their faces up to the sky, with red gashes on their naked breasts, there they remained, as if forgotten, in the midst of a scene beautiful under the sunshine of the glorious autumn day. Long before reaching that field of death we had observed the countless cartouches and heaps of blue paper smelling strong of gunpowder along the wayside; also, along the outskirts of the roads, half-burnt trees and hollow old trunks blackened by fire, showing what the soldier's work had been in the now quiet haunts of the bird and the forest-creature. In a villa, on some ground above this road, with the name "Vigna Santucci" over a gateway, we perceived other like traces, and heard from peasants the details of combat long kept up at that point. Along the roads lay others dead, at distances from Mentana; and soldiers were still at work digging trenches for their burial. On the tilted ground, and amidst the underwood on slopes descending below the road, we saw fragments of almost all kinds of military accoutrement, torn epaulets and belts, bloody clothes, broken weapons; a pack of soiled cards strewn under a hedge; a mutilated photograph, the portrait of a lady, that told the affecting story of the lover or husband, who had worn it in his breast till he was struck down. Proceeding to a deserted convent-church among the trees we observed the many dark stains where pools of blood had saturated the soil; and in the sacred building (long left to decay) saw the tomb just closed over numerous dead; here being accosted by some peasants who offered bent bayonets and shattered muskets for any price they could get. But sadder still was the scene at Mentana, in the condition of a deserted village, left to awful solitude by man's violence. The first house we reached had its interior all in blackened ruin, and the woodwork entirely burnt out; the small church, in which two wounded men had died that morning, showed traces of the bivouac and the military hospital. The confessional was broken, but the high altar seemed still serviceable for rites; and a strange contrast, amid this gloomy desolation, was the dressed-up and life-size wooden image of some saint in a niche above,—emblem of that superstitious terrible reaction against which was read in clear tokens around. The poor inhabitants were just beginning to return from some caves in the rocks along a hill-side which we had passed, where they had taken refuge during the battle; but their squalid homes in the long straggling streets were mostly shut up; not a sign indicated the usual engagements of life, of trade, or industry; and there was something like grim irony in the attempt at mirth on the part of two or three poor men who were drinking wine out of coarse earthenware vessels at a table before a wretched little shop half open.

In some respects still more painful were the sights at Monte Rotondo, though there we found ourselves again surrounded by civilized man and his activities. Before seeing the things done and traceable in that town we had never realized the intensity of hatred against the Church and priesthood that has animated the invaders of the Papal States, and we believe still animates, in more or less violence, the youth of Italy, save under exceptional influences. The principal church of Monte Rotondo, dedicated to

* Inferable, from the fact that the celebrated retirement of the Plois to Mont Sacer is called the "Crustumine Secession."

S. Mary Magdalene, is a large, and in the interior much-decorated building, collegiate, and served by canons, and containing some pictures of value, especially one of the local patrons, SS. Philip, and James, by Carlo Maratta, and a "Purgatorio" of the school of Dominichino. We here beheld a scene of wreck and desecration such as no Christian, from whatever theological standing-point, could contemplate without pain.

We next visited the Piombino Palace, and roamed through long suites of unfurnished halls,—one of those Italian interiors "where comfort dies in vastness," and where, notwithstanding the occupation of a part by French soldiers, silence and gloom now prevailed. Some municipal offices are located here, and in a subordinate *cortile* we saw the pavement entirely covered with the torn registers and documents of local importance thus wantonly destroyed. In the principal court, where many soldiers were idling away their spare time, we found heaps of broken muskets and bayonets, reported as 2,000, here left by the volunteers on the surrender of the town the morning after the battle, when about 800 were taken prisoners, to be brought to Rome that day. By the principal street we reached the gateway at which the assault had been made, on the taking of this town, by the invaders, the 25th of October. On this spot were many traces of the terrific contest that closed about two hours after midnight before the morning of the 26th; the valves of the gate, burnt with turpentine when the entrance was forced, hung in charred fragments to the iron frame, and the attic above was in ruin; all the houses near, both within and without the walls, were riddled with shot. Leaving by this gateway, we visited a Franciscan convent, on level ground, about a quarter of a mile distant; one of those specimens of the larger dilapidated Italian cloister, neglected and dingy, inhabited by a few friars, though spacious enough for the quarters of half a regiment. The three Franciscans, who formed its whole community, had saved themselves by hiding in private houses within the town; and the father guardian, when at last discovered, and dragged before Garibaldi, had been allowed by that leader to go his way in safety. The church had been, and was still (for French had succeeded to former occupants), the soldiers' dormitory, with mattresses lining the nave; in one of the confessionals Garibaldi himself had spent two nights—a not enviable couch! and the choir now served as a military provision store.

To be just to those responsible, at least officially so, for the immense injury inflicted not only at Monte Rotondo but other towns also of these States by the invasion, we should add that, as we learnt on the spot, outrages against person and property were punished with death, by Garibaldi's order, at the former place. Nothing in the antecedents of that extraordinary man exposes him to the charges of cruelty or lawless vindictiveness; and having followed the steps of his volunteers, since the late alarming events, at other towns in the Roman neighbourhood, at Tivoli and Palestrina, we have there learnt nothing discreditable in details of their conduct towards citizens—save, indeed, the proceeding to be expected from such visitants under all like circumstances, the seizure of public money.

Returning that evening about sunset, the romantic landscape, before we reached the wilder Campagna region, seemed to us in sadly beautiful contrast to the realities caused by man. We hear with satisfaction of the sympathy excited at Rome for the sufferers at Mentana and Monte Rotondo; that a subscription has been opened, received at the offices of journals; and the Pope at once sent 2,000 francs for the benefit of the principal church, whose woful conditions we this day witnessed.

RESTORATION OF THE ANCIENT CHURCH OF MONKWEARMOUTH.—A meeting of gentlemen was recently held in the National School, Monkwearmouth, Sunderland, when steps were taken for raising 10,000*l.* for the restoration of the ancient church of that parish, and the erection of a new district church. A list of subscriptions already forwarded was read,—namely, Sir H. Williamson, 2,000*l.*; Mr. W. Stobart, 500*l.*; Alderman Tyzack, Mr. M. Robson, and the Incumbent, 100*l.* each; and several smaller sums, making over 3,000*l.* The gentlemen present resolved to form themselves into a committee, and Messrs. Lambton & Co. were appointed treasurers.

THE LATE OUTBREAK OF FEVER IN GUILDFORD.

We briefly alluded last week to the recent epidemic of fever in Guildford. The official report of Dr. Buchanan upon this outbreak is so full of interest that it may be useful to consider it in some detail, bearing as it does on one or two of the most important matters connected with the sanitary welfare of our large towns.

Guildford, estimated to contain at the present time a population of about 9,000 persons, inhabiting 1,675 houses, is situated on the side of a chalk hill, above the valley of the Wey. The chalk forms a complete natural drainage to the town; but there is no artificial system of sewerage, cesspools cut in the chalk being almost universal. It is said that these cesspools cut in the chalk "keep themselves dry, and are commonly so ineffective that they are not emptied for many years together." Shallow drains or sewers, if they may be so called, receive the surface-water from the streets and the slopes from the houses; and it is well known that of late, without the consent of the authorities, more or less night-soil, chiefly its liquid portions, have been also discharged into these sewers, which were never constructed for such a purpose. These naturally empty themselves into the river Wey. So much for the drainage of Guildford.

The water-supply of Guildford is derived "partly from the public waterworks, which are fed by two wells, sunk some 20 ft. into the chalk, at the lowest part of the town; secondly, from an old well, from which water is raised by the power of an adjacent water-mill; and thirdly, from a new well, from which, for a short time in the middle of the present year, water was distributed to the higher parts of the town by engine power." It is worthy of notice, however, that of the 1,675 houses in Guildford, only 928 are supplied by the waterworks, 747 obtaining their water "from private wells, and some few from the river."

Guildford may generally be considered a healthy town, and the average rate of mortality in recent years has been low. Its situation is no doubt salubrious; and although the lodger-evil in small tenements exists to some extent, we are told that there is very little serious overcrowding in the town. Typhoid and low fevers, however, have not unfrequently prevailed in Guildford and the neighbouring villages; but local inquiry appears to have convinced Dr. Buchanan that a larger proportion of the fatal fever cases returned in the registration district of Guildford in recent years, have occurred outside, than within the town itself. During the present summer, cases of typhoid fever had occurred in neighbouring villages, and a few in the town before the outbreak which gave rise to the official inquiry. Ten cases of fever occurred in the town during the first four weeks of August, of which six occurred within the practice of one medical man. The report states that "in the last three days of August cases of typhoid fever came under treatment in Spital-street and Pannell's-terrace, high lying and usually very healthy parts of the town. In the first two days of September a few others came under observation, and on September 3rd and 4th a surprisingly large number of people sent for medical assistance, and were found to be suffering from the same fever. In the first ten days of the month a total of some 150 cases had come under treatment, and this number had increased to 264 by the end of September." The outbreak culminated in intensity about the middle of September, and soon after declined pretty rapidly.

A circumstance connected with this outbreak very soon attracted attention. Whenever on previous visitations of fever in Guildford, the poorer and low-lying parts of the town had been principally affected, this sudden outburst "was restricted, with almost absolute precision, to the high levels; well-to-do people had suffered as well as the poor; the best houses were invaded as much as dirty ones. Except the coincidence with high level, there was nothing approaching uniformity in the distribution of the epidemic." As the prevalence of the disease began to decline the proportion of cases occurring in other parts of the town was larger. This result, however, may be naturally traced to the almost unavoidable dissemination of the fever by contagion. Inquiry into all the circumstances which might by any possibility have given rise to this extraordinary outbreak of fever led to the disposal, one after another, of more than one

apparently reasonable theory. It was evident that drainage could have had very little direct bearing upon it, inasmuch as the town does not boast of any system of sewerage, and the natural drainage was best in that part of the town most affected. Finally, Dr. Buchanan says,—"Only one condition could be discovered generally coincident in distribution with the outbreak, and that was the high-service of the town water supply."

Further inquiry based upon this conclusion led to the elucidation of the fact that all the houses attacked at the beginning of September were supplied with water from the high service. Many of the cases which appeared at first might be exceptions to this general rule, turned out to be those of "children and others, who, living in houses not supplied by the high-service water, spent the hours of the day in houses so supplied. Towards the end of September the new attacks were less exclusively distributed to such houses." Excluding the few sporadic cases occurring before the 28th of August, and those which occurred after the middle of September, and making a deduction for school children and others above mentioned, less than a dozen of the 150 persons attacked in that fortnight lived in houses which were not supplied by the high-service water.

Convinced that in some way the fever outbreak was due to the high-service water supply, Dr. Buchanan pursued his investigation into all the details of the operations of the Water-works during August. The engine which pumped the water from the new well to the high-service reservoir having broken down on 1st August, his theory appeared somewhat upset by the intelligence that from that date "no water had been pumped from the new well, but the high-service mains had been charged by the water-wheel in connexion with the low-service." In fact, that both high and low service had used the same water, that of the old well. Further inquiry, however, elicited the important admission that on or before the 1st of August, when the pumping-engine of the new well broke down, a bulk of water from that source had been stored in the new high-service reservoir, and that "on August 17th,—the water-wheel of the old well being on that day under repair,—this stored water was distributed to the high-service houses of the town; it was distributed on no other day, and to no other houses. These 330 houses, therefore, on which the fever almost exclusively fell, had received a different water from the other houses of the town,—namely, water from the new well, stored up from August 1st, and delivered on August 17th."

Subsequent analysis of the different waters making up the water supply of Guildford proved, beyond doubt, the presence of organic and putrescible matter in the water of the new well, but not to that extent which might be supposed sufficient to account for the fever outbreak; but it must be remembered that the analysis was not made until September 25th, when the special circumstances which may have so remarkably affected the water at the time the supply was pumped for storage in the new reservoir, and at the time of distribution, had probably been dissipated. Investigation proved that the new well was supplied by a different spring from that which feeds the old well; and, moreover, that the new well obtained its water not only by percolation, but from a "notable fissure in the chalk," into which, and the chalk round the well, it will appear that it was "certainly easy for excrementitious impurities to have entered."

A sewer or drain runs within 10 ft. of the well, through which the iron delivery-pipe of the high-service passes. It is stated that the cause of the engine breaking down was an intense vibration, which was found to have loosened the bricks of this sewer sufficiently to cause the escape of its contents, though only to a small degree. These sewer drains, as we have seen above, often contain not only the surface drainage for which they were intended, but the overflow of many privies, cesspools, and water-closets.

Dr. Buchanan appears to have been fully justified by the train of facts elicited in the course of his investigation in concluding that the late outbreak of fever arose from no other cause than the contamination of the water in the new well from this sewer, produced by a leakage caused by the very vibration which broke down the engine, almost the last work of which was to fill this reservoir, from which these 300 houses were supplied on the 17th of August. No one, indeed, who carefully reads the report, can reasonably feel any doubt that

such and no other was the true cause of the outbreak. Apart, however, from this accidental contamination, grave doubts are raised by a perusal of the report as to the source of the water supply of this new well. An acknowledged sympathy between the height of the water in the river Wey and the new well (which, by the way, does not exist in the old well), suggests the probability of a far larger amount of the water coming from the river than from the chalk-springs.

With regard to the system of the cesspools cut in the chalk, which absorb the liquid portions so completely as to "keep themselves dry" when considered in conjunction with the fact that the wells for the water-supply are cut in the same chalk, and fed principally by percolation, nothing can be said except to express astonishment that Guildford has so long remained healthy. In conclusion, however, we would say one word upon a fact brought to light during this inquiry. It is admitted that a communication exists between the river and the pipes of the water-works. It is said to be *very rarely used*, and only for the purpose of getting a first sucking power to the pumps. It is also stated not to have been used at all this summer; but an analysis of water taken direct from the high-service mains at Charlottetown, seemed to throw considerable doubt upon this assertion. The state of the water may, however, be accounted for by the above theory, that in point of fact the new well draws its principal supply almost direct from the river. However this may be, such communication between the supply-pipes of a water company and the unfiltered water of a foul river, should be immediately interdicted by Act of Parliament. Only last year the terrible cholera epidemic in London was traced to a similar use of unfiltered water by the East London Water-works, through such a communication. Surely it is high time, now that the vital importance of the quality and quantity of water-supply is beginning to be understood, that some effectual system of inspection and surveillance of the source of supply of all water companies should be established, which should above all assure the water-consuming public that no communication between the pipes of the different water-works and unfiltered water any longer exists.

ON COLOUR.*

In considering the question of harmony of colour the tertiaries become essentially valuable. They have the same relation to the secondary colours as to shade that the primary colours have to light. Citrine is to dark violet as yellow is to light violet; russet is to dark green as red is to light green; olive is to dark orange as blue is to light orange. Thus each of the secondaries is neutralized by that tertiary in which the remaining primary predominates. By a proportionate adjustment of the primaries with the secondaries or tertiaries, harmony of colour is produced. In decoration it may be laid down as a principle that one colour should dominate; that this dominant should be a primary or secondary; and that the other colours must be subsidiary to it. In the majority of cases, the most perfect and beautiful harmony is produced by employing neutralized hues of colour for the larger masses, and then giving freshness, cheerfulness, and beauty to the whole by the introduction of the primary or secondary colours that may form the proper equivalents to the prevailing colour. It should be always remembered that the eye is never satisfied with any arrangement of colour unless all the primaries are present in some shape or other.

In carrying out decorations, it will be found that all colours have two kinds of harmony; that of analogy or sympathy, and that of contrast. For instance, we will suppose the walls of a room to be of a soft green colour, and that curtains are required: two colours are open to us; on the one hand, a rich yellow brown, which is the softer or more sympathetic harmony; on the other hand, a warm maroon, which is the harmony of contrast. And again there is the important matter of carpet still to be decided on. Now, if you have to combine with the yellow brown curtains, a maroon-ground carpet will be the best; but if with the maroon curtains, the carpet must be brightened with green ornament, leaves, or even flowers, if for a drawing-room. All these prin-

cipal colourings of the room being thus decided, the decorator will have to consider how best to relieve with colour his cornice and frieze, the ceiling, and the woodwork. The cornice is a very important feature in a room; it acts as a kind of frame to the walls between these and the ceiling; but it should always be borne in mind, that except in peculiar cases, it should be made to belong to the walls, and with that view particular care must be taken in the colouring of it, either by a recall of the wall colour, or by a colour referring to the curtains or other harmonising hue. Thus there are three masses of colour to be considered in living-rooms,—the walls, the curtains, and the carpets; but it is by no means necessary that these should be all of different colours; two of them may accord, either the walls and curtains, or the curtains and carpet. If the walls of a room are highly ornamented in colour, either by arabesque painting or otherwise, it is desirable that the curtains be quiet in tone, and not of contrasted colours, and that the carpet preserve a subdued effect that does not interfere with the decoration of the walls. On the other hand, if the walls of a room are of a quiet tone, or are white and ornamented with gilding, various colours in ornament or flowers may be introduced with propriety in the carpet. As regards the colouring of carpets I should generally recommend the ground to be of a deep rich retiring colour, such as maroon or green, and the patterns, whether in ornament or flowers, to be as flat as possible, and entirely without cast shadows. The Indian carpets imported from Masulipatam are at all times quiet, retiring, and harmonious in their colouring, and worthy of particular study for the well-designed distribution of their ornament. It is surprising when we consider the poverty and general ignorance of the men who work at these carpets, that the result should show such refinement and delicacy in the modulations of the colours. I will not be led away from my more immediate subject by a further consideration of the colours in manufactured textile or other fabrics, but return to the painting and decoration of rooms.

When rooms are papered or painted in tints of colour, the combination necessary to carry out a pleasing effect is sufficiently simple and easy; but even in these great care should be taken to have those tints of a soft, agreeable tone. There are greens and greens, and buffs and buffs, and greys and greys; in the one case as ugly, raw, discordant, offensive, and displeasing as in the other they may be soft, harmonious, agreeable, and refreshing to the sight. What can be more incompatible than a crude emerald green? Soften it, however, with a little sienna or other moderating colour, and make it suitable in depth of tone to the size of the room, and your skill and taste will make it as agreeable as it would be otherwise repulsive.

In the woodwork of our rooms it seems to be too generally considered that it must be either a tinted white or grained in imitation of some wood. Now, I do not proscribe graining; on the contrary, I like it occasionally; but I think it is used far too frequently. Why not employ a good brown, or maroon, or black, well relieved with light-coloured lines, taking care to face up the work to a very smooth surface, and to varnish it? Above all, however, I like the real wood, even if it be plain deal or pitch pine; for this, if well finished by the joiner and kept clean, will, when varnished, have a very handsome effect, and can be readily ornamented to any degree, by painting dark lines and ornament as if inlaid upon it. The wear of this kind of work is far beyond any painting. Again, on walls of rooms, imitations of marbles are often painted, and very beautifully painted, too; for many of our English artists excel in this kind of work; but these imitations are adopted not always because they are appropriate to the place or particularly required, but because, being varnished, they wear well, and nothing else is suggested. I think, however, that in a moderately-sized house, where quiet taste is appreciated, stencilling in geometric patterns in two shades of one colour is preferable to marbling, which, if done in an inferior manner, is a most unsightly sham. In determining the colours for rooms regard should be had to their aspect, giving cool and refreshing shades to the south, and warm comfortable colours to the north. The use of a room should also, of course, influence the colour. Then, also, pictures require particular consideration; if there are many in the room, and they are truly works of art, the colour of the walls must be subservient to them.

If the pictures are not very large, and the colouring of them not dark or heavy, sage green is a good tone: in this case the windows and doors might be cinnamon colour, if not real wood; the cornice of the room might be vellum colour, relieved with the cinnamon and the green in suitable parts of it; the ceiling might be pale grey, or if it is panelled it may be cream colour, relieved with the other tones of the room. If, however, the room be large and the pictures boldly painted, red is an excellent colour for the walls; it gives freshness and vigour to the paintings, and, if the room is lighted from above, it renders it bright and cheerful,—not undesirable qualities where there is no external prospect. The woodwork, if already painted, may be black, or vellum colour, properly relieved on the mouldings. The cornice and ceiling of the room should be carefully toned, so that nothing be too obtrusive; but no special colours can be proposed as they would depend on the design of the architecture.

Considerable discussion has occurred in late years as to the proper background for statues, whether it should be a quiet neutral tone of grey or a more decided colour such as maroon red. I am strongly in favour of the decided colour. There may be special circumstances making the light neutral tone desirable for one or two statues; but, taken as a rule for a gallery, or for even a single statue, I prefer the deep colour. This must be modified of course, according to the condition of the marble; if the statues are old and stained, the colouring must be lowered in tone accordingly. The hue for walls where prints or photographs are to be hung should be a rich yellow brown, or a leather colour. This gives lustre to the back of the print or the tone of the photograph. Occasionally there may be some special object in a room requiring a corresponding modulation of the colouring, such as an allegorical painting in a ceiling, much darkened and obscured by age; such cases have often occurred to me, and have caused difficulty; for you must manage to make the painting look well, and the ceiling not too gloomy. I will give an example. In an old castellated house, there was a room in which were to be arranged a series of family portraits. As the room faced the south, it was desired that the walls might not be red; so it was decided to have a bold damask pattern green flock upon a brown leather and gold ground. The ceiling was divided by projecting beams into fifteen compartments, in each of which was a large oval painting of a cardinal virtue, in *chiaro oscuro* on a dark olive ground; these ovals were surrounded by low relief framing, and outside that by very high foliage ornament. We made the framing deep vellum colour, relieved with gilding, and in the margin put a tone of maroon red, the light ornament vellum, and the ground of the surrounding panel was painted blue sufficiently modulated. The beams which were enriched we painted a brown oak colour, and the ornaments on them were picked out the colour of light wood, and relieved with maroon red and gilding. The curtains of the room were red, and the carpet also, but relieved in subdued colours. The ceiling of this room was of the nature of a discord, as it would be called in music; and yet to my eye it was satisfactory and harmonious. You cannot lay down precise laws as to what colours shall be brought together: a careful modulation will enable an experienced artist to bring any colours together. Discords can always be made to modulate if you but know how to do it. I once heard a learned man observe that "science is a collection of laws, but knowledge is a collection of facts;" and there are facts which experience teaches us, which it would be difficult to explain by reference to the laws of harmony; though these laws are just, sound, and indisputable.

Hitherto we have been considering the principles of contrast and harmony, or its application to simple forms, under ordinary circumstances; but in churches, large halls, or public buildings of importance, it is necessary to consider very carefully the peculiar circumstances of each of them before designing the decoration. I am not surprised at architects dreading the indiscriminate use of colour in a building on which they have bestowed much careful study and labour. Judicious and well-designed arrangements of colour should add to the architectural effect; the principal constructive features of a building should be emphasized or clearly expressed; and the whole, avoiding confusion, should present a glorious combination of symmetry of form and

* By Mr. J. Gregory Crace. See p. 874, ante.

harmony of colour. As for me, I abominate white-wash; I see not the beauty of raw stone walls unrelieved; nor do I see the impropriety of covering those raw stone walls with glowing colour.

I will now briefly allude to colour as applied by the ancients at various periods. Those who have had the opportunity of visiting the interior of Egyptian temples express their warmest admiration at the harmony and richness of the colouring, preserved through so many centuries. The walls are mostly covered with sculpture in low relief, made distinct and intelligible by colour. Judging by what is seen at the British Museum, one cannot but wonder at such good effect obtained by simple means, for their colours appear to have been very limited. Their ornamentation is simple, but beautiful. The Greeks, I have no doubt, carried the art of coloured decoration to the same degree of perfection as the other arts in which they so excelled. All the interiors of their public buildings were coloured, and not only the interior, but in many of them the exterior also. According to the French architect, M. Hittori, the colouring in the Parthenon was as follows:—"The main architectural features, such as the columns and entablatures, were coloured yellow; the surfaces of the walls of the portico, and the cells and all the parts behind, were painted red; the triglyphs and the metopes were painted blue, the guttae of the latter with red spots; the mouldings, fillets, and grand cyma, were ornamented in different colours, the mouths of the lions' heads were red and the eyes blue; the ceilings were decorated by blue grounds with gilt stars." The traces of Greek coloured decoration are few; but we know that it was successfully practised, and the works of their descendants in a provincial Roman city, show even at the present day how beautiful it must have been; for the Romans were soldiers,—their art-workmen, their sculptors, painters, gold-workers, bronze-workers, and potters, were Etruscans or Greeks. Yes, it is in Pompeii we must now look for evidences of Greek art in harmonious colouring. The city of Pompeii, submerged by a continuous flow of mud and ashes alternately, from Vesuvius, lying dead, forgotten, for nearly eighteen centuries; now brought to light again, shows us all the details of Roman life as it existed at that distant period. The walls of the various palaces and houses,—roofless, indeed, but glowing with colour, in its utmost beauty of combination,—the various marble and bronze statues, jewelry, domestic and trade utensils, mosaic floors, and grotesques, all are exposed as the excavations are made, nearly as fresh-looking as when they were submerged; even the paved streets on which the visitor now walks are indented with the marks of the ancient chariot wheels. Here, indeed, a mine of wealth to the student in polychromy, here he will find wonderful combinations of colour always harmonious and beautiful. There are paintings, too, some evidently copies of celebrated works by eminent Greek artists, and what elegance, fancy, and beauty in the various playful arabesques everywhere abounding! A visit to Pompeii is, indeed, an event in a man's life, especially if he has a soul to feel the influence of art. In considering the specimens of decoration from Pompeii, it must be remembered that owing to the manners of the time the chambers were small, and that the heat of the climate, and the bright sunlight, made deep colours sometimes preferable. The discovery of the decorations of the Roman baths, about the time of Raffaele, caused the introduction of what is now called arabesque ornament; though it was then named grotesque, from the grotto-like look of the baths. The arabesques in the loggie of the Vatican are said to be inspired by these, and are well represented in the work by Volpato; there is one part of them I always much admire, namely, the groups of fruits and flowers suspended by red cords on a rich blue ground, painted on the wall surface round each window. All over Italy are to be seen interesting specimens of coloured decoration of the fifteenth and sixteenth centuries at Florence, Mantua, Sienna, Perugia, the Cortona near Pavia, Assisi, and a host of other places. My son studied in these places, and made a great number of coloured sketches, which show how very interesting these works are to the student in decoration, and what value may be given to surfaces otherwise unadorned, by a bold application of harmonious colouring, and refinement and delicacy in the ornament. In another series of drawings, made by myself some years ago from decorations done at Munich in recent

times, you will see what great use the Germans have made of early Italian art in applying the result of their studies to modern work. I think the very simple but beautiful, rich, and glowing colouring of the arch soffits of the Allerheiligen Capellen is a model of successful decoration. It will be recollected that modern Munich is the creation of the late King Louis, late king though still living, of a man strongly inspired with a love for art, and who devoted himself to the adornment of his small capital by the erection of a series of art monuments such as picture-galleries, statue-galleries, museums, libraries, palaces, churches, all combining in their construction and adornment the talents of architects, sculptors, artistic and decorative painters, &c., and thus forming a city which has acquired high renown in art, as compared to which our big, dull, ugly, smoky London, sinks into insignificance.

What I have attempted to explain are merely the rudimentary principles of an art which requires study and constant practice to make it available. One must learn the grammar of a language before it can be correctly understood; and it requires much knowledge and deep reflection before one can write an essay or a poem. But how many a self-made man has raised himself by his own careful training. I say to every house-painter, learn to draw; keep a sketch-book in your pocket, and when you see anything you admire, attempt to draw it; you will find you will soon get on. There are schools of design in various parts of London where you can acquire a knowledge of ornament. It is an amusing occupation—it is likely to be a profitable one; at any rate, do your best, and if you do not command success, it is a last satisfaction to feel that you deserve it.

SCHOOLS OF ART.

The Bristol School.—The distribution of prizes and certificates awarded at the last examination to the successful students, took place at the Fine Arts Academy, Queen's-road. Mr. P. W. S. Miles presided over a large attendance. From a statement supplied by the master, and read by the chairman, it appeared that the result of the second-grade examination in March last was, that 90 exercises were executed by 62 students, to the satisfaction of the examiner. Of these, 17 passed, and five had certificates awarded. In the third grade, 17 students' works were considered very satisfactory; twelve gained prizes, and five honourable mention. Fifteen students' works were selected for national competition, and two received national prize medals. The chairman distributed the prizes.

Gloucester and Stroud Schools.—The annual exhibition of the works of the students of these schools, took place in the Cornhall, Stroud. The works were of a meritorious character, and showed marked progress on the part of the pupils. Several local prizes were offered, and a public meeting was held at the Cornhall for the distribution of these and of those gained by the pupils of the science classes. Mr. S. S. Dickinson presided, and several interesting speeches were delivered. Among those who spoke were Mr. Sibree, Mr. Winterbotham, the Rev. Dr. Badcock, and Mr. Kemp (master of the schools of art). Mr. Pullen, the master of the Science Class, who is leaving to take an important appointment at Brighton, was presented by the chairman with a money testimonial subscribed by Mr. Pullen's pupils. Mr. Dickinson remarked that Mr. Pullen had been most successful in his teaching, and had been the means of securing for one in his class the great honour of the single gold medal offered by the Department in Geology. The committee, in their report, said that in many respects there had been a great improvement in the Science Class during the year. The annual exhibition of the works of the students of the schools was to take place at the Gloucester school, in Longsmith-street; and the distribution of prizes by Mr. Gambier Parry, president of the school, at a public meeting in the Tolsey.

The Carlisle School.—The annual meeting of this school was held in the Academy of Arts, Finkle-street. The mayor presided. The receipts for the year ending 30th June were stated to have amounted altogether to 741. 14s. 11d., of which the principal items were:—Annual subscriptions, 267.; fees of school, 52l. (of which half is deducted for the master); and balance due by treasurer at last account, 21l. The expenditure amounted to 61l., and 18l. remain in

the hands of the treasurer. Captain Ferguson, in moving the adoption of the report, said it was very satisfactory to find that the school was now out of debt. There were few schools conducted in such a satisfactory manner as this, and that circumstance was due in no small degree to the ability and attention of the master, Mr. Herbert Lees. The master regretted that so few operatives took advantage of the facilities the school afforded, and that those who did remained such a short time; and mentioned that there were only two operative painters in Carlisle who attended the school of art, although the instruction they could receive there was likely to benefit them so much.

A Lewes School.—After Christmas, an effort will be made to establish a branch school of art, in connexion with the Lewes Mechanics' Institution, under the auspices of Mr. John White, head-master of the Brighton school.

THE HAVRE INTERNATIONAL MARITIME EXHIBITION.

THE programme has been issued for a Maritime International Exhibition at Havre in 1868, including forty-three classes, in the five following groups: Navigation, Goods, Fishing, Aquiculture, complementary Classes.

A Maritime and International Congress will take place during the time of the Exhibition. There are to be an aquarium and the sea-water ponds worthy of notice with regard to their inhabitants and aquatic plants. The Exhibition will be held in closed galleries which were begun in the month of July, 1867, on the grounds situated by the sea-shore, opposite the roadstead on the Boulevard Impérial and the Boulevard François I. These grounds are granted by Government.

The first 500 exhibitors will have free admission to the club belonging to the Exhibition serving as a place where exhibitors may meet and treat of their affairs.

The rewards adjudged to exhibitors, on the decision of the International Jury, will consist of pecuniary gifts and objects of art, gold and silver medals and honourable mentions: there will be several great prizes amongst the rewards.

Exhibitors pay for space, but pictures and purely art productions will be admitted free of charge.

The Exhibition will open on the 1st of June 1868.

CARVED STALL-ENDS, CHICHESTER CATHEDRAL.

WE have engraved views of half a dozen of the oak seats for the choir which have been set up in Chichester Cathedral. All the plants and trees mentioned in the Bible are introduced on the stall-fronts and ends. On the Dean's and Precentor's stalls English plants and flowers have been used. These stalls, like all the other internal fittings, were designed by Messrs. Slater & Carpenter, architects. Mr. Forsyth was the carver.

NEW AUCTION MART, TOKENHOUSE-YARD.

IN consequence of the old Auction Mart at the corner of Bartholomew-lane having been sold by its proprietors to the Alliance Bank in the year 1864, a number of the members of the leading auctioneering firms in London formed themselves into a limited liability company, and having purchased a site in Tokenhouse-yard, Lothbury, the present convenient structure for the use of the profession and public generally has been erected from the designs of Mr. G. Somers Clarke, architect to the company.

The site formerly was covered by a row of old brick houses, let out as offices, no higher than 40 ft., whilst the additional height of 14 ft. required in the new building to give the number of auction-rooms essential to make the investment at all remunerative to the company, caused an amount of litigation on the vexed question of damage done to light and air of the adjoining properties hardly paralleled in the history of that fertile subject. For nearly one year the lower floors were occupied by the company with a temporary roof on the building. During that period the whole matter was fought out in Court before Vice-Chancellor Page Wood, when the



NEW STALL-ENDS, CHICHESTER CATHEDRAL.

verdicts were generally against the company. Eventually, the best solution in cases of this sort, viz., a compromise and a money compensation to the aggrieved parties, terminated the dispute, and the building was allowed to be finished in its integrity.

The front next Tokenhouse-yard measures 97 ft. in length, and is 54 ft. high to the top of the cornice from the pavement level, by an average depth of 36 ft. It is constructed generally of Portland stone, but portions such as the base and sur-base of the entire building, the principal door, the centre shafts of the two-light windows, and the panels between them of the second-floor, are executed in red Mansfield stone from the Lindley quarries.

The foundations were carried down to a depth of 22 ft. below the level of the street, as the site consisted of made ground, probably the filling in of the old Walbrook stream. The excavations were

obliged to be done by mining in short lengths, as the adjoining buildings, upwards of 200 years old and very lofty, required to be underpinned and shored up most carefully before the trenches for the new building could be constructed. The great depth of this excavation necessitated the formation of a vaulted sub-basement 11 ft. high, let to Mr. Reuben Hibbard (the lessee of the Auction Mart Restaurant on the floor above) as wine-vaults. These vaults, built in Portland cement, with white brick facings, and paved with blue Staffordshire paviors, being below the level of the City sewers, were drained into a sumpt-well, from whence a force-pump discharges the contents into the sewer above in Tokenhouse-yard. In these cellars are deposited upwards of 20,000l. worth of wine, ranged in a symmetrical form in wrought-iron bins the whole length of the building, and they are lighted throughout with gas. A staircase enclosed by a wrought-iron grille leads

to the floor above, or basement proper, appropriated as a luncheon-bar and restaurant, with kitchen, scullery, larder, and so on. Access to the restaurant is obtained direct from the street, and also by the principal stairs on the ground-floor of the Mart itself.

The whole of the ground, first, and second floors, with the exception of one room occupied by the Estate Exchange Company, are in the hands of the company, and let as auction rooms. They vary in size from 33 ft. by 27 ft. 6 in. to 24 ft. by 18 ft. There are also consultation-rooms, retiring rooms, W.C.s, and housekeeper's rooms. Messrs. Lucas, Bros., were the builders; and Mr. John Athey the clerk of the works. Mr. Earp executed the carving.

Some critical remarks on the exterior of the building will be found in our last year's volume.*

* Vol. xxiv., p. 792.



THE AUCTION MART, TOKENHOUSE YARD, LONDON.—MR. G. SOMERS CLARKE, ARCHITECT.

In England there are no elements of comparison between the Royal Academy and Schools of Art, and in France the sort of education attempted in the Municipal Drawing Schools and the *École des Beaux Arts* are vitally different. In the Royal Academy we have an institution similar in its aims for educating professional artists as in the *École des Beaux Arts* in Paris; whilst the Municipal Schools of Paris and the French provincial towns are in their aim and intention the same as our English Schools of Art. In the one case the Academy and the *École Impériale* seek to give technical instruction of a high order to professional students in fine art; in the other, the Art and Municipal Schools endeavour to impart a knowledge of the elements of art such as would be practically useful in the trade to artisans. It may very much concern the refinement in art and the status of English artists to discover the similarity or difference between the nature or degree of education given in the professional schools of the two countries and in the German schools; but as this does not materially influence the art-element in industrial production, it is not my intention to institute any comparison, or search for information concerning them. What I propose to do is to see whether we cannot combine with our English art-education those good features by which the French and German educationalists try to develop art-feeling among the actual producers of the works, in which the artisan either displays knowledge of good form and a taste for the beautiful, or betrays an ignorance of both.

Schools of Design and Schools of Art.

The experiment of national art education in England is one of thirty years' duration; the first School of Design having been organized at Somerset House in 1836. During the subsequent fifteen years several of the leading provincial towns also established schools of design, which, together with the head school in London, were supported principally by direct Parliamentary grants to the several localities. The first object of the schools was to supply an education to designers and art-workmen. Examples for study were supplied to the schools by the Board of Trade, which had the control over them and determined the amount of annual grant to each locality, according to its importance as a manufacturing centre, it being recognised that the work of encouraging improvement in design could best be achieved in the towns in which manufactures were carried on. No difference in this respect was made between London and Manchester, and nothing which the Board of Trade gave to the Central School at Somerset House was withheld from provincial schools. Excellent examples for study were furnished to all, and the schools thus supported effected a great deal of good at comparatively little cost to the country. The subjects of study were few, and the drawings produced in the schools were annually forwarded to London for examination by the heads of the Central School, who reported on them to the Board of Trade. There was no examination, as at present, of the students by means of papers on elementary subjects. In 1852, the system by which it was sought to develop an art-feeling throughout the country was entirely changed. Design became one of a multitude of subjects of instruction; the education in elementary art of the public generally became the aim of the Schools of Design, thereafter called Schools of Art; and the task of supporting the schools was shifted from the Board of Trade to the localities in which the schools existed, with the exception of the London School, to which this did not apply; whilst the management of the schools was transferred to a new Government Department, called the Department of Practical Art, which subsequently became the Science and Art Department of the Committee of Council on Education. Many and very various have been the changes made in the conduct and direction of Schools of Art, which it would be both unprofitable and digressive to consider at present. It will be, perhaps, sufficient to remark that design especially is no longer the work of the schools, though it is one of the twenty-three stages of study in the schools' course. At present the art education of the country is carried on by the certificated teachers of the Art Department in, 1st. Primary schools; 2nd. Night classes in mechanics and other institutes; 3rd. Schools of art for both day and night classes; 4th. Private schools and colleges. The course of instruction is divided into three grades. 1st. Elementary drawing in primary

schools; 2nd. Elementary drawing in schools of art; 3rd. Advanced drawing in schools of art. Teachers of drawing are qualified after examination by certificates in two grades, the second, which bears testimony to teach elementary drawing in primary schools for first grade, and in night classes in the subjects of second grade, in which the certificate is held. (This second grade certificate is that usually held by National schoolmasters.) The third grade of qualification is that held by art-masters, the teachers of schools of art, the whole of the subjects of study being divided into six groups, and a separate certificate granted for each. The State supports art education when given by certificated teachers, not on the School of Design system of a fixed sum to each manufacturing centre, but upon the results of examination of the pupils of the schools, in the second and third grade of instruction, in schools of art or night classes, and in the first grade in primary schools.

The encouragement offered to students in schools has varied much also. For a time free-studentships, medals, and book prizes were given, but at present only ten gold medals, twenty silver, and fifty bronze medals are awarded to the whole of the United Kingdom, and these are for success in either (1) painting from nature in colours, (2) drawing in light and shade from the antique, and (3) design. Other rewards in the form of books are given for success in third-grade elementary subjects, and of books or drawing materials for success at the second grade time examinations, under the local committees of the schools. Upon the success of these examinations grants in aid are made to the schools, from which it will be seen that unless certain subjects of study are pursued in the schools, little or no aid is given by the State; and even then, if the students are absent from the examinations, or have not attended sufficiently regularly to produce a fair year's work previously to the examinations, no assistance is extended to the schools on their behalf.

From this statement it will, however, be apparent that the object of schools of art is to cause a diffusion of knowledge of drawing principally amongst the artisan classes; and, assuming that working men cannot afford to pay the full value of such instruction, to encourage and assist them by rewards, and to share the cost of extending this education with the localities by grants in aid to the teachers.

Concerning the value of the system upon which the schools are thus managed there are various opinions. In it are several features as good as they can be, and others which cannot be so described. Some very successful regulations, which worked well and were the cause of so wide a diffusion of instruction as at present exists, have been discontinued, and other much less satisfactory arrangements substituted. Others, which are improvements upon anything preceding them, have been adopted, and thus our art-schools, which from various causes have been in a condition of perpetual change since 1852, may fairly be supposed to be still in an embryonic state, requiring care and increased experience to develop them, if ever they are to become what they should be, or even what they profess to be. The greatest difficulty in the way of the extension of the advantages of schools of art at present, is the very limited amount of assistance obtained from the public by way of annual subscriptions, or in the shape of annual grants in aid, given to provincial towns, by the central department, in the first place, and secondly, the impossibility of obtaining suitable examples for art-instruction in the schools from the limited funds at their disposal. A reconsideration of these questions, and the adoption of means to obviate these difficulties, for a definite period, would probably enable a large number of localities to resuscitate their schools of art where at present they languish, or to establish new schools where they do not exist. A liberal aid to meet local efforts for a period of say ten years, and the furnishing of all schools willing to provide satisfactory accommodation for them with the best examples for study, would, I feel sure, give the subject of technical education in art so fair a beginning that it would take root, and at the end of such a period be able to draw its own nutriment largely from its own soil. In the long run, the course proposed would be the cheapest and the best; for eventually the cost of these schools must fall equally on the State and on localities, though it will always be a profitable investment of public money that in London and some of the more populous of the provincial towns, schools and

museums of a high class should be supported in a condition of the greatest efficiency, by the State.

Elementary Examinations.

The present system in English schools of art of attaching so great an importance to elementary knowledge on the subjects of second-grade examination is peculiar to them, and not altogether satisfactory, judging by the results, which are obtained by them in facility of drawing, and the still greater facility and mastery of drawing obtained by French and German students without these tests. In such subjects as freehand and model drawing, and perhaps geometrical drawing, the imposition of a time test is satisfactory, and produces readiness and ease of work quite consistent with a fair understanding of the subjects. In perspective and orthographic projection, little good is done by examinations as at present, for only a superficial knowledge of either can be conveyed to students so badly educated as our artisans, as a rule, are; and the knowledge which it is possible to get into them, when sufficient to pass the test, requires a vast outlay of labour, and rapidly disappears afterwards, as I have found from a long and disagreeable experience.

Advanced Time Examinations suggested.

On the other hand, in English schools of art we have no time examination whatever in subjects such as light-and-shade drawing from the cast, or examples, which is found to be so excellent a practice in the French schools. I have been present at these examinations in Paris; and, whilst they convinced me that the French method of teaching drawing in light and shade from the first, is the best possible system for artisans, they made me regret that our own system of examinations does not include the testing of the more advanced students in our schools by similar time drawings. This seems to be worthy of consideration, whether it would not be advisable to add to our elementary examinations the further time examination of advanced students in—1. Light and shade from examples of ornament, figure, and foliage in chalk; 2. Ditto, from the cast; 3. Ditto, from the living model and from natural foliage; 4. Colouring; 5. Drawing in various mediums from memory; 6. Drawing from architectural models, and models of machinery; 7. Original design, as a time exercise.

If, for instance, a student, who had already passed the elementary tests, were required to offer himself for examination in all the subjects of study he had pursued since the last examination, or in those represented in the set of works in which he had produced during the year, both in time and memory drawing, the good features of such tests would be continued for the benefit of the student's education, after the elements had been passed, and more difficult work was being encountered.

Modification of Elementary Teaching.

Another suggestion I would make is the discontinuance in our schools of such severe tests of accuracy in outline drawing. I confess to having, at one time believed thoroughly in the virtues of this hard outline drawing; and, as long as the present value, theoretical and pecuniary, is attached to it in the school of art system, it must be insisted on by art-masters. Yet, after all I have seen, both of French works and some German drawings, I believe we are the only people who lay this heavy burden, grievous to be borne, upon the shoulders of our beginners in art-study. The French pupil begins his study with thick, coarse lines and rough effects of light and shade, which do attempt to be a representation of what the eye sees, in the manner in which it is most easy of expression. We in England require our students to begin their efforts to represent form in a manner it is never seen by the eye—a conventional, expressionless way, requiring precision and accuracy precisely at the time when it is folly to expect it. Experienced artists, even, never resort to so severe a test as embodying their ideas in a wiry line, which does not exist in nature. Their roughest sketches which pretend to the imitation of forms, include a little sketchy shading and variety of thickness in lines, in imitation of emphasis as the eye sees, and are not mere geometric, colourless, shadowless, front elevations of forms. What Mr. Ruskin recommends the pupil to do with pen and ink as a means of studying form (in his "Elements of Drawing"), the French do with chalk and charcoal, using

INSTITUTE OF PAINTERS IN WATER COLOURS.

LIKE the senior society, the Institute of Painters in Water Colours is best represented by those of its members practising landscape-drawing; or, at all events, in this present exhibition of "minor" works,—since the proper denomination of sketch, study, and picture remains a moot point,—the figure-draughtsmen have lent too little assistance calculated to support a different opinion.

It must be rather amusing, and sometimes vexations, to those who have made the study of nature their life-long business, to be corrected in regard to what may be accepted as a *presentation*, in fact, of their study, to be told that what indicates the greatest hurry ought to be endorsed with the strongest acknowledgment of its truth, whilst otherwise earnest watchfulness and honest care, that make the fruit of it apparent, should be accounted as discount in the value received. Sun-gleams, clouds, light and its reflexions, are aspects as transient as a lady's frown, and observation and recollection are the only means by which they may be recorded.

Did one day's consideration suffice for Mr. W. Bennett's study of "A Mountain Torrent" (76), or for Mr. James G. Philp's of "The Boat of the Atlantic" (62), with its clever realization of seething spray and mysterious variety of shadow-tints on the beach it washes; or was the sun slow enough about setting in gloomy splendour "On the Adur, Littlehampton" (38), to enable Mr. H. G. Hine to paint his portrait before, sullenly sinking into his sea-bed, he quite hid his face in the sheets of flat cloud, after having lent Mr. Bennett a patient gleam inland (106) for his immediate and particular pictorial purpose, and being similarly kind to others?

Winter or summer, an exhibition by the Institute of Painters in Water Colours would be strangely imperfect without numbering amongst its leading features one of those Eastern desert subjects for which Mr. Henry Warren has become so famous; and (11) "The Race of the Two Trees—who will be first for Water and Fuel," though a small one, is a very admirable specimen. The goal is a well in the desert: to reach it two parties are strenuously racing their camels, whilst pedestrians are running a spirit, with the probability of little reward for the winners, since "it is not unfrequently happens that, on arriving at a well, but a scant supply of water is found." This is, in all probability, a study for a larger picture; the finish of the workmanship and completeness of the composition dignifying it above the lighter pretensions of a sketch—a designation more properly belonging to an illustration of "The Finding of Moses" (289), and other works of less importance. Among the rest of Mr. Warren's contributions is the figure of a maiden, who, in a low-necked dress of early eighteenth-century cut, and defiance of bronchial affections and all propriety, is walking out when it snows, dissolving the flakes into tears of envious admiration and grief that her complexion should be so clear (308): the idea is more euphuistic than the artist's treatment of it, and to connect its value with the worth of an "old song" (whence the inspiration) would be to underrate it considerably.

Mr. John Absalon's idealities help to vary a little the collection, though none of them offer an opportunity for adding anything like new comment on the agreeable qualities his sketches usually possess, even when as slight as the "Milkmaid and Angler" (391), or (418) "The Whisper." Mr. E. H. Wehnert, in numerous instances, shows a partially for depth of colour, including illustrations of Shakespeare's "Taming of the Shrew" (33 and 50), and sketches of some of his well known larger drawings. He recalls one of his early successes in (122) "Sebastian Gomez, the Mulatto Slave of Marillo, surprised while painting a Virgin and Child," breadth of light and shadow, and subdued richness of colour, as well as for the interest that must always be attached to it as the germ of a masterpiece, make this one of the most notable things in the room. Mr. Louis Haghe is not at all conspicuously represented by his "Sketch for a Drawing made by command of her Majesty the Queen, of the Investiture with the Order of the Garter of his late Majesty Louis Philippe, King of the French, at Windsor, October, 1844" (80): except it be for the associative recollections that are awakened by its presence, it can only be regarded as a cleverly painted interior; but, taken as a starting point, what a number of pages of a yet unwritten history will

be devoted to the interim between its date and now. Two studies of Italian costume (300 and 316), are also by Mr. Haghe, though some would not think it. "Joy and Sorrow" (10), by Mr. Guido Bach, shows great facility in dealing honestly with water-colour; the work has much of the luminous quality of fresco, though the subject of it is not quite so clear: is it slavery envying freedom, or is the dark lady an unmothered mother contemplating the felicity of the fairer one, who bears the weight of the chubby lump of happiness on her lap amid surrounding antecedents of the dative case? However, the drawing is admirably, though loosely, done; and betokens power enough to do still better. There is no mistake to be made about (142) "A Gitana: a Study," by the same; a very pleasant though dangerous study if the artist should happen to be as good-looking as the model, whose brothers and cousins may possibly think long knives short remedies for heart complaints. Making allowance for preternaturally large and liquid eyes, this head is very beautiful, though somewhat of a conventional type; but then, how far preferable to such unconventional type that, to speak as gently as possible of it, is not pretty—is not refined, and braves it as "The latest Thing in Hair and Hairs." Mr. A. Bonvier's physically frail ladies rise above the golden cloud of idealism into the haze of impossibility: she who is gazing on "The Cameo" (67) is of such stuff as dreams are made of; and so is the dark ultra-refined but nevertheless ably drawn and stippled, "Sibilla" (218). How much more real-looking is Mr. James D. Linton's "Study of a Head" (205); and this is finished to a fault, but without that total destruction of vitality that so often attends elaboration. Mr. G. G. Kilburne's "Country Girl" (242) is life-like and natural; though, with a tithe of the labour bestowed on this, Miss Emily Farmer's "Village Child" (414), with "Sorrow and Mirth" (400), are more vivacious, and far more agreeable company. Miss Farmer's child-portraiture is reaching excellence. Mr. W. Lusson Thomas has some pleasant little drawings; if the themes he selects for exhibiting his taste for colour upon had the recommendation of being less time-worn, he would secure a more decided recognition than his "French Fish-girl" (237), presented singly or engaged as one of "The Gossips" (337), or idling with a younger sister on the beach in "Sunshine" (429), even now entitle him to claim; this, (349) "The Round-head's Daughter," with a bright day-light effect to illuminate her as she cogitates over her needle-work, will help to prove. Mr. C. Green, with great precision of touch, makes much of such trivial matters as the most ordinary acquaintance with London common life would furnish *ad libitum*: a coster's barrow on "Saturday Night" (403) is surrounded by the most probable of customers, who, sharing amongst them some appropriate character, are made quite worthy of depiction. With such aid as the light of the paper lantern and focus of colour provided by the fruit and other vendible commodities, they form an effective group, soon to be scattered by the inevitable and inexorable policeman seen approaching in the distance to assert the majesty of the law. "An Acrobat" (367) and a companion study of one of those sylphs who dance hornpipes on a deal board, with a drum accompaniment, are also by Mr. Green, who is seen to best advantage in miniature works of this kind that are usually so well done as to disguise their commonplace origin.

Mr. Charles Cattermole is likewise great in miniature; but his illustrations are of the past, not the present; the traditions of feudal times furnish him with motives: (233) "A Council of War"; (386) "After the Battle"; and "The Baron's Chapel" (399) are of his best examples, showing as much appreciation of Mr. John Gilbert as Mr. Gilbert has previously shown of the Cattermole recognised long ago as one of the most original of artists, and of the least likely to follow anybody.

This brief summary will exemplify the figure and face department; but it would take a longer description to do as much justice to the landscapes, coasts, and sea-pieces, with architecture exterior and interior. The greater number of these possess such qualities as declare immediate reference to nature, but with little evidence of haste or uncertainty in execution, or, in most cases, of incompleteness. Stones are unalterable things (unlike stocks), except by time and such temporary changes as the hand on the dial will account for under reasonable conditions of seasonable weather.

Mr. Carl Werner's sketches bear the impress of authenticity, in that ready facility—not carelessness—with which he transmits facts to paper. "Entrance of Mosque at Cairo" (82), "Jerusalem from the North," introducing the cupolas of the Holy Sepulchre" (197), "Street of Damascus" (210), "Entrance of an old Palace at Cairo" (239), "Old Balcony at Cairo" (324), and a very unprepossessing portrait of a dusky "Girl of Antinoc, Upper Egypt" (264), with others, stand in need of no verbal intimation that they were painted on the spot. Mr. C. Vacher's drawings look more like studio-work, and are not stated to be otherwise. "Remains of the Numidean City, Zambessa, North Africa" (31), bathed in a rose-coloured atmosphere, is a good specimen. There are admirable instances of contrast to the more pains-taking and patient of students, in Mr. D. H. McKewan's "Borrowdale, Cumberland" (75), and his capital interior, "Lady Betty Germain's Bed-chamber, Knole" (296); Mr. W. L. Leitch's "Study from Nature on the Waters of the Awe, Argyshire" (304), "Evening" (181), and others, by the same. But where so much is to be noted, it is difficult to make selection. So in following the order of the catalogue it may be observed that Mr. J. L. Wood's bits of Haddon Hall (4 and 366); "A Lugger riding out a Gale," by Mr. E. Hayes (15); "Sunset at Earlswood, near Reigate" (21), encouraging fresh belief in Mr. T. L. Rowbotham's pretty Italian adaptations, "On the Lake of Lugarno" (42), &c.; Mr. W. W. Deane's "Palazzo Doria, Genoa" (53), and "Sta. Maria de Salute, Venice" (94), with the curious effect of water bluer than the sky; Mr. J. H. Mole's pleasant platitudes "Pegwell Bay, Isle of Thanet" (74); "At Langley, Sussex" (120); and some others still prettier. Mr. J. Mogford's "Sundown, West Coast of Scotland" (127); Mr. H. C. Pidgeon's "Study at Burnham Beeches" (189); Mr. Skinner Prout's "Candebee, on the Seine" (199); "A Silvery Morning" (201), very positively rendered by Mr. J. G. Philp, and welcome after stormy weather; a very careful drawing of the "East Cliff, Hastings" (282), by Mr. H. G. Hine; Mr. J. H. D'Egville's Venetian scenery, particularly "Chioggia" (305), and a very literal view of "Hillsborough, taken from the Harbour at Ilfracombe, North Devon," by Mr. Aaron Penley (343), are marked for more notice. Mr. Beavie's horses' heads (348), and small drawing of "Harvesting in Sussex" (325); Mr. Harrison Weir's "Foragers" (54); Mrs. W. Duffield's Studies of Roses, and Mr. J. Sherrin's "Bough of Apples" (422), are all excellent in their way. Mr. Bennett's drawings throughout are delightfully fresh in tint; and though he generalizes and only suggests natural appearances rather than copies them, his method conveys a very truthful notion of them: the same may be said of Mr. J. W. Whymper, whose sketch of a "Homestead at the Foot of Hindhead" (301), and, again, a "Bit on Blackdown" (312), will show how much affinity there is between their styles.

AN EDUCATIONAL VIEW OF THE PARIS EXHIBITION.*

BEFORE it is possible to learn what features of Continental art-education are worthy of incorporation with our English system, it is requisite that we should inquire into the objects sought after in supplying instruction in art both in England and on the Continent; because, unless our aims are nearly the same, the means for accomplishing those aims will be necessarily dissimilar. Nothing, for instance, could be gained by a comparison of the art-education of artisans in one country with the professional instruction of artists, architects, sculptors, or painters in another. The education of all classes in every subject may be identical in kind up to a certain point, but beyond that point it will vary for different classes, not only in degree, but in kind; and though thoroughness in education is desirable for all, it is of no use to fail in securing sound knowledge of the possible in attempting to cover a wide field of knowledge, desirable in itself, but beyond the reach of the many. In other words, the education of the artisan and the artist may be the same in elementary work, but the success of the former will depend upon readiness and skill in a limited field; whilst for true greatness in the latter all kinds of knowledge in the highest degree are absolutely necessary.

* See p. 897, ante.

wash-leather and stump us instruments; and I feel quite convinced that, if ever we are to make ready and powerful draughtsmen of the students in our art schools, it will be by the modification of our system of teaching drawing, beginning with the vehicle and method of work which the French and some of the German schools have adopted.

Re-arrangement of Advanced Instruction desirable.

In comparing the South Kensington collection of drawings with those of other nations represented in the Exhibition, the most striking feature was the variety in modes and subjects of study, and the high finish in many of the works. This, though apparently a good feature, is not so in reality, remembering the object of schools of art. If they were professional schools, nothing could be said against either the wide field of art culture displayed nor the high artistic qualities of the specimens illustrating the course of study. But they are not professional schools, and as long as they are partially supported by the State, they ought not to aim so evidently at the development of such purely artistic practice. They are established and supported for the benefit of trade through the improvement in the handwork of artisans; and considering the amount of time usually given by young workmen to study, the effort at the high finish and beautiful manipulation seen in these works, is, for them, simple waste of time.

One excellent feature of the recent regulations concerning the examination of students' works in schools of art is, that the whole set of drawings produced during a year's study in the school by any one student, is forwarded to the central department, and upon the progress of the pupil and the fair amount of work done by him, an award is made, both to the student and his school. This is an equitable rule, and its effects will be toward increasing the thoroughness of the course of study pursued by the students, and in decreasing the time wasted by them in seeking after an artistic finish and beauty of manipulation, which in the mass of artisan students is mere affectation. Another arrangement, by which the highest rewards in the national competitions are given to such purely artistic work as painting in colour from nature, and drawing from the antique,—subjects as a rule beyond the power, as they are beyond the use, of the majority of artisans,—is as unsatisfactory. It is true that this exclusiveness is tempered by the admission of design into the trinity of subjects for which the highest rewards are given; but taking all three subjects together, they are not those for which, as it appears to me, the country should offer its highest prizes alone, being rather professional study than study for working men.

Nine-tenths of the trades represented by the students in schools of art would never require instruction in either of these subjects; and when students pursue them it is more for amusement than use, with the exception of design, in which only an insignificant fraction of all the pupils of art-schools in England ever study. If some of the highest prizes were offered for progress in improvement in any branch of study useful to the individual student, judging from the works produced by him, dated from the beginning to the end of his year's work, then artisans studying the more humble and useful branches of art education would have equal encouragement with that now given solely to the student of fine art and design.

In mechanical drawing, a subject of very great importance in England, though the National rewards are now withheld most unfairly from it, we are losing ground rather than gaining it, and, as I noticed in 1864, next to freehand sketch shading from the cast, it is the one study which the French and Germans are thoroughly pursuing, keenly alive to the near relationship between the scientific education of artisans and the general excellence of workmanship in mechanical trades. That is to say, in France and Germany, where freedom and power of drawing is of the greatest value, it is imparted by an effective method of freehand drawing; where accurate and scientific knowledge is required, it is taught through a complete course of orthographic projection, illustrating not only the theory of mechanics, but their application in machines and tools; the principles of the various branches of trades brought into use in building operations being also taught by courses of lessons on the details of workmanship in each branch.

Examples for Instruction required.

We have no examples to use in giving this practical instruction to artisans in England, and it is to say the least singular that our schools of art have existed so long without an effort being made to produce the means of education in mechanical and constructional drawing.

I cannot help feeling that in England, where our public galleries and museums of construction are so few and so far between, great good would result from an effort to supply both schools of art and the public with thoroughly good examples for study in all the branches of art-education required for disseminating knowledge and taste. It is impossible for others than those who are practically engaged in giving art-instruction to realise how the want of suitable examples and copies with which to convey this instruction meets them at every turn, and cripples their best efforts. If it were possible that every artist in charge of a school of art could be a universal genius; and, whilst taking his round of instruction, illustrate his remarks by masterly sketches or carefully finished studies in some fifty branches of art, then we might do without many examples we urgently require now. Even then the student, when left to himself, would be lost. All teachers need specimens of good work to place before their pupils, and at present in England we cannot obtain them.

Branch National Museums.

Very much of the artistic tone of French works in industrial art springs undoubtedly from the atmosphere of taste in which the workmen are always placed. From the time when it is possible to receive impressions, examples of good art surround the artisan, and have their influence in developing incipient taste. The art culture of the French public also is such as to necessitate the infusion of the art element into the design and execution of all objects, and thus there is a demand for skilled workmanship which acts as an incentive to the workman to possess himself of art power, and which offers him also the certainty of brilliant rewards for its exercise in his calling. In England the leverage of an art atmosphere may be said not to exist publicly, and the demand for objects of highly-skilled workmanship is not so general as to create the necessity of art-power in all workmen. Yet as labour, controlled by scientific knowledge, or influenced by skilled hands and good taste, is so much more valuable, both nationally and to individuals, than mere labour unaffected by these influences, it would seem to be a profitable course to supply this deficiency of public taste as much as possible by museums and galleries of industrial masterpieces and works of fine art. If we cannot make our outward influences in the streets and buildings what they are abroad, we could at least in museums and galleries insure the existence of a correct standard of taste for those to study from who have either the desire or the necessity. We want in all the most important seats of manufacture local museums, branches of the South Kensington Museum upon the same system of arrangement, supported principally from the same source and under the control of the same authorities, so that the national expenditure on museums of art and industry for the improvement of industrial manufactures and the elevation of public taste may become in its influence general, instead of, as at present, existing in London alone, and being therefore only local. There can be no reason of a public nature why the good resulting from the Kensington collections should not be extended to the provincial towns; nor is there any plea for the existence of that collection in the metropolis which does not apply with equal force to such towns as Birmingham, Manchester, Leeds, Glasgow, Sheffield, and Nottingham. The national treasures locked up in one place are like a well-stocked granary full of seed, whilst the fields that should reproduce its value a hundred fold, are left barren and uncultivated, a prey to profuse weeds and the contempt of passers by.

I would not have the central museum spoiled, nor decreased in artistic value in the smallest degree; but the distribution of duplicates of objects, or examples very similar of certain styles and periods of manufacture or craftsmanship, would not do this. If the national grant for the provision of specimens of industrial masterpieces is not sufficient to enable the authorities of the central museum to distribute examples to the more important towns, a fair representation of this to Parliament would

probably lead to a provision being made for this purpose specially.

It might be made conditional that any locality desirous to obtain the advantages of one of the Branch National Museums should, at its own cost, provide suitable rent-free premises, having every provision for perfect security, and undertake also its current expenses of lighting, cleaning, warming, insurance, and of the officers and attendants upon it, with the exception, perhaps, of one occasional inspecting officer from the central department, who would represent the nation in the meetings and deliberations of an influential local committee of public men, appointed to manage the details in the conduct of the museum. Such a committee of management might consist of the lord-lieutenant of the county and the mayor of the town in which the branch national museum is located, other members being nominated from the county and borough magistrates, from the town council, and some elected by the subscribers to the museum.

Branch museums so constituted, and in connexion with the schools of art of the district, should be empowered to receive objects and works of art on loan or as donations or bequests, to supplement the national collections lent to the locality. It ought, however, to be understood that, once the property of the nation, always the property of the nation, should hold good of the objects in these museums. No locality should possess the works of art lent to it absolutely; but at definite intervals they might be exchanged for others of additional or varying interest from other branch museums in different localities.

The establishment of these branch museums will be the most direct means of influencing public taste, and it is what ultimately we must adopt. Again, however, I would reiterate that I would have no sacrilegious hand laid upon the South Kensington Museum with a view to its utter dispersion, or even injury, as a collection.

I feel nowhere so proud of being an Englishman as when I am in the permanent portion of the South Kensington Museum. I know the good the Museum has done and is doing in London; and it is this knowledge which leads me, together with my practical experience of the grievous want of such examples of art in the provinces, to plead so hardly for similar museums, on a smaller scale, in all the great centres of manufacture. I see, also, the very important influence of works of art and galleries and museums upon the Continent, in the education of the public and in the training, indirectly, of the workman; and now that we have a system of instruction in existence, in our schools of art, capable of improvement no doubt, but still active and efficient, the only great want which remains is that of public galleries of fine and industrial art, to supplement the action of schools of art, and to remedy some of their present deficiencies. We want to have the public impressed (as Yorkshiremen say) with a feeling for the beauty and the value of good art over bad art and barbarism; and picture-galleries and museums are the readiest, and pleasantest, and most effectual means of conveying this inspiration.

Local Training Schools.

The establishment of these museums would facilitate the utilizing of a good deal of educational power which is now made but little use of, and also give the means to advanced students in the more important provincial schools of art to which museums may become attached, of prosecuting their studies to a higher pitch before leaving the local schools of art, and to earn what allowance the State extends to them during their period of training whilst in the receipt of it. The way in which these good points could be secured, and which I would take the opportunity of suggesting for adoption, is by letting each provincial school of art having the opportunity and the desire, be a training school for two or three art-masters, where, during the period of training and whilst in receipt of the allowances now given solely in London, they might be of great help to the masters and committees of schools of art by assisting in teaching. The greatest blow ever inflicted on the art-education of this country was the withdrawal of the assistance in teaching to provincial schools of art, when the salaries of the art-pupil-teachers were reduced to a nominal sum, viz., from 25*l.* per annum to 10*l.* per annum, and even the number at this salary limited. This step, against which I and a few others strongly and urgently argued, has made a dif-

ference in the numbers taught from my own school alone of 5,000 pupils decrease, and I doubt not that similar evil effects have proportionally followed its application elsewhere. What I would propose would help to remedy the mischief already done, and open up new fields for art-instruction. Instead of admitting students to the training school in London as soon as they possess the first certificate, and giving them a maintenance allowance of 50*l.* a year or more during the period of their study at Kensington, I would make this grant to the student after taking the first art-certificate, whilst remaining at the local school of art in which he studied, on condition that he prepared for another art-certificate, and carried out the wishes of the committee in the work of teaching,—only admitting him to the training school when in the possession of two art-certificates instead of one, as at present. This would be giving very valuable assistance to the schools, precisely in the way it is most required, and in remedying the most fatal of all recent regulations concerning provincial art-schools. The teaching of drawing in night classes of mechanics' and other institutions by persons possessing only the certificate of second grade, is both limited in amount and not satisfactory in kind, and its inefficiency will make it a short-lived experiment; whilst the withholding of all National prizes from students so taught would appear to indicate that its temporary character is acknowledged, or the punishment of the students by making them ineligible to take national prizes through the want of qualifications of their teachers, would not be seriously persevered in.

If what I suggest were done, then in a large number of schools of art there might be one or two assistant teachers holding the first art-certificate carrying on efficient art-teaching in the numerous night-classes which would undoubtedly spring up, when it would be possible to teach artisan-students in them well, at a workman's fee. At present little or nothing is done by many of the art-masters in training, whilst in London, in the matter of teaching, except in assisting the district London schools of art, so that the State gets very little during that time for the assistance it gives. On the plan I propose, there would be no additional cost to the State, the same allowance being given to the same student in the provinces instead of in London, and the student himself would feel that he was fairly earning the assistance given. And I think no one should be admitted as at present to the advantages of further and higher art-study in London, unless he had done this fair share of work in local schools, and proved his capacity as a teacher; thus giving a *quid pro quo* for his own education.

This suggestion, though one which could be more efficiently adopted when branch museums have been established, could be applied with great advantage now, and no arrangement, costing nothing, as this would, could be of such assistance to the larger schools of art, or insure so much good to the cause of art-education, and its dissemination among the working classes.

Importance of Technical Education.

The deficiency of technical education in England, so manifest in a general scrutiny of the Paris Exhibition, has been represented by some of the most distinguished English jurors, to the Schools Inquiry Commission. Probably in some future session Parliament will be called upon to institute an inquiry into this subject specially, and to provide the means, when the method has been decided upon, to offer the advantages of technical education in art and science to all classes of our countrymen. To obtain information of what has been done in this direction upon the Continent, inquiry will have to be made in the schools and institutions of France and Germany, and when this inquiry is undertaken it seems to me that special attention should be directed to the schools of art in France, Wurtemberg, and Nuremberg; and that the subjects of inquiry should also include,—(1) the means whereby examples for instruction are obtained so readily and efficiently for the use of schools, both of art and science in those countries; (2) the organization, management, and support of public galleries and museums of art and science, in metropolitan and provincial towns in all the great countries of Europe; (3) the system upon which private or local efforts to promote art instruction are supplemented by the governments of the several countries; (4) to what extent the direction of the schools and classes are under

local management; and in what manner, if any, the Government authorities test the nature and efficiency of the instruction given in the schools.

Already some of the specialties of England's manufactures are being developed on the Continent, and when the material and physical advantages we have hitherto almost exclusively possessed shall be shared equally by nations, whose energy is as great, whose education is more widespread, and whose taste is infinitely greater than our own, it is not difficult to foresee what must be the fate of those branches of our manufactures in which good design, and the most educated and cultivated skill, are elements of pecuniary value. If, with equal powers of production, Continental manufacturers infuse into their works that life-giving art feeling which is the common possession of themselves and their workmen, our manufactures hitherto required by the world will become distasteful, barbarous, and antiquated by comparison with foreign works, and our trade in them will disappear. The progress in scientific invention tends to equalise the material powers of all nations, by multiplying and facilitating their means of distribution, so that eventually a nation's wealth and safety will depend upon its education more than upon its natural products or the accident of its position, or even its historical antecedents and associations. We have seen very recently how the adoption of one simple scientific invention has, in the ordeal of war, given triumphant superiority to one of the contending parties, and changed the map of Europe. The adoption or neglect of the means of improvement and advancement in the arts of peace may lead to somewhat similar triumphs and commercial disasters, and it seems to me that the Paris Exhibition is a warning to this country to take up in earnest the subject of education, both general and technical. We can afford to spend a few extra thousands a year on education better than to lose the trades of Manchester, Birmingham, Leeds, and Newcastle; and if our exported manufactures will only be accepted by semi-barbarous people, England may soon expect to become again a poor agricultural country.

Institutions of Science and Art.

The general want of trade skill in our display at the Paris Exhibition, referred to by Dr. Playfair and others, would indicate that the time has arrived when, together with these museums, a development of schools of art, in the form of institutions of science and art, might be usefully established, offering education of a secondary character to all classes of society in both art and science, at a cost within the reach of all who can in any way profit by such instruction.

The most economic manner of conducting such an association of educational agencies, and ensuring their efficiency and support in any town or district, would be by placing them all together in one building, and under the same management, so that the schools might make use of the works of art and technical collections during class hours, and apply in the class-rooms the lessons learned from the master-pieces of art, or illustrations of the sciences, or processes of manufacture; and that the public could, at stated times, have free access to the collections; or free at some times, and by a small entrance-fee at others, as at South Kensington.

I would most earnestly caution those who may take action in this matter, not to contemplate the disconnection of the museums from the schools of art and science; for this would both increase the cost of maintaining each, and limit very decidedly the efficiency of all. Museums or collections without active education in class shows, but educationally they are simply worth nothing. If you disconnect the illustrations of art and science from instruction in these subjects, you sever the body and the soul of education, and have two agencies which, united, are living; dissipated, are dead.

Schools of art and schools of science, now in no way connected with each other, may be improved by a relationship, and the connecting link should be museums and collections in which all have a common interest.

The time has passed when, with any regard for national interests, we can stake the success of our manufacturing industry any longer upon the precarious support derived from local sympathy, or rely upon local agency for initiating schemes of education suitable to the demand which exists, or to direct them when established. Nothing but a comprehensive national scheme,

deriving its motive power from the State, and adapting itself both to general wants and to local necessities, will effectually operate on the need which is both general and local.

I am very conscious that schools of art are not what they might be, if properly organized by the Government and supported by both it and the localities; and considering that for fifteen years no serious and practical adaptation to the progress of events has been made in their conduct and management, it is not surprising. All changes that have been made during that time have been in the direction of withdrawing both the direction and support of the State, and this is opposed to development. But if schools of art and science are inefficient or wrongly organized, let the nation take up the whole question of technical education, with a determination after the fullest inquiry of reorganizing the schools, and making them what they should be, part of independent institutions offering the advantages of technical education to all classes of the community, according to their several needs.

Above all rocks of destruction, in the conduct and management of these public institutions, museums of art and science and technical collections, the subordinating them to any denominational or class institutions should be avoided. It is impossible that any merely local institution, or body of men attached to it, competing with similar institutions in the same town or locality, and having a multitude of objects to accomplish, with only limited means, whether of members or money, to do its work, can succeed in giving that prominent importance to the work of technical education which our commercial interests as a nation demand should be accorded to it. That all such agencies should be utilized, and receive great and direct advantages by affiliation to central schools and museums of art and science in all the large towns, is obvious; and this would be the best result of their previous work, with reference to the institutions themselves and the public good. In this way, feeders to our central schools are made to our hands, and their usefulness may be thus developed, by assistance not hitherto received by them.

The great lesson to be learnt by England from the Paris Exhibition is, that notwithstanding all her annual grants for education in science and art, we are not yet so successful in it as would be desirable and profitable. That the subject is of too great an importance nationally to allow of our present experiments in their present form being continued a day longer than is required for the organization of a more matured scheme. That now for the first time our Paris experience has brought the public mind into favour of a judicious expenditure of public money in furtherance of well-considered plans for national education of a technical character; and that voluntarism in subjects of imperial importance has proved itself incapable of competing with the national will of countries where voluntarism is recognised, but not exclusively relied on.

In conclusion, I would epitomise the suggestions made by me as those most useful towards remedying our national deficiencies:—

1. A royal commission of inquiry into the subject of technical education in art and science, both upon the Continent and in England, with a view to the organization of institutions for education in science and art, to include Fine Art and Industrial Museums.
2. The establishment of such Branch National Museums in all the great centres of trade and manufactures, on the plan of the South Kensington Museum, having, in addition, technical collections, giving especial prominence to the trades and manufactures of the locality in which each museum may be placed.
3. A re-organization of the system of national aid and instruction in schools of art, and examinations in shading, colouring, and drawing from examples, casts, nature, and from memory.
4. The provision of suitable examples for study in the various branches of art-education for schools of art and the public generally, by the Science and Art Department.

WALTER SMITH,
Head Master of the Leeds School of Art.

WOOD STAMPING IRON.—A New York street-railway was taken up lately, and it is said that the wooden sleepers were found to have printed their exact representation on the iron. The grain, knots, and curvatures were easily detected, both by the eye and by the touch.

THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of members was held at the House in Conduit-street, on Friday evening (the 22nd ult.), Mr. R. Phend Spier, President, in the chair.*

At the instance of Mr. J. D. Mathews (honorary secretary) the meeting was then invited to discuss the desirability of admitting gentlemen as honorary members of the Association, under certain limitations, which he explained. He observed that he had spoken to several senior members of the profession, and he believed many of them would be disposed to join the Association, not as student members, but as honorary members. If he thought that the introduction of this class would lead to anything like patronizing he would be the last person to propose it; but he contended that it would not have that effect. If the Association had exhibited any desire to be patronized, he believed it would have ceased to exist long ago; but there was a difference between admitting gentlemen to qualified membership who manifestly could not come in as students, and admitting a class of patrons to whom undue deference was to be paid. An accession of honorary members would, he thought, bring not only dignity and permanence to the Association, but also bring funds which might be employed to extend its advantages, especially in the augmentation of the library, which was daily growing more useful. In conclusion, he moved the following resolution:—

"That it is desirable that a class of members to be called 'honorary members' be established, who shall have the same privileges of ordinary members, with the exception of voting and standing for office, and a vested interest in the property of the Association; such members' names to be passed by the committee before being proposed to the Association for election."

The motion was seconded by Mr. J. S. Quilter, and supported by Mr. T. Roger Smith.

The following amendment was moved and seconded:—

"That, in the opinion of this meeting, the introduction of a new class of members in the Association is an unnecessary alteration, and one by no means likely to be advantageous to the prosperity of our Association."

Ultimately the original motion was carried.

The report of the committee, showing the operations of the society for the year 1866-67 was then read. It stated that 105 new members had joined the Association, and that the total number of members was 438, minus those who had resigned, or whose names had been struck off.

SANITARY MATTERS.

Manchester Ladies' Sanitary Reform Association.—The annual meeting of this association has been held at the Town-hall. The Mayor presided. In course of his address the chairman said the town council could take steps for getting the streets swept, the cesspools emptied, and everything appertaining to draining, but it was impossible for them to enter into the households of the poor or attempt to improve the habits of the people. His duty devolved upon the ladies; and he was glad to see that the Ladies' Sanitary Association were interesting themselves about it. He believed the Ladies' Sanitary Association had rendered great assistance to the town council in the important work which they had in hand. The Rev. R. A. Tindall contended that it was essential that the female portion of the working classes should be better educated before they could hope for good results in the sanitary and social condition of the people. He believed the overcrowding amongst cottagers was very often due to intemperance and extravagance, and he attributed the intemperance of the working men to the discomforts which they met with in their own houses through

the neglect of home comforts by their wives. The reformation of this state of things was only to be brought about by the assistance of the ladies. The report was unanimously adopted, and it was also resolved, "That the members of this association, feeling the importance of the work before them, desire to extend its usefulness by the employment of a sanitary woman in connexion with this society, and appeal to their friends to assist them in the formation of a special fund for that purpose."

The Sewage Question at Tipton.—This important question has received the anxious consideration of the committee, with a view to the prevention of the pollution of the river Tone, into which the whole of the sewage of the town at present flows. The best plan they could recommend to the Board, it is thought, would be that adopted at St. Thomas's, Exeter, Croydon, and Leamington, whereby the sewage was denodorized by the carbonate of lime process, and the construction of filtering tanks, whereby it was rendered free from smell. The surveyor has written to the surveyor at Leamington, and has received a reply to the effect that the works there give the greatest satisfaction, and pay 400l. a-year, over the working expenses, by the sale of the manure. With regard to the general question of the pollution of the river Tone, the surveyor has reminded the Local Board that no less than thirty-nine towns and villages drain into it. Mr. Taylor and the surveyor have been requested by the Board (who have passed a vote of thanks to the surveyor for his valuable assistance and information) to go to Leamington and inspect the works.

THE BIRMINGHAM CONCERT HALL.

This hall, in Coleshill-street, Birmingham, has just been re-constructed. The proscenium is surmounted with the royal arms between Arabesque designs, which contain the heads of Shakespeare and Milton. On each side are pilasters adorned with arabesque. The caps and cornices are painted dead white, picked out with gold; and amongst the foliage are medallions, wherein music is represented by the portraits of Beethoven and Mozart. The cove of the ceiling is paneled. The colours used are chiefly buff and light-blue raised with vermilion. The *facia* below, pierced with its circular windows, has, between each of them, well-executed figures, emblematic of the quarters of the globe, painted in cold grey tints on crimson grounds, which give extreme richness to this part of the hall. The gallery fronts are paneled with arabesque designs, centred with medallions, and enriched with gilding. The whole of the remaining portions of the building, the ante-rooms, staircases, and approaches, present a light, clean, and cheerful aspect. The decorations have been carried out by Mr. W. Holland, of Warwick.

THE PROPOSED METROPOLITAN MARKET.

A SPECIAL meeting of the members of the Metropolitan Board of Works has been held, for the purpose of receiving a communication from Lord Robert Montagu in reference to the Foreign Cattle Market Bill, and passing such resolutions thereon as might be necessary. Sir John Thwaites presided.

The Chairman said that the Government were very anxious that energetic steps should be taken for the prevention of the cattle disease by the erection of a market exclusively for the sale of foreign cattle arriving in this country, and wished to know if the Board would be willing to undertake the erection and direction of such a market in the metropolis. The Board, no doubt, would have absolute authority; but at present he could say nothing as to the borrowing powers which the Board would have.

Mr. Shaw asked if the metropolis would have to bear the expense, or whether such expense would be spread over the whole country, as the establishment of such a market would benefit all parts of the kingdom.

The Chairman said the metropolitan district would, he thought, have to do the same as very many of the largest towns in England were doing. A toll was levied to cover the expense of preventing the spread of the cattle disease, and the Board would have to fix such reasonable toll as would cover the expense of the market with-

out making any profit. Of course there would be some increased expense at the outset.

The meeting was addressed by Mr. Taylor against the proposition, and by other members in favour of it; and Colonel Hogg, M.P., moved the following resolution:—

"That the chairman be requested to inform the President of the Privy Council that the Board is willing to undertake the duty of erecting and maintaining a market for the slaughter and sale of foreign cattle, should Parliament cast that duty upon them, reserving to themselves the right to make such objections as may seem expedient when the bill is laid before them."

The motion was carried by a majority of nine, the numbers being 14 to 5.

THE TECHNICAL EDUCATION OF THE WORKING CLASSES.

A DEPUTATION of members of the Associated Chamber of Commerce waited on Lord Robert Montagu, at the Privy Council Office, Downing-street, last week, for the purpose of urging upon Government the necessity of providing and fostering technical education in this country. The deputation was accompanied by Mr. Baines, M.P., Mr. W. E. Forster, M.P., Mr. Dixon, M.P., and other members of the House of Commons. The President of the Association was introduced by the hon. member for Leeds, who stated that there were thirty-nine chambers in the Association, that this conference, was the most important meeting they had ever held, and that the vote upon the subject in question was unanimous.

Mr. Mundella, of Nottingham, brought under the notice of his lordship the educational facilities afforded to those connected with science, art, and manufacture in France and Germany, and contrasted them with the requirements of this country in that respect. His experience as juror at the Paris Exhibition, and his extensive knowledge of foreign manufactures, caused him to feel utter humiliation and shame at the education of our working men, as compared with that of the working men of Germany.

After some remarks from Mr. Sampson Lloyd, Lord Robert Montagu assured the deputation that no pains or trouble had been spared by the Government or himself in giving this question its due share of consideration. The Government had asked for reports on the subject from their secretaries of Legation, and that a *price* of those documents would be given when they were ready to be submitted to the public. Mr. Samuelson, who had volunteered to go abroad and judge for himself, had sent in a very voluminous letter containing his observations and views, and Professor Leone Levi, whose services had been engaged by the Government in the matter, had furnished a report, which was now in type. He heartily wished that before long they should see a satisfactory scheme carried out. In the Department of Science and Art at South Kensington, we had the basis upon which to work, if we could only make up our minds to carry out some system.

PREHISTORIC REMAINS IN CORNWALL.

ON the Cornish hill-sides and moors there are many remains of buildings of extreme antiquity, and some of them of unknown or unascertained purpose, to which the general attention may be said to have not yet been called. "From the Land's End to John O'Groats' House" there seems to have been a singular similarity between some of these buildings, the general names of which, handed down by tradition, would appear to indicate that they were the elements of prehistoric towns. Thus the analogy between the northern broch or brough and borough or burgh is obvious, as also is that between the southern cyttian and city. The ancient terms, however, apply to individual buildings, and there are cyttian in Cornwall which might be generally described by the words we used lately in giving an account of a broch recently uncovered in Caithness. Thus, in an interesting paper by Mr. J. T. Blight, F.S.A., which is printed in the *Cornish Telegraph*, it is said that,—

"In West Cornwall the prevailing type consists of a massive encircling wall, in its breadth containing several small chambers, whilst in the centre is a large open area; the Chysaster butts are constructed on this plan. In East Cornwall I have not yet found an instance of these wall cells; each but (or cell) is generally unattached, forming a separate building of itself, though occasionally having two circular compartments, leading one into the other."

* The following gentlemen were elected members of the Association.—Mr. W. Harrison, King's-road, Brighton; Mr. Alan Bailey, Trinity-place, Charing-cross; Mr. H. G. Furner, Gower-street; Mr. C. R. Barton, Craven-street, Strand; Mr. G. T. Breesey, Wansford, Essex; Mr. Ches. Booth, Albany-street; Mr. Jas. Rogers, Engineer's Office, Euston-square Station; Mr. J. Waite, Cannon-street; Mr. F. Haslam, St. George's-terrace, Hyde; Mr. J. D. Simmon, Oakley-square; Mr. R. O. Carne, India Office; Mr. J. B. Mitchell Withers, Sheffield; Mr. W. Logan, Edward-square, Kensington; Mr. R. F. Deal, Farnival's; Mr. Thomas Holbyer, Ryde; Mr. James Crombie, Whitehall; Mr. W. Day, Tachbrook-street, Pimlico; Mr. E. Windsor, Camden-town; Mr. W. F. Hammond, Dr. Beckett Town; Mr. W. J. Harrison, St. Mark's-borough-street; Mr. J. M. Kemp, Arlington-street; Mr. E. Robson, Parliament-street; and Mr. S. S. Stallwood, Folkestone.

In Wales, the celtic, in fortifications, were constructed partly by excavations, and partly by stones set round the edge of the excavation. Some of the Welsh cell-dwellings, however, are like those of West Cornwall. On the Northumberland moors are fortified enclosures strongly resembling those of West Cornwall. It is notable that Cornwall, Wales, Northumberland, and the Scottish highlands, are all high-level districts.

Circular and rectangular buildings are sometimes associated in Cornwall and Anglesea. Mr. Blight gives an interesting account of a rude sort of rectangular walling, designed, as he thinks, to enclose habitations, at Smallacombe, near the celebrated Cheesewring, in the parish of Linkinhorne, Cornwall. This walling stands on a hill-side, and is 12 ft. to 15 ft. thick; but Mr. Blight is of opinion, that from its position and peculiarities—sloping outside and perpendicular within, for example—it could not have had any military purpose. Could it have been a reservoir for water? or was it designed to resist some other natural force, such as that of snow? There have evidently been less ancient buildings erected on the older and more massive foundations. Here also are examples of those beehive-shaped or dome-formed structures which are also found elsewhere, as in Ireland and Scotland. Sir Gardner Wilkinson is disposed to think structures of this form to be less ancient than the hut circles; and Mr. Blight says he has seen beehive structures of stone built not a hundred years ago. It is hard to say, however, into what extreme antiquity we may have to penetrate in order to get at the origin of such structures, some of which are certainly of very great age.

A THEATRE BY CO-OPERATION.

THE Prince of Wales's Theatre, Rochdale, opened a few nights ago, has been built by means of 11. shares mostly taken by working men. A few earnest working men have thus accomplished what the upper classes of Rochdale have long said was a desideratum, but one which they could not see their way to realise. The Company was formed in April, 1865. Shortly afterwards operations were commenced which resulted in the securing of an eligible site, and the construction of the foundations, and then for some time the scheme received a check. A few months ago the matter was taken up with renewed energy, and designs previously obtained from Mr. Salomons, Manchester, have been carried out.

It was the original intention of the promoters to erect a building combining a larger internal area, with more outward embellishment, but further consideration decided them to operate within more moderate bounds, and instead of a building to cost 8,000l., they decided to raise one to cost 6,000l.

The exterior is plain. It is 20 yards in breadth, and 40 yards in length, and is calculated to seat comfortably 2,200 persons. The shape is described as a "graceful horseshoe," though why that form should be continued we do not know. The pit is a good one, and will hold 1,100 persons. The ceiling is plain, and has a powerful sun-light in the centre. The dressing-rooms and the property-room are in the cellars under the pit (a very improper place, by the way), and are reached by steps proceeding from each side of the fore part of the stage behind the wings. Messrs. Warburton were the builders. Mr. Grieve painted the drop-scene.

RAILWAYS.

THE *Moscow Gazette* publishes the following:—"M. Bogdanovitch, who is making a journey of exploration in Siberia to study the possibility of constructing a railway in that immense province, has sent the following telegram from Omin:—"The object of our expedition into Western Siberia has been attained; the information we have gathered shows by facts the brilliant future reserved for the Siberian railway. The co-operation afforded us by the Governor-general has produced an excellent effect in the country. At the commencement of the spring the line from Sarapul to Tioumen will be constructed at the expense of the Siberians. This route will be called the Russia-China-Taschkent Railway." —M. Belin, a

Prussian author, has contributed to Petermann's *Mittheilungen* a statistical account of the means of transport and locomotion existing in the world at the present time. The railways of the world are 80,600 miles long. Over one-third the total length is found in the United States, or about 30,000 miles; England has 13,072; Germany (Austria included), 13,000 miles; France, 8,400; India, 3,200; Italy, 3,080; Spain, 2,920; Russia, 2,600; Canada, 1,810; Belgium, 1,500; Sweden, 950; Switzerland, 730; Holland, 650. It appears that the railways of Prussia have cost just about half as much per mile as those in England.—The number of private bills for which application will be made in the session 1867-68 will be much smaller than in past years. Saturday evening, at eight o'clock, closed the time at which the plan and section, book of reference, published map, and copy of *Gazette* notice had to be deposited at the Private Bill-office. In 1866 there were 450 sets of plans and other papers deposited: last year there were 181; and for next session there have been 123 sets of plans and other documents lodged. The number of bills of which notice had been given is about 250, against 280 last year, 633 in 1866, 594 in 1865, 504 in 1864, and 381 in 1863. The plans deposited relate to fifty-nine railway and canal bills, and to sixty-four gas, drainage, and miscellaneous bills. The schemes relating to London include a railway from Islington to Finsbury, which will be above ground all the way, and about 1½ mile in length. Market bills will be applied for for Paddington, Lambeth, and Kennington; and a bill for a sub-way under the Thames on the upper side of the Tower. Notice has again been given of a boulevard, to extend from New Palace-yard to Eaton-square. Plans have again been deposited for the widening of Park-lane. An underground railway, pursuing the course of the highway, will be proposed, to extend from Bow to the City.

THE BUILDERS' BENEVOLENT INSTITUTION.

A GENERAL meeting of the subscribers to the Builders' Benevolent Institution was held at Wilks's Rooms, King-street, St. James's, on Thursday, the 28th ult., for the purpose of electing two pensioners of the funds,—one male and one female. The chair was taken by Mr. W. E. Rogers, president of the Institution.

The Chairman, in opening the proceedings, said they had met for the purpose of electing two pensioners on the funds of the Builders' Benevolent Institution. There were eight candidates, and he was sorry to say that only two out of that number could be elected, owing to the want of funds. There would, however, be another election in May next, when those who were unsuccessful on that occasion would have a further opportunity of obtaining the desired result.

The ball was then declared open, and at its conclusion Mr. T. Stirling, who acted as scrutineer, read over the respective numbers allotted to each candidate. The following were then announced as having been elected:—George Newman Lambert, painter, painter, &c., of 4, Hereford-street, Lisson-grove, aged 71. Debility, rheumatism, and an injured arm prevented him from earning more than a few shillings per week.

Hannah Lawrence, aged 73, Desborough-terrace, Harrow-road. Feeble and necessitous, and supported by her daughter, who is in service.

THE ARCHITECT OF THE LANGHAM HOTEL.

SIR,—Your report of my action with Mr. Murray relative to drawings of the Langham Hotel falls in some respects to put the case correctly.

The real point was the authorship of the principal plans, i.e., the arrangement of the building. Mr. Murray never had any pretensions, nor did he claim the design nor any part of the architectural detail of exterior or interior, but he did claim the plans; and I insisted that, as I alone planned the building, so far as basement, ground and first floor were concerned, leaving only the mere drawing out of these correctly to my own "figured dimensions, and the upper floors and sections for Mr. Murray or his clerks to draw, I had a right to retain them.

The result of the action is, that I proved my authorship of these plans, and I retain them; but inasmuch as I did not make the upper floors and sections, I lose these—and the costs; my claim that they were thought out by me, and surely followed the walls of my plans below, not being equal to the fact that they were made on Mr. Murray's paper, and at his cost.

The iron construction I left to Mr. Murray, who employed Mr. Meeson, an engineer, to make the drawings. Again: Mr. Murray was never appointed joint architect with me by the directors.

I was successful, and received the appointment of architect unconditionally from the directors. Mr. Murray's friends then interested themselves on his behalf (he being an unsuccessful competitor), and I made an arrangement with him some days before I saw any one of the directors. I made it a condition that the credit of the design (whichever it might be) should be solely my own, and I defended this action because my right to this was disputed.

JOHN GILES.

TENDERS FOR THE DRAINAGE AND WATER SUPPLY FOR FLUSHING GIBRALTAR.

SIR,—On the 25th of October last, tenders were opened in Gibraltar for "Drainage and water supply for flushing the city of Gibraltar," quantities supplied by Mr. Edward Roberts, engineer for the commissioners of that city. As I have not seen any notice of the same in your publication, and as in one instance there was a great discrepancy in amount, I send particulars. I have gone carefully through the quantities, and, carrying them out at very low English prices, the cost should be at least 30,000l. Can you explain how it is to be done in Gibraltar for 28,620l., where materials and labour are very much in excess of English prices? A. B. C.

H. J. Saunders, Southampton	£41,100 0 0
Waring, Brothers, Victoria Chambers	40,080 0 0
John Flews, London	37,080 0 0
G. E. Peters, London	36,587 0 0
Peter Amigo, Gibraltar	34,100 0 0
Fredk. Furniss, Portsmouth	33,985 0 0
Henry d'Almonte, Gibraltar	33,960 0 0
A. Ryan & Co., Battersea (accepted)	28,620 0 0

DRAWING AND DESIGN AT OUR SCHOOLS OF ART.

I HAVE read with much pleasure Mr. W. Smith's admirable report upon Art Education in the French and English Schools in last week's number of the *Builder*.

I trust that some real benefits may result from the inquiries now being made with respect to the working of schools of art throughout the United Kingdom, not only with respect to the system of instruction, but also with regard to the position and standing of each school. Mr. Smith has not estimated too highly the importance of "drawing correctly," as exemplified in the French system, which, I fear, with us, is sometimes lost sight of in an elaboration of detail; and the spirit of the drawing is often sacrificed to the extreme high finish of the work. This is owing, I think, in a great measure to a very erroneous opinion which appears to be very general in the minds of our students in schools of art, namely, that a work, to stand any chance in the national competition, must be an evidence of great labour and extreme finish. Again, a master in a provincial school of art is naturally desirous that his students' works should be represented in the annual national art competition in London. The students themselves take a great pride in the success of such works, and will sacrifice any amount of time and labour to such end; consequently, when a student possesses a moderate amount of ability, he is set down to produce some competition drawing, perhaps the outline of the "Madeleine scroll," or the shading of the "column from the flat" (both works looked forward to by students with apprehension, and when finished looked back upon with rejoicing); whereas his time might have been more profitably employed in executing a series of works, with a view to obtaining power in the study of light, and shade, and form; but the latter works are only looked upon as studies, while the former are eligible for national competition.

I think this evil might be obviated were the Department of Science and Art to offer as high a prize for a series of studies, showing the student's progress in the power of drawing in light and shade, as they do at present to the very highly finished and elaborate drawings submitted for competition.

One would naturally suppose that a school of art situated in this locality would be very well attended by those who intend becoming designers; yet upon being appointed to this school as master, last Midsummer, I was surprised to find not more than six or eight students attending the school for the purposes of studying design. That number, I am happy to say, has since increased; but, surely it would be to the interest of the manufacturers to insist upon their apprentices going through a systematic course of study. Were they to do so, I am convinced that in a short time they would not have to resort to the Continent (as they are at present obliged) for their first-class designers. The proper element is not wanting in our young designers, but it requires to be properly developed.

In too many cases a young designer joining a school of art has as much to unlearn as he has

The author's present purpose is to call attention to some of the more remarkable defects

and anomalies of our public arrangements, and then to show how, under existing circumstances, the primary objects of preventive and legal medicine might be best attained.

VARIORUM.

CHRISTMAS ANNALS. Christmas numbers of serials, and Almanacs come flushing in upon us in all directions. One of the best of the cheap annuals is Warne's "Gold, Silver, and Lead," edited by Mrs. Valentine and contributed to by a whole host of writers and artists. It is certainly a marvel of cheapness.—"The Guest Meal" is the title given to the Christmas number of *Once a Week*, but really belongs only to a short but well-told tale, by Mr. Mark Lemon, with which the book commences, the remainder of the contributions, by Mr. Shirley Brooks, Mr. H. Kingsley, and others, all standing alone.—*Cassell's Magazine* has an extra quantity of amusing matter in the Christmas number. The writer of a paper in it on Fires says,—

"There is but one absolutely fireproof building in London, possibly in England,—and that is the new Record Office in Fetter-Lane. Stone and iron are here employed, but the structure is cellular, no room within the building being more than 17 ft. by 25 ft., and 17 ft. high; consequently, if every fireproof room were to be set on fire simultaneously, so small would be the body of flames that it would have no effect upon the solid fabric. All these rooms are perfectly distinct from each other, opening into a vaulted passage by means of iron doors. They are in fact, large iron safes, and we may depend upon the absolute safety from fire of the papers entrusted to them. Why should our will be allowed to remain in the fire-insuring premises of Doctors' Commons when absolute safety is thus procurable?"

—From the new number of the *Quiver* we take a useful exhortation,—

"Never mind a pinch, boy,
Never mind a pinch;
Set the wedge the closer;
Heroes never flinch!
Mind it fits the cleft, boy,
Firm, and tight, and strong;
N'er to worthy labour
Did idleness belong.
What if frequent effort
Frequent failure send?
From narrow mountain springlet
The mountain torrent streams.
Then lift the mallet high, boys,
Strike it like a man,
Never mind your marbles,
Labour while you can.

See, the rift grows wide, boy,
Deeper sinks the wedge;
There's your sturdy block, boy,
Split from edge to edge!
Then never mind a pinch, boy,
Labour while you can;
Fit your wedge the closer,
And strike it like a man."

—A writer in the new number of the *Broadway* gives a very media view of Dramatic Authors. It is to be hoped he speaks from limited experience.—"The Christmas number of *Bow Bells* contains a large amount of amusing literature, illustrated, for 2d.—*The Friendly Visitor* (Seeley & Co.) is intended for the aged poor, and printed in large type. The volume for 1867, just published, contains a number of very good woodcuts.—Amongst the Almanacs, the *British Almanac and Companion* for 1868 still remains supreme. *The Companion* includes papers on "The Periodical Meteors of November," by E. W. Brayley; "Royal Commission on Railways," by Arthur Locker; "The Economical Result of Trades Unions, considered in their relation to the Paris Exhibition of 1867," by John Plummer; "The Exhibition of National Portraits, 1867," by James Thorne; "Architecture and Public Improvements, 1867," by the same writer. We give a quotation from the paper on Trades Unions, touching the position of employers and employed on the Continent:—

"One of the most serious allegations made against trades unions is, that in this country at least, they have tended to embitter the relations subsisting between employers and employed. The affirmative evidence on this point is remarkably unimpaired. In England the breach between the masters and the men appears, under the influence of the unions, to be perpetually widening; the antagonism between the interests of capital and labour ever increasing. Abroad, in the Continent, the attitude of this disturbing and irritating influence has largely tended to promote harmony of feeling between employers and employed, the beneficial results of which are observable in numerous ways. In the Paris Exhibition there might have been seen in the architectural section contributions by M. Drache, of Vienna. The brick-making establishment belonging to M. Drache, at Interdorf on the Weisberg, employs about 4,000 persons, and produces the enormous number of 300,000,000 bricks annually. Here, unfettered by the encumbrances of trades unions, capital and labour find their interests identical. The rate of wages is comparatively high for the district, but low as compared with the rate paid in England. Yet the Austrian brick-makers are superior, both in intelligence and the possession of home-comforts, to the majority of their

English brethren. In connexion with his extensive works, M. Drache has established schools, hospitals, and relief funds, as mentioned by Professor Wilson in his report on Agricultural Exhibitions Abroad. Disputes between M. Drache and his workpeople are almost unknown. What a contrast to the state of things in the brick-making trades of Lancashire, as shown by the evidence taken before the Manchester Trades Union Commissioners! In Belgium the works of John Cockerill & Company, at Seraing, near Liege, employ 7,000 men constantly. Mr. Cockerill, the founder of the firm, was an Englishman, and one of the works, was the absence of trades unions, and the comparative rarity of strikes in that district. The works of Krupp, at Essen, in Prussia, cover 450 English acres, and employ 10,000 men, who turn out no less than 100,000,000 pounds of steel per annum. Another great German factory is that of Borsig, at Berlin, which has built 2,000 railway-engines since it was first established in 1817; patient, hard-working operatives, are also to be found in Bavaria, Wurtemberg, Hanover, and other parts of Germany. In all these there exists a far more kindly feeling between masters and men than the same encouraging development of amicable relations between capital and labour. At Mulhouse, the aid of the nearest possible approach to the country, the workmen's town at Mulhouse; but at the latter place the aid of the employed, not to the employers. The printing establishment of Messrs. Mame, at Tours, employs about 1,000 hands, many of them women and children. Here, according to the Rev. W. H. Brookfield, which are elsewhere a too frequent cause of altercation between employers and employed, have never yet disturbed the tranquillity of this establishment. There are Messrs. Schneider & Co., the total population of the town being 24,000."

—The *Chromolithograph* is a journal of art, literature, decoration, and the accomplishments, and intends to give for 6d. three coloured plates in each number,—a sufficiently remarkable feature if the promise be well kept, as there seems reason to believe it will be. Under the head of "Frozen Musical Notes," it is proposed to give notices of notable buildings, criticisms, and papers on the decorative arts. The heading is not quite the thing. Every one knows architecture has been called Frozen Music. "Notes of Frozen Music" (if the figure be desirable) would convey correctly what the writer wishes to say: "Frozen Musical Notes" means a very different thing.—*The Ecclesiologist* contains a letter from Mr. Gambier Parry on "Recent Architectural Colouring in French Churches." Mr. Parry says that throughout a tour of church painting he has been repeatedly struck by the absence of principle. He thinks we have not much to learn from France in this art.—The December part of the *Art-Journal* closes the twenty-ninth volume of that excellent publication. The catalogue of the Paris Exhibition will be continued through the greater part of the ensuing year. The steel engravers in the present number after O'Neill and Hook are very good.—"The Young Nile Voyagers." By Anne Bowman. Roundedge. In this a rather romantic expedition of two boys to Egypt, for the discovery of a friend of their deceased father, who had desired them to go to this friend for help at his death, is very well told, so as to bring in every now and then some useful information. It is illustrated by J. B. Zwecker, and will be read with great zest by the young, and especially by boys.—"How to Make Cakes in a Hundred different Ways" (Roundedge) is a reasonable "Household Manual," which is likely to be more useful than how to do some other things in a hundred different ways that we have heard of.

Miscellaneous.

A SCHOOL FOR WATERFORD.—Lady Esmond has bequeathed the sum of 30,000l. to the Board of Trinity College as trustees, for the purpose of building and endowing a classical school in the county of Waterford.

THE SANITARY INSPECTOR OF NOTTINGHAM.—With reference to a recent paragraph on the improved condition of Nottingham, we wish to say in correction that Mr. William Richards is the sanitary inspector of the town, and that the present rateable value of Nottingham proper is 270,000l.

EAST LONDON MUSEUM SITE BILL.—This Bill has passed through committee, and been read a third time and passed in the House of Commons. It is going rapidly through the other House.

THE NEW STATE HOUSE AT SACRAMENTO, CALIFORNIA.—This edifice will be a very imposing structure. It covers nearly 60,000 ft. of ground, and will be 226 ft. in height. The handsome avenue in the city leads from its front to the river.

THE ROYAL SOCIETY.—The annual meeting for the election of officers and to hear the president's address was held on St. Andrew's Day. The total number of fellows, including five royal and forty-eight foreign members, is 617. The receipts for the year were 4,932l.; the expenditure, including purchase of 600l. Consols, 4,436l.

ROYAL SCHOOL OF NAVAL ARCHITECTURE AND MARINE ENGINEERING, SOUTH KENSINGTON.—A scholarship of 50l. a year for three years (being the first yet awarded) has been gained upon examination by Mr. J. F. Coars, of Chatham. The school now numbers forty-one students, fourteen of whom are sent by the Lords of the Admiralty.

A PAINTER'S GIFT TO CANTERBURY.—We understand that a house in St. Peter's-street has been purchased by Mr. Sidney Cooper, R.A., to be devoted as a school of art for the study of the youths of Canterbury, at a nominal figure; and that if the usefulness of the school is appreciated, Mr. Cooper contemplates handing it over to the corporation as trustees by a deed of gift.

CHILDREN'S PLAYGROUNDS AND DAY NURSERIES. A sub-committee has been appointed by the council of the Working Men's Club and Institute Union, 150, Strand, to consider the question of providing playgrounds and day nurseries for the children of the London poor. The hon. secretaries invite correspondence on the subject from persons who may have information to communicate or practical suggestions to offer.

DAMAGES FOR DEPRECIATION OF PROPERTY BY PUBLIC WORKS.—A law-suit has just terminated at Wicklow, in which the plaintiff, Mr. Tighe, obtained a verdict from a special jury for 12,051l. The object of the suit was to determine the amount of the depreciation of Mr. Tighe's mansion and estate of Rosanna, in the county of Wicklow, by reason of the construction above it of the great reservoir at Roundwood, on the river Vartry, for the future supply of water to Dublin.

DRAINING A LAKE.—The lake of Neusiedl, in Hungary, on the confines of Austria, is now completely drained and dried, and the land so obtained is about to be placed under cultivation. It contains eight square miles of virgin soil, and the belief is that it will prove extremely fertile. The land is given to the neighbouring proprietors, and Prince Esterhazy and the convent of Heiligenkreuz will receive the largest share of it. This extensive tract of soil gained from nature lies close by the lines of railway from Vienna to Raab.

THE YORKSHIRE ARCHITECTURAL SOCIETY.—A general meeting of this society has been held in the Museum, York; the Rev. Canon Hay in the chair. The Rev. G. Rowe, one of the secretaries, announced the desire of an Architectural and Archaeological Society, which is about to be formed at Sheffield, to be received into union with the Yorkshire Architectural Society, which was agreed to. A paper, by the Rev. C. Kerry, "On the History and Antiquities of All Saints' Church, North-street," was then read by the Rev. G. W. Guest; after which the Rev. Canon Baine read a notice of some early monuments at Conisbro', and the Rev. G. Rowe, a paper "On the Contents of the Associated Societies' Annual Volume."

THE BOATMEN'S INSTITUTE, Sale-street, Paddington, has been re-opened, last week, having been entirely reconstructed. It consists of a school-room on the ground-floor, 31 ft. by 23 ft. with class-room, 16 ft. by 11 ft., and a chapel on the first-floor, 43 ft. by 23 ft. In the basement is also provided a kitchen, coal-cellar, &c. The chapel has a light open roof, with trusses partly of wood and partly of iron, and is lighted by two large lanterns. The seats are open, fixed to Macfarlane's cast-iron brackets. The building is warmed throughout with Haden's apparatus. The works have been carried out, at a cost of about 1,000l., by Messrs. Scrivenor & White, under the direction of Mr. T. Heygate Vernon, architect.

The Builder.

VOL. XXV.—No. 1297.

Position of Ecclesiastical Architecture in Germany.



E concluded a recent notice of ecclesiastical works now in progress in Germany,* with some observations upon the works of Vincent Staditz; and we shall now proceed to notice several of the churches designed by Professor Schmidt, of Vienna. One of the illustrations in our present number, represents the new Lazarist or Vincentian Church, at Vienna.† This church was completed in 1864, and is one of the best modern churches in the Austrian dominions. It is a large building (about 240 ft. long), and consists of a nave, with lateral chapels, transepts, with chapels to the

east, and a large chancel or choir, with an apse. Over the "crossing" is an octagon lantern, surmounted by a tall slate spire. The style is Early Decorated. Internally, the church is vaulted. The whole design is conspicuous for simplicity and absence of pretension; it is at the same time free from baldness or poverty. The material is brick, with windows and dressings of white stone, and stone columns within. The interior is polychromed.

The next illustration we give is of a church which is being built by the same architect at Finfhaus, near Vienna. It presents a thorough contrast to the Lazarist Church, but is in its way equally good. The plan is very original: it consists of a large octagon, with transepts or square projections on six sides: the first and eighth sides are occupied by the nave and choir; the octagon is surmounted with a dome, which is a very successful attempt to combine this feature with a Gothic building. Most of the designed Gothic domes look as if they had no connexion whatever with the building upon which they are placed; but here the dome seems so natural and seems to suit the position so well, that we could imagine no kind of roof or covering so suitable in the position. It is 60 ft. in diameter, and very nearly 120 ft. high. Flanking the west end of the nave, which is only two bays long, are two towers, placed with their angles to the cardinal points of the church. Half-way up they are chamfered into octagon lanterns, crowned with low spires. These spires seem to us the weakest part of the design; in fact, we would sooner see them away altogether, as they appear to us to disturb somewhat the general harmony of the design and detract from the dignity of the dome. The choir ends in an apse, surrounded by octagonal buildings, which, we suppose, will be used as sacristies. The interior

is very plain in respect of the architecture, but a rich system of decorative painting is to be adopted.

Another very fine church is being built by the same architect on the Weisgraben at Vienna. It is a larger and more elaborate building than either of the former churches. It consists of a nave and aisles, with a very singular western tower, transepts, and an apsidal choir. We do not, however, think it equal in merit to the two former churches, though it is undoubtedly a fine building.

We must not leave Mr. Schmidt without praising his excellent restoration of the Cathedral Church of St. Stephen at Vienna. We should like to see that restoration completed by the removal of the Rococo altars, and substitution of others more in harmony with the style of the building.

A large new Romanesque church, dedicated to SS. Cyrill and Methodius, has been erected at Prague. It is a fine large church, and would be good were it not for the introduction of tracery into the windows, and the very modern look of the spires.

The Votive Church at Vienna, designed by Mr. Ferstel, is progressing rapidly. A view of this church, and particulars of other buildings by the same able architect, have been published in the *Builder*. The Votive Church is a noble building, but to some extent a copy of Cologne Cathedral. It is striking from its great size and pleasing proportions.

The new Protestant church, opened a few years ago, in Cologne, is a somewhat bald and uninteresting building, in the Early Romanesque style. The Protestant church at Deutz has a pretty tower, copied from the eastern spires at Würzburg Cathedral, and which looks well at a distance. The rest of the church is like a music-hall, and thoroughly unecclesiastical in appearance.

The new Lutheran churches at Donauwerth, Aschfenberg, Bingen, and St. Goarhausen, are remarkable only for their badness. The two former are of no style of architecture, and the two latter are jumbles of every style. The same may be said of the new Roman Catholic church at Neustadt, in the Pfalz.

Two new churches of large dimensions have just been built at Ludwigshafen. One is Roman Catholic and the other Lutheran. The Catholic church consists of a nave and aisles under one roof, and a deep chancel; two towers, which are intended eventually to bear spires, flank the chancel, which terminates in an apse. The building is of brick: the style is Second Pointed, simple, unpretending, and very plain, but honest, and good both in design and construction; it is built by an architect of the name of Heobsch. The Lutheran church is exactly the opposite to this: it is very large, and externally is built in a kind of bad Romanesque style, with most horrible detail, more resembling Saracenic than any architecture we know of. Internally, columns, roof, arches, and galleries are all of iron. Every portion of the church, externally and internally, is covered with poorly designed ornament, borrowed from every style that ever existed; in fact, it is one of the most pretentious and detestable buildings we have ever seen. As this church is built in what the Germans call the "Zukunft Gothic," or "Gothic for the future," we must say a few words upon this style. We fear Munich was the cradle of this new architecture, and certainly some of its wildest vagaries are to be found in that city. Amongst these must be mentioned the Maximilian Strasse and the Maximilianium. This style is founded chiefly upon Florentine Romanesque and late German Gothic. In order to make this jumble more wonderful, Saracenic, Indian, and Chinese ornaments are stuck about the buildings in every conceivable position. The material in which this style delights is a bright glazed carrot-coloured

brick, and plaster which is usually painted pink; and this abominable jumble the Munich architects coolly tell us is the "Gothic for the future." Taste forbid!

It is sad that Munich, which was the first place where the revival of German ecclesiastical architecture flourished, should have fallen into such child's play. The new Protestant church at Freising is one of the least offensive examples of this style we know of. The Franciscan church at Passau is a restoration in which many of the absurdities of this style have been perpetrated, though it is nothing like so wild as most of the specimens we have seen. Nearly every thing in the building is iron or plaster, and the spire and pinnacles are worthy of Batty Langley. We will not, however, dwell any longer upon this disagreeable theme, but will make a few observations upon some of the works of restoration now in progress in Germany.

One of the finest restorations we know of is that of the St. Godehard's Church at Hildesheim, by the architect Hase, of Hanover. This noble Basilican church has been thoroughly restored, internally as well as externally. The fittings, which were in the Rococo style, have been replaced with others more in keeping with the building. A new high altar, entirely of bronze and marble, and of very good design, has been erected in the eastern choir. A pulpit of stone, the panels of which are inlaid with old Byzantine enamels, has been set up in the nave. The choir has been finely decorated by Wetter, of Cologne. A splendid corona of very similar design to the celebrated one in the cathedral has been made from a drawing by the same artist. The very elaborate mosaic pavement which forms the floor of the choir and sanctuary, and the stained glass, are also from his hand. We notice particularly in this church that the decoration, instead of forming a series of isolated pictures, having nothing to do with each other, is arranged in one scheme, and each separate figure or subject bears a relation to the whole. Most of the decoration is on a gold ground, and the style of the building, which is Early Romanesque, has been most strictly adhered to. The restoration of the cathedral at Speyer, which has now been completed several years, is also a noble work: its chief glory, however, is the magnificence of the decoration. It is impossible for us in England to imagine the effect of a cathedral nearly 400 ft. long entirely covered with decoration, and its walls ornamented with frescoes, every one of which is a picture of the high merit, grand in conception, noble in composition, and good in execution. When shall we in England see our public buildings decorated in such a manner? When shall we see anything to equal the frescoes by Ilfenbach in the church of St. Apollinarisburg; by Steinlie, in the church of St. Giles, at Munster; by Hess, in St. Boniface, at Munich; or those in the cathedral at Mainz? Or, to speak of secular works, the frescoes by Steinlie in the "Römer" at Frankfurt, and the museum at Cologne; and by Rethel in the town-hall at Aix-la-Chapelle? Why cannot we do these things in England? Our ideas of decoration seem to be confined to painting stars or conventional roses on a blue ground, or writing up inscriptions in Old English letters; and, if a figure ever is attempted, it bears more resemblance to a "Gay Fawkes" than a human being. The Church of St. Catulus, at Moorburg, has been restored and decorated, and the fittings which were old have been repaired, and those which were not in character with the building removed. The noble fifteenth-century high altar, for which this church is chiefly celebrated, has been restored. The decoration is rather too "cinque-cento" in character; but the general effect is rich and harmonious.

We have already spoken of the restoration of Ratisbon Cathedral, and have given illustrations of the church, showing the new spires and

* See p. 763, ante.

† See p. 920.

lantern, now being erected from the designs of Mr. Deisinger.

The cathedral at Augsburg has also been restored, and all the fittings that were not Gothic taken away and replaced by others in harmony with the building. The new stained glass is far from satisfactory.

The cathedrals at Halberstadt, Paderborn, Minden, and Ulm, are also at present in course of restoration, but our space does not permit us to give a description of them. We regret also that we cannot give an account of the works of restoration now being carried on in the following churches:—Cathedral at Aix-la-Chapelle, St. Patroclus's Church at Soest; St. Nicholas's Church at Soest; the Weiss Church at Soest; the Cathedral, St. George's Church, and Holy Cross Chapel at Paderborn; St. Mary's Church at Würzburg; St. Ludger's at Münster; the church of St. Maria in Capitolio, St. Martin's, St. Gereon's the Minorite, and Protestant churches at Cologne. The Liebfrauen Church at Treves; the churches at Eitersbach, near Treves; Main Bischofsheim, Stadt Prozelten; Scotch Benedictine Church at Rathenow; the Liebfrauen Church at Worms; St. Margaret's at Salzburg; St. Martin's and the Cemetery Church at Landshut.

Nor will our space admit of more than mentioning the following new churches:—Protestant churches at Hanover and Stuttgart; Jesuit Church at Aix-la-Chapelle; churches at Kreisshausen and Leelhausen, near Augsburg; at Seisenhausen, at Harburg, at Berlin. New cathedrals at Gran, in Hungary, and Olmutz, in Moravia; church at Redwitz, in Bohemia; church at Rosenberg; church at Wiesbaden; at Langerfeld and Mülheim; and a convent church at Doering.

It will be seen from the number of churches we mention that ecclesiastical architecture is not at a standstill in Germany. It is true that so many new churches are not built in Germany as in England; but many of the German churches are much larger than any that has been done in this country. In addition to this, several churches that were desecrated at the Revolution have been re-opened; as, for instance, the "Neu Bau" church at Würzburg; the Franciscan church at Passau; Carmelite church at Andernach (Protestant); the church of the Abbey of Abdinghof, at Paderborn (Protestant); St. Mary's, Rothenburg; and others. Another reason why we do not expect to find so many number of churches building in Germany that we do in England, is that the population of Germany has not increased so much as that of England. It must also be remembered that at the Reformation and Revolution, as a rule, the monastic churches were not destroyed, but were, in most cases, handed over for parochial purposes; and thus about fifty or sixty years ago, many small parishes became possessed of immense churches, which were far larger than required at that time, and for many years after.

Before concluding this article, we must point out what seems to us the great danger which threatens Ecclesiastical architecture in Germany, and that is the "new style," or what the Germans call "Zukunft Gothic." We have referred to this style before and described its peculiarities, and we feel sure that nothing can come of it but the destruction of anything like good taste and artistic propriety. It is impossible to invent a style for the future; our duty is to design for the present, and the future will take care of itself and invent its own architecture if necessary. In conclusion, we congratulate the Germans upon the great progress they have made in Ecclesiastical architecture, especially during the last ten years.

LABOURERS' DWELLINGS COMPETITION, LIVERPOOL.

We do not propose to lay before our readers a critical analysis of each set of plans. This would be an unprofitable task. As in all competitions there are certain groups of plans which may be classified, we must choose the simpler method, and mention one or more of a group. We feel keenly that we shall be unable to do full justice to the competitors from the system of espionage which the authorities have thought proper to adopt, and their prohibition of anything in the shape of written memoranda. Where one has to trust to memory, it will not be surprising if inaccuracies creep in. So long as they are not of a serious kind we must be satis-

fied; but we feel it is due to the competitors to make this observation.

Since our last number the committee has selected ten plans, on which the engineer, the medical officer of health, and the town clerk are to report separately with regard to both financial and sanitary considerations, and the probable cost of each plan as a test of the estimates submitted. The three plans mentioned in our last are included in the ten selected, but the others are not marked, so we cannot point them out.

No. 64a, by John Birch, appears to possess many of the peculiarities of the dwellings of Alderman Waterlow. The buildings are in two blocks, facing the present streets, with baths and washhouses between. They are six stories high. The rooms are too low, being but 8 ft. from story to story. This architect supplies two separate arrangements, one marked A, the other B. The former is estimated at 24,000l., the latter at 21,000l. The plans are well drawn, and exhibit talent; but we think they are too expensive, cumbersome, and complicated for the site and purpose.

No. 1, by C. H. Howell, is quadrangular on plan. The lowest class of dwellings contains only one room and use of a general scullery; the highest class contains four rooms, scullery, and W.C. The plans are well put forth by their authors. Generally the dwellings are grouped one on each side of the staircase. The wings are, however, differently arranged. Cost stated at 20,000l. The buildings are very high.

No. 9, "Multum in Parvo," contains fifty-four dwellings, arranged on the ordinary cottage plan; the site, with the exception of three transverse courts, being quite covered with the property—not arranged in flats.

Messrs. Lucy & Littler's dwellings are decidedly peculiar in being divided into no less than nine isolated blocks of various sizes. Another peculiarity seems to be the branching off of small staircases from large central ones, the object of which arrangement we do not approach. The plan wants unity and connexion, and the estimate is absurdly low.

No. 15 courts the attention of the members of the Society of Freemasons, by a Masonic device, and we shall leave it to them.

No. 12, by Isaac Farrell, Dublin, is arranged in two quadrangles. The plan is decidedly original, each dwelling possessing a small yard, and water closet in the upper flats constructed on balconies. The plan is to be commended from the evident desire to get rid of internal water-closets; its disadvantage, however, is the crowding of the back premises. The galleries to the flats are inside the quadrangles.

No. 49, by Reade & Goodison, is in the arrangement of the blocks similar to No. 50, described in our last. There are, however, four main staircases, which are open through into the inner quadrangle, and central carways in addition. One of the peculiarities of the plans is the absence of sculleries, and the substitution of a sink, like that of a butler's pantry, with waste-pipe, mechanically ventilated in the living-room, which can be closed up and made a dresser when not in use. The bedrooms are commodious, and the smallest dwelling contains a living and bed room. A tender from a local builder is attached, stating that he is prepared to erect and complete the buildings for 17,000l. odd. The rents seem to be extremely moderate, ranging from 2s. 3d. to 4s. 6d. The floors are fire-proof, and the plan is characterised by simplicity. The debatable point is the massing of the water-closets at the ends.

No. 23, "A Stroke for the Poor," is decidedly a bold stroke. We think, candidly speaking, that the buildings are the largest shown in the rooms, and the estimate is 28,000l. The playgrounds are on the roof flats. Most of the dwellings have three bedrooms.

No. 32, by Habershon & Fife, are incomplete. No analysis of the plans appears to be appended, and they seem costly.

No. 33, by Watford & Donkin, contain 108 tenements, of the Alderman Waterlow type. The plans are well got up.

In No. 65, by Thos. Mercer, the dwellings are grouped around the staircases, and face both inwards and outwards, and consequently are back to back; having, however, side doors to the staircases, there would be through currents of air. The estimate is too low.

No. 47, by John Reeves, is one of those plans that were stated to be in accordance with the Building Act and bye-laws. It only shows how indifferent plans may be, notwithstanding such conditions being fulfilled.

No. 42, by John Glover, is another of the plans mentioned as being in accordance with the Act, but much more cautious in its pretensions than No. 47. The dwellings are divided into blocks by the staircases. There is a good deal of painstaking about the plans. The estimate, again, is too low.

In No. 38 are contained so many plans, schemes, and devices, that at first we were quite bewildered. There are no less than five systems exhibited, marked A, B, C, D, and E. We are not desirous of going through our alphabet again, so we must content ourselves with observing that the internal merit they possess does not appear to warrant the dilution the ideas of the author seem to have undergone in attempting to do too much.

No. 57, by Samuel Sharp, contains two transverse streets. The arrangement is not an economical one.

No. 60, by Adams & Longson, is crowded with courts and courtyards. They are peculiar in having yards to all the houses.

In his explanation of No. 20, Mr. Rollet says he has brought forward his plans with considerable diffidence. We cannot help observing that a disagreeable person might say that the plans hardly justified him in that frame of mind, as they are of the mildest type. Forty-eight dwellings are all that are provided for, and the extreme simplicity of the elevation is almost ludicrous. They appear to be arranged in four transverse blocks, divided into two days.

No. 48 adopts the strange device of a postage stamp. Is the object to show that he stuck to it when at work? Some merit is exhibited in the elevations, which are of a Gothic character. The plan forms a quadrangle surrounded with streets. The estimate is between 8,000l. and 9,000l., which is absurd.

No. 44, by Mer, is very badly drawn.

Nos. 72 and 69, the former by Mr. G. Grayson, and the latter marked "Light and Air" (Mr. Moy) are very similar in arrangement. They are each estimated to cost 28,000l., which seems honest. Both are in flats approached by galleries on the sides facing the quadrangle. The position of the blocks on the site are similar to Nos. 22 and 49. "Light and Air" possesses six staircases, and No. 72 only two. They would have been much better if they had been opened through to the quadrangle. No. 72 is stated to be divided into 170 dwellings, about the largest number contained in any of the plans. No. 69 has 180 dwellings, which are shown on a large scale, and of which we can form a better judgment than of those in No. 72. The arrangement of the sculleries and water-closets is good; the scullery forming a sort of passage to the other rooms. The living-rooms are large, 16 ft. by 13 ft.; the bed-rooms 10 ft. by 10 ft. There appear to be no four-roomed dwellings in No. 69. The two rooms are put down as 6s. per week, and the three rooms at 6s. The rents are too high. The probable return is stated at a little over 5 per cent. It is a pity that so good a plan should err in a financial point,—that is, as regards the high rentals; but, we think, if most of the other competitors had been as honest as "Light and Air," the returns they show from the stated rentals would be very much less than they wish us to believe.

No. 81, by John Brown, is covered with buildings, and the openings to the courts are very narrow.

No. 73, "Verie," possesses considerable merit. The arrangement of the dwellings in principle is somewhat like No. 65, by Thos. Mercer. The sinks and closets are built out from the stair-landings.

No. 16, marked "Economist," hardly bears out its title, being apparently costly and complicated.

The author of No. 38 appears to imagine, from the green bank shown between the blocks, that the site is a rural one.

No. 3, marked, "Vérité sans Peur," is original in having the blocks set a good distance back from the streets, and the central area enclosed with a glass roof. The plans display considerable ability; but we differ from the author with regard to the sanitary effect of this arrangement. All such schemes must end in making the dwellings one huge house with many rooms, whereas the aim should be isolation and separation.

Having now touched upon the subject of plans of the exhibition, though in far from an exhaustive manner, we may remark that there seems something unsatisfactory in the way the competitors are being treated. Of course, where so

* See pp. 691 and 699, ante.

many interests are affected,—where one part in the town wish the houses built, and another equally strong try to strangle the scheme with the Building Act,—where the cottage-owners oppose, and lukewarm friends smother with faint praise—we may expect that everything will not go quite smoothly or straight; but we were not prepared to find a system of repression put in force, or so much appearance of back-stair work as hitherto has characterized the proceedings. Again, an officer who has already prepared several plans which have been rejected, should not have been called in to sit in judgment upon the competitors; for the most honest mind is in danger of a bias, more especially if he feels aggrieved at the treatment he himself has received.

It seems doubtful whether the dwellings will ever get further than the plans.

DESTRUCTION OF HER MAJESTY'S THEATRE.

At ten minutes before eleven on the night of Friday, the 6th inst., the inhabitants of the suburbs saw the sky reddened by a mighty fire: at ten minutes to twelve all was dark again; and within that time Her Majesty's Theatre, in the Haymarket, with its fittings and pictures, its grand organ and chandeliers, its scenery, wardrobe, musical library, and irreparable scores, was utterly destroyed, nothing remaining but the enclosing walls. The well-known façade in the Haymarket, with its bas-relief of artificial stone, and its colonnade, remains, with comparatively few marks of disturbance, but behind it there is desolation. A visit to the spot on the return of daylight showed the whole area open, cumbered only with a wet, smoking mass of remnants,—charred wood, half-burnt beams, a reeking heap of silks and velvets.

The first opera-house in England was built on this site by Sir John Vanbrugh, and was opened in 1705. Some of the newspapers have said the house was always called the King's Theatre till our present Queen's accession. But this is wrong, for Anne was reigning when it was built, and it was opened as The Queen's Theatre. Amongst the architects by whom it was altered from time to time were Robert Adam, and M. Novosielski; and when in 1789 it died the natural death of theatres, Novosielski obtained an increased area, and rebuilt the house very much as we now see it, so far as the interior is concerned. As the late Mr. I. B. Papworth observes, in an account of the theatre, with illustrations, given in Britton & Pugin's "Public Buildings of London," the horseshoe form which Novosielski then adopted was at that time a novelty in British theatres, but was used by the Italians in their edifices. The exterior, as we see it, is due to Messrs. Nash & G. Repton, and was part of the improvements made under the New Street Commissioners in 1820. When this alteration took place the lessee was Mr. Holloway, and by him and his executors the sum spent was about 50,000*l.*, which apparently included forming the Arcade on the west side of the theatre on what was then known as Market-lane. The columns of the colonnade are of cast-iron; the entablature is of Bath stone. The body of the building is of brick, covered with Roman cement,—at a time when Roman cement was not rubbish. The bas-relief, which represents the progress of music, Apollo and the Muses forming the centre, was executed by Mr. Bubb. As left by Novosielski, the area of the auditorium of Her Majesty's Theatre was larger than that of La Scala in Milan, notwithstanding what is constantly said to the contrary. The length from the curtain to the back of the boxes in La Scala is 94 ft.; the width from the back of the boxes 78 ft., giving an area of 7,332 ft. In Her Majesty's these dimensions were 102 ft. and 75 ft., giving an area of 7,650 ft.; its height, however, from floor to ceiling, the highest part over the pit, was 65 ft., La Scala being 70 ft. and Her Majesty's 66 ft. The painting-room of Her Majesty's was in the roof over the pit, and here, at the ventilator in years gone by, we have at times listened to Grief and Lablache, hearing everything distinctly in the intervals of a chat with the then chief of the scenic department.

Not long ago alteration was made which somewhat lessened the area, by bringing the proscenium nearer to the house, to the extent, if we remember rightly, of two boxes on each side. This was done under the professional direction of Mr. Lee, and had no advantages both before and behind the curtain. If the comparison with the

Milan Opera-house were continued in the latter direction, the advantages would be found greatly in favour of the Italian house. The stage of our opera-house was most inconveniently small, and the accommodation generally was exceedingly bad. The wardrobe, for example, was up innumerable flights of stairs at the top of the building. It was an excellent house for hearing and presented a noble expanse, but in other respects was sufficiently abominable. The crash-room was insignificant, the approaches were poor. The staircases were of wood. Only the night before the fire it had occurred to us when passing up one of them to remark to friends as to what would probably be the fate of the occupants of the upper part of the house in the event of a fire occurring during a performance. Faith in stone for staircases has been recently lessened, and stone has been pronounced against as a fire-resisting material. By the new Building Bill before Parliament stairs of public buildings are required to be of "fire-resisting materials," and it would surprise some to find on looking to the list of fire-resisting materials that stone is not included. It appears certain that stone stairs are not to be relied on under fire: irregular expansion by heat is fatal to them. Still it must be remembered that they will not burn, and will afford safe means of egress to an overtaken crowd that with a wooden staircase would probably perish. What would have been the position of the occupants of the upper part of the house, had the fire at the Opera-house occurred during a performance? Escape would have been impossible: the loss of life would probably have been awful.

The recent fire, like others, has provoked an immense amount of warning and suggestion,—some wise and some otherwise. In a fortnight it will be forgotten, and if a new theatre were then built, not the slightest consideration would be given to what has been said, excepting so far as circumstances conveniently permitted. Look at the two new theatres in Holborn, wedged in amongst houses, as we have said before, in the most improper and unamiable manner, one with a stage not large enough to swing a cat on. At the Queen's Theatre, Long-acre, the accommodation for those engaged, if we are not wrongly informed, is of the most unsatisfactory kind. Two members of the company, Mr. Clayton, comedian, and the leader of the orchestra, have already injured themselves by collision with a beam.

Look into the property-rooms and odd corners of most of our theatres: see what dust-heaps and rubbish-shops they are. It is scarcely possible to get at anything or to know what they contain. Why should the wardrobe be kept in the theatre? There should be a separate place close by, or, at all events, in a compartment enclosed with walls of its own, the connexion being shut off with iron doors. We must not be led, however, into observations on the construction and planning of theatres. These points we have before now treated of, on more occasions than one, and shall return to them. Certain it is, that the mode at present pursued is not a good one. Mr. Bonicant writes to suggest what he terms a very simple process by which theatres may be secured against destruction by fire. He says,—

"Above the stage, and co-extensive with it, there is a gridiron of iron, from which hangs the pendant scenery. Let the trussers of the floor, which is open-work, be laid on their under-ties, with lines of small iron pipe, forming a gridiron, pricked at every inch with holes; let this system of iron communication with the water-lain constant service. Let one hose when turned on the water-lain against the wall of the stage on the outside, and there correspond no longer to the gridiron, on the inside, so that the water may be turned on by a person either outside or inside of the building. The effect of this operation would be to let fall a continuous and even deluge, more effectual in checking a fire than the jet from a hose, because it not only addresses itself to the seat of a fire, but to adjacent material. A similar gridiron process should be introduced underneath the stage, together on the rafters over the auditorium; and a fourth in all available places around the ceiling, so placed that the rain from such would fall on the exposed roof of the building. The water-lain on the side of the stage should have a separate main, so that the water could be brought into operation separately; yet the whole system, by the introduction of one main only, to be turned on to attack the whole theatre, from the back of the gallery to the rear of the stage, could be deluged in a moment. It is of great importance that such a process should be as readily worked from the outside as from the inside of a building. I believe that the water companies supply what they term sealed mains; that is, the constant service of the street main is connected with the building, and the lever is there used up to break this seal in to confess the use of the supply. Such facilities exist, as I am informed; and if they do not, and too complex a device impediment to their introduction, an Act of Parliament might be obtained to render such assistance obligatory."

The suggestion is not a new one. It has been made on more than one occasion with reference

to warehouses (was tried at Drury Lane Theatre years ago), and, if we mistake not, some such system is patented; at any rate, it was submitted to us for our opinion four or five years ago preparatory to such a step. We did not advise the spending of any money upon it. Water so discharged, if discharged, would be sure to fall in the wrong place and be useless, or on some hasty alarm would be made to do more mischief than the cause of the alarm. As a rule, however, the affair would be out of order, or the cistern empty, or the lever unapproachable, or the whole system forgotten at the moment of need. When Drury Lane Theatre was burnt down in 1809, there were in the upper part of it two immense reservoirs, sufficient to inundate the house: whether they were empty when the fire occurred, were forgotten, or could not be reached, they failed in their purpose. It seems, too, that a large iron curtain, which had been set up with the view of dividing the auditorium from the stage, in the event of fire, had been removed a few months previously, as it was found to be so rusty that it could not be worked. The enormous tank over the Opera-house is said by the architect to the theatre to have been full of water, and to have been used by the firemen in their ineffectual and mysterious endeavour to put out the fire before they sought for extraneous assistance. It is difficult to understand, however, how with the control of such a body of water as that reservoir would hold they could have failed to quench the fire if it were attacked at the outbreak. The best means of protection appear to us to consist in wise planning, with a view to the efficient division of the building into many separate compartments as practicable, the use of the greatest possible proportion of non-flammable materials in the construction, water and appliances always at hand and in order for immediate use, and continuous watchfulness by intelligent men. We want, as we said at some length a short time ago, a class of men, as watchers, of a superior character to those now usually employed.

The cause of the fire at Her Majesty's Theatre remains still unknown: a defective flue and spontaneous combustion have both been suggested; the latter a by no means improbable cause, notwithstanding the fact known to every one that oil is not used in scene-painting. An oily rag and some lamp-black, in a heap of shavings or in other rags; the accidental conjunction of some other materials in a heap of rubbish such as we have before now seen in theatres; or even a pile of rags or tow alone, would, under certain circumstances, produce flame. In the present case, however, we have no grounds to reason upon. The cause is at present wrapped in darkness, and will, perhaps, remain so. We venture, however, to throw out a suggestion that occurs to us.

The last incident that took place on the stage was the descent of Don Giovanni amidst fire and smoke to regions below. Can it be that a spark was then kindled where it smouldered and spread until heat sufficient was generated to produce flame, and the resultant destruction? It seems very desirable that a more strict investigation than we have yet heard of should take place, and that the watchmen should be made to give a much more precise account than is yet before the public of what they were doing during the whole of the evening, and of their proceedings when the fire was discovered. The coroner might do good service by opening an inquiry into the matter, and ought at once to interfere.

THE CONDITION OF ARCHITECTURAL SCULPTURE.

I BELIEVE every thoughtful man agrees with you that the result of England's visit to Paris this year is the belief that in nearly every branch of domestic and decorative art we are sadly deficient and stand, when compared with the workmen of France, at a disadvantage of the minor states of Europe. Indeed, so wide seems the difference between us that, scarcely giving left for us is to look earnestly at the work of a better future. To this end I wish to make a few remarks through your influential columns; and, confiding myself to my own particular brand of art-work, will endeavour to point out the defects in our system of working which have mainly tended to leave us in the rear of other nations.

It has been said that we are a cold and inar-

stic people. That, I think, many are prepared to deny. Indeed, I think the man who first made that assertion would not refuse to deny the existence of gold in quartz. The true metal, I believe, is here among us; but we bungle in refining it. The old masters of the Middle Ages found it in our race pure enough, and glorious works they wrought with it. There were quick brains and bright eyes in those days, and cunning forms were invented, beautiful and new. No tiring, no flagging, no self-satisfied laziness: a style was worked up to its perfection; all was done with it that mortal hands could do. They worked with such love and healthy vigour that four hundred years afterwards we go creeping round their mighty structures with our eyes and mouths extended in astonishment! And who were these men? No one can deny that they were of our race and country. Then, is it to be supposed that the faculties they were capable of cultivating to such an artistic pitch are now dead among us? Such a day, I believe, would forbid evil for England. We may have become a hard-headed people;—giants in mechanism, children in art. This is merely the national result of a strictly mechanical age; and let us try to discover how this comes about.

I think we shall find that the canker may very easily be traced to our present system of competition,—I am, of course, writing upon architectural sculpture exclusively,—a competition which places one of our most interesting, and the most public of arts, on a par with brick-work and paving. There may be a few men who would take exception to this remark; but I contend that the exceptions are very few, and the practice very general. Is it not a general practice, in large provincial towns especially, to lump in sculpture together with all the mechanical trades required in building, and give it straight into the hands of the builder? And what is the consequence? The builder, of course, sends it round to half a dozen men until he obtains the cheapest. Now there are architectural sculptors who work for eighteenpence per hour, and there are architectural sculptors who could not be obtained for four times that amount: then how often, may we suppose, have the latter the means of showing their skill under such a system? There is, perhaps, nothing so convincing as personal experience; and from that let me then take one little instance. Some time ago I applied to a gentleman for the carving in a church of his designing: he referred me to the builder, to whom I gave an estimate, which he said was in every way satisfactory. Time went on, and I wondered, in my innocence, why I had not been instructed to proceed with the work: I wrote for an explanation, and in return was informed that a person had undertaken to do the thing thirty per cent. under my price; and, thinking it would be useless to apply to me for such a reduction, they had signed with him to commence at once! In this thought they were wrong. The virtues of a Phocion would never suit this era. Indeed, I venture to say that if the self-denying old Greek had lived in our time he would have been voted an imbecile, incapable of taking care of himself, and in all probability given over to the mad doctors. Being a strong believer in Darwin's theory of existence, I should have undertaken that work at the reduced price, or even lower than that, and employed inferior men to do it: the profit accruing to me would have been relatively the same, the difference being in the price paid for skilled and unskilled labour. Perhaps this little confession may seem rather indiscreet, but it is best that the truth should be held up plainly to those who are too mentally blind to find it for themselves. This is not an accidental occurrence, a difficulty to be stumbled over once in a life-time; the same thing comes up to cramp the hands of a hundred others every day. Work done under this system might be tolerated if it could be confined within its own limits, but its consequences cannot be restrained; it is the one stone dropped into the lake, and its influence circles out and spreads over the whole surface of the art. Its natural sequence is a beggary, wretched, pitiful scale of remuneration even at the best, a remuneration which works the muscle of the arm but fails to engage the action of the mind.

I have read somewhere of a brainless wench, who, on the eve of her marriage, goes to buy some necessary utensils for the new home; she comes back laden with a lot of unnecessary pots and pans, not one of which is capable of holding water. But when her future lord points out the paltry nature of her purchase, she answers,

"Yes, my dear; but look what a lot for the money!" She is not the only simple innocent wandering about this world mistaking quantity for quality. It is, I believe, generally thought that the difficulties we have to surmount are easy to overcome, and the heaviest of our studies but light. With part of this I quite agree. Our studies certainly are very light indeed, and I have just been trying to explain that we are only trained for the labour of the arm, and not for the working of the head. But the difficulties to be surmounted are quite another thing. Let us, for example, take a supposititious case. Tomorrow, perhaps, a man may receive orders to carve a church recently restored—style, thirteenth century. The next day one of the fifteenth; or he may be instructed to execute carvings for a Classical or a Byzantine building. A gentleman may write for him to attend to his villa, which is either Italian, Elizabethan, or that indescribable style which takes its rise—and often its fall—in suburban districts. Now, will any one think for a moment how much study is required to thoroughly master even three of these styles? Say, Early English, Perpendicular, and Renaissance; the easy grace and lovable forms of the first, the severity of drawing and modelling in the second, and the wide range afforded to fancy in the last. To work in these with a master-hand a man's remuneration should be sufficient to procure him the means for travelling to inspect the best examples of each; or allow him, at least, the means to purchase the best models to be obtained of them. But such a consideration seems never to be dreamed of, and all that is required from us is that the work should be done somehow for the money allowed for it in the builder's contract.

What can come of it but barrenness of thought and poverty of feeling? Starvation prices naturally bring forth unhealthy ideas stunted in their growth. I have often heard it stated that if carvings were not put in with the builder's general contract, in many cases the building committee would look upon money so expended as so much capital running to waste. That may be true; for it is generally, though quietly, whispered that building committees are generous enough not to monopolise all the wisdom in the world. But how is it that the system works so well in Scotland, and many parts of northern England, where every trade engaged sends in a separate tender? And why not here? We find that carvings are executed there; and well too,—for example, the British Linen Company's Bank in Edinburgh. Where have we, in London or the provinces, a modern elevation to excel that in its sculptured details? I have not the pleasure of knowing the sculptor's name, but his work proves that he has not been "economised" as we are.

Need we ask what has become of the spirit of symbolism, which was made to tell such wonderful tales in the old work that a carver could make the forms he produced read like a story-book. It has been cast aside, we know; but has anything better or more instructive stepped into its place? Again: let us examine some of the best carved of our modern Renaissance façades, and we shall find them, nearly without exception, empty and meaningless. There, to be sure, is that everlasting, undying acanthus-leaf, twisted and tortured into cruel and unnatural shapes enough to make one listen for its shrieking. But where must we look for the graceful human and animal forms, or the fanciful grotesques, which alone give life and vigour to the style? Down with the other good things, sacrificed at the feet of the modern god *economy* and his unholy trinity *L. S. D.* It is all very well, and I have no doubt quite proper, that certain voluble gentlemen should let off high-stepping speeches every now and then about our want of enthusiasm; but let me ask, who made the conditions we all complain of? Who brought our art down to its present degradation? Slaves can seldom emancipate themselves when their masters are many; but I venture to say if the architects of this country—our masters—instead of hunting after the "cheapest," would only apply for the best models, or sketches, for the sculpture in their works, and let the best take it at something like a fair remuneration, they would soon find that English carvers would produce something good enough to win the admiration of those who now look upon them with contempt.

I fear I am trespassing too much upon your limited space already; but I cannot conclude without thanking you sincerely for the earnest efforts you have before made, and are now

making, to lift the minor arts of this country into a higher and nobler sphere. I do not despair that the end will be obtained; for I am buoyed, like many others, with the recollection that your valuable journal has taught men to recognise some of the greatest social truths, and successfully exposed some of the vilest social errors of modern times. With your powerful advocacy, men cannot be long blind to the fact that the finest and purest feelings of humanity can be as readily touched through the eye as the ear; and that everything endowed with beauty and purity of form must leave an unconscious though evident impress on every human heart. The more general such forms become, and the oftener they can be made to arrest the eye of the unrefined and vulgar, so often will society gain by the influence of their silent teaching.

My pen is far too feeble to hold up the full importance of this subject, or I would endeavour to use my strength in exhorting those who are near akin to us—the metal workers, gem engravers, embossers of silver and gold, the painters of domestic ware, and every man who by his art enriches the value of the raw material,—to take up this vital question as a common cause. I would urge them to mark out the errors, in their various ways of working, which cramp them down and hold the inventive talent of each in useless bondage. It has been wisely said that there is too much of *thinking in crowds* among us: wherever such is the case, individual thought and action are too often smothered by the dominant voice of a mediocre majority; for originality can never spring up without self-reliance and an untrammelled singleness of thought. Let us then look well among ourselves, seeking and casting out all that tends to weaken and impoverish art, even in common objects among us; and where the evils are too great for our unaided strength to subdue, let us drum them into men's ears until we compel them to stand and listen. When this is attained, and a proper liberal acknowledgment of skill is established among us, it requires no spirit of prophecy to foretell that the art-workman of this country will not be long ere he shoulders the best men now marching in the van of other nations.

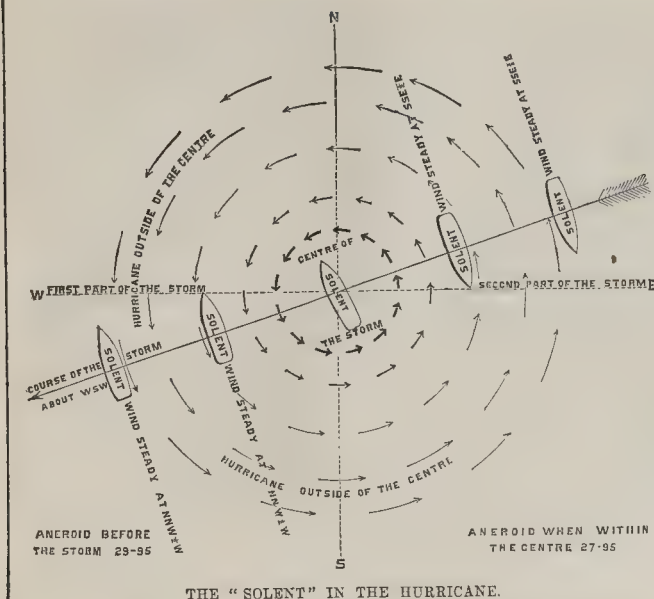
JOHN RONDIS, Carver.

THE VALUE OF CAREFUL BAROMETRICAL OBSERVATIONS AT SEA.

THE sad calamity at St. Thomas's, West Indies, now so fresh in the minds of all, which has brought such sorrow through the length and breadth of the land, and which now appeals through the channels of the press and the private influence of the charitable, gives evidence in the interests of science and those entrusted with the lives and riches of others, that their knowledge and conduct on such occasions should be rightly estimated, especially when derived from experience and the truthful indications afforded by that valuable instrument the barometer, whether aneroid or mercurial.

As a listener in the private circle to the description given by the commander of the Royal Mail steam-ship *Solent*, I venture, even at the risk of being tedious, to offer a few details which, doubtless, will be fully appreciated by those who know little of the dangers at sea, and whom such details may enable to more fully comprehend the graphic pictures that have appeared in the daily press, of those harrowing scenes now the substance of the past.

On the morning of the 29th ult. the *Solent* left St. Thomas's for Peter Island at about 6 a.m., to transfer to the *Rhone* her passengers, mails, about a million dollars' worth of specie, and a valuable cargo; the weather squally, aneroid at the usual height for that hour in the morning,—29.95. As the ship approached Peter Island, steering an easterly course, the barometer was observed to fall slightly, the wind freshening in squalls from the northward with much rain, though as yet giving no unusual indications of anything serious at hand. After reaching Drake's Channel, the *Solent* hove to under the stern of the *Rhone*, anchored off Great Harbour, Peter Island, about 9 a.m. Now friendly communications passed between the two commanders in reference to the weather; both looked forward to the coming of a strong breeze, and thought it advisable not to come alongside for the discharge of cargo, &c. The glass had now fallen to 29.84, the late Captain Woolley, of the *Rhone*, at once thought of shifting his anchorage, supposing it would only be what



is commonly called a "norther," or a steady gale blowing from the northward. The commander of the *Solent* steamed his ship to windward, and hove to for a little time to consult his chart, watch the aneroid, and consider what course to adopt. Finding this valuable and trustworthy instrument, of which there were two for guidance, still falling, and the wind inclined to veer to the westward, from his previous experience under similar circumstances two years ago that month, in the *Havannah*, where the centre of a hurricane passed over his ship, he determined on anchoring about a mile to the northward of Peter Island, so as to have the shelter of that island for the second or worst part of the storm, which he knew would be from the southward. About ten o'clock the aneroid stood at nearly 29.80, after which the hands could be almost seen to move, as the hands of a watch, rapidly falling. The starboard anchor had already been let go, according to the law of storms, the wind veering westerly. The port anchor was now let go, veering to the clinch on the starboard one, and to 75 fathoms on the port. All hands were employed securing boats, furling awnings, sending masts and yards down, lashing everything about the decks, and preparing for a very heavy gale. There was not, however, sufficient time to get down more than the fore-yard and house the main-topmast, before all were called from aloft to secure themselves from danger. The *Conway* had steamed away for anchorage about Reef Island; but the thick haze prevented seeing whether she reached that point. The *Rhone* had been seen making all due preparations to meet the emergency. On board the *Solent* steam was kept ready. At eleven o'clock the *Rhone* was seen rolling heavily at anchor. The storm increased, and at noon was blowing a fearful hurricane, wind steady at N.N.W. $\frac{1}{2}$ W. The aneroid had fallen to 27.95, indicative of 2 in. in the mercurial column in six hours; at 12.15 p.m. it fell a dead calm, with a considerable sea. The aneroid remained steady at 27.95 for the short period of twenty-five minutes (*vide diagram*), whilst the centre of calm was passing over the ship, when two light flashes of lightning, with indistinct thunder, were seen and heard. These, with the condition of the aneroid and the treacherous calm, warned the captain of the speedy approach of the most-to-be-dreaded part of the storm, though those less acquainted with these terrible visitations might have supposed all danger had subsided; yet he felt it was close at hand, and made further and due preparation to meet the

necessity. The sheet-anchor was got ready for letting go, in case of a cable parting, and the engineers were set to the engines to work them with full pressure of steam if necessary.

An awful period of suspense was this dread lull. At 12.40 p.m. it became almost dark, and of a sudden a most fearful and terrific rush of wind succeeded from the S.S.E. $\frac{1}{2}$ E., and struck the ship upon the port broadside, heeling her over nearly on her beam-ends, blowing her fore and main masts and main-top mast out of her; this, though hoisted, went into three pieces, the port cable parting, although running out, when the sheet-anchor was let go, the engines being set going gently ahead, with the helm hard down, to bring the ship's head to wind. The vessel was now a scene of devastation; boats, seats, hen-coops, portions of the masts and rigging, broken skylights, &c., were carried overboard, endangering the lives of those who were at the post of duty during the fury of the elements. Unfortunately, the first and second officers were already disabled. The crew, consisting of blacks, were paralyzed with fear, and ran off deck below for security. The whole duty of now managing this vessel in her sad distress devolved on the captain and third officer, Mr. Duncan, who nobly stood by him, and together they managed to get the helm amidships by means of the relieving tackles, which judiciously had been hooked on ready, the ship now coming gradually head to wind, it being impossible to stand at the wheel from the force of the gale. Already the captain had suffered some severe blows and falls, having been blown down the fore-hatchway, and struck severely in the back by a nine-gallon breaker, which, out of nautical terms, is an iron-bound cask that had been fitted for an anchor-buoy, which was blown from where it was lashed, and came at him like a cricket-ball, throwing him many yards along the deck. After 1 p.m. the barometer began to rise, and about 1.30 p.m. the weather improved a little, but still blew furiously. The engines were kept gently going, easing the cables; and at 2 p.m. the barometer was rising rapidly, the wind still steady at S.S.E. $\frac{1}{2}$ E.

The Admiralty naval agent, Mr. H. W. Barnett, kindly gave his assistance at such a critical juncture, by watching and noting the changes of the aneroids and weather, to which it was impossible the captain's personal attention could be directed at such an hour. The judicious anchorage chosen by the commander, Captain J. M. Gillies, sheltered the vessel from the effects of the heavy sea. The weather gradually improved,

the barometers now rising as rapidly as they had previously fallen, the wind still steadily blowing from the same point, S.S.E. $\frac{1}{2}$ E. Towards evening, as the weather cleared up, the *Conway* was observed on shore near the town at Tortola, dismasted, and her funnel gone. Nothing of the havoc that had befallen the vessels in the harbour and the town of St. Thomas was known until the *Solent* wended her way into that port, the particulars of which are so painful and sad that we forbear to retouch on them here. To render this hurried sketch of the condition of a single vessel more correct and intelligible, we append a diagram of the progress and passage of the storm over the *Solent*, and for the correctness of which the writer is indebted to the commander, who has been invalided home in consequence of the injuries received.

Although the storm passed over the ship, the diagram represents it as if the ship had passed through the storm, the rate of its travelling being considered equal to twenty miles an hour.

THE TRADES UNION MOVEMENT.

In respect to the malicious damage to two stone caps at the Church of St. Mary Magdalen, Paddington, the Operative Masons' Society held a special meeting to disclaim the act as a unionist one. Mr. Dyer, the secretary of the committee, said that, as far as the society was concerned, they had only to fall back on their old character. Their association had existed for thirty-three or thirty-four years, it numbered thousands of members, and the employers knew well that during its existence it had never been guilty of ratting, or any similar crime. A long discussion then ensued, in the course of which every member who spoke condemned in the strongest terms the outrage which had been committed at Paddington. One of the speakers pointed out that their rules not only forbade ratting or any similar crime, but even enacted very severe penalties against any person who used abusive language towards an employer. It was unanimously resolved,—

"That we deplore the outrage at Paddington, but deny most emphatically any complicity or knowledge of the affair; and we trust that public opinion, judging us by the past, will not assume that such a despicable outrage could at the present moment have been perpetrated by members of the Society of Masons; but should such prove to be the case, we shall be glad to bear of such unworthy members receiving such a severe punishment."

Two abominable outrages have been committed at Belper. For some time the workmen of Mr. John Watson, the largest nail manufacturer in Belper, have refused to work, owing to improved machinery being introduced that would assist the workman in his daily work. The Union stated that no horsenail-maker should work for Mr. Watson so long as he should continue using the machinery, he having commenced operations on a small scale at Wirksworth. Amongst the men who worked in opposition to the dictates of the Union, was an old man residing at Gorsev Hundred, Belper, of the name of Nightingale. He was leaving his workshop at Belper one evening lately, having in his hand the nails that he had made during the day. After he had locked the door he was felled to the ground by a life-preserver from behind by some dastardly ruffian, and while on the ground his assailant dealt him other fearful blows. Nightingale had shouted "Murder," which attracted the attention of a woman, who came to his assistance, when the murderous villain took to his heels; but not before the witness had a full opportunity of seeing his face, having a lighted candle in her hand, which, it is to be hoped, will yet shed a retributive light upon this diabolical deed of darkness. In the same town two nail shops have been broken into through the roofs, and several pairs of bellows destroyed, because the two men to whom they belonged were some trifle in arrears of the compulsory black-mail, called "contributions," to the Belper Nail-makers' Union. The police have used every exertion to find out the guilty persons; but such is the terror evinced, that some are afraid to state facts that have come to their knowledge.

The measures necessary for putting an end to the abuses of trades' unions formed the subject of a paper read by Mr. Frederic Hill, of the General Post-office, late Inspector of Prisons, at a meeting of the Jurisprudence Department of the National Association for the Promotion of Social Science, held at 1, Adam-street, Adelphi; Mr. William Overend, Q.C., chairman of the Trades' Unions Commission, in the chair.

Mr. BIR commenced his observations by remarking that, until the appointment of the present commission, the country had no conception of the amount of tyranny and crime which trades' unions produced; of the turpitude in which a large portion of the best of our artisans are kept; of the harassing and mischievous interference to which employers are subjected; and of the injury to the public generally caused by the crippling of production. He did not, however, intend that this condemnation should apply to all trades' unions, nor to all the proceedings of some of the worst of them. But when trades' unions, not limiting their actions to legitimate ends, applied their power in coercion, whether of fellow-workmen or employers, in very many cases to terrorism, and in some to even maiming and murder, such unions became gangs of criminals leagued together for the establishment of a despotism wholly subversive of law and justice, utterly opposed to the spirit of English institutions, and absolutely intolerable. Under these circumstances it behoved every member of the community to do all in his power to abate this monstrous evil, and to unite in an energetic effort to procure the adoption of those remedies which afforded the best prospect of success.

By three measures—the lien on trades' union funds, so as to make them responsible at law for damage to property or person, the appointment of a public prosecutor, and the adoption of effective means for diffusing a knowledge of political economy, he thought the monstrous evil with which they had to deal would soon be greatly abated and brought within dimensions no longer formidable enough to cause national alarm. Amongst the further measures which he would recommend was the appointment of local justices to try all matters not considered of sufficient importance to reserve for the superior courts; an object which might be obtained by giving criminal jurisdiction to county-court judges. His next proposal was to give to the Government such a general control of the police of the country as would secure, where necessary, especially in case of riots, swift and combined action. He would also earnestly repeat a recommendation, which he formerly made, as an inspector of prisons, for the establishment of a reserve police, to be called out whenever the ordinary police was insufficient. And the last measure he would venture to suggest was the appointment of Government auditors, who, on the application of any trades' union, should undertake, on proper payment, to examine the accounts and assets of the concern so as to give an opinion upon their solvency. Were these measures carried out, he thought they would go far to remove the evils which spring from the existence of trades' unions.

A discussion followed the reading of the paper, after which the chairman said he had derived a good deal of experience of the working of trades' unions from the Sheffield inquiry. He had seen a great many of their abuses, but he was nevertheless not blind to the advantages which might exist in connexion with the system. A working man was entirely in the power of his master, who could discharge him or reduce his wages at his discretion; and if, by joining with one, two, three, or more of his fellow workmen, he was enabled to protect himself against injustice, no one could blame him for doing so. It was a perfectly legal and legitimate act, and it was the only way in which, in many cases, men could get an increase of wages, which the masters were too often inclined to depress. Every man or body of men had a right to say to an employer, "We will leave your employment if you do not give us a certain rate of wages;" but unfortunately trades' unions did not stop at that. They sought not only to obtain higher wages for themselves, but they tried to prevent masters from employing others. They did more than that; they tried to prevent non-unionists from working for those masters who did not accede to their terms. His own opinion was that trade unions as at present constituted had a tendency to make the masters resort to an oppressive and cruel purpose of enforcing their laws. That, of course, was a state of things which could not be tolerated in a civilised community.

THE METROPOLITAN STREET BARS.—A deputation from the Metropolitan Board of Works have had an interview with Mr. Gathorne Hardy, at the House of Commons, relative to laws and other obstructions to the metropolitan.

MANCHESTER ARCHITECTURAL ASSOCIATION.

The opening meeting and conversations of the members of this Association were held on the 19th ult., at the Cathedral Hotel; Mr. L. Booth, the president, in the chair. The Hon. Secretary (Mr. A. Darbyshire) read the seventh annual report, which stated that continued success attended the operations of the Association, and during the year twenty-five names had been added to the list of associate members. The introduction of the archaeological and student elements had tended to increase the interest and usefulness of the Association. Papers had been read and discussions had taken place during the session, the principal of which was upon the amendment of the present unsatisfactory form of builders' contracts. The classes for students had been successful and were highly appreciated, and the Association were under great obligations to Mr. Dalmard for his gratuitous assistance in the department of anatomical and figure drawing. A very interesting paper had been read by M. Ludwig Oppenheimer, of Vienna. Delegates had attended the meeting of the Architectural Alliance, in London, last September, and the Association had visited the Association in Liverpool, and inspected some of the more important buildings in course of erection there. The annual excursion was to Houghton Hall. The Chairman delivered the annual address and review of the past session. With regard to the competition for the new Town Hall, he said he saw no reason to complain of the manner in which that competition had been conducted. On the contrary, it might well be considered to mark the commencement of a new and improved practice. It was the most sensible and fairly conducted important public competition he had known.

THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of members was held on Friday evening, the 6th instant, at the House in Conduit-street; Mr. R. Pené Spiers, president, in the chair.

At the previous meeting (held on the 22nd ult.) a resolution was proposed and, after some debate and opposition, eventually carried, to the effect that it would be desirable to establish a class of honorary members, who should have the same privileges as ordinary members, with the exception of voting and standing for office, and a vested interest in the property of the Association. In order to give effect to this resolution, it became necessary to alter certain of the rules. A motion having now been made to this effect, Mr. R. W. Edis proposed any change in the constitution of the Association, contending in the first instance that sufficient notice had not been given of so material an alteration; next, that the opinion of the last meeting (composed of less than fifty members) could not be considered as a satisfactory representation of the feeling of a society consisting of upwards of 400 members; and that it would be undesirable to admit to the Association gentlemen who, declining to come in on equal terms with the other members, would, in fact, become patrons, and set themselves up superior to the rank-and-file of the Association. He also reminded the meeting that the Association had now among its members not only a Professor of architecture, but several Fellows of the Institute, and also Fellows of other learned societies; and that it would be paying them a bad compliment to elect honorary members who would not come in upon equal terms with them. In conclusion, he moved as an amendment, "That no alteration be proposed be made in the rules."

Some discussion ensued, in which Mr. Plumb, Mr. Blinnell, Mr. Blashill, and others, took part, and eventually an amendment to the proposed amendment was moved, to the effect that the subject be referred to the committee for reconsideration; the president observing that this would be the more respectful course, and that in all probability the question would be "shelved." If this suggestion were adopted.

On a division, however, the latter amendment was negatived. The amendment of Mr. Edis was then put, and carried by a majority of eighteen in a very crowded meeting.

The following gentlemen were elected members of the Association:—Mr. Spencer, Folkestone; Mr. F. Edwards, Beckenham; Mr. E. Street, Islington; Mr. F. Fowler, Ipswich; Mr. H. Gimley, Chipping-hill; Mr. L. Day, Poekham, N. Hants; Mr. J. Stein, New Cavendish-street; Mr. A. Young, South Lambeth; Mr. A. W. Burton, Finsbury; Mr. James Weir, Great Marlborough-street; Mr. B. Evelyn, Cambridge-street, Finsbury; Mr. M. H. Knight, Dalston; and Mr. W. Mills, Norwood.

A vote of thanks was passed to Mr. Heywood, the architect of the H.B.W. in Valley improvement; and to Mr. Blashill, for his kindness in conducting the members over the works.

Mr. Tall then read a paper on "Concrete Dwellings," and exhibited his apparatus for the construction of walls, &c., in that material. Having explained the various experiments which he had made to perfect his apparatus, he described the manner in which he prepared the concrete, and the proportions of clay, gravel, chingle, slag, brick lumps, clinkers, stone chippings, sand, &c., used up according to the

materials to be found in the neighbourhood of the buildings to be erected. In mixing the concrete it would be necessary to add more water in summer than in winter, and not to weaken the cement by putting in either too much sand or too much water. For his own part, he used as little sand as possible, but the best and purest cement he could find in the proportion of one of cement to seven of gravel. A great advantage in the use of concrete was that it did not require the use of skilled labour, with the exception of a single carpenter to superintend the whole of the building. The latter could tell where to put the chimneys and frames for windows and doors, fire-places, &c., as also the blocks for fixing the staircases. With regard to ornamentation, the necessary mouldings for doors and windows could be carried out in a thin coat of cement by aid of a wooden frame, which could be worked with ease and mathematical accuracy. He contended at some length that a concrete house was stronger and warmer than one of brick or stone, and that it did not absorb the moisture which buildings composed of those materials always did.

In reply to questions, Mr. Tall stated that the cost of concrete dwellings, as compared with that of brick and stone, depended upon the description of materials necessary for the manufacture of the concrete in the locality where the buildings were to be raised. In some cases the cost would not exceed one-third that of brick, but the average might be taken at one-half. There would also be a saving in the matter of rain-pipes, &c.

The discussion was adjourned until a future day.

The Chairman announced that on the next evening of meeting a paper would be read by Mr. W. White on "Systematic Proportion in Architecture."

ST. MARTIN'S SCHOOL OF ART.

The prizes awarded to the students attached to this school, as the result of the annual competition, were presented last night in the school-room in Castle-street, Endell-street.

Mr. Boreford Hope, M.P., occupied the chair, and gave the prizes. There were also present Mr. C. Landseer, R.A., Mr. H. O'Neill, R.A., Rev. Mr. Humphrey, vicar of St. Martin's, Mr. T. S. Watson, and others.

The Rev. R. G. Maul (the hon. secretary) made a brief preliminary statement, and observed that he had never met the students with more pleasure, for never had the school come out so well as on that occasion.

Mr. Bowler, the inspector from South Kensington, addressed the meeting, pointing out that the object of Government in establishing schools of art throughout the country was to produce a staff of designers for manufacturing purposes to enable England to hold her place in the markets of the world; but that the preliminary steps in the necessary course of instruction differed in no respect from such as would be taken with a view to acquiring proficiency in pure art.

Mr. B. Hope then addressed the students, turning his observations principally to the case of those who had not carried off prizes. They must not suppose that art-schools were merely places in which gold and silver, and bronze medals were to be won. Let them not degrade their noble study so much as to look at it merely in the light of a horse-race or a boat-race, where the honours were carried off by one competitor, and there was nothing in the shape of recompense left to those who were second in the race. The commercial use of these schools had been cleverly and clearly pointed out by the preceding speaker, but it was not the whole case. Why was that room so crowded on that occasion? They were not all designers, nor had they all the idea of turning their art-knowledge to pecuniary purposes. The object, he hoped and was persuaded, was higher than this; and he was so warm an advocate of these schools because, in this grinding, steaming, puffing, express train travelling age—in this age of smoky towns, narrow streets, and much distress, and of hard political debates, they wanted to have some thoughts and ideas above these low material interests. True education implied training as well as knowledge, and could never be considered as having successfully accomplished its purpose unless it left the mind clearer and sharper than it found it. The art-education offered in these schools supplied, to a great extent, the place of the lite-

rary and mathematical training that was given in the higher places of education, and which was beyond the reach of the persons for whose benefit these schools were opened; and they also served to spread a healthy diffusion of sound architectural principles through the land. The speaker concluded an animated address by congratulating Mr. Casey (the head-master) upon the successes of his students.

Mr. Hope then handed the prizes to their respective winners, accompanying each with a few general expressions of congratulation and encouragement; the last presentation being the National Gold Medal to Mr. Herbert Johnson, who, on the previous night, received a silver medal at the Royal Academy, for a study from the antique.

An address was then read by Mr. H. O'Neill, R.A., on the "Object and Method of Art Education." Amongst other points he gave the students a strong caution against the too great tendency to *realism* of the present day, observing that although it was essential to copy with the greatest accuracy all the details of an object—its defects as well as its beauties—they were not to look on this as the end of art; that the real artist would not confine himself to what could be seen in any one object, but bring his imagination to aid in combining and harmoniously arranging all elements of beauty. He observed that this running after the real was not confined to pictorial art, but pervaded literature and the drama; that many people would rather go to see the real water run from a real pump on the stage than listen to the words of Shakespeare from the mouth of a fine actor.

The proceedings terminated with a vote of thanks to Mr. Maal, the honorary secretary, and to Mr. Hope for kindly taking the chair.

PRESERVATION OF ANCIENT BUILDINGS.

In the House of Commons, Mr. Layard asked the Secretary of State for India, whether any recent steps had been taken towards preserving the numerous ancient architectural remains of public buildings and other monuments in India; and whether he would lay on the table of the House copies of any documents lately issued by himself or the Governor-General of India relating to this subject.

Sir S. Northcote said some despatches had been received from the Government of India on this interesting subject, and there had also been a correspondence with the Department of Science and Art at South Kensington. The papers were hardly in a fit state to lay before the House; but when the correspondence was completed it could be produced.

Mr. Beresford Hope has given notice that on an early day after the recess he will call attention to the state of the buildings of archaeological and architectural interest in possession of the Crown.

ROMANESQUE BUILDINGS OF THE RHINE PROVINCES.

ARCHITECTURAL remains on the Moselle, the Lahn, and the Rhine have been lately illustrated in two shapes; one as a series of photographs for the Architectural Photographic Association, and the other as a handsomely-bound and fully illustrated volume entitled "Rambles in the Rhine Provinces."* Mr. Seddon having occasion during the spring of this year to visit the borders of the Rhine, and finding that he should have to repeat his visit, it occurred to him that he could, without any great sacrifice of time, if that district should be selected for the operations of the year, pioneer the ground, and point out such objects as would, in his opinion, be suitable ones. This proposition was submitted to the photographers, and by them to the committee, and ultimately was accepted, although not without misgivings, as the following extracts from a ray letter on the subject from the Honorary Secretary of the Society will serve to show—a letter too good to be lost. Mr. Aitchison wrote:—

"The proposal of giving a lot of German photographs filled me with dismay. The little I have seen of German work gave me the idea of mouse-traps or bird-cages done in stone, wonderful in point of construction as most Medieval buildings are, but even further removed from

art than most Medieval work." "I consider that, as we call ourselves an Architectural Association, we should at least be able to improve the taste of our architects, and show what is good to the public, than merely publish a sort of architectural crib for daily use. If we are ever to have any architectural art, Gothic must be entirely different; our habits, thoughts, and tastes are diametrically opposed to those that prevailed in the Middle Ages; and the present fashion is no more likely to last than the French enthusiasm about eating horse flesh, when we can get good beef and mutton. The public are very slightly incited with any feeling for beauty, but are full of enthusiasm and energy with regard to the revival of shapes, intricate patterns, and mechanical invention displayed in this revived work, just such an interest as a child takes in one of the carved ivory Chinese balls; but as the people get educated they will naturally ask for works of art, and that art must be suitable to the construction of general life—composition, elegance, and simplicity rather than complexity, baddening, want of taste and proportion in Medieval work; and if the architects are solely to be instructed by that style, their minds will get a sort of pig which will make them admire oddness and distortion, and prevent them from appreciating anything that is really elegant, beautiful, or artistic. So I suggest as a compromise that we give the Middle Ages but a few examples to meet with to improve them in their own style, as far as that can go, but not to deprive them of the opportunity of seeing things that in point of art are as superior as a statue of Phidias is to an image of a Canibal leader; and I suggest that we give them next year some of the Renaissance tombs from Venice, Florence, and Assisi, and that we also give good examples from the best masters of work from which all the good in Medieval art came; and my own impression of German Gothic is, that it is the very babbles of everything bad; worse even than English Gothic, which is saying a good deal. I do not expect you to agree with me, but I am quite certain about its truth, and have no more doubt that it will be admitted hereafter than I have that three angles of a triangle are equal to two right angles; and I am also sure that if a race of artists to not spring up who can not only feel this, but are able to apply it, architecture will sink not only lower than it is now, but will be likely to degenerate into a vulgarism of the kind of the people, and be only astrology, put into the hands of the people, and be only used to gratify some crutch for the babbles of some former style of art, whether Gothic or Greek."

The result of the journey, the difficulties of which Mr. Seddon described the other night in a paper at the Institute of Architects, is a series of twenty-two mounted photographs, from which subscribers of one guinea are entitled to select ten, while subscribers of two guineas are entitled to the whole in a neat portfolio; and certainly the investment is not a bad one. The subjects are Schloss Elz; Heisterbach Abbey; Andernach Church, also details of doorways and gallery of apse; Limburg Cathedral, west front and interior; Laach Abbey, and western entrance; Porta Nigra, Treves; the doorways from the church of Notre Dame there, and various views and details of the cathedral; Fountain at Sayn; Munster-Maisfeld Church; and old houses at Rhense and Boppard, as well as the Church at the latter place.*

It will be observed that the Romanesque and Transition works of the Rhenish provinces have been chiefly selected,—some of them more picturesque than useful, but still as a whole an interesting collection. The illustrations are round, so agree with their external galleries round, so general in buildings of this period, are numerous; that at Heisterbach Abbey, once a famous building; at Notre Dame, Treves; at the cathedral of Laach; and at Andernach. The west end of Laach Abbey and the recessed tombs at Treves are also valuable examples. These, as well as some of the carved capitals given, should be examined with a glass; they then cease to be photographs, and seem positively worn stone. In two or three of the views when so examined the Mason's Marks are discoverable on some of the stones. Laach Abbey, we may say, is situated in a most romantic and retired position on the borders of the volcanic lake in the Eifel district, called Lancher See, at the distance of about three leagues from the right bank of the Rhine, below Andernach. The plan of the church is a characteristic example of the German Romanesque style, with transept and circular apse, and groups of towers at either end. The enclosed cloister court at the entrance is also a feature once almost universal among the large Rhenish churches, such as those so frequent in the city of Cologne; few, however, of these have been suffered to remain to the present day, so that this example at Laach is of peculiar interest. A view of the central western archway to this cloister is given among this series of photographs, and very beautiful it is. Mr. Seddon thinks it was seriously injured by fire a few years since, but it has been well restored.

The picturesque dwellings constructed of timber, which are characteristic of the villages on the banks of the rivers of Germany, have

* Application is to be made to Messrs. Cundall & Fleming, agents for the Association, New Bond-street. Subscribers should purchase, too, for a few pence, the Part of the Institute's Transactions containing the descriptive paper to which we have alluded.

nearly run out the lease of their existence. The inevitable decay, which sooner or later overtakes all the works of man, is hastened in their case by the perishable nature of the materials of which they are constructed. There are many stone-built houses of Romanesque work of the twelfth century which will long outlast these, few of which date further back than the sixteenth or seventeenth century. Of the two excellent examples given of timber houses at Boppard and at Rhense, a village a little below that town, the former of them is noticeable for its richly-carved angle-posts and the quaint and varied fillings-in of the lower panels of the two upper stories. "These are formed of interlacing timbers, all the points of junction of which are emphasized by small circles or lozenges cut out of the pieces of wood, and filled like the spaces between the timbers with light-colored plastering. The curved gable above has already succumbed to the slater, as the rest doubtless soon will have to do. In the example at Rhense are several interesting features, such as the projection of the circular staircase above the entrance doorway; the door itself divided into halves, each with four projecting panels, the peaked roof of the dormer and the turret over the angle, which has some good old glazing in the windows, and the curious gallery beneath from which it is bracketed."

In Mr. Seddon's elegant volume, to which we must now turn, reduced examples of some of the photographs already alluded to are used as illustrations, but these form but a small portion, there being, in all, twenty pages of illustrations, and seventy smaller ones, mostly woodcuts, and including a number of plans. We are enabled to give as examples of the wood engravings a view of the church at Andernach, and a view of the four in Limburg Cathedral.

Swartz Rheindorf is in two stories, one above the other, each forming a complete church by itself. A large octagonal opening in the upper door, at the cross, throws the two together to a certain extent; so that congregations in the two churches, at the same time, might join in the service performed in either. This building was dedicated in the year 1151, and is entirely in the Romanesque round-arched style. Remains of ancient wall paintings have lately been discovered on the walls of the lower church, and are being restored with care. The most effective feature of this church externally is the gallery which surrounds the upper story. The openings in this are arranged in groups of four arches, between the several piers; and again are subdivided into pairs by coupled columns in the centre, the other shafts being single, and the arrangement is slightly varied round the apse. On the north side only the gallery is discontinued along the two extreme western bays, but from the south side it is returned along the west front which faces the Rhine. The capitals exhibit great variety of design, and the view obtained from this gallery of the country around, including the Rhine as far as Cologne, is charming beyond description. A lofty tower, surmounted by a spire like those to the twin eastern towers of Bonn Cathedral, makes a fine pyramidal composition of the whole.

"The greatest care is happily taken of this architectural gem by the present worthy rector, who appears to have a pride in exhibiting it to strangers. Let us hope, therefore, that the love of such works of art is not quite so dead as is assumed in the remark in some of the guide-books, to the effect that this church can interest only architects and antiquaries. The works of restoration, which are slowly progressing, appear to be under intelligent direction, and to be fit and judicious. As one of the few pieces of art of great value, the existence of which until lately had not been contemplated. As one of the few places the condition of which showed a marked improvement since the date of my former visit, I feel it due to the guardians of Swartz Rheindorf to record the fact."

The original church at Andernach was said to have been built about the year 908, and gradually destroyed in the war between Otto and Philip, in 1189; considerable portions of it, however, are pure Romanesque, and probably formed part of the older church.

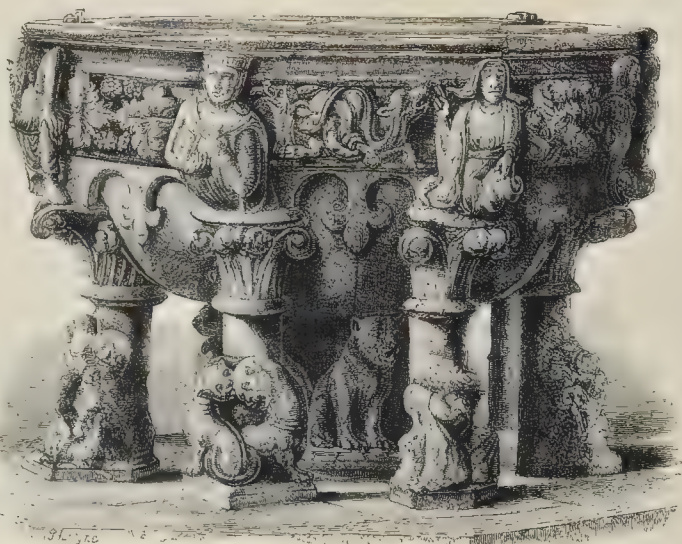
"The general composition," says Mr. Seddon, "is, it must be confessed, an unfortunate one, although the same which was very frequently adopted in the German churches. Four equal towers always need some central or dominant mass to group them together. Placed in pairs at opposite ends of the building, they make it look, as Mr. Kustin has pointed out, like the legs of a table turned upside down. Much worse, then, is it, when two of the legs are shorter than the two, giving the effect of a table with two legs turned over again it could not stand level. In the Church of Andernach, seen from the east or north-west view, the smaller towers being the nearest, appear in perspective so nearly the size of the others, that it seems to have been merely by an error that they are quite so."

* The perspective illustration in King's "Study Book" is from this point of view.

* "Rambles in the Rhine Provinces." By John P. Seddon. Illustrated with chromo-lithographs, photographs, and wood engravings. London: John Murray, 1866.



ANDERNACH CHURCH.



FONT, LIMBURG CATHEDRAL.

It is to be regretted, as it seems to us, that our author has quoted this very weak simile of Mr. Ruskin's. That eloquent writer affords plenty of good things for quotation, but this is surely not of them. There is no likeness whatever between the things compared.

The western towers of Andernach, seen in the view, are noble structures, and there are other parts of the building that will repay careful study. The eastern apse is a capital example. The principal stage has a recessed arcade of seven arches, decorated with a roll moulding, resting on columns, which are much after the Corinthian type in proportion and treatment of capital. The open gallery above has, over each of these, a group of four detached columns, set round a square pier placed diagonally, and between these are two semicircular arched openings on a

pair of shafts coupled in the direction of the axis of the apse. Below is the ordinary tablet band, but unusually plain; and above, a cornice, which, for boldness of projection and richness of detail, exceeds any example, even those at Cologne.

The Font in Limburg Cathedral, our second illustration, is a remarkably elaborate work, at present covered with drab wash. The church, a fine one, is said to date from 1213 to 1242. Limburg, which is on the Lahn, deserves longer time than our author was able, the weather being very bad when the visit was made, to give it.

Two of the most interesting chapters in the book are those devoted to Schloss Elz and Schloss Ehrenburg; but we may not give more space to the subject. Many years have passed since,

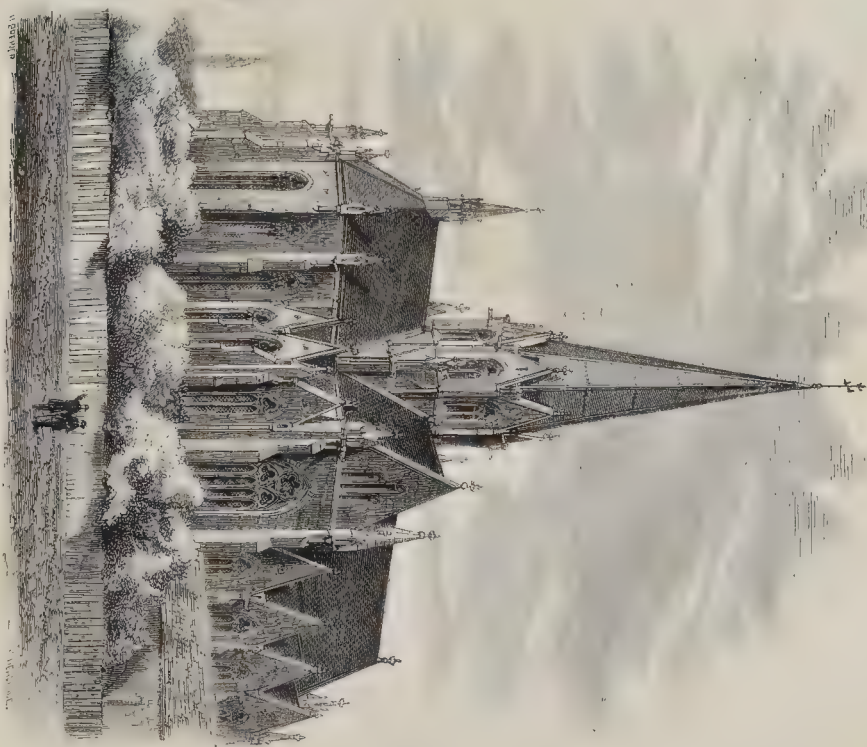
trudging the banks of these rivers, sketch-book in hand, we arrived at the opinion now expressed by our author that "the simplicity and good proportions of German Romanesque work, and its effectiveness compared with the cost, as also its evident capacity for a higher development, which it was only prevented from achieving through its being interrupted by the rise of the Gothic style, are points which necessarily impress themselves upon those who examine it." We go, however, further than this.* Let us add, in conclusion, that "Rambles in the Rhine Provinces" can scarcely fail to advance Mr. Seddon's reputation.

* In studying the works of this period, "An Historical Essay on Architecture," by the late Thomas Hope, should not be disregarded.

MODERN GERMAN CHURCHES.—HERR FRIEDRICH SCHMIDT, ARCHITECT.



Finkhaus Church, near Vienna.



Die Lazaruskirche, Vienna.

[See p. 27, note.

THE CHEAP FOOD MOVEMENT.

The first of several large markets for the sale of provisions which it is contemplated to establish in the various districts of the metropolis has been thrown open to the public. It is situated in the East-end. At a cost of 2,500l. Messrs. McCall, of Houndsditch, have erected an extensive building at 272, Whitechapel-road, for the purpose of supplying meat and other provisions to the public at as low retail prices as the wholesale prices will admit of. Good-looking mutton was sold there on Saturday from 4½d. to 5½d. per lb., and beef from 5½d. to 6½d. per lb. Ostend rabbits were exhibited for 6d. per lb., butter from 10d. to 1s. 2d., hams 7½d., fowls from 1s. 6d. to 2s. 6d., tea 2s. and 2s. 4d. per lb., and sugar 4d. to 6d. Boots and shoes were shown equally low in price. The new establishment was extensively patronised.

The Holloway and Highgate Co-operative Society, got up chiefly by Mr. Heine, the chairman, has induced a salesman of Newgate Market to open premises in Upper Holloway, at his own expense and risk, for the sale of butchers' meat at prices somewhat similar to those just quoted.

How is it that a special and co-operative movement has been necessary to correct the competitive "haggling" principle? Tradesmen are themselves deserting the old principles and co-operating to keep up market prices; and the co-operative principle, wherever it has been gone into in earnest by consumers, has forthwith been followed by a speedy tumbling down of these market prices. Some one capable of doing so should make the present and prospective mutual relationship of the competitive and the co-operative principles their special study, and give the public the benefit of their reflections on this interesting subject. Co-operation seems likely to supersede competition altogether. Trades unions of all sorts are co-operative.

ACCIDENTS.

Destruction of a Church by Fire.—A fire has totally destroyed the parish church of Little Billingham, Norfolk. The edifice had but lately undergone very extensive repairs to the roof, and a new apparatus was fixed for warming the edifice with hot air, and Sunday before last was the first time of its being publicly used. In the evening the roof was found to be on fire, and in a very short time the whole building was in a blaze, and the roof soon after fell in. A new stained-glass window was slightly scorched, and everything in the interior of the building was totally destroyed.

A House Blown Down.—During a recent gale of wind, a house in Ipswich, near "Spider's Hall," at the end of the path branching from the Woodbridge-road to Sidgate-lane, was partially blown down. The house had been built about five or six years.

Fall of a Viaduct.—A wooden viaduct has fallen, it is said, under the weight of a mineral train on the Vale of Neath railway. The alleged occurrence suggests the importance of attention to the state of these wooden bridges and viaducts, which are numerous in the West of England as well as in South Wales. Striding across the valleys and glens of Devon and Cornwall, looking like colossal centipedes on stilts, they give an idea of peril to the most experienced traveller. An engineer once remarked that, although compelled himself frequently to cross them, he would on no account allow his wife and family to do so.

Fall of a Building at Bradford.—Copy Quarry, at the back of Brunswick-place, Bradford, is nearly filled up, but a chasm, upwards of twenty-four yards deep, is still open at the back of the buildings used as stables and coachhouses. The outer wall of a coachhouse on the brink of the gulf has fallen onwards into the quarry, bringing the roof down with it. There are other low buildings on the brink of this hole, which do not appear to have a very secure foundation.

Fall of a Harbour Shed at Greenock.—The entire framework of the roof and iron pillars, and part of the outside brickwall of the new shed being erected at the west side of Albert Harbour, Greenock, has fallen in. One man was killed, another seriously injured, and a third slightly wounded. A great portion of the wall will require to be rebuilt, and the whole of the frames replaced.

Fall of the Top Stone of a Spire with a Man on it.—A fatal accident, arising out of an act of foolhardiness, has just taken place at Plinzunet (Oütes du Nord). A seaman appeared suddenly outside the clock tower of the church, just as the people were leaving after vespers, and seizing hold of the lightning conductor, climbed up to the cross on the summit of the spire. He then commenced to gesticulate in bravado, when the stone to which the cross was fixed got loosened and fell to the ground, dragging with it the unfortunate man, who was dashed to pieces, having fallen from a height of 150 feet.

SANITARY SHORTCOMINGS IN BATH.

A SERIES of letters which have appeared in the *Bath Chronicle* seem to indicate that there are very good reasons why the city death-returns have not diminished like those of other towns where sanitary improvements have been wisely planned and energetically carried out. Since 1851, as remarked in the *Lancet*, in an article on this subject, there does not appear to have been any improvement in the health of the inhabitants, and the recurrence of epidemic disease has been distinctly shown to have resulted from structural defects of drainage, which, in addition to the practice of sinking cesspools into the porous oolite, have largely contributed to the pollution of the water supply.

The sufferance of slaughter-houses and pig-sties in the crowded parts of the town, and the slow progress in substituting iron and stone-ware pipes for the old defective drains, are serious evils, which weaken the defences of the city against the attack of an epidemic. A map, shaded according to the death-rate, shows how remarkably constant is the relation between the greatest mortality and the localities where the slaughter-houses abound.

It was found in 1867 that one-third of Bath was dependent on surface-wells,—a fact which, taken in connexion with the nature of the soil, the imperfect drains, and the frequency of cesspools, becomes of the utmost importance, and helps to an understanding why the death-rate for some years past has averaged 22 per 1,000.

The writer of the letters in the *Bath Chronicle* (Mr. Smeade Brown) complains of the obstacles interposed in the way of reform by the delegation of all power of the Town Council in sanitary matters to a committee which is wanting in a sufficient infusion of the medical element to insure proper thought and knowledge concerning the hygienic requirements of the city. We are glad, however, to observe that among those who objected to the appointment of a medical officer (at 125l. a year, or just 25l. more than the inspector of nuisances, who besides receives a uniform suit of clothing) a more enlightened opinion now prevails. One of the committee last week, at their meeting, said that, although he was one of those who did not feel the necessity of a medical officer at the time of his appointment, he now most cordially rejoiced that they had such an officer and such an office.

PROVINCIAL NEWS.

Hemel Hempstead.—At a public meeting it has been resolved to pull down the remaining portion of the old Market-house, and erect a new one on the site; and the bailiff has been empowered to raise 2,000l. by loan for that purpose. A committee, consisting of ten of the inhabitants has been appointed to act with the bailiff.

Newcastle-upon-Tyne.—The foundation stone of the Abbot Memorial Building for Girls connected with the Northern Counties Orphan Institution has been laid by Mrs. Abbot, widow of the late Mr. John G. Abbot, of this town, on a site a short distance north of Brandling-place, Newcastle. The building is intended by Mrs. Abbot, who gave 5,000l. for its erection, as a memorial of her late husband. This, it may be noted, is a different building from the Abbot Memorial Schools lately noticed in the *Builder*. Messrs. Austin & Johnson are the architects who have been selected by the committee to prepare the plans of the new building, which is intended to accommodate sixty children. There are to be large and lofty dining-rooms, school, and class rooms, with teachers' rooms, and the usual domestic offices on the ground floor. On the first floor there will be the dormitories, with teachers' rooms adjacent, and

the committee-room and apartments in connexion with it; and above will be rooms for play and other purposes. Hot and cold baths, lavatories, and all the usual appliances will be placed in convenient situations. Externally, the building will present the appearance of a mansion, in the style prevailing in the earlier years of the reign of James I. The principal front will have a gable at either end, having a bay window extending to the height of two stories; and the connecting curtain wall will be pierced by mullioned and transomed windows, a range of dormers giving light to the attic story. There will be a leaded belfry, with a bell and vane, over the centre of the building; and an ornamental iron balcony will stretch across the whole front at the level of the first floor. In the rear of the building there will be a covered shed for the children to play under in bad weather. The buildings will be of red pressed bricks, with stone dressings. The grounds around, containing about two acres, will be laid out ornamentally, there being a light iron palisade as a boundary towards the Town Moor, with walls on the other three sides of the site. The contract for executing the work has been let to Mr. Walter Scott.

CONVERTING A RAILWAY ARCH.

MR. SHEPPARD, provision merchant, having for some time occupied an arch in the south abutment supporting the large girder bridge spanning the main entrance to the London Bridge Terminus, has until lately been put to great inconvenience owing to the limited amount of frontage and height in which to display his goods in comparison with the internal size; and the constant overflow of the water draining from the bridge above running down the coloured cement work of the front imparting to it a dingy streaky appearance, and tinging down the whole, so that it was a difficult matter to distinguish the shop front from the surrounding mass of dead wall. To remedy these defects, and to extend the frontage (so as to include two show-cases previously made within its limits), a façade of wood has been erected, giving a much bolder appearance. To overcome the effect of the large extent of dead space surrounding the limited and stunted appearance of the old front, the whole has been treated in rather an exceptional manner. The line of arch in the old front forms the centre of the composition, and is supported on each side by circular-headed bays, with facias, cornices, &c., to enclose cases: the arches of bays are supported by carved panels,—the springings being on a level with the transom of the shop front, and the tympani filled in with plate-glass. The arches are enriched with cable moldings, and spring from engaged columns with carved capitals and polished mahogany shafts. An arading, with shafts as before, and with a background of decorated glass, is placed above the bays ranging with the crown of the main arch, and the whole surmounted by the main facia and cornice. In the decoration Pompeian green and buff are used for the main ground work, and relieved and picked out with positive colours. Mr. Ennor is the contractor: the decorations were done by Messrs. Cowtan; and the carving is by Mr. Forsyth. Mr. C. N. McIntyre North was the architect.

DURHAM CATHEDRAL.

THE western window of this cathedral has been filled with stained glass by Messrs. Clayton & Bell, at the cost of Dr. Waddington, the Dean of Durham. In the window, which is of seven lights, with foliated tracery in the head, both the ancestors and forefathers of our Lord are represented; the figures in the lights being twenty-one in number, or three in each light. Jesse occupies the lowest place in the centre light, and from his body spring branches of foliage, which, entwining themselves throughout all parts of the window, form, as it were, a framework in which the figures are placed, that immediately above Jesse, and those in the two lights next the centre, being kingly ancestors of our Lord, and those in the four outer lights being prophets who foretold Him; while in the top of the centre light He is represented sitting in His Mother's arms. Above, in the topmost portion of the tracery, is the "Agnus Dei," with adoring angels on either side, while below on the left is the "Annunciation," with figures of the Virgin Mary and St. Gabriel, with

the Dove descending upon her, and on the right the "Adoration of the Magi," with figures of the three kings presenting their offerings to the Infant Jesus, the "Star in the East" being figured in the opening above. Below these groups, and immediately above the twenty-one figures before mentioned, are four angels censuring. The ground-work of the lights is alternately a rich blue and ruby, while the foliage and great part of the figures are either white or of very light colours, thus taking away any tendency to heaviness of tone. The work has been carried out under the superintendence of Mr. C. Hodgson Fowler, architect.

THE LATE HURRICANES.

THERE has been a singular succession of hurricanes, cyclones, or typhoons of late throughout the world, accompanied with earthquakes and volcanic eruptions. By the terrible cyclone which recently occurred in Bengal, 1,000 lives have been lost at Calcutta alone, 30,000 native huts destroyed in the suburbs alone of that city, and 600 native boats and numerous ships destroyed in its vicinity. The crops of rice, jute, &c., in Bengal, too, have been sadly injured. Since the hurricane took place at St. Thomas's two earthquakes have occurred there, and it is believed that there was an earthquake during the hurricane. There have, within a short time, been more than one volcanic eruption in the ocean, and Vesuvius is in a highly active state. The recent severe gale in England is said to have been really a cyclone quite similar in its nature to that which has just passed over India. Professor Brande describes these destructive storms as follows:—

"Rotatory storms or whirlwinds, occur in the tropical seas of China, the West Indies, and round Mauritius, but never on the equator. Their diameter is generally about 200 or 300 miles, but sometimes exceeds even 500. The centre of the vortex (which is always calm) travels at a rate varying from two to thirty miles an hour. These storms are preceded by a singular stillness of atmosphere and a rapid fall of the barometer. They are, perhaps, the most destructive of all storms."

The question is an interesting and an important one, whether there be any essential connexion between hurricanes and earthquakes. It is not the first time their occurrence has been simultaneous, or nearly so.

THE INSTITUTION OF CIVIL ENGINEERS.

On December 3rd, the first paper read was—"Description of the Victoria Bridge, on the Line of the Victoria Station and Fimlico Railway," by Mr. W. Wilson.

It was stated that this bridge crossed the River Thames about 150 yards to the eastward of the Chelsea Suspension Bridge, at a point where the width of the water-way between the embankment walls was 740 ft. It consisted of four segmental wrought-iron arches, each having a span of 175 ft. at the springing, with a rise of 17 ft. 6 in., and a clear headway of 22 ft. above Trinity high-water level. At the northern end there was a land opening of 70 ft. span crossing the Grosvenor-road, and on the southern shore there was a corresponding opening of 65 ft. span, crossing the wharfs of the Brighton Railway Company.

In the first place, the gravel was dredged out of the bed of the river, down to the clay substratum, for a breadth of 100 ft., and extending across the entire width of the water. Cofferdams, constructed of two rows of whole timbers, waled and strutted in the usual manner, were then driven 4 ft. below the level of the intended foundation. When the inclosed area was cleared of water, the clay was excavated to a depth of 40 ft. below Trinity high-water level. The space to be occupied by the foundations was next surrounded by permanent sheet piles, driven to a depth of 8 ft. below the lowest foundation level. Within this sheeting a bed of cement concrete, 4 ft. in thickness, was formed, and on that the masonry of the piers was commenced, the concrete being afterwards carried up to the top of the sheet piles round the entire circumference of the piers. From the footings up to the level of 4 ft. below low water, the piers were built entirely of brickwork in lias mortar. Thence to high-water level they were faced with rock-faced Portland reach stone, with one through course half-way up. The core, or backing, was com-

posed of pavior bricks, set in lias mortar, and the cutwaters, caps, springers, and other masonry above high water, were of tool-dressed Bramley Fall stone. The width of the piers at the springing line was 12 ft. 4 in.; and from the extrados of the arch to the level of the cornice, the width was 10 ft.

The superstructure of each of the four principal openings consisted of six wrought-iron arched girders, springing from cast-iron bed-plates fixed to the masonry. Horizontal girders, resting on the piers and on the abutments, and riveted to the arch near the crown, formed the longitudinal bearers for the roadway. The spandrels, or intermediate spaces between the arched ribs and the horizontal girders, were filled in with a wrought-iron framework radiating from the arch; and between the horizontal bearers cross girders, for carrying the roadway, were fixed at distances averaging about 3 ft. apart.

The total cost of the bridge, including the land arches and abutments, was about 84,000l. The superficial area of the roadway, between the parapets, being 31,690 ft., the cost per square foot was 2l. 18s.; while the total length being 930 ft., the cost per lineal foot was 45l. 3s. Only twelve months were occupied in the erection of this important structure.

The works were designed by Mr. Fowler (President Inst. C.E.), and were carried out under his supervision by the author. Mr. John Kelk, M.P., was the contractor, and the ironwork was sub-let to Messrs. Bray & Waddington; the wrought-iron-work was supplied by the Monkbridge Iron Company, and the cross-girders and angle-irons by the Butterley Company.

The second paper read was, "On New Railways at Battersea, with the Widening of the Victoria Bridge, and Approaches to the Victoria Station," by Mr. C. D. Fox. These works, which were three years in progress, comprised a length equal to nine miles of double line, of which five miles were on a viaduct, and had cost for works only, including the bridge over the Thames, the sum of 910,000l. The high-level line of the Brighton Company, which was entirely on viaduct, had cost, including permanent way, stations, and signals, and the numerous heavy bridges, 45l. per lineal yard of double line. The whole of the works had been executed from the designs and under the superintendence of Sir Charles Fox and the author; Mr. Edmund Wragge being the resident engineer. The contractors were Messrs. Peto, Betts, & Cramp-ton, Messrs. Lucas Brothers, and Messrs. W. & J. Pickering; Mr. J. Heywood, jun., executing the ironwork for the Brighton Company.

FROM SCOTLAND.

Edinburgh.—St. John's Episcopal Church is a structure erected in 1819, from the design of Mr. Burn, in the Perpendicular style of Gothic. For some years past it has been in contemplation to add to the accommodation and embellish the interior, and several leading architects have been applied to on the subject; but from the position of the building it has been found impossible to extend it except at an enormous cost. Some slight alterations have now been effected upon the exterior, and the interior has undergone a complete overhauling. The interior was fitted up with very high pews, covered with green baize, two small galleries flanked the altar, and a large gallery occupies the west end. The galleries at the altar have been entirely dispensed with, the high pews have been replaced by open benches of oak with carved poppy-head terminals, and the front of the west gallery has been considerably lowered. A reading-desk, of this old fashioned umbrous sort, has been swept away, and three stalls and reading-desks have been placed within the altar-rails, the space enclosed by which has been greatly enlarged. A new pulpit of oak, in keeping with the other features, has replaced one with an open canopy, not of the most elegant design. A reredos, it is expected, will also be provided. The walls have been lined with oak panelling to a height of 5 ft., and the space above and the ceilings decorated in colour. The wall decoration is far from satisfactory: upon a groundwork of stone colour an oblong pattern has been drawn in double lines of red, suggestive of brickwork. The ceiling of the nave, which is of mook fau-ncing with pendants,—as in Henry VII.'s Chapel at Westminster,—has been treated with a deep blue background, the mouldings and pendants being brought out with gilding; the

shafts which run up the clearstory walls have red lines run up alongside them, and their caps are gilt. The aisles are treated in a similar manner, and the foliated capitals of the pillars are solidly gilded. Messrs. Peddie & Kinnear were the architects employed, and the decorations were done by Messrs. C. & J. Moxon.

A CISTERN FOR ROOF.

I AM delighted, as one of the public and a constant reader of yours, with the article at page 847, "On the Storage of Rainwater." Non-professional and ignorant as I am of the art of building, I have for many years entertained and pressed upon the attention of practical men the notion of forming the roofs of houses and buildings, generally, of cisterns for the collection and storage, and the simplest mode of distribution, for domestic and other service, of rain-water. In these days of iron so easily and cheaply worked into any form, why not substitute for slate or tile roof a cistern—say, from 12 in. to 24 in. deep,—with partitions, and having a roof of thin zinc, with a small incline from the ridge curled up at the edge or eave into a half circle, and perforated so as to lead the water into the cistern? Empty, a sufficiently stout cistern would be much less in weight, and would surely cost much less than an ordinary roof; and, when full, even the weight, I presume, would not be more than the walls of a well-built house would or ought to support. I will not bore you with any attempt at further details; but I must add, how pleasant it would be to have an abundant supply of soft rain-water in every room in the house by merely the turning of a tap. With a cistern for a roof a house would be cooler in summer and warmer in winter; and in winter might be kept from freezing by a small steam-pipe from the top of the kitchen-boiler.

A. Z.

THE GREAT BELL OF ST. PAUL'S CATHEDRAL.

In searching for materials with a view to compile an accurate account of remarkable bells, I have discovered many palpable errors in our topographical and other works, and am led to conclude that but very few books contain any trustworthy information on the subject.

Here is an extraordinary mistake, which ought at once to be corrected. It has been stated, over and over again, by numerous writers, from about the middle of the last century down to the present day, that the diameter of the great bell of St. Paul's is 10 ft.; whereas it is only 6 ft. 9½ in. We are further told that the bell was cast in 1716, and that its weight is 11,474 lb. The fact is, it was made in 1709, its weight being 11,648 lb., or 5 tons 4 cwt.; and it bears the following inscription: "Richard Phelps made me, 1709."

I may take this opportunity to mention that it has also been often asserted that the present great bell at St. Paul's was brought from Westminster, and that on a certain occasion the Cathedral clock struck thirteen upon it instead of twelve, at midnight. Now, this is altogether false. The bell came not from Westminster, but from the Whitechapel foundry. Nor did St. Paul's clock, which was made by Langley Bradley in 1708, ever strike thirteen times in succession, so far as is known.

Again, some persons say the present bell was cast "out of the metal of 'Great Tom' of Westminster." But this is likewise a fiction, as I will endeavour to show. It is true that a bell, which, from the reign of Edward I., hung in the clock-tower then standing opposite Westminster Hall, and which was at first known as "Edward," and afterwards as "Great Tom," was taken down and removed to St. Paul's about the end of the seventeenth century. That bell, however, was subsequently cracked, and then re-cast by Philip Wightman; but it proved so faulty that Richard Phelps was employed to make one of new metal; and this bell, on which the clock now strikes the hour, was delivered at the Cathedral before Wightman's bell was removed from that edifice. (See Sir Christopher Wren's "Answer to a Pamphlet entitled 'Frauds and Abuses at St. Paul's,' 1712. See also "Fact against Scandal," London, 1713.)

With reference to the popular tradition, that a soldier whilst on guard at Windsor Castle, during the reign of William III., solemnly de-

clared that he heard the clock of St. Paul's strike thirteen instead of twelve, at midnight, and thus saved his life, when he was accused of sleeping upon his post. I will only say that the sentinel must have spoken of "Great Tom, at Westminster," for St. Paul's Cathedral had not then any public clock or large bell.

THOMAS WALESBY.

MOULDY SUBSTANCES IN ROOMS.

It has long been known that the presence of moulds in rooms is highly injurious to human health; under certain conditions of dampness and bad ventilation it is no uncommon thing to see mildew run all over a large expanse of white-washed wall or ceiling. If this mould could enter in a living room, and it be not destroyed, it frequently brings on a complication of painful symptoms in the human patient, or, in other words, the membranes and tissues of the body are known to offer a fitting habitat for the plant, and it is transferred from the original objects to the human frame. A weak solution of hypochlorite of lime has recently been recommended as a destroyer of moulds in rooms, and as their growth is both common and rapid in this country in damp and ill-ventilated situations the remedy is worth a trial. S.

AN ADVERTISED COMPETITION: A WARNING.

Sir,—Two or three weeks ago an advertisement appeared, inviting architects to compete for a warehouse in Leeds, and stating that a plan of the site would be forwarded upon receiving a fee of 10s. In consequence of what I heard, I requested a friend in Leeds to make inquiries; and he informs me that he can find no such firm as Messrs. Baxter & Co. (whose name appeared at the foot of the advertisement) at the address given. G. E. G.

GIBRALTAR WATER SUPPLY AND FLUSHING.

Sir,—It is a mistake to suppose that labour and materials are much, if at all, in excess of English prices. In a place in which there are kept upwards of 5,000 soldiers in comparative idleness, there are several hundreds of skilled labourers, of numerous callings, who can be employed, as in laying down the gas-pipes, at 8d. or 1s. per day. Materials are chiefly on the spot, and can be obtained in the usual "Gibraltar way." A large profit will remain to THE CONTRACTOR.

COAL-PLATES AND GLASS FLOORS.

ALL I desired to say was, that glass, without being properly supported by an iron frame, was unsafe. Quite admitting the force of your note, that light is often very desirable, another question arises as to the position of coal-plates: are these necessarily to be in the centre of a footway, or could not proper shafts be easily constructed on side of footway, or clear of the same altogether? After the deplorable accident at the London, Chatham, and Dover Railway, from plate-glass flooring without adequate supports, let me caution and advise great care in the use of glass floorings in interiors: as a roofing it is all that can be desired. "CAVENDO TUTUS."

NOVEL MODE OF SELECTING AN ARCHITECT.

Sir,—At a meeting of the Board of Guardians of the Headington Union, held on the 24th ult., the following novel method of selecting an architect was adopted:—The names of three gentlemen practising in Oxford were written on separate pieces of paper, folded, and placed in a hat, and the one chosen whose name came out first. I think, sir, this is a fact which should be known to the profession, not because shabby treatment of architects by public boards is uncommon, but because nothing but public exposure will convince such people that gentlemen practising in a profession deserve to be treated as gentlemen, and that such a use of their names is unjustifiable. TACITON.

WATER-PIPES IN FROSTY WEATHER.

A CLIENT has suggested to me the following plan for averting the miseries of bursting water-pipes:—He would insert in each service-pipe a small India-rubber tube; the idea being of course that the expansion of the water in freezing would be accommodated by the collapse of the internal tube instead of by the bursting of the enclosing pipe.

It is obvious that there is a limit to its application, for with certain lengths of pipe, and consequent pressure, the tube would be permanently compressed; but I should be glad if some of your scientific contributors would give their consideration to this suggestion for doing the public an appreciable service. E. INCHES BELL.

Another correspondent suggests, under special circumstances, a very small pipe, containing warm water and returning to a boiler, might pass through the larger pipes and into cisterns.

THE LANGHAM HOTEL.

Sir,—I regret to trouble either you or your readers with any further notice of my action against Mr. Giles; but that gentleman, in his letter to you last week, states as he alone planned the building, so far as the basement, ground, and first floor were concerned, he retains these plans. This, I am pained to say, is simply untrue. The above-named plans are the original working drawings furnished by myself for the erection of the building, and are amongst the number ordered by the judge to be delivered over to me. Mr. Giles alleges I used influence with the directors. I neither knew nor had ever spoken to one of them; but I certainly felt I had a claim to be employed, after so eminent an authority as Mr. Sydney Smirke (who had been called in to advise the directors) recommending my designs to be adopted. JAMES MURRAY.

* We have also a letter from the defendant's solicitor, contradicting the plaintiff's solicitor, but must decline to insert any more communications on the subject. A strange confusion of ideas seems to prevail.

RAILWAY MATTERS.

SOME damaging statements as to the Metropolitan Railway have appeared in the *Money Market Review*. The following figures are given as showing for the last seven half-years what the proportion of the net revenue has been to the dividends and interest paid:—

	Half-years.	Net revenue.	Dividends and interest paid.
December, 1864	£43,360	£68,530
June, 1865	45,836	82,240
December, 1865	62,290	96,820
June, 1866	68,104	117,240
December, 1867	68,123	126,060
June, 1867	78,283	145,430
Estimated for Dec., 1867	75,000	160,000

Thus nearly half the dividends and interest on an amount of capital hitherto comparatively small has been paid out of capital in some form; and our readers will form their own judgment what proportion the traffic of the suburban Western Extension will bear to the necessity which will arise, when it is opened, for paying all dividends out of revenue, and that, too, on a larger amount of capital than has hitherto come in for dividend, whether from revenue or capital.

Estimating, however, the net surplus for the current half-year as above, at 75,000, the charges will stand as follows:—The interest on loans, including the paid-up proportion of the 800,000 new loan, amounts to £7,500, and the preference to 7,500, in all 15,000. This would leave a balance of 30,000, to pay dividend on 3,700,000, of ordinary stock.

If incorrect, this should be set right. If correct, it is time for the shareholders to look about them.

In reply to a question put by Lord Stanley of Alderley, the Duke of Richmond has stated that experiments had been made on different lines of railway, with a view to the establishment of a system of communication between guards and drivers. Those experiments would be continued during the winter, and the results would be laid before the Board of Trade, who would endeavour, if possible, to carry out the object they had in view.

CHURCH-BUILDING NEWS.

WITNEY.—The parish church has been re-opened after its restoration. Last year the restored chancel was thrown open, and during the interval the restorations have been carried on throughout the whole of the church. By this means it now fairly indicates its original thirteenth-century features, in details which have long been hidden through bad taste and neglect. Among these details, an ancient crypt, supposed to have contained the remains of the founders of the edifice, is prominent. It was, until these restorations were fully carried out, hidden by pews. The latter have been removed, so as to disclose a portion of the windows which lighted the crypt from the outside, as well as the interior arches, sixteen of which were originally built. Contrary to usual custom, the crypt was above the level of the floor. Over the arches now disclosed are two monumental figures, supposed to represent the founders of the church, whose remains are supposed to have been disturbed in the places beneath, for the sake of the lead of which the coffins were made. The crypt is in the north transept. The floor here is covered with seats, placed on a level with the remainder of the building. To show the remainder of the old arches and windows would entail an expenditure of about 200l., but would much increase the interest of this very interesting portion of the church. In the south transept the restorations have been carried out in a similar way, and exhibit some fine old window tracery, before concealed behind a thick coat of stucco. An interesting specimen of wall painting was by the same means kept in the dark till the present restorations displayed it. The large west window of the nave is no longer blocked out of view from

the inside by the sloping organ-gallery which latterly disfigured and completely hid this window from sight within. In making this restoration cart-loads of dust, the accumulation of centuries, were removed by the contractor (Mr. Groves). The re-pewing of the church now gives accommodation to 1,000 persons; formerly, only 860 could be located. The building is properly warmed by Haden's apparatus, combining the warm-water pipe system with that of hot air in fines. The cost of the chancel, heating apparatus, and other necessary additions, together with the commission of the architect, Mr. G. E. Street, is about 1,000l. Mr. Groves's estimate for the other restorations was 4,000l.

HAVERHILL.—The church here, after restoration, has been re-opened for divine service. The edifice was in a lamentable condition, and the old pews and square family boxes were not at all economic of space—a much greater number of far more comfortable sittings being now contained in the same area. All the woodwork of the church, including the roof and the framing in the tower for the bells, was destroyed by fire about 1655, when the greater part of the town, with the adjoining parsonage-house, was also reduced to ashes. This disastrous fire cracked and rent the walls in many directions, and funds are much needed to restore the tower, which is still in a very unsafe condition. Lord Allington gave timber enough to repair the church, which was then patched up, and so remained until very lately, when the inhabitants determined to restore it as nearly as possible to its former condition, and employed Messrs. Elmslie & Francis, of Westminster (the architects of the cemetery chapels recently erected at Haverhill), under whom the work has been carried out by Messrs. Mason & Green, of Haverhill, builders. A gallery at the west end of the nave has been removed, and the organ refixed in the chancel aisle. The new panelled ceiling of the nave and chancel roof has been decorated and painted by Messrs. Heaton, Butler, & Bayne. The entire cost of the restoration has been about 2,500l.

LOUTH.—Mr. Charles Clark's tender for taking down the old porch and building a new one to the parish church, according to the plans made by Mr. R. J. Withers, architect, has been accepted. The following tenders were sent in:—Mr. Ryall, 515l.; Mr. Maxey, 482l. 5s. 6d.; and Mr. Clerk, 443l. The sums are exclusive of carved stone-work, painted windows, iron gates, &c. The whole cost will be borne by Mr. C. Parker.

HUSBAND'S BOSWORTH (Leicestershire).—The parish church of Husband's Bosworth, Leicestershire, which has just undergone a restoration, has been re-opened for divine service. The works which have been executed under the present contracts are as follow:—The elliptic arches of the arcade have been removed, and a series of Gothic arches, with clustered columns, now occupy their place: these arches are for the most part executed in Bath stone, the arches having alternating portions of Kenilworth red stone; the caps of the pillars are carved, each pillar varying, but all having natural foliage, with slightly conventional stems. One of the easternmost caps is the passion flower in clusters, the other the rose. The other six caps are, respectively, the ivy, the oak, the geranium, the hawthorn and convolvulus, the artichoke, and the hop. These arcades and pillars have been introduced without disturbing the roofs or the clerestory walls. The aisle roofs have been improved by the introduction of additional timbers and corbels, and the nave roof, which was very sound, but of the meanest character, has been caased. Spandrel piers and corbels have been introduced against the wall under the tie beams, and the ceiling decorated with stencilling, by Lee, of Lutterworth. New stone windows of Decorated character have been introduced throughout the church, the tracery of each varying in design. Four of these have been filled with stained glass as memorial windows. The body of the church has been re-seated with low open seats, executed in pitch pine, all facing the east. The boundary wall of the churchyard has been rebuilt, and new gates have been placed at the south entrance. The promoters of the work and the architect were desirous of carrying the works further, by the reconstruction of the present modern porches, the restoration of the tower and spire, and the general restoration of minor portions of the stone-work. These, together with other works necessary to be done before the whole structure can be said to be completely restored, are unavoidably postponed. The cost of the restorations, including those executed in 1861, and the chancel, will be

about 2,500l. The works have been carried out from designs under the superintendence of Messrs. E. F. Law & Sons, architects, Northampton; and have been executed by Messrs. Law & Sons, builders, Lutterworth.

Grillaton.—The north aisle of this church has been re-opened for divine service. Two years ago, Sir John Neeld, bart., M.P., restored the tower and nave and rebuilt the chancel; and this year he has completed the work, and rebuilt the north aisle. The designs were by Mr. A. Blomfield, and the work was executed by masons and carpenters in the locality. There have been five Early English windows inserted, three in the north wall, and one in the east and west respectively. A high-pitched roof has been divided into bays by ribs, the bays being boarded in the inside of the rafters, and the ribs springing from corbels upon the walls. The old seats have been cut down, and the panelling reworked into low open seats. The organ, which previously stood in front of the west window, has been considerably lessened, and is now placed against the north, admitting a great increase of light. The walls are faced inside with hammer-dressed freestone, pointed, and left without plaster.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Chester.—The ceremony of consecrating a new Roman Catholic chapel in Chester has been performed, with the usual ceremonial. The new edifice is attached to the Deo House Convent of the "Sisterhood of the Faithful Companions of Jesus," and is intended for the use of the inmates of the convent, and the members of the Roman Catholic persuasion resident in the immediate vicinity. The building is from the design of Mr. F. Kirby, formerly of Chester, but now of Liverpool.

Attercliffe.—The foundation-stone of the new Church of St. Charles (of Milan) has been laid at Attercliffe. The church is intended to supersede the present mission chapel, and stands on a plot of land near Heppenstall-lane, the gift of Mr. Wake. The Duke of Norfolk has contributed 500l. towards the work, and Mrs. Wake and family give a like amount. The church is estimated to afford accommodation for 400 persons. The site lies to the left of the turnpike road near to Heppenstall-road, on a piece of land which is being laid out for streets. The church will be built entirely of stone, in the Gothic style, the west front presenting a lofty gable, with two two-light tracery windows, between which a deep buttress is formed into a canopied niche, containing a figure of St. Charles, and is continued upwards to support a bell-turret over the centre of the gable. There are two side porches, baptistery, transepts, chancel, two sacristies, &c. All the floors are laid with encaustic tiles, except where boarded for seats. All the woodwork inside is varnished, and the roof decorated. A house for the resident clergy is included in the contract, and schools are to be built immediately after the completion of the church. The buildings will together form a large group. Mr. John Milner is the contractor, and the estimated cost is 4,700l. The architects are Messrs. Innocent & Brown, of Prior-court.

STAINED GLASS.

Kingdon Chapel.—The window at the west end of the nave of this church has been filled with stained glass by Messrs. Clayton & Bell. This window, at the restoration of the church, was filled with fluted white glass, but the light was obstructed from entering by the organ and gallery being placed directly in front of it. Upon the removal of the organ this window was thrown open to the church. The window is a four-light one, of the Early English style. The window contains representations of the four great prophets, Isaiah, Jeremiah, Ezekiel, and Daniel; also of the four evangelists, Matthew, Mark, Luke, and John. In the two centre parts above there are representations of two angels, bearing scrolls containing the word "Sanctuary," repeated three times. The groundwork of the window is of a cream colour, filled up with white tracery work. The window is given by Mr. Arthur H. Wall, of Burghill House, near Hereford, in memory of his father, the Rev. J. Wall, late vicar of this parish.

Darlastone Church, Leicestershire.—An east

window for this church has just been completed. In the tracery and upper compartments of the window are the emblems of divine power and dominion. Emblems of Divine Providence are introduced in the crockets and in various parts of the tracery, &c. The subject of the left-hand opening is Mary Magdalene in the house of Simon, at the feet of our Saviour. The centre opening represents the descent of the Holy Ghost in rays of fire, and in the likeness of tongues. These proceed from the Cross (which is surmounted by a rainbow of three colours). The subject of the right-hand opening is our Saviour's charge to Peter, after His Resurrection. Above these subjects are canopies with crockets, in harmony with the general design of the window. The window on the south side of the chancel has also been filled with stained glass. The subject of the right-hand opening of this window is the example of Jesus Christ in His works of mercy. The left-hand opening represents the Good Samaritan. These subjects are surmounted by floriated canopies; and in the upper compartments an Angel of Mercy, with tracery. The glass in both windows was designed and executed by Mr. William Holland, of Warwick.

Thornthwaite Church, near Harrogate.—A two-light stained-glass memorial window has been erected in this church. The subjects, which are represented in panels, under canopies of the Early English period, are "The Good Samaritan," and "The Acts of Deeds of Dorcas." The artist employed for this work was Mr. J. W. Knowles, of York.

Training College Chapel, York.—A stained-glass window, executed by Mr. J. W. Knowles, of this city, has been recently erected in this chapel, as a memorial. The subjects are "Christ blessing little Children," and "Christ teaching Humility." These subjects are depicted in panels above which are canopies of the Decorated period. The tracery is filled in with ornamental work of the same period.

Durham Cathedral.—It has been decided that the *Te Deum* window in this cathedral shall be filled with stained glass, in memory of the late Archdeacon Thorp. The work will be done by a London firm, the estimated cost being 600l.

St. John's, Torquay, Devon.—Several stained-glass memorial windows have just been erected in this church. The windows erected are three in number, having two lights each, in the apsidal chancel, and the south transept window containing four lights, and several tracery openings. Besides these, the north transept window, also having four lights, but larger than those in the south transept, and two small windows of two lights each, in the north-east chapel, have been filled with stained glass by the Rev. P. Graham, at his sole expense, the whole forming a memorial of his late wife. The windows have been made by Messrs. Lavers & Barraud, of London and Manchester. The work is treated more in a modern than in the old conventional style. The three windows in the apse contain subjects illustrative of the life of our Lord, in the following order, arranged in two tiers, so that each window contains four subjects:—The Annunciation, the Nativity, the Offerings of the Wise Men, the Presentation in the Temple, Our Lord among the Doctors, the Baptism in the Jordan, the Sermon on the Mount, the Transfiguration, the Agony in the Garden, the Crucifixion, the Resurrection, Our Lord's Appearance after His Resurrection to the Two Disciples at Emmaus. These subjects are placed in canopies on a ground of mosaic, and in the tracery above the centre window is the Lamb, and above each of the side windows an angel. The north transept window has figures of four holy women in the Old Testament, viz., Sarah, Hannah, Ruth, and Queen Esther, under canopies. In the large tracery opening is a representation of Our Lord bearing His cross, attended by the holy women, to Calvary. The south transept window has figures of four holy women of the New Testament, viz., St. Mary the Virgin, St. Mary Magdalene, Dorcas, and Eunice, also under canopies, with an angel in the tracery, bearing a scroll with the word Alleluia. The subjects in the two windows in the north-east chapel represent instances of faith and devotion in women, and are as follow:—Our Lord in the house of Martha and Mary at Bethany, Mary sitting at His feet and hearing His Words; Our Lord teaching the Woman of Samaria at Jacob's Well; the Syro-Phoenician woman entreating Our Lord to heal her daughter; the woman with the issue of blood touching our Lord's garment.

Holy Innocents', Liverpool.—A memorial window has recently been erected in the Church

of the Holy Innocents, Myrtle-street. The design is intended to illustrate the verse in the 90th Psalm, "In the morning it flourisheth and groweth up; in the evening it is cut down and withereth." It consists of two landscapes. In the background is a range of mountains. One compartment represents a palm-tree in full vigour, and a parterre of flowers in luxuriant growth and beauty, where the lily stands conspicuous. On the other half is a leafless tree, and the same flowers cut down and withered. In a small lozenge-shaped compartment, which forms the apex of the arch, is a copy of Titian's "Ascension of Our Saviour." The whole was designed and executed by a Liverpool firm.

Hereford Cathedral.—Eight windows have just been filled with stained glass in the Lady Chapel of this cathedral, in memory of various members of the family of the late Canon Morgan. The artist has designed these windows in accordance with existing examples of the thirteenth century, for at that period this chapel was built. The new windows are of the mosaic class, composed of a multitude of small pieces of every possible colour. They are treated with the utmost variety of patterns and shapes of medallions consistent with the style of the architecture. Each window consists of three medallions, divided by a rich pattern or boss: the whole is surrounded by a border, and an inscription in Old English forms the base of each light. The whole of the eight windows have been fixed with iron rods and cement, and protected externally with galvanized iron guards. Two of the windows are made to open without interfering with the patterns or subjects. The artist was Mr. Gibbs.

SCHOOL-BUILDING NEWS.

Ringstead.—The architects of the school recently opened here were Messrs. Wadmore & Baker, of Great St. Helen's. In these schools earth-closets have been fitted up: we shall be glad to hear how they answer, after they have been some time in operation.

Bootle.—New National Schools, in connexion with St. John's Church, have been opened with a bazaar, in aid of church repairs. The building just completed contains accommodation for 600 scholars. The infants' school is a room with open timber roof, 58 ft. by 25 ft., and 30 ft. high to the ridge. The boys' and girls' school-rooms are each respectively 59 ft. 6 in. by 20 ft., placed side by side, and 16 ft. 6 in. high. The whole are so arranged that they can be thrown into one for public meetings, with a clear and uninterrupted view from every part. There are five large class-rooms, two lavatories, and all the other necessary accommodation, with separate entrances for each section. There are two good-sized play-grounds, containing 326 superficial clear yards each. The contract for the schools was 1,900l., and carried out by Messrs. James Burroughs & Sons, under the superintendence of Mr. James N. Croft, of this town, architect. We may here mention that a new parsonage-house has also lately been completed in Balliol-road, in connexion with St. John's Church, and in which the same architect and contractor were employed.

Taunton.—St. Mary's Central National Schools, Taunton, have recently been completed. They are situated in the street to the south side of St. Mary's Church. Some old school-buildings existed on the same site before. The new schools comprise, on the ground-floor, a boys' school, 40 ft. by 32 ft., 6 in.; infants' school, 36 ft. 6 in. by 19 ft. 6 in.; and classroom for the latter, 21 ft. by 17 ft. 6 in., with separate play-grounds for the boys, girls, and infants, with covered corridors, hat and cloak rooms, &c. On the floor over the infants' school and classroom are respectively placed those for the girls. There are no rooms over the boys' school, which has a stained fir roof, open to the rafters. The front to the road is the only side of the building brought into prominence, as houses adjoin the schools at the two ends. The boys' school has a gable towards the road, with a large five-light window, having transoms and plate-tracery head. Its roof is surmounted by a bell-turret set diamond-wise, and covered with cleft oak shingle. The girls' school has two dormer windows, of somewhat similar character to that for the boys'. The general material of the walls was local stone, with Ham-hill for the window and door dressings, &c. The total outlay amounted to about 1,500l. The works have

been carried out by Mr. Henry Davis, of Taunton, builder, under the superintendence of Mr. Ferray, of London, architect.

Westminster.—An important addition has just been made to the Wesleyan Training College, Horseferry-road, in the shape of a new wing, comprising thirty bedrooms; lecture-hall, 60 ft. long by 27 ft. wide; gentlemen's day-room, same size as lecture-hall; two spacious class-rooms; and book-room, on basement, for the supply of books to this and kindred institutions. The building is of picked stocks, with plain Gothic Bath stone windows, and occupies a frontage of 43 ft. in New Peter-street, Horseferry-road. The entrance is, however, only obtained through the College; a new York-stone staircase, giving access to both old and new buildings. The desks throughout are arranged for two students only at each, and the masters can readily gain access to every student without the usual objectionable mode of passing behind the seats. The building throughout is warmed with hot water, and lighted with gas. Ornamental star-lights are used in the lecture-hall, day and class rooms, with very good effect. The cost of the whole is about 7,000*l.* Messrs. Wilson & Wilcock, of London and Bath, were the architects; Mr. Hobson, of the Adelphi, was the builder.

Newport (Salisbury).—New schools have been opened at Salter's Hall, Newport. Mr. J. F. Cobb was the builder; and Mr. Edmund Kirby, of Liverpool, the architect.

Books Received.

Wonderful Inventions. By JOHN TIMBS.
London: Routledge.

THIS work is of a different class from some of Mr. Timbs's numerous and useful volumes, containing fewer of the words of others. It gives an interesting and complete *resumé* of the history and nature of many celebrated inventions,—from the compass to the cable, as Mr. Timbs remarks; and is well adapted for purchase as a Christmas gift to young people, and for reading, by old as well as young. The book is illustrated with numerous engravings.

VARIORUM.

"Schnick Schnack: Trifles for the Little Ones," is a book full of little coloured sketches, some of them remarkably good of their kind.—notice, for example, the quaint little rogue on the title-page reading a book, with spectacles and a red cap on, or the group illustrating "Brother is Bulky." We do not find any artist's name. If we remember rightly, they are by Oscar Pletsch, and have appeared in a German edition.—The publishers of the last-named book (Routledge & Co.) have also issued a larger volume of coloured sketches, under the title, "Routledge's Coloured Scrap-book," some of which are very funny; as, for example, "Jack and Gill" by Mr. H. S. Marks. Mr. Harrison Weir contributes several of the drawings, and they are accompanied with stories and anecdotes, forming a book that will be taken up again and again in "the children's hour." "Little Boy Blue," and "Cinderella left at Home," are exceedingly good plates of their kind.—"The Little Oxley's Sayings and Doings," is one of "Sister Ellen's Nursery Stories" (Routledge), and is intended for very little children.—"The Story of Papa's Wise Dogs," is another of Routledge's books for children; the merit claimed for which consists in the circumstance that all the anecdotes it contains are true.—Stearns's "Sentimental Journey," for 6d., would seem to be cheap enough; but Messrs. Routledge add for that sum a large collection of the wit's letters.—"The Treasures of the Earth." By William Jones, F.S.A. (F. Worne & Co.), is a nice little book, giving in a pleasant style an account of mines, minerals, and metals, to which are added some anecdotes of well-known men connected with mining.—The year's volume of the "Children's Friend" is a very good one, full of cuts; and the same may be said of "The Infants' Magazine," and the "Servants' Magazine," all published by Partridge & Co.—"Blackwood's Shilling Scribbling Diary" is this year interleaved with blotting-paper, which increases its value. A postal district map of London on the inside of the cover is a useful adjunct.—*Hanover Square (Ashdown & Parry)*

is to give for a shilling a month two compositions for the piano, and two for the voice. It is edited by Mr. Lindsay Sloper, and has begun very well.—"Young England's Almanack and Naturalists' Calendar for 1868" (Tweedie). "First follow nature" is an excellent rule in many things, and in none more so than in the fine arts, whether painting, sculpture, or architecture. We know that Titian, Poussin, and our own Stothard, in his rambles in the fields, observed carefully every flower, and often brought many home for present or future use. Smeaton, from contemplation of the bole of an oak-tree, devised the first Eddystone Lighthouse of any duration, and which has now braved the storms for above a hundred years. It is not likely that any one beyond middle age will take up the study of natural objects; but all the young may be induced to enter on that agreeable pursuit. When Mr. Lowe's advice is followed, we may substitute the study of *things* for that of *words*, and so gain practical knowledge while the faculties are *enlivened*, or *educated* in the true sense of the word. Valuable aid towards this end may be found in the very useful almanack now before us.—"The Laws and Principles of Whist," by "Cavendish," is a book known to those who study that game, and all we have to do is to mention the publication of a new edition, the eighth, with numerous additions. Like all the works that come from Messrs. De la Rue & Co., it is handsomely produced.

Miscellaneous.

THE MONUMENT AT DRUMCLOG.—The monument erected some years ago, in commemoration of the memorable Battle of Drumclog, in the west of Scotland, having for a considerable period been in a very dilapidated condition, a movement was lately originated in the Hamilton district, for the construction of an entirely new one of more durable material; and workmen have been engaged in the necessary preliminary operations. It having been arranged that the new monument should be of granite, designs and estimates were procured from the leading granite companies. A number of designs were received by the committee; and the one sent in by Messrs. Macdonald, Field, & Co., of Aberdeen, was unanimously selected. The execution of the work was undertaken by Messrs. Cruikshank & Son, of Glasgow. The monument is an obelisk, supported on a pedestal, consisting of a base, dado, and cornice, resting on a projecting base and surbase. The details are treated in the Grecian style. The obelisk measures 15 ft. 6 in. in height. The whole height of the monument, from the base to the apex of the obelisk, is 23 ft.

CENTRAL COTTAGE IMPROVEMENT SOCIETY.—The annual meeting of this Society has been held at the Whittington Club-house, Arundel-street, Strand, Mr. R. Dimsdale, M.P., in the chair. The report stated that one of the first duties devolving upon the council after the last meeting was to take measures for procuring a first-rate single cottage with three bed-rooms, to be erected at a cost not exceeding 100 guineas. The result was a most interesting exhibition of plans. No less than 150 architects competed, and many admirable designs were sent in. The first plan selected was found to be the work of Mr. William Habershon, a pupil and nephew of the honorary architect; but as the advertisement had stated that the honorary architect would not himself compete, that gentleman offered a third prize at his own cost, which was then awarded to this particular plan. The next two in the scale of excellence according to the judgment of the council were those of Mr. Smith and Mr. Gregory Gill, and to them were awarded the first and second prizes, subject to the condition that they could be erected under ordinary circumstances for the sum specified, viz. 100 guineas. The council, however, had not been able to bring this matter to such a conclusion as would enable them to issue the plans of Messrs. Smith and Gill as plans approved of by the Society, and issued with its *imprimatur*, for the simple reason that so far as at present ascertained they could not be built for the sum specified. The council, considering the great demand there is for a single cottage-plan, proposes to issue one as soon as possible, with a well-arranged interior and a neat elevation, which can be erected in any ordinary locality for 100 guineas. The report was adopted.

MARKETS FOR LONDON.—The Food Committee of the Society of Arts have this subject under their consideration. At their last meeting it was determined to collect information on this head, with a view to promote the establishment of additional facilities for the supply of food to the metropolis.

MAREZZO MARBLE.—We have seen some specimens of artificial marble, termed by the inventor, Mr. Guelton, "marezzo." It is manufactured in the form of slabs, mouldings, table-tops, &c., and imitates every variety of marble. The colours and veining are traced on large surfaces of plate-glass, and the cement, or material composing the artificial marble is run over it: when set the slabs are removed from the glass. The surfaces are then polished by friction, in the same way as those of marble. The material is suitable for internal decoration. It is fixed to walls by the methods usually employed for facing walls with marble. It appears to have advantages over scagliola.

ROAD STEAMERS.—A new locomotive for common roads has been patented by Mr. B. W. Thomson, and successfully tried in Edinburgh. It has an upright boiler, and weighs 5 tons; but its chief feature is that the tires of the wheels are covered with indiarubber, which is said to have a singular effect in increasing the grip of the wheel on the road without doing damage either to the road or to the indiarubber, while it enables the locomotive to run either upon rough macadamized roads on the one hand, or on soft turf, or even ploughed land, on the other, without making much impression on the surface. On turf the traces of the wheels, it is said, were scarcely visible, and on soft soil a walking-stick was readily thrust into the rut. If this be the case, the importance of indiarubber tires to steam ploughs must be very great, and must tend to promote immensely the use of steam-power in agriculture.

LIBILITY FOR INJURY BY DIMINUTION OF LIGHT.—In the case of Eagle v. The Charing Cross Railway Company, the company had, by the execution of their works, occasioned a diminution of light to the plaintiff's premises, which were consequently rendered less convenient and suitable for the requirements of the plaintiff's business of a wool warehouse keeper (carried on therein) than they otherwise would have been. The Court of Common Pleas held that this was "an injury to an interest in land," within the meaning of the Lands Clauses Consolidation Act, and that the plaintiff was entitled to compensation. An injury to the light of a house was an injury to the house itself, and, although on a sale for some purposes its value might not be diminished, yet the plaintiff had a right to keep the premises, if so minded, for the carrying on of his accustomed business, and for that purpose the premises were deteriorated by deficiency of light.

THE MANCHESTER FREE PUBLIC LIBRARIES.—The report for 1866-67 of the Manchester Public Free Libraries Committee, prepared by Dr. Crestadoro, the chief librarian, has been issued in a printed form. It states, that during the year ending September 6th, 1867, a new Branch Lending Library, with news-room attached, was opened in Rusholme-road for the districts of Chorlton and Ardwick; and a new capacious building for Ancote has been completed in Every-street, where the Lending Library and News-room of that district are now removed. Since the last report the aggregate annual issues have advanced from 432,498 to 673,432. Out of this total number of issues, 193,349 volumes were given out to readers and students in the Reference department; 59,563 volumes were issued in the reading-rooms attached to the branch libraries; and the remaining 420,520 volumes were borrowed in 388,765 times. Numerically, this amounts to the whole of the shelves of five lending libraries being emptied, and their contents taken home, read, and returned more than nine times by as many armies of readers in the course of one year! The borrowers, as represented by their cards, have, during the year, numbered 21,599. In the libraries and news-rooms there have been about 1,882,000 visitors, inclusive of borrowers, as compared with 1,387,530 during the preceding year, being an increase of more than 35 per cent. The number of volumes and pamphlets added to the libraries during the year was 6,225, of which 2,213 volumes and sixty pamphlets were acquired by purchase, and 3,200 volumes and 752 pamphlets by donation.

MANSION HOUSE, LONDON.—The sum of 2,850*l.* is to be expended in decorating the Egyptian Hall and the saloon at the Mansion House.

A TESTIMONIAL.—A meeting was held on 4th inst., at Belvidere-road, of the members of the Sick and Accidental Fund, among the workmen in the employment of Messrs. Lucas, Brothers, on the occasion of the resignation of Mr. J. Williams, their secretary, who has accepted a situation on the works of the New St. Thomas's Hospital. The committee presented him, on behalf of themselves and the members, with a timepiece, as an expression of their regard to himself, and appreciation of the great perseverance and tact he had displayed in the formation and management of a fund which, during the six years it has been established, has conferred great benefits on its members.

THE AMENDED NEW STREETS ACT.—The new Act to amend the Metropolitan Streets Act, which received the Royal Assent on Saturday, has been issued. The 6th section, as to costermongers, is now amended in respect to the deposit of goods in the streets. It is not to apply to costermongers, street hawkers, or itinerant traders, so long as they carry on their business in accordance with the regulations from time to time made by the Commissioners of Police, and so much of the 6th section in the recited Act as refers to the surface of any space that intervenes in any street between the footway and the carriage-way is now repealed. The cab question is disposed of by a clause stating that no regulation is to be made in respect of the carriage of lamps by hackney carriages in respect of the 17th section, except with the approval of the Secretary of State. The only other provision is that the statutes are to be construed together.

SILT IN THE THAMES.—The correspondence has just been presented to Parliament which took place between the Thames Conservancy Board and the Metropolitan Board of Works, relative to the formation of certain deposits of mud near the outfall of the Main Drainage sewers. Mr. Bazalgette, in a report dated the 21st October last, says:—

"It is a well-known fact that the point on the north side of the river half a mile above Barking Creek was always subject to accumulations of mud prior to the opening of the Main Drainage works; and on both sides of the river the mud-banks, known as the 'Saltings,' are rapidly washing into the stream by the action of the tide and steamboat traffic; and from Woolwich downwards the authorities of the Royal Dockyard have recently, by means of a newly-invented mud-distributor, been washing the deposit which has accumulated in their docks into the river. These circumstances lead to the inference that the accumulations shown upon the conservators' sections cannot be fairly attributed entirely to the Main Drainage outfalls."

In testing this point the Board's surveyors came to the conclusion "that alterations have taken place in the bed of the river, but that there has been only a very small increase in the total quantity of deposit." Mr. Bazalgette recommended that a conference should take place between the Board and the Thames conservators, in order to discuss the subject together.

PROPOSED MEMORIAL OF HENRY KIRKE WHITE.—An effort is being made, according to the *Nottinghamshire Guardian*, to raise a memorial to the excellent and gifted Kirke White. Is it not a reproach to his fellow-townsmen of Nottingham, and to his admirers, that he should have been allowed to lie so long in his grave without there being even so much as a stone set up to his memory? In his lines on Wilford Churchyard, he says:—

"This is the spot
Which I have long mark'd out to lay my bones in."
Kirke White was not buried in Wilford Churchyard; nevertheless, the fact of his having marked out the spot for himself, and that spot being well known, renders it the most suitable place in the county, more especially as he also wrote,—

"Grant, Heaven, that here my pilgrimage may close.
Yet, if this be denied, where'er my bones
May lie Yet still my spirit
Shall wing its way to these my native Regions,
And hover o'er this spot."

What the mover in this case, the Rev. E. Davies, proposes to do is to place a small but handsome stained-glass window in the church, and beside it a neat tablet, with a suitable inscription, surmounted by a medallion bearing his profile. He has already received considerable encouragement, and hopes the needed amount (about 100*l.*) will soon be forthcoming. Subscriptions are received at Smith's Bank, Nottingham, or by himself at Wilford Rectory.

SEAFOED, SUSSEX.—A committee has been formed under the Sanitary Act, 1866, for the purpose of carrying out a new and complete system of drainage, channelling, and other improvements in this town; and Messrs. Gotto & Beesley have been engaged to prepare the necessary plans and estimates for the works.

LANCASHIRE BRIDGE, STOCKPORT.—For a length of time the stability of this erection has been a debatable question; so much so, indeed, that the attention of the Local Board has been drawn gravely to it; and, after a professional examination, it has been declared insecure, and will require to be taken down at an early date.

LEICESTER CLOCK TOWER AND MEMORIAL STRUCTURE COMPETITION.—One hundred and six designs from local and other architects have been received by the committee, and are now open to public inspection in the picture-gallery of Messrs. Vice & Moon, Market-place. Some few are very good, but the majority are otherwise.

THE FEMALE SCHOOL OF ART.—The distribution of prizes is fixed to take place at Burlington House, this Saturday, the 14th inst. Sir F. Grant, P.R.A., will preside. At the Royal Academy, a young lady, Miss Louisa Stair, has carried off the Gold Medal (!) and Scholarship of 60*l.* from her male competitors! a remarkable sign of the times.

EXTRAORDINARY ERUPTION OF COAL AT WEST HARTLEPOOL BEACH.—It will be remembered that last winter, immediately following a north-east gale, the poor of Hartlepool were presented by the waves with an immense amount of treasure trove, in shape of Spanish dollars, which had been buried for forty years. This winter, not less than 1,000 tons of coal have been cast up on these same sands, and nearly every cart in the town has been called into requisition to carry away the treasure. The poorer inhabitants turned out *en masse* with barrows, baskets, sacks, &c., and every description of receptacle was improvised for the occasion.

FROM LAMBETH.—The dilapidated houses at the corner of Stamford-street are at last "To let." Twenty years of squabbling, forcible entry, and violent ejection have passed since the last tenants left dust and decay to work alone in their ruin.—It is proposed to make a new street from the New Kent-road, across the Dover-road, Kent-street, through St. George's New-down, into Tooley-street. This will break up a colony of the most desperate thieves and other birds of prey at a cost of nearly 20,000*l.* to be borne by the parishes of St. George-the-Martyr, St. Mary Bermondsey, and St. Mary Newington.—The clock of Old Lambeth Church, after 200 years' service, is about to be replaced by a modern successor; and the window commemorating the existence of "the pedlar and his dog" to be enriched by the addition of coloured glass. The cost is to be defrayed from a grant of 250*l.* out of the proceeds of the Pedlar's Acre estate.—*South London Press.*

NEW THAMES TUNNEL.—An engineering project, for which the necessary Parliamentary sanction has not yet been obtained, is in contemplation, namely, a tunnel or subway intended to be driven under the Thames between London Bridge and the Tower. The present project has the sanction of the Tower authorities, and arrangements for the Surrey side approach have been already made. The old tunnel is about 1,250 ft. between the shafts. The proposed subway will be about 1,320 ft. The one cost above 450,000*l.*; the other is estimated to cost the comparative trifle of 16,000*l.* Mr. Peter Barlow, F.R.S., who is the engineer of this project, proposes that the descent and ascent to the tunnel shall be by hydraulic lifts, similar to those in use in the large new hotels, and that the passengers shall be conveyed from one shaft to the other in light steel omnibuses of perfect workmanship, and driven by manual power upon a system of accumulating force. The friction will, it is expected, be so much reduced by the exactitude of the fittings and the excellence of the materials and workmanship employed, as to make the power of one man amply sufficient for working an omnibus. The bottoms of the shafts will be on the same level, and the subway will dip in the centre, to give speed and to accumulate force for the last half of the journey. Mr. Barlow recommends his scheme as applicable to the relief of the crowded streets. He gives full particulars of it in a pamphlet privately circulated, "On the Relief of London Street Traffic."

TECHNICAL EDUCATION.—The Council of the Society of Arts are arranging for a Conference, which is to be held on Thursday and Friday, the 23rd and 24th of January next, to consider and suggest what measures may be taken to promote the industrial and scientific education of the various classes of the community.

SELF-ACTING TRAIN SIGNALS.—A scheme of self-acting train signals, invented by Mr. R. F. D. Campbell, surveyor, was noticed in the *Builder* in the autumn of 1865. Our opinion was that it was rather too delicate in its details for practical use, an opinion with which the inventor now says he entirely concurs, and he has since simplified and improved the scheme. His signals can be either worked through pneumatic, electric, or mechanical power. Without diagrams we cannot briefly or clearly explain the system. It gives notice of various contingencies, such as the breaking of a coupling, a carriage off the line, fire in a carriage. There is also an arrangement for use by passengers if assailed, &c.

GAS AND AIR PURIFIER.—A paper, containing a description of a revolving washer for removing certain impurities from gas in the process of its manufacture, and applicable to the purification of air, and for other sanitary purposes, was read before the Royal Scottish Society of Arts, by Mr. John Reid, the manager of the Edinburgh and Leith Gas Company, and has been issued in a printed form. The leading idea of Mr. Reid's improved washer is to employ a horizontal instead of a vertical passage for the gas while being submitted to the action of the shower of water, whereby it should undergo a thorough shower-bath from a copious stream of water jets, falling some 20 inches, in an elongated horizontal chamber, instead of 30 ft. in height; and that this should be effected without in any way presenting obstruction to its free passage, or throwing any back pressure on the retorts. He also proposes, by aid of his apparatus, to purify air for sanitary purposes, by means of Condry's fluid, otherwise known as "ozone water."

ROMAN REMAINS AT APPLETON-LE-STREET.—About the commencement of November, a mere accident—the ploughing up of the upper store of a Roman mill—induced examination of a field situated on the glebe farm in the township of Amotherby and parish of Appleton-le-Street. The Rev. James Robertson, of Appleton, is the explorer, and this gentleman has laid bare a series of large paved floors, varying from 6 in. to 2 ft. 6 in. below the surface of the land. The place is very near the supposed junction of two great lines of Roman road—one from Derwentio to Iaurium, the other from Eboracum to Prætorium. The field in question has been tried in various places, and pavements have been found over a wide area. So far no trace of walls or foundations have been found: they are simply pavements. These are irregular in outline, and varying in size, one being 150 ft. across it. Some are detached, while others have paved pathways as connexions. Of implements none have been found of metal, but a remarkably fine red-flint long "scraper," a flint "drill," and some other flints, have been picked up, with a "spindle whorl" of Samian pottery, and another similarly formed (unpierced) of stone.

NEWCASTLE-UPON-TYNE TOWN SURVEYOR'S REPORT.—The report of Mr. Thomas Bryson for 1867 has been printed. Under the head of public health the reporter says:—"It is a matter of serious concern that, notwithstanding the strenuous efforts made by the committee to improve the sanitary condition of the borough, a high rate of mortality still prevails. In connexion with those questions underlying that of public health, which come within the range of my department, I may remark that, although a great deal has been done in the way of sewerage and house drainage, still much remains to be done in the ventilation of sewers, and in the paving and surface drainage of the extended parts of the town, especially in the neighbourhood of Scotswood-road and other places. While, however, these improvements are all good as far as they go, still it is my conviction, that until better accommodation be provided for the working classes, the death-rate will not be very materially reduced. If some of those schemes of street improvement through Pandon and the lower parts of the town were carried out, they would be of immense service in this direction, and in addition to opening out sites for such a purpose, would afford great relief to the commerce of the Quay."

The Builder.

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The Echo
of the Clerkenwell
Explosion.

OUR readers and all England have heard that on Friday, the 13th, a barrel of gunpowder, nitro-glycerine, or some other explosive material, was fired near the outer wall of the House of Detention in Clerkenwell, knocked down some 60 ft. or 70 ft. of that wall, as well as several houses in Corporation-row, and killed and wounded frightfully a multitude of unoffending, unconcerned persons, with the object of possibly furthering the escape of two persons under arrest as members of the Fenian conspiracy. Knowing this, however, and having read

the full accounts that have appeared in the newspapers, they will still be unable to realise, without a visit to people and place, the havoc done by that one explosion: they must walk through street after street, they must enter the wards of hospital after hospital.

The English have been happily characterized as a law-abiding people. In one respect they are eminently distinguished from most, if not from all, other nations, namely, in their reverence for human life. The wider are the limits of our foreign travel, the more cause do we see to be content with this portion of the national character. From the statesman who devotes more anxious hours to the consideration of the propriety of mitigating a capital sentence, than some Continental rulers would be disposed to give to ensure the preservation of a whole district from military execution, to the humblest peasant, the same feeling is found predominant. And those soldiers and those generals who are the readiest to encounter the imminent peril of battle at the call of duty, are, even more than their civil brethren, taught by the code under which they are organized, the criminality of needless exposure to danger, or of needless waste of blood.

For a barrel containing a quantity of gunpowder, sufficient to breach a wall for 60 ft. or more, and to shake to their foundations an entire street of houses, to be exploded in the midst of London, without a word of warning to protect even the casual passengers, is therefore a crime likely to be regarded amongst us with a feeling of startled and half-incredulous indignation that requires no prompting from the press. It is no breach of the rule which closes our columns to the discussion of any other political subjects than those which are free from the bias of party feeling, to point out the lesson which has been thus loudly given to every householder in our metropolis and large towns. Since swords were disused as part of the necessary equipment of a gentleman, we have laid aside much of that vigilance which characterises the ruder states of society. We have been content that the law should watch for us. Unarmed, we have become also unalarmed,—secure in the

Latin rather than in the English sense of the word. War itself has become to some extent civilised: due warning to non-combatants has for the most part become a feature of its assaults, and we have almost taken it for granted that a man can come into peril of life or limb only by his own fault or folly.

It has, however, become but too apparent that there exist amongst us miscreants who, for no adequate result, perhaps for no result but the mischief itself, do not hesitate to confound old men, women, infants,—those indifferent persons whom war to a certain extent protects,—in the very worst peril of war. A mine is precisely that which the bravest soldier most dreads,—we do not say fears,—but looks at as a somewhat diabolical and unfair mode of attack. The spirit which, in the creation of our volunteer force, has, in the opinion of many competent to judge, alone saved our shores from insult, will, we doubt not, give no uncertain reply to the echoes of the Clerkenwell explosion. But our word of caution is to the householders. It becomes their duty to exercise an amount of vigilance not hitherto requisite within the memory of Englishmen. Every cellar, every outbuilding, every obscure and sheltered portion of the domestic premises, should receive the attention of the master's eye,—no questionable fact should fail to be promptly investigated. A barrel in a truck left in a street without explanation has, in a fearful manner, explained itself. To-day it may be powder; to-morrow it may be fire; the next day it may be sudden personal assault. Whatever the Legislature may hereafter do, whatever municipal authorities may more speedily effect, whatever may be the increased vigilance of the very respectable force pledged to maintain order and protect life and property, it is the duty of each head of a family to do, what no one can so well do for him, to look to the safety of his own premises with a wary eye; to see that no neglected access, or tempting pile of combustibles, or concealed space where mischief may be directed on himself or on his neighbours, is left unvisited to afford a shelter to the enemies of society. No man so humble exists among us but that he may, by a tacit but constant vigilance, and the exercise of good sense, aid the population of our cities to protect themselves from wanton, malignant, unscrupulous attack.

Yet another warning may be gained from the catastrophe of the 6th, followed by that of the 13th, of December. Let the managers of our public buildings be on their guard. It would not be a more fruitless or a more difficult matter to fire the British Museum or the National Gallery than to blow down the walls of Clerkenwell gaol. The question *qui bono* is no longer one on the triumphant posing of which respectability can now afford to go to sleep. Accident has often found us unprepared: fire-proof buildings have been turned into furnaces, as in the cases of the Crystal Palace and of the two iron churches at Bayswater last winter. Let not crime meet with similar supineness. With men among us ready to emulate the crime of Erostratus without even the excuse of his insane and miserable vanity, it behoves those responsible for the protection of all public buildings to be on the alert.

It is much to be desired that a commission or committee should be organised, containing men accustomed to the duties of the fire brigade, of the police, and of the detective force, to draw up a code of instructions for the safe guard of public and of private property. Hints to housekeepers, and to the guardians of public buildings, from those whose experience has taught them how to detect the ordinary signs of premeditated outrage, would be of great value. In the absence of any such official aid each man must depend on common sense, and must regard as an indication of possible danger any unusual and inexplicable movement.

It has been often stated that the life of any man is at the disposal of any other man who is prepared to throw away his own for the sake of taking that of the former. The history of attempted regicides, to which the remark was intended to refer, happily does not altogether bear out its truth. However determined, and even however fanatical a murderer may be, there is a *something*, whether it be conscience or not, that usually unnerves his hand at the critical moment. The want of practice in the use of firearms, the usual implements of the modern assassin, has been urged as an explanation of that failure, which is happily rather the rule than the exception. But in cases where steel has been resorted to the same tremor has been evident. The chasseur who charged King Ferdinand of Naples with his bayonet, was not much more successful than the assailant of the Emperor Alexander in Paris, although he actually penetrated the skin, and a foot further advance, or a pound weight added to the blow, would have pierced the king through the body. It is not for us at all times to detect the subtle mode in which Divine Providence prevents the uncommissioned agent from executing the work of death before a summons had been issued from an irreversible tribunal.

But the dastard whose only risk consists in lighting a squib at a moment when no one looks on, and running round the corner while it burns, is less amenable to the emotions of fear than the more open assassin. On such a criminal the law may, if it can arrest him, indeed inflict retribution; but such retribution is no restitution of the wrong inflicted by the crime on the helpless and on the innocent. If the whole Clerkenwell conspiracy be brought to light, and the conspirators adequately punished, small will be the satisfaction thus afforded to the numerous sufferers, in life or person, or to the alarmed and injured inhabitants of Corporation-row. Law may avenge where it has failed to awe, but it cannot restore. It remains, then, for every one of us to look to his own safety, and to prevent, by vigilant care, irreparable evil.

Modern society has, by tacit assent, assigned to the law the care of personal safety. Against those who put themselves out of the pale of such assent, society must protect itself. We are not recommending an appeal to Lynch law. We should consider such a social change amongst ourselves as a surer and a darker sign of the decadence of Great Britain than any discovered or invented by the unfriendly ingenuity of Ledru-Rollin. Nor are we advocating the adoption of arms for personal defence. If we are driven to such a step, it will be by the acts of men who play with the tools of the soldier, while ignorant of his honour and his courage. But it is the duty of all honest and prudent men to aid and to maintain the execution of the laws which we are unwilling to change. Individuals must watch over any menace of individual safety. Citizens must watch their habitations. First, by due vigilance, must they disconcert the projects of the enemies of society. Secondly, by full information must they aid the officers of the law. Thirdly, in the interest of the very existence of society, are all good men bound to keep a pointed and sleepless watch on the words and actions of those who have of late, under what pretext soever, whether of quibbling special pleading, or of sentimental sympathy with the perpetrators rather than with the victims of crime, done their best to baffle and discredit the course of the tribunals of the country, and to muffle that sword with which alone, and that perhaps somewhat too tardily and gingerly, the present race of Englishmen has been wont to meet the criminal and the assassin.

Attention, moreover, cannot be too loudly called to the extreme impropriety of such a construction and arrangement of our prisons as

shall allow their yards to be commanded, and their inmates seen and signalled to, from the "top stories" of adjoining houses. Such a neglect of the most obvious precaution seems at any time inexplicable: its continuance would be altogether inexcusable.

We have never been alarmists in the ordinary sense of the word; but caution is the only sure preventive of panic. Alarm, in its primary sense of *à l'arme*,—to arms,—is the cry, not of cowards, but of brave men at the first symptom of danger. The wholesome application of the "cat" put a stop at once to the recreation of garrotting, which had become far more ordinary than agreeable. The same promptitude of action will, no doubt, have a similar effect on those who amuse themselves with the murderous employment of gunpowder. In the mean time, no man can afford to neglect such a warning as has been echoed from the shattered wall of Clerkenwell prison; and we all shall do well to bear in mind the proverb,—Forewarned, forearmed.

Our daily contemporaries are loudly calling on the Government. It is not so clear to us what they ask the Government to do. The law is, or ought to be, able to vindicate itself; and all that Justice requires is, that those who, by recent sympathy with the perpetrators of the Manchester murder, have encouraged the perpetration of that at Clerkenwell, should cease to cumber her path. Our own appeal to each household to look to his own premises is, at all events, susceptible of a much more speedy response than any application to the Home Office can receive. But there is one point which we are anxious to bring to the attention of the Government, and of those independent members of Parliament who can devote leisure and capacity to the preparation of well-considered remedies for proved abuses. An explosion like that at Clerkenwell would hardly have been possible in any capital but our own. In Paris, in Florence, in Vienna, in St. Petersburg, men would have been unable either to wheel a beer-barrel full of powder about the streets, or to purchase, without leaving good marks of the transaction, such a quantity of that dangerous material. Free trade in the implements of death is hardly a necessary part of social freedom. Slowly enough we have come to accept that truth as regards poison. Perhaps we shall now learn that the supervision of competent authority is necessary for the public safety in all cases where it is sought to obtain speedy and certain means of death or destruction. It is no part of the function of an organized state to allow of the preparation, within its bosom, of the warlike implements and munitions of treason. Powder lies close. A gallon measure will contain more than 150 lb. of such powder as is used for military demolition. A thirty-six gallon beer-barrel, if full, would therefore contain the means of even greater damage than that done on Friday afternoon. With a means of destruction of such fearful capability, it is clear that some check should be imposed on its ready purchase and sale; and that the responsibility which we admit to attach to the vendors and purchasers of poison should *à fortiori*, be made to apply to all those who handle, or seek to handle, any of those yet more terrible engines of human destruction, the unscrupulous use of which may in a few seconds render a populous city a heap of ruins, and convert a whole population into victims and mourners.

HOMBURG.

The town of Hombourg-ès-Monts may be said to consist principally of one main thoroughfare about a mile long. This is full of houses, shops, and hotels, in the rather meagre Italian style affected by Germans in their modern street architecture. At the extreme eastern end—for it is built due east and west—is the railway, and at the western extremity is the Schloss. It is as though the old town had once nestled under the protection afforded by the neighbourhood of the castle, but becoming celebrated and thronged with visitors, had extended itself westwards. Several short streets depart right and left of this main artery, and emerge upon two newer lines of thoroughfare running parallel with it, on either side. One of these—the Ober promenade—is lined on one side with villas, nearly all let out in furnished apartments; the other only passes in the rear of houses; but, doubtless, at no distant date, will add to the rivalries of

the active touters of the villas in the first-mentioned. Lying due east and west, one side of the main street is, for a great part of the day, in deep repose shadow, while the other is in bright sunshine, and the line of hotels and shops, in it flaunting with awnings and gay with balconies, with their decorations of flowers and creeping plants. The building material in most frequent use is brick covered with composit, tinted of a light colour. The ease and comparatively small cost of renewing the coat of colour annually aids in preserving a pleasant, refreshing air of cleanliness. The chief feature of all the houses, which are plain enough in other respects, is their balconies. These are generally very wide stone slabs, moulded on the edge, supported by massive stone brackets, and furnished with very light ornamental iron grilles, which, like the houses, are painted a light colour, such as salmon colour, cream colour, &c. The graceful Gothic patterns of these, and their pale tints, produce a very different effect to those we may call our Baker or Harley Street patterns, or the sombre-coloured heavy articles Thames-street furnishes for our modern villas. What with the striped awnings drawn over them, and the numbers of creeping plants trained about them, and displays of flowers here and there, they form very pleasing features. Some of them are on two stages, rising from the ground on light iron columns, and pass before the two principal floors, the same awning serving for both. In some cases a single window has a strong stone balcony with an iron grille to itself. In others the balconies assume a verandah form, supported on corbelled brackets, and are gracefully twined with creepers. Loggias, too, are not wanting. Here and there are houses having one or more of their upper stories set back, so as to form a loggia. The footways are very narrow, and the roadway paved with stone. These leading characteristics strike the eye on first entering the town.

The avowed attraction to Hombourg consists in the sanitary properties of its waters. The gouty and the rheumatic fly thither in hope of ridding themselves for a time of an enemy to whom they know they must eventually succumb. They hie thither now just in the same fashion as the lieges of George III. flocked to Tunbridge Wells and Bath; those of George IV. to Brighton; and those of William IV. to Cheltenham and Leamington. There are, however, other attractions, which cause the newly-fashionable spa to be regarded with favour by the hale and idle, young and fair. These are the well-known facilities for gambling afforded at the Kursaal; and the constant round of entertainments given there by the tempting directors; and the ever-changing and over-brilliant throngs of company.

About three-quarters of a mile down the main street, from the railway, facing a line of shops, stands the far-famed Kursaal. Like its less imposing neighbours, this German-Italian edifice is built of brick, with a coating of composit; but it exceeds the generality of them in the possession of an introduction of the bright red sandstone of the district in the quoins, pilasters, cornice, and windows. In size, of course, it overtops them all. The block form of this structure might be roughly compared to the letter E, as in Elizabethan mansions, if it possessed the central projection, which is here absent. It will be thus seen that the body of the edifice is recessed, and that it has two advancing wings. The fronts of these are in a line with the houses on either side. They are occupied by the theatre and the administration respectively. The space between the wings is laid out as a fore-garden. A very handsome corridor, 240 ft. long and 30 ft. wide, lighted by windows which face the forecourt, forms the approach to the entrances of the various parts of the structure. The principal apartments consist of a restaurant 130 ft. long by 50 ft.; a ball-room 96 ft. by 50 ft. with cloak-rooms, two reading-rooms, opening one from the other, and the three spacious gaming salles, with their lobby and a row of cabinets. All these are blocked together in this manner.—The restaurant occupies the whole depth of the building, where it adjoins the eastern wing, the windows of one end looking into the front corridor, and those at the other into another corridor in the rear. The access to this is from a central corridor, in which the visitor finds himself, on emerging from either of the wide and long entrance ways. On either hand of the eastern-most entrance is a cloak-room, and immediately before it is the ample doorway of the ball-room. This ball-room has a second entrance from the corridor in the rear of the house, and when not in occupation as a ball-room is used as a way

through the building from the street to the grounds behind. When required for a ball, its separate entrance and cloak rooms admit of its being completely shut off from the other apartments. The westernmost doorway opens from the corridor into a similar wide way into the same central corridor, where, in the opposite direction to the ball-room, a large lobby or vestibule gives access to the reading-rooms on the one hand, and the gambling saloons on the two others. The largest salle, 130 ft. in length by 42 ft. in width, corresponds, at this end of the structure, with the restaurant at the other; and *en suite* with it, extending westwards, is the gorgeous Gold-saal, or *salon d'or*. This is 57 ft. long by 40 ft., and has two semicircular bays, one on either side of its length, exactly opposite to one another.

The Gold-saal takes its name from the profusion of gilding employed in the decorations, not from the purpose to which it is dedicated. On setting foot in it the eye is met by a blaze of gilding and mirrors, to which, at night, the chandeliers, with their hundreds of sparkling pendants, add more glitter. The immense mirrors reflect the lights over and over again, and, of course, add very materially to the dignity and lustrous effect of the *salle*. The aides are regularly divided by pilasters into large panels of the same size, some of which are the window openings and others the mirror spaces, each space being enriched by additional pilasters on either side, which are carried up to the level of the frieze above. The pilasters, the ornaments over each panel, the frieze, the cornice that divides this height of the chamber from that which rises above it, with a similar treatment, and terminates in a coved ceiling, are all painted of a very light-brown tint, and richly floriated with gilded ornamentation. A handsome gilded French timepiece stands on a mantel-piece near the entrance-door. The windows have crimson draperies and white curtains. In the centre of the apartment is a large oblong card-table, covered with the conventional green cloth. About twenty chairs, with red cushions, are ranged about it, and all round the room are covered benches, or settees, placed against the wall in every available space. The floor is of parquet. Such are the constructional and ornamental features of the Gold-saal. The company who sweep to and fro in it, or stand idly looking on, and the wondrous varieties of gamblers who crowd round the table, are not for us to describe.

The largest hall, where there are two tables, is treated in a more Raffaelesque manner, the decorations being in the natural colours of the flowers and foliage represented. Here we may read of the paternal solicitude of the Administration for the pockets of the frequenter. This notice is framed upon the wall:—"Le maximum des mises par une chance au trente et quarante est fixé à quatre mille florins, et le minimum à deux florins." The maximum stake was, however, fixed in 1860, at 5,600 florins, at which sum it still remains. Below the above notice there follows:—"Mise en banque au trente-et-un, 1,500 francs; à la roulette, 60,000 francs!"—signed, "L'Administration." In the reading-room there are more instructions for the public: "Avis. On est prié de ne pas porter les journaux hors du cabinet de lecture, et de ne pas y faire la conversation."—L'Administration."

The panels of the reading-room have a mauve ground of flock paper, with wide stripes of a deeper mauve and powdering of alternate large and small gold bouquets of roses, embossed, cut out, and laid on. The stiles of the panels are buff; and there are gilt and buff raised mouldings bordering the panels. The curtains to the windows are in rich Oriental patterns, made of a woollen material, with deep horizontal stripes of chocolate and mauve, and gold hues, alternately with a stripe of the ground colour of pinkish drab. The floor is parquetté with a very large pattern. Before leaving the interior of the building, we may note another precaution to maintain order and prevent complaints. A table is stuck up containing a schedule of the current relative value of all foreign coins.

Behind this palace of pleasure is the Kur-garten, which is a garden taken off the public grounds in which the walls are situated. It is prim and pleasant, with neatly clipped hedges and straight tuft-tipped trees growing in large tubs full of sunshine and company, with gay groups of little children playing about in a central walk in a full-dress manner, if we may say so, to express a certain formality.

Looking at the rear elevation of the Kursaal from this point of view, it presents the aspect of a large oblong building, having two wings, one higher than the other on either side of it. The most important feature of the facade is a long light, iron and glass verandah, running from one end of the building to the other, on a terrace raised above the garden. The facade of the body of the Kursaal, as seen above the verandah, is divided by two pilasters into a centre, with four large semi-circular-headed windows in it, and two ends, each having one pedimented window. It is covered with slate, and ornamented with many pinnacles. Flights of steps, at the centre, and at the ends of the terrace, permit of easy descent to the grounds below. A good band plays here every afternoon, in an orchestra, that deserves a word. It is in the form of an alcove, and is large enough to seat forty performers. The front is ornamented with a semi-circular open-work barge-board cresting, of a light and tasteful Gothic design, painted salmon colour. The parapet railing below consists of a row of quatrefoils, finished off with a series of cuspis. A number of green plants climb up the ironwork, and convert the orchestra into a bower. It is an isolated building, well shaded by neighbouring trees, but additional shelter is contrived with the aid of an awning stretched above it, from trees to trees.

The five celebrated wells are known as Louisenbrunnen, Kaiserbrunnen, Stahlbrunnen, Elisabethbrunnen, and Ludwigbrunnen. The propriety of the place depending upon these to some extent, they are all carefully maintained. We may see that the original wooden fencing with which each was at first surrounded, is being superseded by more costly and substantial parapets, made of the bright red sandstone of the district. They are all in the same locality, a sort of public park, laid out as ornamental grounds, though far enough apart, with the aid of trees, to be out of sight of one another. The company stand round the ornamental boundaries of the wells, whilst the attendants hand up the water in glasses from below. The vicinity is made as enjoyable as possible by broad walks, avenues of trees, shady seats, and occasionally by the exhibition, at small, tasty stalls, of small objects, suitable for souvenirs of the place. A Swiss stall is particularly tempting among them. Partly hidden among the trees in the immediate neighbourhood of each well, is an isolated building, containing several privies, cleanly kept. Over the Louisenbrunnen, which is a small circular opening into the earth, surrounded by an ornamental iron railing at sufficient distance from it to admit of the movements of the attendant, there is a pavilion-like canopy, supported on light iron columns. These are placed at the edge of a broad circular walk around the railings: so the visitors waiting for the healing waters to be handed to them in their turns, are under the shelter the canopy affords. The sun is the object against which shelter is sought, not the rain. All the avenues, the seats, the verandahs, the disposition of most people's time, in fact, are dictated here by the sun. The Elisabethbrunnen, is now in course of transition from the primitive railed space to a handsomely walled-in well. As there is a constant dripping and spilling of water going on as glass after glass is passed to and fro from the well over the parapet to the throng of visitors standing around it, it has been found expedient to make the top rail of the parapet hollowed. Here, within a few paces of the waters, there is a long light open colonnade leading up to a large greenhouse, up and down which the company parade out of the glare of the sun. From seven a.m. to eight a.m. a band of thirty performers on stringed instruments discourse music to the promenaders, who are of both sexes, all ages, and all nations. The Stahlbrunnen is approached by a broad circular walk, from which depart paths leading to the magic waters. This well is enclosed with ornamental ironwork supported by heavy red stone pillars at the internal and external angles of its form, which is that of an elongated cross with canted angles. A descent of several steps has to be made to the water source. The Kaiserbrunnen is handsomely built of red sandstone. It is of a circular form, with a square-headed recess in it, and, like all the rest, is sunk below the level of the surrounding grounds. A flight of steps leads down to a stage where there is a smaller enclosure surrounding the actual source of the water. Wide avenues of trees, low chestnuts and limes with their lowest branches lopped off, radiate from it. The Ludwigbrunnen is

surrounded by a broad umbrageous circular walk, from which descends a steep sloping bank on the side nearest the well. A flight of stone steps built into the bank gives access to the space below, where there is another ringed walk around the octagonal railing that surrounds a deeper descent in which the water is found. There is a summer-house of an ornamental character to be seen in the avenues close by. It is built of wood in a Swiss chalet style. The rafters overhang, and are moulded fantastically on the edge. The front principal rafter projects boldly forward on brackets, and all the timbers are stop chamfered and have ornamental turned ends. The central king-post terminates with a floriated finial, and a rich barge-board cresting leads up to it. The sides and back are formed with stop chamfered stiles and rails, and are close-boarded between.

The building material chiefly used in Homburg is, as we said before, brick. We observed a different mode of raising the bricks than the carriage by hod-load as practised by us. When a building is in progress and a load of bricks is brought to the site, the whole process of building is stopped, and every bricklayer, as well as labourer, places himself in a convenient line so as to permit of the handing of the bricks from one man to another, from the ground to the height where they are required, till there are enough placed ready for use on the scaffold. The scaffolding, too, differs in some instances from ours. Put-logs are thrown out when scaffolding is required and planks laid along them, by which means the ground is kept quite clear.

The slates in use are very light and thin, and scalloped at the edges. The valleys are formed of the same slates as are used for the roofs, by curving them, which their thinness makes an easy task. The Homburg housewives have the smoky-chimney nuisance to contend against, as well as other folks. We note a contrivance used to cure this evil. Over the orifice of a chimney-flue an iron plate is placed upon four little iron columns, about 6 in. high, one at each angle of the chimney, and the plate is weighted by a conical cap of mortar put upon it. The spaces between the columns admit of the smoke passing freely in either direction, while the plate held over the flue would have the effect of preventing much of the down-draught.

The Schloss, or castle, is, as we have said, at the end of the town most removed from the railway. It has lately changed hands, owing to the accessions of territory made by Prussia; and a sale, at which the King of Prussia was a large purchaser, has recently disposed of the museum and some of the choice works of art deposited there. It possessed portraits of several members of the royal family of England, and is, moreover, associated with English sympathies, as having been the residence of the daughter of James I., the Princess Elizabeth. Her apartments are stated to have remained undisturbed since her decease.

The effect of the aspect of their dwelling-houses upon invalids is fully acknowledged by the Homburg physicians. A northern aspect is that which is deemed most pernicious by them. The owners of the handsome villas facing this aspect, on the Ober Promenade, endeavour to make the best of their sites by throwing out balconies and forming loggias wherever it is possible to catch the sunshine.

We shall be of some service to the frequenters or future visitors to Homburg, in drawing attention to misdirected letters and to irregularities in the post-office. There are no less than four different Homburgs in Europe, and one Homburg, and for want of proper direction letters go astray; in the height of the season, too, the post-office is so inefficient and deficient, that hundreds of letters are distributed among the various hotel-keepers, to find owners as best they may. Letters should be distinctly directed to "Homburg, Rhine, North Germany."

THE PALMERSTON STATUE IN PALACE-YARD.

A commission for the statue of Lord Palmerston, to be erected near the Houses of Parliament, has been entrusted by the committee of subscribers to Mr. Thomas Woolner. The site which has been fixed upon is at the corner of the new inclosure in Palace-yard, immediately opposite the Peel monument. The work is to consist of a single colossal figure, 8 ft. in height, and is to be commenced immediately.

WORKMEN'S DWELLINGS AND THE LATE CHOLERA EPIDEMIC.

We recently had reason to point out a few of those groups of town districts which especially contributed to the general excess of mortality in our urban population. One of the most conspicuous of these groups was that part of South Wales having for centres Swansea, Cardiff, and Merthyr Tydfil, and in which the vast majority of the population are engaged in the production of coal and iron. We have before us a pamphlet, recently published, entitled, "A Sketch of the Cholera Epidemic at Ystalyfera, in the Autumn of 1866," by James Rogers, surgeon. Now, we must confess that we never before had heard of this place, described as a village, and our search for it in various maps, and even for a mention of it in the census volume, has been alike unsuccessful; but the outbreak of cholera in its direct bearing upon the manner in which its inhabitants were housed, is important as further evidence of the ease with which nearly every local visitation of cholera can be traced to the almost wilful neglect of the most ordinary sanitary precautions.

The precise locality of Ystalyfera matters little. It appears to be a village in the Neath union, not very far from Swansea, and to take its name from, or give its name to, some large works (either coal or iron works), at which nearly all the inhabitants earn their living. It seems probable that the aggregation of the inhabitants through the establishment of these works has been very rapid, or the village would have found a place in the census of 1861. On these points, however, the pamphlet, intended, no doubt, principally for local circulation, gives us no information, and we will proceed to notice a few of the points which possess a general interest, more particularly in those neighbourhoods where the establishment of any large works or factories causes the temporary or permanent aggregation of a new population.

The village in question is stated to be "built upon an abrupt hill side, as the fancy of each proprietor indicated, without any drainage, with very few privies, nearly all being on cesspools, many of them on higher ground than the neighbouring houses, and becoming loathsome nuisances, percolating their contents into the soil below them." Many of the houses had two stories below the level of the road, and two above. The back walls of the lower tenements were inevitably damp and slimy from contact with the earth, especially in wet weather, from percolation of roof-water, there being a practical absence of eave-troughs. Even where the houses were of a better kind, the back rooms were necessarily dark from the height of the earth above them, and "there being no area or retaining-wall to the bank, the earth had dribbled down and obstructed the course of the rain-water from the roof." To add to these unfavourable circumstances, a considerable number of the houses appear to have been built close to a canal, the percolation from which, Mr. Rogers says, "made the back walls damp, and when the houses were closed for the night, the miasma from this cause affected the air of the whole house, and, in spite of the other conveniences, the general cleanliness and thrift of the people who lived in them, their sober, steady habits, with an abundant supply of very good water, nearly every household was more or less affected." The very first case of cholera during the late epidemic occurred in a house where the pavement of the back premises had become "squashy" from a combination of damp caused by the natural drainage from the high ground close to the house, contaminated by the percolation of the overflow of the cesspools of other houses situated higher up the slope. Such were the drainage and sewerage arrangements of Ystalyfera at the time of the cholera epidemic in the autumn of last year.

The inhabitants of this village were but little better off in the matter of water supply. Although many of the houses are described as being supplied with abundance of excellent water, it is evident that a very large proportion of the tenements were not so well off. "The water supply was very scanty in quantity, and uncertain in quality, being little better than surface water, percolating through shale tips, and the drainage of coal and mine seams, and colliery workings: so scarce was the water in the works that it was a common practice with the men to drink largely of the canal water, which was conveyed in pipes through the various departments for the purposes of the works. This water received the surface drainage

of nearly all the houses in the village." And from further evidence in the pamphlet, it is clear that with the surface drainage, the canal also received a considerable contribution of sewage in the shape of the overflow of cesspools, especially after heavy rains. It need not be a matter for surprise that many of the cholera cases were directly traced to drinking this water, and that a very large number of those who suffered were first attacked with premonitory symptoms while performing their daily task at the works. One particular case is mentioned, which bears both upon the source of the water supply and upon the beighted ignorance which appears to have prevailed in sanitary matters among even the better class of the inhabitants of this village. The landlady of an inn, who is described as "one of the most cleanly women in her house," fell an early victim to the disease. At the back of the house there was a yard less than 30 ft. square, in which were two pigsties, two privies on cesspools, fowl-houses, and a well; the yard being wholly undrained. An open gutter, running from this yard into an adjoining field, and along a hedge, in front of a row of houses, gave off a most noisome stench; and several virulent cases occurred in these houses.

As if to render these terrible sanitary shortcomings of the village of Ystalyfera, as to drainage and water-supply,—aggravated by the ignorance and apathy of both the owners and occupiers of the houses in such matters,—"window-sashes unhung, and the top sash fixed, no provision for any sort of ventilation, were characteristics of more than half of the cottages." Thus these Welsh villagers lived in a continual miasma arising from the above defects of drainage, the exhalations of cesspools, exaggerated by a chronic and thrifty predilection for pigsties and wash-tubs within the shortest possible distance of their doors.

We have no means of ascertaining the precise extent of this village either as to houses or inhabitants, but the author of this pamphlet gives us some clues to the ravages of the disease. He states that during the epidemic, at its worst, forty new cases occurred in one day, 27th August; and further, that in his own practice, there were "in round numbers, 1,000 cases of choleraic disease." That not more than ninety-five of these proved fatal seems to show either that the form of disease was not invariably of a virulent type, or that this practitioner was most fortunate with his mode of treatment. A portion of this treatise is devoted to the medical aspect of the question, which, although foreign to our present purpose, renders it a valuable contribution to the now somewhat voluminous literature relating to the elucidation of the mystery of cholera and its medical treatment.

It is more than probable that, but for the awakening of a kind of sanitary activity in this village previously to the outbreak, the consequences would have been still more disastrous. Mr. Rogers, in concluding his sketch of this local epidemic, states respecting the deaths which came under his immediate notice, "of these ninety-five it is not too much to say nearly all died of local circumstances,—the effect of avarice, or ignorance, or neglect of sanitary precaution; in short, given a case of cholera, in a foul dwelling—death; in a healthy dwelling—recovery." A medical friend of the author having demurred to this sentence as "too strong," he was asked to point out a fatal case where the house or the surrounding circumstances did not completely bear out the statement. The medical friend, who knew the neighbourhood, parried this question with another,—*"Where in Ystalyfera will you find a really healthy workman's dwelling?"*

We fear there are many other "large works" districts, the sanitary condition of which is even now little better than was that of Ystalyfera, in the autumn of 1866. How long will it be before all these out-lying districts shall have been brought within a comprehensive system of sanitary supervision? We certainly do not yet possess a machinery equal to the task, and it appears that the proprietors of "large works" cannot always be trusted to see that their labourers are housed in such a manner as not to be liable to decimation from a cholera epidemic. The labourers themselves are too ignorant and too careless in these vital matters to be left to themselves. There is, therefore, almost but one consideration which leads to hope for the speedy cleansing away of such blots upon the sanitary intelligence of the present day as the condition of Ystalyfera. This is that when Boards of Guardians begin to understand how intimate a

sympathy exists between a high rate of mortality from epidemics, and heavy poor-rates, caused by the large proportion of heads of families and bread-winners, who invariably fall victims to these diseases; then may we expect them to come to the conclusion, that an effective sanitary supervision, and the judicious expenditure of a little capital, in drainage, sewerage, and water supply, are cheaper in the long run than an epidemic. Furthermore, as proprietors of "large works" are among the largest contributors to poor-rates, the same conclusion may not be entirely lost upon them.

THE DANGERS OF THE VIRGIN ISLANDS: THE PACKET STATION.

OUR article on the dangers of the Virgin Islands has attracted notice, and is likely to produce good fruit. We understand that on the assembling of Parliament, the matter will be brought on, fully ventilated and discussed, and possibly may lead to a safer and more convenient station being established, that will prove advantageous to the Royal Mail Company, and to the great numbers of our fellow countrymen who travel, or whose business or pleasure leads them that route.

We are gratified to see that the late severe calamity that occurred at St. Thomas's and the other islands, has evoked a considerable amount of public sympathy, and handsome contributions are rolling in to swell the noble tide of benevolence that is set in to relieve the misery and distress occasioned by this happily rare and unprecedented catastrophe; but we learn with regret that no professional person is to be employed to superintend the repair and restoration of the churches, public buildings, &c., injured or destroyed by the hurricanes, but it is to be left to "native talent," both white and black, to expend and distribute the money so liberally and generously contributed.

A barrister has been sent out to distribute the funds, and to direct the tide of benevolence into proper channels; but it appears to us that this duty could have been quite as well or better carried out by an architect or engineer, who could at the same time have aided in the restoration or reconstruction of the many structures destroyed. We would advocate the employment of properly qualified professional men in the expenditure of public money, so that the full advantage may be derived from the outlay.

We will now point out a few of the prominent advantages attending the removal of the Central Packet Station in the West Indies, from St. Thomas's to Falmouth, Antigua; and, in the first place it is nearer Great Britain by three degrees than St. Thomas's, and the mails and passengers could be delivered to the leeward and windward islands from thirty to forty hours earlier than if the present central station were retained; and the approaches to the Antigua harbours are unattended with those risks and dangers that closely beset St. Thomas's, as the latter island is surrounded with several small islands and reefs. A few years ago the company lost a most costly and superb vessel, the *Parametta*, on the Anagada reefs, and now the unfortunate and ill-fated *Rhone* has gone to pieces; and upwards of eighty other vessels have shared the same fate (many of which were attracted by the Packet Company's business there), on the several islands and reefs in the proximity of St. Thomas's, on the late occasion (October 28), and several previously.

The harbours of Antigua are like St. Thomas's, perfectly land-locked, and are well sheltered by high lands from heavy gales of winds or hurricanes; but the lands are not so high as St. Thomas's, and the creeks in the mountains permit the cool refreshing trade winds to circulate over the harbour, while at St. Thomas's the high lands exclude the breezes and render that harbour insufferably close and hot at certain seasons much hotter than we have experienced at Falmouth. The extreme range of the thermometer at the latter harbour was from 70° to 90°; the average from about 76° to 86°.

From a careful survey of Falmouth Harbour there has been found a large area of deep water for deeply-laden steamers, and equal to the draft of her Majesty's men-of-war, and this capacity is larger than the whole of either the Liverpool or the London Docks. The deep water of this harbour could be easily extended by a judicious

system of dredging; and if we look at the very large and magnificent fleets of ships that now throng the docks alluded to, surely a harbour of larger dimensions could afford suitable accommodation for the comparatively small fleet of the Royal Mail Steam Packet Company. To facilitate the entrance to these harbours it was proposed to remove all impediments, such as rocks and shoals, that rather endangered the passage of vessels; to throw out a breakwater that would protect the shipping lying there during heavy gales of wind; and to form a pier at a point where it was deep water, close alongside where the largest steamers could lie to load and discharge; and this is a very urgent and necessary convenience, as it is a general complaint throughout the West India islands that they have no proper piers at which to embark and disembark passengers, and frequently lives are lost, or placed in jeopardy by this very serious default.

The other harbour (English) has an area equal to more than half the size of the Liverpool Docks, and this is where H.M. ships of war take shelter during the hurricane season; and this harbour could be readily connected with Falmouth Harbour by means of a ship canal, that would add materially to the convenience and advantage of both of them, and the trade that would frequent them; and the former harbour could be used for the colliers, and for depôts of coals, the very excellent and substantially constructed wharfs that exist there being very well adapted for it.

There are many good houses a little above the level of the harbour and the surrounding heights, suitable for the residences of every grade of officers and men employed by the company, from the superintendent downwards. Many of the houses were used as officers' quarters when English troops were stationed there; but now they are generally unoccupied, and fast going to decay.

There are, also, many other large buildings,—barracks, stores of large size, block-houses, capstan sheds, &c., &c., in fact, every building and convenience necessary for a dock-yard, besides smiths' and engineers' shops and many artisans' cottages.

There is too a fine hospital on Shirley Heights overlooking the harbour.

This station has also the advantages of being well supplied with water, which could be easily conveyed by means of pipes to the harbour, besides at the north side of Falmouth Harbour there is a fresh-water spring capable of yielding 50,000 gallons of good water daily, which could be stored up and rendered available for ships' use.

There are other springs to the east of English Harbour, that could be dammed up in the ravines that descend the mountain sides, where reservoirs could be made of any capacity to hold water to supply the shipping; so there cannot be a doubt that an unlimited supply of water could be collected in the neighbourhood of these harbours for the shipping; and this is a very important consideration in any country, much more so in a tropical one, though perhaps it might not be considered a strong or vital question by steam ships' companies, as they can condense the sea water for their own purposes, and really the water is not bad when cooled with a pure and crystal-like lump of ice, rendering it agreeable and refreshing. In a former article we strongly recommended the connexion of the central depôt of the packet station in the West Indies with the other West India islands by means of submarine telegraph, and we again draw attention to the subject, as we believe it to be one fraught with great advantage to trade and commerce, the general and internal government of the islands, and the telegraph might also be usefully employed in conveying meteorological and other information most useful to shipping, and which system has proved so advantageous in this country as developed and carried out under the late Admiral Fitzroy.

We have now fairly launched this momentous subject on the sea of public opinion, and shall feel ourselves disappointed if it do not return to us freighted with a large amount of benefit to the country; and as this question has been now in agitation and under consideration for many years, we trust it has arrived at that position that will lead to a complete and permanent settlement of it, bearing forcibly in mind that by the adoption of the plan recommended we should benefit an old, deserving, but not over-prosperous colony of our own, and, at the same time, secure our central depôt for the mails in the West Indies on our own territory.

A LONDON WEST-END STREET WITHOUT A TURNING.

In the second and last edition of my "Hand-book for London" (published in April, 1850, and now wholly out of print), is the following account of a London West-end street, without a turning on either side. Sackville-street, Piccadilly, is a long and wide street, and a fashionable and useful, though not a much-frequented, thoroughfare:—

"Sackville-street, Piccadilly, the longest street in London of any consequence without a turning on either side. Built *circa* 1678,* but why so called, I am not aware. Sir William Petty, the earliest writer on political economy in this country, lived in the reigns of Charles II. and James II., in the corner house on the east side, opposite St. James's Church. Dr. Joseph Warton had lodgings here in 1792.†

To this account I propose to make a "Chapter of Additions," promising that the peerages of Shelburne and Lansdowne are held by the descendants of this Sir William Petty, the circumstance of whose residence at the corner of Sackville-street I derived from the valuable MS. rate-books of St. Martin's-in-the-Fields, in which parish Sackville-street was, when first built,—not, as now, in the parish of St. James, Westminster.

Sackville-street, Piccadilly, consists of forty-four houses, well-built of brick, and derives its name, I see reason to believe, from the Sackvilles, Dukes of Dorset, or the Sackville-Wests, Earls De-la-Warr.

Sackville-street, in Dublin,—the finest street in Ireland,—was so called after Lionel Sackville, seventh earl and first duke of Dorset (died 1765, over a century since), twice Lord Lieutenant of Ireland. He was born in the reign of King James II., and was the holder of high offices of state under Queen Anne, King George I., King George II., and King George III., a tenure of political power without parallel (I believe) in English history. Though no more than seventy-eight years of age at his death, it was the Duke's lot to live in more reigns than any other person lived that I can call to mind, "Old Parr," who never knew the pills which bear his name, being excepted, as a matter of course.‡

The first "Boyle's Fashionable Court and Country Guide and Town Visiting Directory" I possess is that for the year 1802. It contains, its title-page tells us, "An Alphabetical Arrangement of the Names and Places of Abode (in Town and Country) of all the Ladies and Gentlemen of Fashion;" and its boast on its title-page is that it contains, "for the use of porters in the hall, servants, &c., a separate register of all the fashionable streets, set down in a numerical manner, that the reader may see at one view and become acquainted in an instant with the names of the various persons of fashion, according to the numbers in each street."

Lolling, porter-like in imagination, in a large leather-covered, brass-nailed, sentry-box of a chair, in No. — (where the best wine-cellar doubtless was, and a French cook must have been kept), my fancy (James of Buckleys-square-like) that we are a footman at the best (in plush), or at least a well opaned and vintaged porter in the hall of No. —, Sackville-street, Piccadilly, revolving "the sad vicissitude" of houses and names in "our street," as it has passed from 1802, the forty-second year of King George III., to A.D. 1867, the thirty-first year of the reign of King George's granddaughter, her most gracious Majesty Queen Victoria, "whom God long preserve."

In the year of our Lord 1802, pleasantly placed, Sackville-street, Piccadilly, London, was thus inhabited:—

Nos. 1, 2, and 3 are passed over by courteous Mr. and Mrs. Boyle.

No. 4, Colonel Whetham.

No. 5, was in 1819 the residence of Charles Kemble, the celebrated actor.

No. 9, Dr. Wright; afterwards, 1843, S. Cartwright, jun., surgeon-dentist.

No. 10, Lieut.-Col. Sharpe. This house unheeded by Mrs. Boyle in 1843.

No. 19, A. Frere, and of "Stamford Brook, Hammersmith," we are told in the body of the Guide. Was he any relation of Whistlercraft Hookham Frere?

No. 22, I find inhabited by Benjamin Charles

Brodie, the famous surgeon, afterwards Sir Benjamin Brodie, bart.

No. 24, James Mitchell. A Scotsman had got into the street. Was he any relation of the Sir Andrew Mitchell who had so much to do in Prussia, when Frederick the Great was king?

No. 27, William Leake. In 1843 Mrs. Boyle records a No. 27a.

No. 28, Dowager Duchess of Rutland, and (we are told in the body of the book) of "Croxted Park, near Belvoir Castle." In 1843, "Henry Donaldson, John Robinson, and Stephen Esclander" lived here.

No. 29, Lord Hawkesbury, M.P., and the same authority adds, of "Roehampton, in Surrey." This house was afterwards inhabited by the Earl of Barrymore.

No. 30, Everard Home, afterwards Sir Everard Home, the famous surgeon.

No. 31, Hon. Mrs. Bland; and of "Isleworth, Middlesex."

No. 32, Arthur Young, of "Bradfield Hall, near St. Edmundsbury, Suffolk."—I presume the Arthur Young of English agriculture.

No. 33, Dr. Blane.

No. 34, J. Weyland.

No. 35, Whitshed Keene, and "Richmond, Surrey."

No. 37, Mrs. Lanchester.

No. 38, Charles Hawkins. From 1810 to 1814 the house of Dowager Lady Poulet.

No. 39, Edmund Wigley, "esq., M.P.; and Chexeniat, Worcestershire." In 1809 the house of Sir Herbert Jenner, the Sir Herbert Jenner First of the Prerogative Will Office, Doctors' Commons.

No. 40, John Spittswood. In 1840 the house of Dr. Prout, the famous physician.

No. 43, Joseph Ashby Partridge, and "Breckspire, near Ayrfield [Harefield?], Middlesex."

In our time, men and women who remember the deaths of King George IV. and King William IV., and the accession of the beloved Queen who now reigns "over us,"—this Sackville-street, Piccadilly, was famous for its dentists. On more than five occasions we have dropped in willingly, and reluctantly too, to see either Mr. Clark or Mr. Rogers at No. 5, Mr. Cartwright at No. 9, Mr. Nasmyth at No. 18, or Mr. Parkinson at No. 36. Our teeth ache as we write at the recollection of what we suffered, and our heart leaps light when we think of the pains we were freed from by the skill of more than one surgeon-dentist in Sackville-street, Piccadilly.

The following letter will be read with interest. There can be no need of telling the readers of the *Builder* who Lionel Duke of Dorset was:—

"Lionel Sackville, Duke of Dorset, to Henrietta Hobart, Countess of Suffolk.

Dublin Castle, Nov. 9, 1731.

MADAM,—What shall I say for not returning you my hearty thanks upon your kind remembrance of a poor Irish friend? I think it is best not to trouble you with excuses, for I can make none that are good. I will not add to my impertinence by making you the messenger of my compliments to Mr. Pope, when I see him I will make them myself, in the best manner I am able, and at the same time I hope he will grant me a free conference upon the subject-matter of the epitaph. [Pope's on the Earl of Dorset?] Your newspapers talk of nothing but the great guest you have in England [the Duke of Lorraine]. I cannot but say I wish he had seen a little of our fiery upon the Birthday [of the king]. I believe more rich clothes were never seen together, except at St. James's, and some of them so well chosen that one would have sworn a certain countess of my acquaintance had given her assistance upon this occasion. I should not do justice to Captain Pearce's genius if I did not give you some account of the ball-room that he fitted up for the night's entertainment. The usual place was thought too little, and therefore it was resolved to make use of the old hall, which had been long disused and very much out of repair; however he so contrived it that I think I never saw a more beautiful scene. I am sure you won't think that an improper expression, when I tell you the walls were all covered with canvas, painted in perspective; the space was a large one, but it was so contrived as to make it look as big again; there were your coaches, your gypsies, your grooms, and pillars of all orders and denominations;—in short, there were all those things that your fine folks talk on now-a-days; and the lights were so perfectly well disposed, that at upon my word, it had a most surprising fine effect. Some jokers were of opinion that our room might be better than our company; but they were perfectly convinced to the contrary, when they saw how it was filled. Newspapers, you know, are not always to be depended upon, and therefore I dare say you will believe me, when I tell you that it was infinite pleasure to me to find by your letter the king was so much better: my concern upon that head I believe you think goes somewhat further than merely the duty of a loyal subject towards his Master. I take it for granted this letter will find their Majesties settled at St. James's for the winter, and I hope both of them in perfect health. Her Grace desires her best compliments may be made to you; and that you may get rid of your head-aches, face-aches, and all other your troublesome companions, is the hearty wish of

Yours, &c. DORSET."

I have no more to add to this account of pleasant Sackville-street, Piccadilly, London.

PETER CUNNINGHAM.

LABOURERS' DWELLINGS, LIVERPOOL.

The Health Committee have recommended for the approval of the Council the plans No. 47, prepared by Mr. John Reeves, of Liverpool. We have examined the design, which consists of two blocks of terrace houses in flats, divided by a court, 30 ft. wide, and facing two transverse streets, from Sylvester-street to Ashfield-street, also 30 ft. wide. The other portions of the site east and west of the proposed streets are covered with two-story cottages, twelve of which contain, each, cellar, parlour, kitchen, and three bed-rooms; and the remaining eight contain living-room, kitchen, and two bed-rooms. They are of a type very common in Liverpool. The two blocks of terrace-houses contain in all forty-eight dwellings, having each a kitchen, scullery, W.C., and two bed-rooms: the end houses have each a small additional bed-room. The estimate is 6,600*l.*, without the land. Only eight of the dwellings are proposed to be let at 3*s.* per week, 4*s.* and 5*s.* being the general run of the rents. The return on the investment is stated at 7 per cent.

It is quite a mystery why this plan should have been selected. The engineer's estimate of the cost far exceeds that by Mr. Reeves. There is no use minding the matter: it is impossible for it to be carried out for the sum stated, and the award would be unfair on that ground alone. We reckon that, at the rents stated, the corporation would receive about 4 per cent. on the outlay. It becomes more likely every day that none of the plans will be adopted. The next thing we expect to hear, if the houses are to be built at all, is, that the "engineer be ordered to make new plans."

We cannot conclude without remarking, that should the selected plans be adopted, labourers' dwellings will still remain to be built; and also, that the plans are not within the bye-laws, the terrace houses being 33 ft. high at one end, instead of 30 ft. throughout: so much for the statement in the local papers, that "the committee soon found out, when they began the task of selection, that the question they would really have to consider was, not which was the best plan, but which was most in accordance with the conditions of the competition."*

BIRMINGHAM AT THE PARIS EXHIBITION.†

The sub-committee of council of the Birmingham Chamber of Commerce requested an able and competent townsman, Mr. W. C. Aitken, the author of various publications connected with the art and industry of Birmingham, to accompany the local artisans selected, to visit, examine, and report on the works exhibited in the French International Exhibition; also to furnish a general report on those special industries which referred more particularly to Birmingham. The resultant reports by Mr. Aitken and the local artisans, however, are due to the scheme originated by the Society of Arts in London, to facilitate the visit of "foremen and skilled artisans to Paris," and to inspect and report on the contents of the Exhibition. Mr. Aitken is himself a member of the Society of Arts' committee.

The Exhibition, says Mr. Aitken, in his general report, demonstrates not the decadence of English inventive skill, industry, or perseverance, but that other nations, availing themselves of the experience gained in previous international exhibitions, have entered the industrial arena in those fields of industry in which we have hitherto reigned supreme. It bears evidence also, he remarks, that up to the present time the element of art is more generally known, understood, and intelligently introduced into manufactures on the Continent than in England. It also shows that the chief and direct advantages of an international exhibition are more particularly received by the country in which it is held; that practically the examination of objects by, and the decisions of, juries as to the merits of the objects exhibited are not to be depended upon; and that henceforth the farce

* Mr. Birch wishes it said, with reference to our notice of his design, that his plans and estimate provide for a height in the rooms of 8 ft., from floor to ceiling.

† Report presented to the Council of the Birmingham Chamber of Commerce, on Manufactures of a similar kind to those of Birmingham, as represented in the International Exhibition held at Paris, 1867; with Remarks on the Necessity for increased Facilities for Art Education, Science-teaching, and Technic Instruction, &c. By W. C. Aitken. Birmingham: Billing & Co., Printers.

* Rate-books of St. Martin's-in-the-Fields.

† Nichols's Lit. Ance., ix. 473.

‡ Dr. Young, the poet of "Night Thoughts," lived in the same reign as the Duke of Dorset lived in, and died in the same year the Duke died in. Doctor Young (Doctor Old) was, at his death, four years older than the Duke.

of juries and their awards may be considered at an end.

England, he continues, is placed at a disadvantage as regards the exhibition of heavy machinery, tools, and raw or partially manufactured materials, more particularly railway appliances; and judgment is given against her in consequence. Of the last it is stated that 300 contributions are the number exhibited: 152 of these are sent by France; while our country, which has done so much, and was the earliest to introduce and perfect the railway system, sends only twenty-one examples, the remaining contributions being made up by other exhibiting countries; but even the limited contributions of England are said to contain by far the noblest example of a locomotive. He points out that the distance, and consequent expense in transit, no doubt materially operated in limiting the English display. It may, however, be questioned whether the fact of sixty locomotives having been ordered for English railways from foreign engineering establishments, as also others for our railways in the East Indies, should not have induced a greater number of locomotives to be exhibited by our great engineering firms.

In raw produce also, as, for example, in iron, the cost of carriage no doubt equally operated, and our immense supplies of that metal, indicated only by a few English exhibitors, is by no means a fair representation of our gigantic industry therein; some idea of the magnitude of which, as contrasted with that of other countries, may be gathered from the consideration that we produce annually 4,500,000 tons, against not more than, at most, 400,000 tons, which it requires all the collective power and energy of every European nation united together to smelt and produce, from the priest and rarest known ores and charcoal; and which, after being made, cannot be sold at much under double the price of our most esteemed brands. The general excellence of English iron is admitted by every country, and its low cost is proved by the extent of our exports in that metal; but while there are abundant examples to show what the French can do in the production of iron in its manufactured state, as sheets, bars, girders, &c., we have no idea as to at what cost the examples shown were produced. The French, in getting up works for exhibition purposes, are notoriously regardless of cost; and there is every reason to suppose, that on the present occasion they have been equally so.

That labour may be cheaper and aid the Continental ironmaster, is true; but so long as we have our immense supplies of coal and iron, the iron industry of this country will, and must, survive and flourish. In coming time the wages of the foreign artisan will be approximated more nearly to those of this country at the present time, and this must react in favour of the English ironmaster. Moreover, it must not be forgotten that the means which have conduced to the development of the manufacture of iron in other countries, and created that mighty industry, are all our own.

Iron is especially a metal of the Birmingham district, and the merits of the exhibits in that metal, with the opinions expressed as to it, have induced Mr. Aitken to place before his constituents the implied opinion as to the competition in that metal they are likely to have in other countries. He does so because the elements introduced into the discussion as to the true state of that important industry in England are essentially those which affect other branches, which are more particularly examined in this report. That other countries must and will advance in the manipulation of iron, is to be expected; and that they will take, and are taking, advantage of every appliance and discovery made in England to aid them in making these advances is natural. Progress is the law of creation. Continental nations are jealous of this country: in the majority of those countries and states they are arming for the contest: they are educating their youths in trade schools. One moment's consideration will, however, show that by a greater attention to technic and general education among the workmen, coupled with our immense supplies of iron and coal, and a somewhat less infusion of mere speculation, the iron trade of England will practically again place itself in a healthy and comparatively impregnable position.

The space asked for by intending Birmingham exhibitors was 8,400 ft. It was cut down to 4,000 ft. This led to the withdrawing of at least one-third of the applicants. The total number of exhibitors from this town, including

those from Dudley, Bromsgrove, Stourbridge, and Redditch, was only eighty-five, as opposed to 120, the number from Birmingham who exhibited at Paris in 1855. On the present occasion one of the chief firms in the brass trade had their exhibits so crowded together as to render the inspection of their most complete display impossible.

Despite the want of space at command, according to Mr. Aitken, there is, on the part of manufacturers, a growing dislike to these exhibitions, arising out of their too frequent recurrence, the expense, and the hindrance to business caused by the preparations for exhibiting. These considerations, coupled with the want of space, in the case of Birmingham, resulted in several important trades being totally unrepresented; and in those trades that were represented, the number of exhibitors was so few as to afford no idea whatever of the importance or magnitude of the trade so imperfectly illustrated.

The general conclusion to which the reporter has arrived is that English manufactures have suffered from lack of sufficient representation; that in the useful and substantial England holds her place; but in ornamental art, as applied to manufactures, she is behind. Still even in the "substantial" he sees the necessity for increased exertion, for other nations are making rapid strides in this direction: the whole face of French industry is changed, has advanced, and is rapidly advancing. At every succeeding exhibition he has marked the progress of France; and other nations, as Prussia, Belgium, Austria, and even the small states of the Zollverein show signs of increased industrial activity.

Scientific and technic instruction, Mr. Aitken remarks, is absolutely necessary. If it is admitted "that a greater number of new and successful combinations have been made by foreigners during the last ten years, than by the people of this country," and if "our trade suffers from want of art-education, as is generally thought by those who understand the matter," it is time that we bestir ourselves, cast from around us the mantle of egotism in which we have hitherto been enveloped, tear from our eyes the delusive spectacles which exalted everything English, and diminished everything which was or is not. Industry formerly, unaffected by foreign rivalry, contented only with small producers of its own nation, and then the competition was small. But free trade has thrown down the barriers; and the world is now one mighty universal market. To be successful in this competition, our nation must therefore put forward all its energies to educate, in technic, and other schools, the present and coming generations.

If we fail in taking advantage of the lesson taught us by the exhibition, viz., that great progress has been, and is being, made by other countries, through artistic and industrial training; and if we neglect so to educate and train, it may truly be said of us, "Miserable is that nation which, after this exhibition, comprehends not the necessity for progress."

OBLIQUE ARCHES.*

An "oblique" or "skew" bridge is one in which the roads passing over and under the arch cross each other obliquely. The angle which a perpendicular to the axis of the roadway passing under the bridge makes with that of the roadway over it, is called the "angle of obliquity."

Before the introduction of railroads it was usual for the engineer in laying out a road across a country, when he came obliquely on a stream, to turn his road on each side of it, so as to enable him to cross by a bridge thrown over at right angles to the direction of the stream. But this plan could not be adopted in forming a railroad, in which sudden turns must be carefully avoided, and the greatest possible straightness obtained. Hence, in making lines of railway, it frequently becomes necessary to build very oblique bridges of considerable span, and the voussoirs of the arch must be so constructed as to secure the greatest stability.

An oblique arch is a portion of two concentric semicircular cylinders, cut obliquely by two planes, which form the face of the arch, the intradosal and extradosal lines of the two faces

being generally ellipses. The solid contained between these two cylinders is cut by a number of similar screw-surfaces described about their common axis; and these are intersected at right angles by another series of similar screw-surfaces. The whole arch is thus divided into a number of equal and similar solids, which form the voussoirs of the oblique bridge. The dimensions and angles of the voussoirs can only be found accurately by trigonometrical calculation. As all the joints and beds are in spiral lines, it follows that the two faces of the arch should also be spiral; but when the span and angle of obliquity are great, this is scarcely feasible; for the wall and parapet over the arch being straight, the faces must be worked off to the same plane, so that the arch must have the appearance of being elliptical. Bridges may be safely built with as great an obliquity as 65°; but in arches of wide span and a high angle of obliquity, the direct section should be a flat segment of a circle in preference to a semicircle.

The earliest writer who appears to have discussed the question of spiral courses is Mr. Chapman, the engineer of the Kildare canal (Ireland), who is the author of the article on Oblique Arches in "Rees's Cyclopaedia" (published 1819); but he seems to have considered that it would be very difficult to get a mason to work the courses in stone, and advises the soffit to be built of brick, and only the faces of the arch to be of stone.

Mr. Nicholson, in his treatise on "Stone-cutting," published in 1825, also pointed out the true method of building oblique arches with spiral courses; but he did not enter much into the details of the art.

In 1836, Mr. Hart, a mason, working on railways under Mr. Stephenson, published a practical mode of finding templates for the spiral courses by a mechanical process, which gave tolerably accurate results. But this method, besides being laborious, is not sufficiently exact to satisfy the scientific engineer; and in 1839, a very complete treatise on the subject was produced by Mr. Buok, an engineer largely engaged on railway work, who found algebraical formulæ by which the dimensions and angles of the templates can be calculated. This work was re-edited in 1857, by Mr. W. H. Barlow, who added to it a method of making the requisite calculations without the use of trigonometrical formulæ, so that an intelligent foreman could direct the masons employed in building the bridge how to work the stones.

Mr. Donaldson has brought his high mathematical attainments to bear on the subject, and by means of the elegant modern methods of analysis, for which the University of Cambridge is justly celebrated, has obtained formulæ of great accuracy. He has also described a more exact mode of constructing the templates than those usually adopted; but we question whether the practical engineer will prefer this very elaborate process to the simpler though perhaps less accurate methods given by preceding writers on the oblique arch.

HEALTH AND WAGES.

Dr. J. H. STALLARD, at the Society of Arts, on the 4th inst., read a paper on the relation between health and wages, from which we may quote a few passages.

What, he asked, are the conditions essential to successful labour? They may be divided into three categories. Firstly, the power or physical ability to work. Secondly, the mental and moral qualifications, viz., the will to work and industry to work honestly, these being united with more or less of intelligence and skill. And lastly, the opportunity of working, which depends locally on the demand for labour and the profit which it yields. Taking the world at large, this opportunity is given to all who have will, intelligence, honesty, and strength, a combination of which will inevitably lead the possessors to seek the best market for their labour, and to rest satisfied with none which does not enable them to gratify the reasonable wants of an independent life.

Now, although the immediate object of this paper is to point out the intimate relation between health and wages, it must not be forgotten that the essential conditions of labour are most closely mixed up together, and react one upon the other with the most complicated results. Thus in a depressed state of trade, want of employment and privation lead inevitably to

* "A Treatise on the Art of Constructing Oblique Arches with Spiral Courses." By W. Donaldson, M.A., Assoc. Inst. C.E. Spon, London, 1867.

exhausted health, and to the many consequences of exhausted health to be noticed presently. Moreover, it drives the labourer to tramp the country in search of work; it unsettles his ordinary mode of life, and brings him into collision with a class of wanderers whose habits he gradually acquires. One of the saddest features in the present state of society is the extraordinary increase of vagrancy which is now observed throughout the entire country. A week of such a life breaks the health and destroys the energy of the best intentioned labourer; and although he may be glad to escape the first or even the second time, the final result will be that he gradually loses health and energy for work—that he will adopt the shifts of the class with which he is thrown, and cease altogether to be a productive member of the community. So, again, whilst skill can in many cases supply the want of strength,—and we shall see that it has a constant tendency to do so,—yet it may be taken as a rule that both are associated together, a feeble community being ignorant, not because they are deficient in natural intelligence, but because they have neither the means, nor the time, nor the energy, to acquire knowledge. In the agricultural labourer we have the best example of strength without intelligence. In the population of the East of London we have intelligence without strength or knowledge to supply its place.

Lastly, it is clearly possible to have knowledge and strength without honesty or the will to work—the want of which equally prevents the employment of the labourer and leads eventually to the destruction of his health.

We arrive, then, at the conclusion that power or physical ability forms the basis of all kinds of labour. No man can work who is physically incompetent, and, *ceteris paribus*, the degree of strength determines the quantity of labour which a man can perform and the wages he can earn.

The first effect of physical degradation is an augmentation of productive power. The poor have more children than the rich. The more perfect the individual, the more refined his habits, the greater the difficulty in propagating the species. Nature makes up in numbers what she lacks in power; and so with inferior resources the poor have more mouths to feed. Physically these children are less healthy than their parents, from whom they inherit the seeds of debility and disease. The poor have thus a burden which the rich are not called upon to bear; the former have to bring forth, tend, and bury a mass of infantile humanity, and the expense of doing so must be a serious tax upon their scanty resources, and materially interfere with the rearing of the surviving children.

I have the written opinion of the most distinguished members of the medical profession, an opinion which must be endorsed by all practical philanthropists, that a very large proportion of the debility, deformity, disease, and premature death amongst the children of the London poor, as well as the want of stamina observed in after-life, is owing to insufficient, irregular, and unwholesome feeding during the period of growth.

A fertile source of degraded physical health amongst the labouring class is the waste of adult male life incidental to the occupation, and more prevalent in large towns, where the children are even more dependent on the father than they are in the country districts.

The struggle of bare existence is harder for the physically feeble than it is for others, and with an empty stomach and exhausted frame, the poor crossing-sweeper plies his occupation with an activity and perseverance prompted as much by habit as despair. Look at that ragged urchin turning somersaults; he works hard enough, God knows, for the scanty pittance thrown him by the passers-by. Watch the pertinacity of the news-boys and the sellers of fuses. Turn to the coster, and ask him how many miles he has to walk to realise a shilling. The more feeble he is, and the less his stock, the further he has to go.

The public ought to provide industrial institutions that the entire labouring class might be participants in the advantages of skilled labour according to their intelligence and strength. In this advantage capital will derive a double benefit, first by diminishing the monopoly of the artisan, and then by diminishing the expense of the pauper class. It is proposed to form public schools for the technical education of the artisan class; much more is it necessary to have industrial schools for the indigent class; and to feed them whilst they learn. Any excessive power of production will right itself, since an

intelligent labourer will certainly emigrate to other lands if he fail to supply his reasonable wants here.

Having shown that physical health is the basis of individual labour, it remains only to observe that what is true of individuals is also true of communities and nations.

In conclusion, I will add a few remarks on the remedies for the state of things I have described:—

1st. A review of the Poor-Law system, with the object of replacing the present repressive measures by an active system of judicious help to those whom sickness and misfortune drag down to the class below them, and eventually to pauperism.

2nd. A more perfect organisation of charities, whereby the destitute and deserving poor may be supplied with what is necessary, without having recourse to the system of begging, inseparable from the present multiplication of charitable institutions.

3rd. The necessity of supplying relief to the children of the indigent class in the shape of wholesome food.

4th. That industrial training should be a condition of all relief to the children of the poor, and that such training should occupy the first place in the education of a class which depends on labour for independence; moral and religious instruction being from the necessity of the case secondary thereto.

5th. By a system of seven years' apprenticeship, with food and clothing at the public cost, that a certain number of children may be raised from the uttermost of the class, with the view of breaking down the monopoly now enjoyed by the latter, and filling up the hiatus which sickness and misfortune constantly make in the ranks of the artisan.

6th. By taking measures to transfer as many children, orphans, and others, to the country districts where, as in Scotland and France, they may be cheaply and healthily brought up in the homes to which they naturally belong. By this means the physical degeneration inseparable from town life would be combated, and the tendency to security of labour in the country, now becoming general on account of the facilities of transit and the attractions of large towns, would be greatly diminished.

7th. That it is the duty of Government to provide a register of labour from the instrumentality of the Poor Law, and reform the tramp wards, that a stop may be put to vagrancy, and the destitute labourer may travel with safety, and with a reasonable expectation that he may obtain work.

Lastly, These objects can only be secured by a reform in the present system of doing charity by proxy, and the efforts of philanthropic persons require to be organised and superintended by a staff of officials, which might be properly provided at the public cost, with the certain result that charitable persons would give more liberally, because they would be assured that the assistance they gave would then be only used to supplement benevolence when the latter fails, and the rich would thus relieve the lower order of ratesayers from the undue pressure to which they are now subjected. In fact, State charity, to be efficient, must be kept as much as possible out of sight.

GLOUCESTER SCHOOL OF ART.

THE annual distribution of prizes to the pupils of this school has taken place at the Tolsey. The admission tickets were a shilling each, and the room was crowded by the pupils and their friends. The mayor (Mr. C. F. Innes) presided. The report said:—

The number of students who attended the Gloucester School of Art during the year happens to be exactly the same as that of last year, 1866, that the return of the year does not show an increase is, we believe, chiefly ascribable to the nature and position of the building, as situated at the foot of the instrumentality of the Poor Law, and reform the tramp wards, that a stop may be put to vagrancy, and the destitute labourer may travel with safety, and with a reasonable expectation that he may obtain work.

Mr. Gambier Parry addressed the meeting, and in course of his speech he referred to the subject of beauty and use in art. This school, he said, is for the benefit of the operative, working, artisan class—using that expression in a very wide sense—to enable them to utilise their fingers for the benefit of their lives. Therefore, the great thing to demonstrate is, that beauty is of use. I believe that of late we have to a certain degree come to acknowledge this in our designs for manufactured articles of cotton and furniture, and things of that sort. But still, in our highest manufactures in which art appears the French have outdone us completely. I was sorry to find that in one art we cannot approach them at all—that beautiful and most refined art of chiselling metal work, which requires the finest eye and the steadiest hand, and in figure drawing also they have certainly gone far ahead of us.

Mr. Kemp, the master, said no one was better aware than he of the inferiority of England to

France in matters of art, and no master impressed the fact more strongly upon his pupils, or strove more to do what he could to remedy the defect. "We are a very long way behind the French in this matter," he said. "We have to make a beginning; they do not seem ever to have had to make a beginning. What are ten or fifteen years in comparison with the centuries of experience the French have had; and what also the extent of our little island as compared with France, with its treasured works of art scattered all over it? The odds are fearfully against us; but I trust that our British nation will soon make them equal. One of our divergences to the right or left, whichever it may be, is the exclusive striving after accuracy. Now, a merely accurate man is one of the most disagreeable people in the world; and if accuracy is beauty, the best thing we can do is to cover our walls with photographs and fill our libraries with Blue-books. We want not only accuracy, but poetry and spirit, and liveliness, and a spark of originality amongst our pupils."

In subsequent remarks, Mr. Parry drew the mayor's attention to the effects of the inadequacy and inconvenience of the present building used as the school, and implored him, as forwarding a really good moral purpose, to aid them in remedying the defect. The real scheme to answer would be to have one building inclosing the School of Art, the museum, a public library, baths and washhouses, and so forth, with at the back a space for the Gymnastic Society; the washwomen and the athletes would form very nice studies for the art pupils. But, appealing to the utilitarian Englishman, he was perfectly confident that it would pay. He hoped the mayor would signalise his year of office by forwarding this scheme.

GREY-TOWERS, NUNTHORPE.

THIS mansion, for Mr. W. B. J. Hopkins, which has been in progress about two years and a half, is now approaching completion. It is situated about seven miles from Middlebrook-on-Tees, and amidst some of the finest scenery in Cleveland. The building is faced with blue flint stone, from quarries in the neighbourhood, and the dressings are of a warm yellow local sandstone. The principal staircase is of oak, and the chief rooms on the ground-floor have panelled wood ceilings; that to the main staircase being enriched with carved and moulded ribs, shields, &c., and surmounted by a lantern-light glazed with richly-cut glass. The whole of the building has been carried out in a handsome and substantial manner, and the arrangements for water supply, heating, and ventilation are very complete. There are in all about thirty bed-rooms, including dressing-rooms. We give a view of the south and east fronts, and the ground plan. The mansion has been erected by Messrs. Oliver & John-on, contractors, Middlesex. The clerk of the works is Mr. W. Freeman. The architect is Mr. John Ross, of Dringman.

REFERENCES.

	Rs.	Is.	Fl.	It.
A. Carriage-porch	15	0	13	0
B. Inner porch	13	0	8	0
C. Entrance-hall	27	0	18	0
D. Breakfast-room	24	0	18	0
E. Library	24	0	18	0
F. Drawing-room	30	0	23	0
G. Conservatory	30	0	18	0
H. Ante-room	19	0	18	0
I. Dining-room	27	0	18	0
K. Principal staircase	26	0	18	0
L. Smoke-room	16	0	13	0
M. Billiard-room	26	0	24	0
N. Gun closet.				
O. Lavatory and W.C.				
P. Side entrance-hall	14	0	5	0
Q. Kitchen	25	0	21	0
R. Scullery	13	0	10	0
S. Kitchen closet	10	0	7	0
T. Bed closet (plate safe under)	12	0	7	0
U. Open court	13	0	7	0
V. Butler's pantry	20	7	14	0
W. Garden entrance-hall.				
XX. Corridors.				
YY. Back staircase (ditto to cellars under).				
ZZ. W.C.s.				
a. Housekeeper's room	19	0	13	0
b. Store-closet				
c. Lobby.				
d. Servants' hall	20	0	17	0
e. Laundry	24	0	18	0
f. Washhouse	18	0	16	0
g. Verandah.				
h. Shoe-house.				
i. Shoe-larder.				
k. Coal-house.				
l. Sticks.				
m. Ashes.				
n. Court-yard.				



GREY TOWERS, NUNTHORPE.—MR. JOHN ROSS, ARCHTCT.



THE CO-OPERATIVE MOVEMENT.

A MEETING of farmers and others interested in agriculture has been held at Irlington, convened by the Agricultural and Horticultural Association (Limited). The council of this society includes the Right Hon. W. Cooper, M.P., and Mr. T. Hughes, M.P. Mr. Greening, the managing director, stated that the operations of the association, so far as they had done, had been crowned with complete success. The members were supplied with the best description of implements, manures, cattle-food, seeds, &c., at trade prices, without the intervention of agents' profits; but, in addition to their securing good and unadulterated articles, the whole of the profits, minus the small charge for working expenses, which did not average more than 4 per cent., would find their way into the pockets of the members. They would receive a dividend of 7½ per cent. on the capital and the profits upon their purchases, minus the working expenses, the amount returned in the average of existing co-operative associations being 6-7½ of the profits. At present the manufacturers allowed a commission of something like 20 per cent. to the agents who sold the goods, and in the event of the farmers availing themselves of the advantages of agricultural co-operation, that commission would be saved, and would of itself form a large source of profit. Extensive adulterations in cattle-food would thus also be checked.

In addressing a meeting of the Peckham Industrial and Provident Society, Mr. Hughes, M.P., observed that the co-operative principle had extended itself in many ways. He instanced the case of the Messrs. Briggs, the great coal-owners of Wakefield, who had resolved to put an end to the strike and lock-out system by giving their men a share in the profits. Previously their collieries never paid more than 7 per cent., whereas under the new system not only was there 10 per cent. paid for capital to the Messrs. Briggs, but a sum of 1,800l. in hard cash was divided among the working people. In the second year the 10 per cent. was also paid, a dividend of 3 per cent. was declared, and 2,000l. divided among the workmen. The principle thus carried out made these men partners, and of course more careful; and hence it was that a vast amount of expenditure was saved, and an enormous success attained. The movement was only just beginning, but he was strongly of opinion it would eventually succeed and put an end to those terrible struggles between labour and capital which brought so much misery and ruin on hundreds and thousands of families among the working classes of this country. He exhorted them earnestly and sincerely to persevere in their good work, and not be discouraged by any opposition which might be thrown in their way.

SAVE THE CHILDREN.

THE REFUGE for HOMELESS CHILDREN now includes a house, No. 8, Great Queen-street, Lincoln's-inn-fields, for 100 boys; the Training Ship, *Chickster*, with another 100 boys; and two homes for girls, one at 19, Broad-street, Bloomsbury, and the other temporarily located at Kilburn. These refuges afford home and training for the inmates, who are received into them all the year round.

The Report for 1867 describes the good result of the support that was given to 200 boys from the Casual Wards in 1866, and the establishment of the Training Ship.

The industrial element still continues to be an important branch of the training in this Refuge:—without it no permanent good could be accomplished among the boys. The trades taught are carpentering, firewood chopping, shoemaking, and tailoring; occupations which are all useful to the lads whether they emigrate to the colonies, go to sea, or obtain situations at home.

The result of the industrial work for the past year is as follows, viz.:—

Work done for customers and goods sold.....	£807 5 0
Value of work done for the Boys and Girls' Refuges.....	546 15 2
350 pairs of new boots in stock, value.....	269 5 6
Earned boys' work.....	141 0 11
Earned by boys at lay-making.....	35 9 4
	£1,439 15 11

Being more than was earned last year by 500l. We learn that 2,031 pairs of new boots and shoes were made; 2,224 repaired. 1,170 new articles of clothing were made in the tailors' class; 2,727

articles repaired. 29,752 bundles of firewood were cut, made up, and sold; 2,420 for the use of the Institution. 42 mattresses were made; 20 repaired.

The payments for supporting the inmates of the three refuges, maintaining the five day and evening ragged-schools, and for completing and fitting the ship, clothing for the first fifty boys &c., were 8,727l. 3s. 1d.; invested in a Redwood Annuity, 611l. 9s. 6d.; on deposit, 800l.; total 10,038l. 12s. 7d.; the payments left in hand, 640l. 12s. 4d.

What is wanted is, that the Government will forego the claim of 2,000l. for the masts, sails, boats, and other materials, drawn from the dockyard, to complete and fit up the ship; so that the funds required for paying that debt could be devoted to the support of more boys on the ship and in the refuge. Should the Government still require payment for the materials the committee will, of course, be bound to pay, and that being the case, the work would be retarded. The committee, however, hope that when the Government see that the ship is now in working order, and that there are 100 boys on board, being trained for a seafaring life, they will at once discharge the committee from all liability in respect of the materials referred to. We hope so too: the work is a good one, and must be looked upon as of a national character; for whether it is viewed as a means for rescuing the waifs and strays of this great metropolis, or as a means of supplying the diminution of seamen so generally felt in every port, the work which is thus established must prove beneficial to the country at large.

THE FEMALE SCHOOL OF ART.

The meeting-room of the Royal Society at Burlington House was filled with a pretty audience on the 14th inst., to hear the Report and see Sir Francis Grant, P.R.A., present the prizes to successful competitors. He was supported by Professor Westmacott; Mr. O'Neill, R.A.; Mr. Landseer, R.A.; Mr. Lewis Pocock; Mr. Bywater; Mr. Redgrave, R.A.; and many other friends of the school. It appears that there are now 107 students on the books, being 34 more than at the same date last year. At the close of the summer session the number was 130, and the committee have little doubt that, as the advantages offered by the school become more extensively known, a very short period will suffice to raise the number from 150 to 200 students, which it can easily accommodate. At the annual second-grade examination in March, 1867, 36 students presented themselves for examination, 25 passed in one or more of the papers, and 13 prizes were taken. At the annual national and local examination of the drawings at South Kensington last April, one national silver medal was awarded to Alice Elfrida Manly, and one national bronze to Margaretta Clarke. Ten local prizes No. 1, and four prizes No. 2, were awarded; and three students obtained honourable mention. Two prizes for design offered by Miss Bell, of Alton, have been awarded, the first prize to Sarah McGregor, the second prize to Emily Austin. The first gold medal given by her Majesty, to be competed for annually by the students of this school, has been awarded to Alice Elfrida Manly for three groups of flowers in tempera from nature. The Report dwelt upon other circumstances connected with the working of the school, and concluded with a congratulatory reference to the circumstance that the gold medal of the Royal Academy and a scholarship of 60l. had this year been won, as we mentioned last week, by Miss Louisa Starr.*

The President read an excellent address, and in the course of it said:—One day last week he had had the pleasure of going over the school, accompanied by its excellent superintendent, Miss Gann, and was highly gratified. He found there numerous students receiving a sound and valuable education, and saw many young ladies displaying great ability in drawing from the antique, from the life, from the flat, or from model. He was especially struck with one beautiful painting in monochrome, from the antique, and upon inquiring by whom it had been executed he was infinitely surprised to find it was the work of Miss Manly. It was very extraordinary to see such varied excellence in

* We understand there were six male and three female competitors.

such different departments of art; and having already admired her remarkable drawings of flowers, he could not but prognosticate a brilliant future from so successful a beginning. Referring to the progress made by ladies, he said,—We men may well tremble in our shoes when we see this great "storm wave" of female talent and enterprise rolling rapidly forward and threatening to overwhelm us; but while I shall ever be the advocate of an open field, fair play, and no favour, I trust the result will be better art, and a friendly, peaceable, and even affectionate rivalry.

Professor Westmacott afterwards briefly addressed the meeting, and Mr. Redgrave moved a vote of thanks to Sir Francis Grant, which, being seconded by Mr. O'Neill, was passed by acclamation, and the meeting was dissolved.

We would direct the attention of those who are interested in the progress of industrial art to Mr. Walter Smith's "Educational View of the Paris Exhibition," which we printed recently.* With the greater part of his suggestions we fully agree.

ACCIDENTS.

THE parish church of Letwell, near Worksop, Nottingham, has been totally destroyed by fire. The cause of the fire has not been ascertained, but it is supposed to have originated, as usual, from the overheating of the apparatus for warming the church on Sunday morning. The building was restored and fitted with open benches in 1664.

A shocking accident has occurred at the parish church, King's Norton. A new peal of bells, subscribed for by the parishioners, has just been cast by Messrs. Blews & Son, of Birmingham, and the largest bell was being fixed, when, from some cause at present unexplained, it fell, cutting in two the organ, and fatally crushing the head of Mr. Arthur Longmore, a young gentleman who has shown much interest in the work.

An extensive fall of earth has occurred in a deep excavation near Bolton, on the new railway line between Horwich and Hindley, completely burying four or five of the men. One of them has since died.

The jury who sat on the body of William Watt who was killed in Sunderland Docks by the falling of a bridge, have returned the following verdict:—"That the deceased was accidentally killed by the fall of a certain archway leading to No. 13 drop at Sunderland Dock, and that the fall of the said archway arose from the want of a proper repair of the abutment or east wall of the archway, which wall, in the opinion of the jurors, from its defective state, ought previously to have been repaired; and they strongly censure the Commissioners for not having acted upon the report of Mr. Meik."

In a café, Rue Galande, Paris, the beams and joists which sustained the first floor gave way and fell, killing three masons, and more or less injuring three or four other individuals in the shop below.

THE SEWAGE QUESTION, GLASGOW.

A MEETING of the Association for the Consideration of the Sewage Question, and others interested in that question, was held on the 16th instant. Mr. Hugh H. Macfure, C.E., read a paper on the sewage question, more especially as concerning Glasgow. He explained that his proposal was simply to deal with sewage in the state in which it was found in the common sewers, and to apply a practical combination of the outfall works in the Thames with the simple and effective irrigation works adopted, and in daily use at Edinburgh, Croydon, Worthing, Carlisle, and elsewhere. The main covered intercepting sewers he proposed should be carried to stations some little distance beyond the present buildings and suburbs of Glasgow; thence through the agricultural districts on both sides of the Clyde, by open sewage canals, these canals terminating on each side of the river, in large receiving tanks, situated on the margin of the river at points about three-quarters of a mile below Dalnair. The tanks would be capable of containing the sewage of the city for a period of twelve hours. He could not disguise the difficulties and expenses connected with the large quantity of low-level sewage. The difficulty could only be

* See pp. 867 and 893.

met by collecting, by means of a tunnel under the Clyde, the contents of those sewers into a well on the south side at Govan, and pumping them up into a receiving tank situated at the north side of the Glasgow and Paisley Railway, near Craigton. Mr. MacIure went on to meet objections which might be made to open canals and other parts of his scheme. The cost of it, including works, land, and contingencies, would be 332,031*l.*, to which must be added 4,130*l.* per annum for pumping, independent of management and maintenance of works. He mentioned that the land available for irrigation on the north and south sides of the Clyde below Partick was, in all, 6,540 acres. The sewage of Glasgow would irrigate 4,740 acres.

THE SOLWAY VIADUCT.

MR. R. S. NORTH, C.E., had, it appears, charge of the erection of this viaduct, subject to the control and direction of the agent of the contractors; and the conditions on which he undertook this charge were something like the following:—That the cost of erection was to be 8,000*l.*; that the time for completing the viaduct was to be eighteen months; that Mr. North's salary was to be 1,000*l.* per annum, or 1,50*l.* for eighteen months, and if the work was finished in less time he was still to receive 1,500*l.*; that if the viaduct occupied a longer period than eighteen months, Mr. North was to forfeit 100*l.* for every month beyond eighteen it took to complete it; and that, if the viaduct should be erected for less than 8,000*l.*, the saving was to be divided between Mr. North and the contractors. The erection of the viaduct was commenced in the summer of 1855; and Mr. North conducted the operations until October, 1866, when he was dismissed. Mr. North has since raised an action in the Scottish Court of Session, claiming 526*l.* 6*s.* 3*d.* for salary due, with interest thereon; 884*l.* 18*s.* 7*d.*, for salary due for the period of his unexpired services, with interest; and 5,000*l.* for "loss of profits and injury to his character, credit, and feelings." The contractors, on the other hand, have brought a counter-action, claiming 3,000*l.* damages for breach of agreement, in improper construction and delay; and 1,000*l.* damages for allowing the plant and materials to be injured and destroyed.

MEDALS FOR HOUSE IMPROVEMENT.

WE have pleasure in recording the award of a gold medal to the Society for Improving the Condition of the Labouring Classes, by the International Jury of the Paris Universal Exhibition. This society has been engaged in its important work, under the presidency of the Earl of Shaftesbury, for nearly a quarter of a century. And whilst we could wish for so useful a society still greater support, it will be gratifying to the many friends of the movement to know, that in respect of plans and designs for working men's homes, the English are found to occupy a foremost place.

We understand that a similar medal has been awarded to the Metropolitan Association for Improving the Dwellings of the Industrious Classes.

THE SANITARY FIGHT.

I HAVE perused with interest the article in your number for the 23rd ult. on the preservation of rain-water in towns. The subject deserves attention, as every day's experience shows that the question of water supply to towns and cities is becoming of more and more pressing urgency. There are, however, one or two points to which I will, with your permission, briefly advert.

In every building, from a cottage to a mansion, provision could no doubt be made, and space found, for a cistern in such a situation in the attic or roof, as in no way to interfere with the beneficial occupation. Rain-water so stored should, however, be filtered before use; and at no time should it be used except when perfectly fresh, saving only for inferior purposes, such as the supply of w.c. For this and other like purposes it might be found very convenient, and would save, at least in part, the great drain there is upon our waterworks systems for these

and similar conveniences; besides, the cistern would on many occasions afford a supply when other sources are frozen up or temporarily cut off. So, by the storage of rain-water, no doubt some good might be done; but, as a rule, all tubs, tanks, cisterns, and other receptacles for the retention (and possible stagnation and putridity) of water for domestic purposes are objectionable. As to the rain-water being of service in flushing systems of sewers, there is no doubt of its great value; and the beneficial effects of the periodical cleansing of town surfaces and sewers by rainfall, must, I think, be admitted by all. It would, indeed, be a calamity rather than an advantage to cut off from the sewers all the rainfall.

As to dilution of town sewage by rain, and consequent increase of bulk to be dealt with, that need not be a source of trouble where there is a well-devised system of storm outlets for the discharge of the rainfall into the natural water-courses; and as to increased volume at the outfalls, this difficulty is easily disposed of, for when the sewage is much diluted with rain-water it may, in most cases, be safely turned direct into the adjacent stream, and so be carried off in the increased and dilute volume. This works well also in another way; for where the sewage is used for irrigation at times of heavy rainfall, when the diluted water is discharged direct to the stream, the land is charged with the rainfall, and least able to receive and pass off the extra quantity of moisture which the addition of the sewage dilute with the rainfall would give.

Sewers properly devised are not intended for the conveyance of stormfalls of rain; the natural streams are open to receive these, and into them they should go. Besides the convenience of this process, and the consequent diminution of expense in constructing sewers adjusted for sewage only, there is another very important consideration; that is, that in the manufacturing districts, especially, every drop of fresh water is required for trade purposes; and there is no need why sanitary improvements should not, so far as they can properly do so, preserve trade privileges and rights unimpaired. Sanitary works may, in isolated cases, affect prejudicially trade interests, but for one such instance there will be a thousand preponderating tendencies to good.

At the present time a great onslaught is being made upon the hitherto impassable barriers, and we are beset with the besiegers so closely that there is no escape. Let us take a look over the ramparts and see the assailants who are besieging our smoke-begrimed and murky, muddy-rivered city. We hail them and demand their terms upon which we may surrender. "You ought not to cast any dirt, or dye, or refuse, or sewage, or any other like grievous thing into your river," so say the rivers' pollution preventionists. "You must utilize your sewage, and count every pound or pint of refuse as worth so much," so say the sewage utilizers. "You must burn your smoke," so say the urban air purifiers. "You must build decent habitable dwellings for your workers, and let them out of the dark dreary alleys, close courts, and cellars of your city," so say the improved dwellings philosophers. "You must educate, educate!" so say those who see that it is dangerous to put the weapons of power into the hands of untrained men. And then, there is a general cry for new hospitals where disease can be treated, and where grim death can be battled with; new workhouses, where the poor can live in luxury approaching that of model prisons; new asylums, where imbecility can be won back to reason, or, if not, can be coaxed into harmlessness with music and kind words; new parks, baths, and playgrounds. In short, a new and improved lease of life for the toiling millions in this workshop of the world. It is a strong barrier which interposes betwixt us and all this good, but it must come down. To restore so far as can be the purity of our streams will be to the advantage of everybody, whether he be trader or dweller by the once clear brook where the "speckled trout" abounded, but where now, alas! no living thing can exist. To burn the smoke from the thousands of chimney-shafts will be to give us air fit to breathe, and to save annually thousands of tons of coal. To improve the dwellings of the industrial classes will be to elevate them mentally, to improve them physically, to make them better workers, sounder thinkers. To fertilize the earth with the waste products of our cities and towns will be to turn a present curse into a blessing; for whatever that is offensive to us we cast into the lap of mother

earth, all-bounteous Nature will return us out of her great laboratory tenfold in food for man and beast. So every other upward struggle to what is right and good will bring a sure reward if we faint not. As yet, the public mind is but very partially willing to accept these truths in their full force. We look over the old, old barrier and treat the innovators as foes, and refuse to surrender the citadel of our time-honoured prejudices. The day is dawning, however, and the barrier shows signs of giving way,—friendly glances are exchanged with the foes (?) outside, and, if not we, at least the next generation will, we trust, witness marvels of conquest of progress over prejudice, and see wonders in the conversion of waste and want into profit and plenty.

J. B.

ARCHITECTURE IN GERMANY.

HAVING seen a good deal of German architecture a few years ago, I read your able leader of last week with much interest. You are very right when you fear that Munich was the cradle of that *soi-disant* "Gothic of the Future" which is running riot in some parts of Germany, especially in the south. It is known as the "Maximilian Style" in all their schools; and the style, to which this name is given is very weak Romanesque, with Classic, Gothic, and all sorts of other details. Munich was the cradle, and the Architectural Colleges of Stuttgart, Karlsruhe, and Hanover were, and still are, the nurseries. At Berlin, however, and throughout the North of Germany, this style has had no chance, thanks to the memory of Schinkel, and the teachings of Stähler and Strack; and, as the study of Ecclesiastical architecture is more and more revived, we may soon hope to see the last of this nineteenth century Rococo. To the list of buildings enriched with frescoes you might have added, the Museum at Berlin (Kambrach), and the Palace at Stuttgart (Schnorr); also the Pompeiunum at Aeschaffenburg, and the Trinkhalle at Baden. I ask with you, sir, "Why cannot we do these things in England?"

ALFRED STRONG.

Stelle's "Emperors" in the Römer, at Frankfurt, are, I believe, executed in oils on canvass, and affixed to wood panels.

THE POSITION OF THE BRITISH WORKMAN.

I HAVE just read in the current number of the *Builder* the letter headed "The Condition of Architectural Sculpture," and signed "John Roddis, Carver."

It is admirable, so far as it goes; but Mr. Roddis has altogether overlooked the most material bar to excellence in workmanship in England, which is trade-unionism, *alias* trade-terrorism. Did the proprietors of houses being built, did building committees, did architects ordain that one scale of wages should be paid in building trades to skilled and unskilled workmen alike? No; but the workmen did. Suppose an architect or his clerk of the works engaged a few first-rate hands, and paid them whatever remuneration they chose to ask, what would ensue? *Rattening!*

In this land of boasted liberty, a workman may not use the skill and energy with which God has endowed him, and by means of which he would often gladly earn a little extra money wherewith to purchase some comfort, it may be for a sick wife or a dying child, because, forsooth, some *law* fellow-member of his "union" has neither the will nor the skill to keep pace with him; and therefore has framed these wicked "rules" to drag every one else down to his own low level. This is the great bar to progress in England.

And while on the subject of trades unions, their necessary consequences, "atrikes," naturally rise to mind; and *à propos* of them, I wish to say to their originators and abettors, "Behold in the unparalleled distress already prevailing among the poorer classes, though winter has scarcely commenced its terrors as yet, the worthy fruit of the seed sown by you! When there was work in plenty to be done, and at fair wages too, you drove out shipwrights, bricklayers, tailors, workmen of all trades and grades, and much of the present destitution and misery lies at your door, and you will have to account for it hereafter, if not here.

I confess, though I am not hardhearted nor

uncharitable, that the appeals for "help for the starving" never seemed to me to come with so bad a grace as now. Workmen have ruined themselves and ruined their employers by refusing to work; and the very class to which those employers belong must further impoverish itself by feeding and clothing the hungry and naked wives and children of those men who have so deeply injured its members.* Well, so mote it be. At this particular season of the year we will not forget Who said, "Do good to them that despitefully use you." R. F. H.

THE LAMPS IN HYDE PARK.

SIR,—I have another grievance, those complete failures—the new lamps in Hyde Park! That stupid circle of corrugated glass or metal, put midway in the otherwise good-looking lamp-globe, divides it into a steamy half-lighted semicircle, and an obscure fog-red second semicircle over. What is that corrugated plate for? It does not reflect the light, nor allow it to pass through, but simply absorbs it.

The burners, again, are not good, and the result is a dim, dingy, yellow light, just like a badly trimmed oil-lamp, as may be proved any evening all along Hyde Park. Why were not two or three of the lamps put up and experimentalized upon, before we were committed to these failures, at, of course, some considerable expense? Once up, there is very little hope of getting rid of them, unless the *Builder* raises its breath, and blows a blast strong enough to drive them away. The lamp-posts, too, are too far apart: there should be at least half as many, if not quite as many, again. While "lighting the park," why not have *lighted* it? Now the lamps simply serve to make the surrounding darkness more visible.—I am, your

ENRAGED CORRESPONDENT.

MARKET AT HOUNSDITCH.

SIR,—You some time ago threw out some valuable suggestions as to building markets. I have just finished a market for Mr. McCall, of Houndsditch, the well-known preserved-provision manufacturer. It is close to Whitechapel Church, and has cost about 3,000*l*. I saw it opened, and, judging from the prices asked for meat, and the great number of buyers, I should say it will be a great boon to the poor, and also to all who can avail themselves of its advantages, as I saw excellent shoulders of mutton sold for 5*d*., and legs at 5*d*. per lb. It is intended, also, to sell soup and all kinds of cooked meats; also butter, cheese, groceries,—in fact, if possible, to enable a poor man to go thither on Saturday, and buy all the provisions of any kind he may require, and that at the lowest possible price, and in a warm and well-lighted place, instead of wandering about from shop to shop, sometimes in the snow and wet. J. P. WATERSON.

WAGES IN NEW ZEALAND.

SIR,—In your number, June 15, 1867, you state,—"Bricklayers in New Zealand earn 1*s*. per hour; plasterers have as good wages, &c." The figures you give are, no doubt, very high, especially when compared with the majority of the wages for similar tradesmen in Britain, but yet they are very far below what is actually paid here.

In Dunedin (the chief town of the province of Otago, and also the most flourishing town in New Zealand), the following have been the wages paid for some years: before that, and during the first rushes to the gold-fields, they were much higher:—

Masons and bricklayers, 12*s*. to 15*s*. per day.
Bricklayers' labourers, 10*s*. per day.
Carpenters and joiners, plumbers, painters, and, in fact, all other tradesmen, 12*s*. to 15*s*. per day.

In the towns on the gold-fields of this province, in Hokitika, Greymouth, and other towns on the west coast, the wages are always much

higher than they are here. The eight-hours system is the rule all over New Zealand and Australia. In the monthly summaries of the *Otago Daily Times*, you will always see lists of wages prevailing here; so that you need never be led astray, as these lists are to be depended on.

I have been in active practice here for the last six years, and as I am therefore in a position to know what tradesmen's wages, &c., are, I have taken the liberty of sending this statement.

Dunedin.

DAVID ROSS, Architect.

LANGHAM HOTEL PLANS.

SIR,—I must really trespass upon the courtesy of yourself and readers to be allowed to say again that Mr. Murray never saw the plans of the principal floors of the hotel until I had completely designed every arrangement in them. My clerks and my own diary can establish this fact sufficiently.

I never alleged that Mr. Murray used influence with the directors; I knew that his friends did so.

As regards the conclusion of his letter, I can only quote the report of the directors, as follows:—"The directors, having taken the best professional advice, selected the design of Mr. Giles."

The plans I mentioned *are* in my possession. The Judge struck them out of the report when I proved them to be mine, and they remain with me. JOHN GILES.

** We depart unwillingly from our determination to admit no other letter on this subject: under the circumstances we could not refuse insertion to the above.

"AN ADVERTISED COMPETITION."

SIR,—In answer to a paragraph headed "A Warning," the same issue of the *Builder* of the 18th is the office of the agent, and temporary office of Mr. Baxter, where all reasonable information can be obtained. The gentleman in question is now abroad forming a company to build large manufacturing premises in this locality, or abroad according to cost; the warehouse is intended for the sale of their own goods.

Mr. Baxter does not wish to have any misunderstanding, any competing architect wishing to withdraw from the same can have the fee returned.

J. BROWN, Architect, Queen-street, Leeds.

** The fact that we have received five other letters to the effect of that from "G. E. G.," shows that, at any rate, the affair has not been well managed.

RADIATION FROM IRON PIPES.

SIR,—I have just heated my office with steam, but I find the (cast) iron pipes do not part freely with their heat, but carry a good percentage of it out into the waste drain, where it is useless except for the purpose of driving the rats away. Can any of your readers tell me how I could promote the radiating properties of the pipe? R.

HER MAJESTY'S THEATRE.

SIR,—I believe there is no cause from which so many fire originate as from warm air-stoves. The fact is, work-people are allowed to cut a building about in all directions, without proper superintendence from the architect or otherwise. The consequence is, they either cut away timbers, or place the stoves in conjunction with them or boarding. The result is, the stove is too often over-heated, the timbers and boarding become in so dried and heated a state as to cause spontaneous combustion. As Her Majesty's Theatre the fireman on duty smelt fire, which smell must have continued, although he named to his companion all was safe, when, in fact, the mischief was increasing, instead of representing it to proper authorities; and this was probably from an over-heated apparatus. A SUBSCRIBER.

INDIGNATION MEETING OF WORKMEN.

On Wednesday evening a meeting of the whole of the men at present employed by Mr. Freake, of Goswell-gardens, was held at his works, to express the views of his employes, nearly 400 in number, on the recent attempt to turn down by means of Greek fire his property, No. 4, Grosvenor-square. The general clerk of works, Mr. Terry, was elected chairman, and in opening the meeting said they were met to give expression to their opinion as to the dastardly deeds perpetrated by the so-called Fenians, especially in reference to Mr. Freake's house at Grosvenor-square. He considered that those who could so wantonly endanger the property and lives of those who had never done them any harm, murdering poor women and little children, and causing misery in many households, were not worthy the name of men: they were rowdies, utterly reckless of the property of the rich or the homes and lives of the poor.

The following resolution was proposed and carried unanimously:—"That this meeting of men in the employ of Mr. Freake, having been convened by themselves to enable them to express their opinion on the late dastardly outrage at Clerkenwell, which has caused such destruction of life and loss of property, and also on the dastardly attempt to destroy No. 4, Grosvenor-square, the property of our employer, do hereby declare that they can have no sympathy with such inhuman wretches, who disgrace the name of man by such devil-h actions, and who have now by their attacks on private property brought themselves down to our own level, and we can no longer remain passive spectators to the action of

such diabolical agencies, by means of which our wives and little ones are threatened with destruction."

A mason said their employer's interest was their interest—that if his buildings were destroyed, they themselves would suffer by being thrown out of work. He wished all to know that the working man's interest was bound up in the interest of his employers, and he thought that they ought to bind themselves into a committee to watch their masters' interest.

A resolution was then proposed and carried with acclamation that the working men should form themselves into a volunteer watch corps to protect the property of their employers, and in doing so protect their own tools.

A vote of respectful sympathy with their employer was passed, and the chairman was requested to convey the same to Mr. Freake.

The spirit of the meeting, the views expressed, and the ability shown were in the highest degree gratifying.

CONSPIRACY AGAINST ARCHITECTS.

In the case (Manchester, before Mr. Justice Shies) of James M'Master, joiner and builder, Adam Hanning, and Thomas Slater, operative joiners, who were charged with conspiring to defraud Messrs. Pennington & Brigen, architects, Essex-street, Manchester, of the sum of 100*l*., the jury returned a verdict finding the defendants guilty of conspiracy, but recommending them to mercy on account of their previous excellent character.

Mr. Justice Shies, in passing sentence, said the jury had come to a very right conclusion. There could be no doubt that the prisoners had conspired to make the prosecutors pay more money than they admitted to be due. The prisoners took a course which seemed to have been well calculated to coerce the prosecutors into doing what they did not think they were bound in justice and fairness to do. They brought to bear upon the prosecutors the probable hostility of a trades union; but it appeared that that combination had not the remotest connexion with their schemes. He would mitigate the sentence, in consequence of the recommendation to mercy; but he could not do less, in such a community, that sentence each of the prisoners to nine months' imprisonment.

METROPOLITAN BUILDING ACT.

WINDOWS IN PARTY WALLS.

At the Marylebone Police Court on Friday, 13th, the district surveyor for St. Pancras preferred a complaint against Mr. George Ashley, builder, Madia-val, for not complying with the Metropolitan Building Act, through neglecting to erect a certain party wall to the Lichfield Ale Stores, Frederick-street, Hampstead-road, for Mr. B. Taylor.

Mr. W. F. Potter, architect, stated in answer to the summons that a party wall already existed, against which it was proposed to construct a lean-to roof; but inasmuch as there were certain windows in the said party wall, an application had been made to the Metropolitan Board of Works to allow the erection of an iron roof, so as not to obstruct the existing windows, which could not be done away with, and which application had been refused. The district surveyor demurred to this arrangement as that did not get over the difficulty of the party wall.

Mr. D'Eyncourt, the magistrate, said the question was whether the Metropolitan Board of Works had the power to grant the application.

Mr. Potter contended, under the 69th section of the Building Act, the Board had the power to grant applications of this nature in exceptional cases, and this was an exceptional case.

Mr. D'Eyncourt ultimately, after a lengthened controversy, dismissed the summons.

THE EFFECTS OF OVERCROWDING IN PADDOINGTON.

Faith to time some of the members of the Paddockton vestry have called attention to the rapid increase of overcrowding in the parish, particularly in Clarendon-street, Woodchester-street, and Cirencester-street, the property, it was alleged, of one or two vestrymen. Nothing was done by the vestry; but the matter has been painfully revived before the guardians of the poor of the parish. Dr. Markham, Poor-law Inspector, who was present, asked for an explanation of the great and rapid increase in the number of medical orders given to the poor in one portion of the parish as compared with the other. Mr. Goslett, jun., said there was no difficulty in answering the question. In the one district there were Clarendon, Woodchester, and Cirencester streets, which were so overcrowded that diseases of every type rapidly germinated and spread amongst the inmates. This was the reason why in that district 1,220 medical orders had been issued last year; whilst only 212 had been granted in the other division of the parish. Mr. Goslett, sen., corroborated his son's remarks, and added, that last month a crowded division supplied 115 parish patients, whilst the other district only supplied 27. Mr. Hartree, the relieving officer, was questioned. He said the three streets named were in a most dreadful condition. The houses were let to poor people, who had to crowd every room in them with separate families, in order to pay their rents. The Board would be astounded at the number of persons living in one house, which in some cases exceeded thirty. Only one water-closet was found to each house. From his own knowledge of the district he was not at all surprised at the number of medical orders granted. Mr. Ellis, churchwarden, said the houses on the north-west side of Clarendon-street were built close to the canal, and the latter was actually 18 ft. higher than the basement, where human beings had to exist. He strongly suggested that the matter be referred to the sanitary committee, which was agreed to. Dr. Markham, at the close of the conversation, said he was quite satisfied with the reasons given for the great preponderance of sickness in one part of the parish as compared with the other.

* For particulars, see p. 841, ante.

BATHS AND WASHHOUSES.

MARYLEBONE AND WESTMINSTER.

At the last meeting of the Marylebone vestry, an application was read from the commissioners of the parish baths and washhouses, asking permission to excavate under the Marylebone-road, for the purpose of adding to the convenience of the throngs of frequenters to the swimming-baths. Mr. Carr, one of the commissioners, said it was highly gratifying to find the establishments so excellently patronized as they were. The commissioners were so pleased with their efforts were appreciated by the public, that they were about taking steps to reduce the prices still lower. After some congratulatory remarks on the excellent manner in which the baths and washhouses were conducted, and the handsome revenue which they yielded to the parish, the request was unanimously granted.

At St. James's vestry meeting on the same day, the baths and washhouses of that parish were referred to, but in a different strain. The Hon. Frederick Byng complained in strong language that the usefulness of the establishments was almost stopped by the irregular water supply of the Grand Junction Company. On the previous Thursday the supply suddenly, and apparently for no earthly reason, stopped, and the place had to be closed. The next day the supply was resumed, and again stopped. Next day, Saturday, was the busiest day in the week, but no water could be had. All that was done that day was a little mauling and ironing. The vestry had gone to great expense to make the place worthy of public patronage, expending last year no less than \$800 in steam apparatus; but all was of comparatively little use, owing to the negligence or the incompetency of the water company. Several gentlemen endorsed the last speaker's remarks, and the vestry clerk was directed to remonstrate with the directors of the Grand Junction Company, and report the result to the vestry.

ACTION FOR NON-FULFILMENT OF CONTRACT.

PEARCE AND ANOTHER V. BAUGH.

This was an action in the Queen's Bench for a breach of contract, to which the defendant had pleaded about twenty-four pleas.

Mr. Anstey was counsel for the plaintiff, Mr. O'Malley, Q.C., and Mr. Pearce represented the defendant. The plaintiffs are metal workers, in London, and the defendant is an enamel iron plate manufacturer, carrying on business in Birmingham. The original contractor for the completion of the ornamental drinking-fountain at Westminster having failed to complete by a given time, his contract had to be rescinded, and a fresh one was entered into with the plaintiff. Before they completed it they applied to the defendant, who has a patent for enamelling iron tiles, to know by what time he could furnish the required number for the fountain, and upon his representation plaintiffs undertook to finish the work. Defendant failed to supply them within the specified time, and consequently the plaintiffs were unable to complete the work within the time contracted by them, and hence this action. The case principally depended upon a voluminous correspondence, and occupied the court until its rising.

BUILDING CONTRACTS.

In the case *Blake v. Izard and Others*, touching building contract, construction of interest of owner of land in material brought upon the premises to be used in the construction of the houses, and bill of sale, it appeared, that by a building contract it was agreed that all materials brought on the land by the intended lessee should become the property of the intended lessors. The intended lessee entered and commenced building, but obtained no lease.

It was held that the materials brought on the land by him vested in the intended lessors, and were not liable to be taken in execution by a creditor of the intended lessee, and that the agreement was not a bill of sale.

The case is stated in vol. xvi. *Weekly Reporter*, p. 108.

CHURCH-BUILDING NEWS.

Harkstead.—For some time past the chancel of the church here has been closed, it having been restored as a memorial of the late Rev. Ralph Berners, formerly rector of the parish, and it has been re-opened for divine service. When it was determined to restore this part of the church, the rector, the Rev. Hugh Berners, placed the matter in the hands of Messrs. W. Slater & R. H. Carpenter, of London, by whom plans were prepared, and the work was undertaken by Mr. W. G. Cunliffe, of Ipswich, who has carried it out. The old roof has been taken off, and a new one of the same height as that of the nave (from which it is distinguished externally by an ornamental ridge) substituted. The roof is a hammer-beam roof, the principals and purlins being of oak, and the remainder of deal. The chancel roof is divided into three bays, and there being no chancel arch, the westernmost truss has been made to form a quasi arch. The wooden braces spring from carved stone capitals, below which are small columns of Irish green

marble, with bases and annulets of stone. The east window is new. It is in the Decorated style, and has three lights, with geometrical tracery under moulded internal and external arches, resting on carved capitals, supported on detached shafts, those inside being of red cork marble. There are two other windows in the chancel, one in the north and the other in the south wall; each has two lights and tracery, and is set in a deeply-moulded reveal. During the progress of the work the ancient piscina and sedilia were discovered. The vestry, which stood on the north side has been pulled down, and not at present rebuilt, but a stone doorway has been made in anticipation of a vestry. The floor is paved with Minton's encaustic and plain tiles, arranged in various patterns. Externally, the walls have been refaced with black flints, chopped to a face and set in cement. The buttresses and string courses have been rebuilt with Ancaster stone, and the gable is surmounted by a stone cross. The priest's door has been restored. The stonework has been executed by Mr. J. Frewer, of Ipswich; and the carving by Mr. Forsyth. The cost of the restoration is about 6000l.

Llanerdd.—The church here, which has been in ruins for a considerable time, has now through the exertions of the incumbent, again been made suitable for divine worship. It is an interesting structure, and is delineated in the "Archæologia Cambrensis." The approach is over the fields, which occasionally causes considerable inconvenience. The church comprises a nave, chancel, and north transept. Messrs. Kennedy & O'Donoghue, were the architects employed in the restoration.

Aberffraw.—The church of Aberffraw, North Wales, was partially repaired some thirty or forty years ago. But as the arrangement of the interior was then left unfinished, and repairs of an extensive nature being required, the present incumbent has instructed Messrs. Kennedy & O'Donoghue to prepare plans, and has entered into a contract exceeding 1,000l., the whole of which he purposes defraying at his own expense. The church consists of a nave and north aisle of equal lengths. The chancel, formed at the end of the nave portion, is divided by a series of arches and columns, the bases of which had been buried. By lowering the church floor as intended, these will be brought to their proper proportions. There is at the west end a richly ornamented Norman arch, in excellent preservation; this arch is supposed to have been the access to a tower, formerly attached to the church. A new robing-room and porch are to be added.

Llanarmon.—The state of the church here having for some time been such as to require repair, the incumbent has had plans and specifications from Messrs. Kennedy & O'Donoghue, and is actively employed in raising funds for the work.

Bryngwran.—The church of Bryngwran has undergone a repair, and partial re-arrangement, and has been provided with a new pulpit and reading-desk. Messrs. Kennedy & O'Donoghue were the architects consulted.

Llanfaglan.—The present parish church, which is placed at an inconvenient distance from the bulk of the population, is to be kept up as a place of burial, and plans for an entirely new building have been prepared by Messrs. Kennedy & O'Donoghue. The edifice is to be placed so as to afford the requisite facility for attendance to church-goers in this parish, as well as in a neighbouring populous district, which forms part of the parish of Llanlleblig.

Redgrave.—The old church of St. Botolph, at Redgrave, has recently undergone a renovation. A new open timbered roof of Memel fir, supported on principals, with carved collars and braces, resting on carved stone corbels, representing various angelic figures, has been erected. The interior boarding of the roof is stained and varnished, and the exterior is covered with slate. A brick parapet on the south side has been entirely removed, the new roof being carried over the walls, and terminated with moulded gutterings. The south wall, which presented a very motley appearance, being patched with plaster and mortar, has been restored and re-pointed. The stonework of the windows has also undergone a renovation, and the chancel floor has been re-paved with Minton's tiles. The work has been executed by Mr. C. Bishop, of Diss.

Runsell.—The church of this parish has been re-opened for divine service. The whole of the interior, excepting the roof, has been renewed, by designs of Mr. F. Chancellor; and the work has been carried out by the contractor, Mr. James

Baker, of Chelmsford. The main features of the alterations are the removal of a gallery which blocked up the tower arch and also a window at the west end in the tower; the substitution of open benches, all of pitch pine, with carved heads, in place of the old pews. There is also a stone pulpit, furnished by Mr. Wray, of Chelmsford; and an oak lectern, reading-desk, and stalls in the chancel; also a fine ancient oak screen, with tracery work tolerably perfect, which has come out well, the paint, &c., having been rubbed off. The space within the communion rails is paved with encaustic tiles, and the other parts of the church with blue and red Staffordshire tiles laid in cement on a 6-in. bed of concrete, with which the floor of the church is covered throughout. The carved heads of the benches, each of a different design, have been executed by Mr. Polley, of Coggeshall.

Trent (Somerset).—The Seymour Chapel, which forms the ancient chantry chapel of this parish, but now connected with the church, has been restored, at the cost of Mr. H. D. Seymour, M.P., as a memorial of his late father. The ancient work is of a beautiful Early Decorated type, but there are remains of the original Early Pointed work. The north wall has been rebuilt, and has a series of coupled windows, under richly moulded internal arches. Under these windows are two moulded recessed tombs, one of which has a magnificently sculptured figure of a knight in full armour, of Edward I.'s time. The other is a figure of a civilian of about the same date. The roof is of oak, and of a pointed form, with moulded ribs dividing it into panels, with carved and sculptured brackets under. The floor is laid with Poole tiles. The architects were Mr. W. Slater and Mr. R. Herbert Carpenter; and the contractor, Mr. Clarke, of Bruton; the clerk of works being Mr. J. Farrall.

Harwell.—The church here has been restored and re-opened. The estimated expenses of the restoration are calculated to be 1,300l. The main features of the work consist in the removal of the old-fashioned stained deal seats; new oaken pulpit, lectern, and reading-desk; the removal of the organ from the gallery, and the placing of seats for the choir in the chancel. The removal of the organ-gallery displays the Norman arch of the ancient belfry. The interior and exterior of the edifice have been renovated throughout, and further improvements were contemplated in the chancel.

Rousham.—The chancel in Rousham Church has been re-built. The east and side windows were the work of Mr. C. Blackmore, of London; and the chancel is floored with Minton's encaustic tiles. The double piscina has been replaced, and a credence-table, copied from it, placed on the opposite side.

Thorne and Hatfield.—The foundation stone of a new church has been laid at Sykehouse. The ancient chapel of the place had become so ruinous that it was a matter of necessity to take it down, with the exception of a brick tower, which had been added to the chapel about 100 years ago, and which will be made to harmonise with the new structure by the introduction of windows of a better character, the addition of a spire, and some other details. The plans of the new church have been furnished by Mr. C. H. Fowler, architect to the Dean and Chapter of Durham.

Kendal.—The reredos at the parish church, a contribution by Mr. F. A. Argies and Mrs. Argies, has just been completed. It is of Caen stone. The centre part, from the floor to the bottom of the east window, consists of nine Pointed Gothic arches, surmounted with a cornice and crest. The arches are supported on pillars, the shafts of which are of polished Kendal Fell marble, of dark brown colour, with the exception of the two arches immediately behind the altar, which terminate in bosses. On each side of the window rising to a considerable height is a pillared niche surmounted with a carved canopy. A fretwork of foliage, fruit, and other imagery interlaces the various parts of the screen. The colour of the stone differs little from that of the walls of the church, alongside of which the erection runs. The architect was Mr. J. S. Crowther, of Manchester; and the work was executed by Messrs. Ellison & Hinchcliffe, of Manchester. The cost is supposed to be about 300l.

Fulwood.—A new pulpit, of Early Decorated character, has just been presented to Fulwood Church by Mr. Henry Isaac Dixon, one of the churchwardens. Its plan is polygonal, and it is constructed of oak, with banded shafts of black

oak at the angles, the caps embellished with conventional carving, and the cornice enriched with carvings of low relief. It stands upon a moulded base of Eyam-moor stone, and has been executed by Mr. Arthur Hayball, from a design by Mr. J. B. Mitchell-Withers. The church is now lighted by artistically-wrought glass standards, manufactured by Mr. Thomas Brawn, of Birmingham, and other improvements are in contemplation.

Saffron Walden.—The parish church has just been embellished by the decoration of the east wall of the chancel, and by the addition of a carved reredos, executed in Caen stone by Mr. J. Forsyth, of London. This reredos extends the whole length of the chancel; but the centre portion has five canopied spaces, in which are introduced sitting figures painted on a background. In the centre panel our Saviour is represented with the right hand in the act of benediction, and the left holding the orb. The figures of St. Matthew, St. Luke (the good physician), St. John (the beloved disciple), and St. Mark, occupy the panels on either side. The figures and the wall decorations are the work of Messrs. Ward & Hughes, of London, by whom also the stained glass in the east window was recently executed. The designer of the reredos and also of the decoration was Mr. William Smith, of London; and the whole has been carried out under his direction. The whole is a memorial of a lady named Mrs. Taylor, deceased.

GLASGOW ARCHEOLOGICAL SOCIETY.

THE ROMAN INSCRIPTION.

THE annual general meeting of this society was held on the 16th inst. Mr. Sheriff Strathern occupied the chair. On the tables around the room were a selection of interesting objects from the valuable collection of Mr. Adam Sims, including the key of the Glasgow Tolbooth, the tongue of the old bell at Biggar, the cap and handkerchief of King Charles I., &c.

The Chairman, in the course of a few introductory remarks, said it was wonderful, in this great community, how few really took an interest in the science of archaeology.

Mr. John Buchanan afterwards read a paper on "Inscriptions upon Stones found in the Old Roman Wall between the Clyde and Forth," particularly on a slab recently discovered near the Castlehill Station, a few miles north of Glasgow, of which he exhibited a cast. Mr. Buchanan said that there was some risk that the slab might not be allowed to remain in Scotland, its proper home, but sent to America. Its discovery was quite unknown to the Glasgow public till within the last few weeks [probably through our pages], so no active steps were taken towards having it deposited for preservation in some public institution here.

We trust the society will now take steps to prevent the removal of the slab.

Books Received.

THE last edition of the old original "Boy's Own Book" is published by Lockwood & Co. It has been revised and considerably added to, so as to bring it up to the level of the present day. For nearly a quarter of a century it has held its own, and seems likely to do so for years to come.—"What's his Name" is the title of Cassell's Annual for Christmas, 1867; in other words, an extra part of "Cassell's Magazine." It contains stories by a dozen writers, with cuts, and all for sixpence.—"Dietrichsen's Royal Almanac," in its 31st year, continues to present its very large amount of official and other information. Its lists of governing bodies of colonies, of fairs, the British consular service, &c., &c., give it value.—"The City Diary" (Collingridge), in addition to the matter ordinarily given in a diary for the week, contains a considerable amount of official information with regard to the City, carefully compiled and well arranged. It is a complete guide to the various business offices of the Corporation and City generally. The space for daily entries might usefully be a little larger.—"The Messrs. Lettis, who received a silver medal at the late Paris Exhibition for their Diaries and Account Books, send us two or three of their publications, part of a very considerable series. The "No. 12 Enlarged Diary," though a small book, gives plenty of

room for each day's entry, and is otherwise recommendable.—"Gottlieb's Register and Almanac" has now reached its twenty-seventh year.—"The Railway Almanac for 1868," on a sheet, presents especially a Directory of Railway Officials.—"The Publisher's Circular," for December 10 (No. 725; Low & Co.), contains specimens of a large number of the new illustrated books of the season, and forms a remarkable pamphlet, buyable for a shilling. It shows, one is forced to say, the dead level of mediocrity to which woodcut illustrations have fallen, and the knowledge thus enforced may not be the least of the advantages resulting from the publication of "The Circular."—Recent Marine, Hydraulic, and Sanitary Engineering in Scotland: an Address to the Royal Scottish Society of Arts, November, 1867. By George Robertson, C.E., F.R.S.E., President of the Royal Scottish Society of Arts. Edinburgh, printed by Neil & Co. In this address the progress of various engineering and sanitary works of late years in Scotland is reviewed, such as the Loch Katrine water supply of Glasgow; the Granton and Leith Docks, near Edinburgh; the Dundee Dock improvements, &c., and sanitary improvements in various towns; to most of which engineering and sanitary works we have already from time to time adverted in the *Builder*.

Miscellaneous.

ARBITRATION IN TRADE DISPUTES.—The members of the Amalgamated Carpenters' and Joiners' Society at Manchester, have passed a resolution in favour of the adoption of arbitration in the settlement of trade disputes, and of appointing delegates to the proposed court of arbitration.

THE LIVERPOOL MASTER BUILDERS' DINNER.—The members of the Liverpool Master Builders' Association held their first annual dinner on Wednesday in last week, in the Liverpool Limited Restaurant, New Exchange-buildings, under the presidency of Mr. Thomas Haigh. About 100 gentlemen sat down, and among the number were Messrs. Samuel Holme, jun., and A. Parker (vice-chairman), Messrs. Landale, W. Jones, jun., Urmon, Radcliffe, Pickup, Goodall, Bromley, A. Holme, W. Witter, Tomkinson, Tanner, Roberts, Hughes, and Lyon.

THE CHESTER NEW WATER SUPPLY.—The Chairman of the Water Works Company, the Mayor, two directors, and Mr. Dugdale (resident engineer of the company), have inspected the reservoir for the new supply, and the building recently erected opposite Huntington Brook, beneath which the river water enters into the new pipes, which are carried to the old works at Barrel-well. The water, in the first place, enters into the well beneath the building, at the higher source, through gratings of copper, and is conducted by large pipes, as we have before stated, to the Barrel-well works, from whence it is afterwards pumped for the use of the city. The Mayor turned on the supply.

PORTSLADE CHURCH.—A movement was recently made to restore the parish church of Portslade, or to make certain alterations; and the vicar, the Rev. F. G. Holbrooke, obtained subscriptions, amounting to 402*l*. Estimates were submitted; and a vestry meeting was called to determine what should be done, when the whole scheme was resisted, by Mr. William Hall, of Shoreham, who is owner, as trustee, of the Rectory and Manor of Portslade. An amendment against the alterations was proposed by Mr. Hall, and the result was: for the amendment, 97; against, 66; majority for the amendment, 31. The restorations are, therefore, abandoned for the present.

INCOMBUSTIBLE WOOD.—According to M. Schatteman's experiments, says *Galignani*, there is an easy and cheap way of rendering wood incombustible: it consists in coating it with chloride of lime [chloride of calcium seems to be meant, which is a different thing from chloride of lime]. It is true, he continues, this will only protect the surface, but it will prevent the flames from spreading. The operation [with solution of the chloride] should be repeated twice with a common white-washing brush. The cost is at the rate of about 5*fr*. per 100 square metres, the liquid costing 1*fr*. and the rest being the man's wages. Where chloride of lime cannot be had, it might be made by treating chalk with hydro-chloric acid.

CANDLEPS FOR THE GATHERING.—A wax myrtle grows in Louisiana from which berries enough may be gathered in a day to make 8 lb. of tallow, which is much harder and purer than common tallow.

NEW BRIDGE ACROSS THE TYNE.—Contracts have been advertised for the erection of a new bridge across the Tyne, at Redhugh. It will more closely connect the west of Newcastle with the west end of Gateshead.

CHESTER CATHEDRAL.—The nave of this cathedral has, for the first time within memory, been made available for divine service. The cathedral had been closed for some weeks in order that the preparations for the service, which has now taken place in the nave, and some necessary internal refittings, might be accomplished. The Dean announced in his sermon that the Chapter had expended in fitting up the nave for these services the whole of the funds which had been saved in past years for the much-needed restoration of the cathedral.

RE-BUILDING OF HOLY TRINITY CHURCH, DORCHESTER.—The designs have been exhibited at the Town-hall, where they have been inspected by a large number of persons interested in the scheme. There are in all twenty-five sets of drawings now before the committee. The committee met in the Council Chamber, when half a dozen of the most likely designs were selected and examined. There seems, however, to be a difference of opinion existing in the committee as to the style of building which it is most desirable to provide. The final selection was to take place at a subsequent meeting.

A LIFT AT THE HIGH LEVEL BRIDGE, NEWCASTLE-UPON-TYNE.—A meeting has been held in Newcastle for the purpose of carrying into effect a proposed "lift" to the High Level Bridge from the Close. The "lift" is intended not only for passengers, but also for horses and carts (loaded and unloaded), and cattle of every description. At present the heavy hills leading to the upper part of Newcastle make severe work for horses. The tolls will be one penny per person, 3*d*. for each carriage or vehicle, 4*d*. each for oxen or other large animals, 1*d*. each for pigs, sheep, lambs, or other small animals, 4*d*. per cwt. for goods, and so on in proportion. The company, it is expected, will receive extensive patronage.

THE CANTERBURY DRAINAGE WORKS.—The contractors for the new system of drainage in this city (Messrs. Dickenson & Oliver, London), are making efforts to complete the work by next spring. Operations commenced in the marshes alongside the Broad Oak-road, where filtering works have been erected. The building is 168 ft. long, 60 ft. wide, and 7 ft. deep, and into it will be conveyed the whole of the sewage of the city. The liquid manure will escape by an outfall drain into the river below Fordwich, and the residue, utilised with approved apparatus, will form a source of revenue. The outfall sewer has been carried across the marshes into the Starry-road, and is to be continued to the outfall point on the river beyond Fordwich. Working back to the city, a brick cemented sewer has been laid in St. Stephen's-road, and workmen are engaged in draining St. Peter's-lane, &c.

UTILIZATION OF THE WEST HAM SEWAGE.—A scheme has been proposed by Captain William Russ, and approved of by Messrs. Lucas & Wilkinson, of Westminster, engineers, for the utilization of the sewage of the West Ham district, which is at present discharged into the Lea at Blackwall, causing a considerable nuisance. It is intended to carry the sewage to Hainsault Forest, where land has already been secured for the discharge and utilization of the whole of the sewage; and as the promoters would only be bound to give a certain quantity, market-gardeners, who abound on the route, could also be supplied with the surplus when they require it. As the matter stands, a farmer at Hainsault has agreed to give 2*l*. per acre for 300 acres the first year, and for 600 acres thereafter for twenty years, and to take any residue that may be given. The estimated cost of the proposed works is as follows:—

About seven miles of forcing mains, including compensation and laying, at 4,500 <i>l</i> . per mile.....	£31,500
Additional engine-power, &c., say	8,500
Legal engineering, and contingencies	5,000
Total	£45,000

On this outlay 9 per cent. per annum is calculated on, in addition to the saving of the entire cost of the present pumping into the Lea.

KIDD'S SAFETY APPARATUS FOR PIPES.—The object of this arrangement is to prevent the bursting of water-pipes by pressure or frost; the pipes are emptied automatically. A description and blocks have been forwarded to us, but we cannot afford space for them.

DIRECT REVENUE OF PARIS.—The annual report issued by Baron Haussmann, Prefect of the Seine, shows that the total direct revenue of the city of Paris amounted during the year ending 30th September last, to 89,238,752 fr., divided as follows:—Land-tax, 10,995,702 fr.; furniture-tax, 6,424,989 fr.; doors and windows, 17,298,587 fr.; and licences to trade, 17,298,587 fr.

UTILISATION OF COKE OVEN GASES.—An attempt to utilise the gases given off in the process of coking has been made at the works of Messrs. Carver & Co., of St. Etienne. The gases are collected and drawn off through pipes, and cooled, when the tar, ammoniacal liquids, &c., are condensed. From these condensed liquids benzine, naphthaline, sulphate of ammonia, artificial manures, and a number of dyestuffs are made. The gas remaining after condensation of the liquids, and which is, of course, ordinary illuminating gas, can be used in the usual manner.

POLLUTION OF WATER.—When a well is supplied with water which percolates through the earth, and does not flow through any defined channel, although the owner of the well is not entitled to the water until it actually enters his well, the occupier of adjoining property will be restrained from using a cesspool therein in such a manner as to pollute the water coming through his property and supplying the well. This was the holding of the Master of the Rolls, in the case of *Womersley v. Church*, which was a suit for an injunction to restrain the use of a cesspool upon the defendant's premises (near Norwich) in such a manner as to pollute a well belonging to the plaintiff.

THE PROPOSED EQUALIZATION OF METROPOLITAN RATES.—A deputation on this subject from the Metropolitan Asylum District Board, has had an interview with the Poor-Law Board. After listening to the remarks of the deputation, recommendatory of a more equitable mode of rating throughout the metropolis, and as to another and temporary question relating to the Asylum Board, the Earl of Devon said the importance of the question of rating could not be exaggerated, and it was receiving the closest attention of the Poor-Law Board; but he would not express any views hastily, and could only assure them that the question would continue to receive the utmost attention of the Board.

EAST LONDON MUSEUM OF SCIENCE AND ART SITE BILL.—We have received a letter from M. Antonio Brady, one of the promoters of this Bill, in which he explains that there was no such difficulty as that supposed which led to the throwing out of the Bill, inasmuch as by Royal Charter of 27 Vict., the Department of Science and Art have authority to accept any trust for the furtherance of science and art; and that all that the Bill was intended to do was to enable the three gentlemen named in it to make over the site in question to that department for the purposes named. The promoters and the Government, in pressing the Bill forward, had hoped to provide labour during winter for many working people now idle. On the re-assembling of Parliament the subject will be again brought forward.

ADVANCED EDUCATION FOR GIRLS IN PARIS.—An association has been formed to afford an opportunity to the female children of Paris to obtain secondary education, the members being professors of the universities or of public or private schools, including M. Milne Edwards, and other members of the institute, to whom are added M. Viollet-le-Duc, the architect and inspector-general of historic monuments, and one lady, Madame Pape-Charpentier, directress of the normal classes of the Salles d'Asile. The courses, which occupy three years, will include literature, history, geography, domestic economy, the elements of jurisprudence, natural sciences, physics, and some branches of mathematics. There are to be two terms per annum between the 1st of December and the end of May. In the three years the pupils will have gone through nearly the whole course of instruction given at the Lycées, and may obtain on examination the same diploma as is given to the young men who have finished their education at a lycée in a satisfactory manner.

TRANSATLANTIC ITEMS.—In St. Paul, Minn., 410 buildings have been erected during the past year, at a cost of 712,860 dollars.—Nearly 500 buildings have been erected at Davenport, Iowa, during the last twelve months. The total expenditure in buildings and improvements is estimated at 1,207,950 dollars.—A Yankee speculator has bought an island in the Ohio river and stocked it with black cats, to raise the animals for the sake of their furs. What will he do with the carcasses? Sell them as American rabbits?

SOCIETY OF ENGINEERS.—At the ordinary meeting of this society, held on Monday, the 16th inst.—Mr. W. H. Le Feuvre, president, in the chair,—a paper was read by Mr. James Gresham, "On the most Recent Improvements in the Injector;" after which a discussion on the paper took place. The president announced the names of the president, vice-president, and council for the ensuing year. The names of four candidates for election as members were announced. Council, 1868:—President, Mr. B. Latham; vice-president, Mr. F. W. Bryant. Members of council—Messrs. J. H. Adams, W. Adams, D. K. Clark, J. Hendry, C. J. Light, W. Macgeorge, W. Naylor, V. Pendred, F. C. Reynolds, and W. Wilson. Mr. A. Williams, hon. sec. and treasurer. Mr. P. F. Nurey, auditor. Mr. G. W. Harris, secretary.

ARTESIAN WELLS.—Mr. G. A. Shufeldt, jun., by whom the Chicago Artesian Wells were bored, states, in the *Scientific American*, that the wells are now 711 ft. in depth; they commenced filling with water at a distance of 10 ft. from the surface, and continued full all the way down; whence he asks—Why did not the centrifugal force throw this water out? and why was no water discharged until the drill had penetrated a particular subterranean stream? Before this point was reached there was plenty of water in the wells, and we could pump out an abundant supply; and this is true of hundreds of other artesian wells scattered throughout the country: they do not discharge the water above the surface, but plenty of it can be obtained by pumping. He adheres to the opinion that water, in flowing wells, comes from a higher source, and is not thrown out by the earth's centrifugal force.

REMOVAL OF HOUSE FIXTURES BY BUILDERS ON LEASEHOLD LAND.—Neal Saunders, builder, South Norwood; Joseph Neal, bookkeeper, Mile-end; and Benjamin Cooper, builder, Addiscombe, have been committed for trial, charged with unlawfully and maliciously removing certain fixtures belonging to houses on land in Birchanger-road, Croydon, of which Mr. John Jones, of Enmore Park, South Norwood, is the freeholder. One portion of the land had been let on lease to Saunders, who had erected, or was erecting, twelve houses on it, and on this property money had been advanced by Mr. Jones and another gentleman: from these houses a considerable portion of the fixtures had been removed. Neal had six houses in course of erection, and money had been advanced on them: these had been levelled to the ground. Cooper had also some houses on the land, and these had been torn down and parts removed. Mr. Jones claimed an interest in all the houses not as freeholder only. A false report, it was said, had got abroad that Mr. Jones was bankrupt.

PHOTOGRAPHY ON PORCELAIN OR GLASS.—The following curious method of transporting photographs on to ceramic surfaces has just been patented by M. Grune. The usual negative on glass is coated with a fusible glass by the heat of a common cupelling furnace, and the image is thus protected and positives are got from the negative by collodionising the image side of the negative in a dark room with iodised collodion; and after it is developed it appears in reduced silver. Before the collodionised surface is quite dry, a sharp point of a needle is run all along the borders, and the plate is then immersed in water containing 5 per cent. of glycerine. The film of collodion soon floats on the liquid. The film is taken out when wanted, and its silver surface changed to gold by chloride of gold, or to the appearance of steel by chloride of platinum, &c., after which it is dipped into a solution of metallic salts, which, by the action of fire, will yield certain colours according to the operator's wish. The film is now carefully laid on the porcelain or glass to be adorned; and it sticks by means of diluted glycerine and a soft brush. It is then coated with a vitreous flux, and becomes permanently fixed in the furnace.

WORTHING SURVEYORSHIP.—There were sixty-seven candidates for this office. Ultimately the Board elected Mr. John Ellis, late town surveyor for Harrogate, Yorkshire.

DESTRUCTION OF ST. PAUL'S CHURCH, CLIFTON, BY FIRE.—At midnight on Sunday last, St. Paul's Church, in the very centre of Clifton, Bristol, was totally destroyed by fire, the only things saved being the registry book, the communion plate, and the vestry furniture. The incumbent estimates the damage at upwards of 5,000l. The fire originated from the chamber of the heating apparatus being overheated.

PARTIAL DESTRUCTION OF A CHURCH.—The coast at Hunstanton, St. Edmunds, has been visited by a very severe gale from the north. The whole of the gable of St. Edmund's Church has been blown down, leaving about 6 ft. of wall standing. The church, which has been built about two years, consisted only of the chancel, and was intended, as soon as funds would allow, to be completed.

DISASTROUS EXPLOSION OF FIRE-DAMP.—An explosion of fire-damp has occurred in a coal-mine at Blangy (Saône-et-Loire). Two galleries, in which some men were at work, behind the spot where the disaster occurred, were obstructed by the *débris*. Eighty dead bodies had already been got out. The Emperor, on hearing of the disaster, forwarded 10,000 fr. to be distributed amongst the families of the victims.

THE THAMES EMBANKMENT.—At the last meeting of the Metropolitan Board of Works tenders were opened for making and erecting wrought-iron trussed girder bridges for the Thames Embankment and steam-boat piers. Fourteen tenders were opened, out of which the offer of the London Engineering and Iron Ship-building Company to do the work for a sum of 2,359l. 2s. 4d., was accepted, subject to the usual inquiry.

MOSAIC PAVEMENTS.—The widow of the late Dr. Woollaston has presented to the Art Library of South Kensington Museum a valuable series of drawings of Greek and Roman mosaics to be found in Spain, France, Pompeii, Prussia, Hali-car-nassus, Switzerland, Rome and Italy generally, Constantinople, Carthage, and also in various counties of England, which had been executed for Dr. Woollaston. We are glad to have been personally instrumental in leading to their deposition at South Kensington.

LUCIFER MATCHES.—The following particulars concerning matches are gleaned from a paper lately read to the Société des Ingénieurs Civils, by M. Féligny. It has been calculated that the number of matches consumed in France is about six per head per day; it is eight in England, and nine in Belgium. Taking the French average as a basis, the number of matches consumed all over Europe in a day is about 2,000 millions, representing upwards of 600lb. of wood. The kinds of wood chiefly employed in manufacturing them, viz., aspen and poplar, are sold by the cubic metre (35 cubic feet). Allowing for waste, this quantity does not weigh more than 500lb.; so that in Europe alone the number of cubic metres of wood thus burnt amounts to 400,000, being equivalent to 14 millions of cubic feet English measure. To this quantity should be added that of the stearine matches commonly called vestas, the consumption of which has of late increased very considerably.

TENDERS

For house and offices, Elephant-buildings, Newington, for Mr. E. H. Rabbitts, Mr. Witherden Young, architect. Quantities by Mr. Nicholls:—

Colls & Son	£2,370 0 0
Tarrant	2,276 0 0
Higgs	2,273 0 0
Rider & Son	2,260 0 0
Thompson	2,220 0 0
Bird	2,248 0 0

For Female Training College, Cheltenham. Mr. J. T. Darby, architect.

Broom & Son (accepted)	£4,474 0 0
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For Ventnor Main Sewerage.—Contracts No. 5 and No. 6.—Mr. John G. Livesey, C.E., engineer. Quantities supplied by Mr. Augustus F. Livesey:—

	Contract No. 5.	Contract No. 6.
Phillips	£238 9 0	£218 5 0
Wainwright	510 0 0	890 0 0
Moses & Walder	600 0 0	370 0 0
Moxon	465 0 0	285 0 0
Frayne (accepted)	478 9 0	284 10 8
Beavis & Son	470 0 0	360 0 0
Pharoah	450 0 0	308 0 0

The Builder.

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*Something of what
has been done
in 1867.*

TOGETHER, the year that has but a few more days to run has been a busy one. It would almost seem that as the world gets older it is beginning to make better use of its time. There appears to be a

wider-spread, more serious, more hearty determination to improve the condition of

things generally. Acceleration of pace in all things is the tendency of the day. The great human family is getting so large, requires so much food, so much clothing, so much housing, that the time for taking things quietly has gone by, and incessant activity, or co-operation in some form, is required on all sides. Instead of a thousand years being as a day, a day must be as a thousand years with us. Let us look back upon some of the year's work. Altogether, as we have said, it has been a busy year. Satisfactory, fruitful, initiatory work has been done in it. We sent out representatives to the Great Exposition, Paris; to the Congress at Antwerp; to the Sanitary Conference at Weimar; we had great gatherings of our own at Belfast and Dundee, for the consideration of social and scientific matters; we received the Belgian volunteers, the Sultan, and the Pacha of Egypt; the old-acquainted Eisteddfod was held at Carmarthen; divers architectural and archaeological societies moved hither and thither, in prosecution of their studies; various minute investigations into causes that affect the public health have been made by Government officers; we have had some trial of the working of the new Sanitary Act; several towns that have hitherto held out against the adoption of constructional sanitary works have complied with this great necessity; we have had a second essay of a Natural Portrait Exhibition; and several important public buildings have been designed, while progress has been made with those in hand.

It has been a year of especial attention to workhouses and their infirmaries, not bestowed, as we have often urged, before it was crying needed. The Clerkenwell guardians of the poor determined to erect a supplementary establishment at Holloway; those of St. Martin's-in-the-Fields commenced to carry out their intention to build a similar retreat for 400 old men and women at Wimbledon, at a cost of 25,000*l.*; and those of Marylebone have built new casual wards. St. Pancras, too, has taken steps towards building an infirmary at Highgate. The Bangor and Beaumaris Union resolved on a new hospital; handsome prizes were offered for designs for a new workhouse at Penkridge; Hertford set about accomplishing a new workhouse and infirmary; Burnley Union resolves upon a new workhouse; men have been employed the live-long year over a new workhouse at Morpeth; Durham has stirred itself to enlarge and improve its workhouse accommodation; Newport Union has bethought itself of an infirmary; Darlington has issued an offer of prizes for designs for a

new workhouse, having previously offered a small sum for designs for the extension of present premises; among other cases, the guardians of Gravesend and Milton are also putting their poorhouse in order. Lewes Union is far advanced in a project for a new workhouse; the Bristol guardians are busy over a new hospital for their union-house; Brentford is busy building additional casual wards, as is the City of London Union; Birkenhead intends new schools for High Tranmere workhouse; Whitechapel Union has building works on hand.

It has been a year, too, of some private munificence for public objects. The Mayer Museum, rich in Medieval works in gold and silver, gems, Anglo-Saxon antiquities, and illustrations of Wedgwood, has been presented to Liverpool. The Marquis of Westminster has presented a park to Chester; and Preston in also indebted to a liberal giver,—the late Alderman Miller,—for one of its three new public parks. At Stockwell, Mrs. Hillyard laid the foundation-stones of three homes for fatherless boys, towards the cost of which she contributed the sum of 20,000*l.* A museum has been given to Salisbury, by Mr. William Blackmore. Admiral Kelly bequeathed 80,000*l.* for the establishment of a college in Devonshire. Baron Ferdinand de Rothschild has taken the preliminary step of purchase of a site for a new hospital in Southwark Bridge-road. The Earl of Dudley has given a fountain to Dudley. Mr. M. T. Bass presented a recreation-ground to Derby. Mr. Alfred Harris gave 3,800*l.* for the foundation of a fever hospital at Bradford; and many open hands have given round sums of 1,000*l.* each for various building purposes of a charitable basis.

The borough of Liverpool wisely laid out 200*l.* in stimulating the thoughts of trained minds towards the production of good dwellings for the labouring classes; though how it may result is not yet certain. On the other hand, at Wigan, fifty cottages were put up for competition—plans and tenders indiscriminately—without any attempt to make good use of an opportunity seldom occurring. Labourers' dwellings, we perceive, are now incorporated, very properly, as one of the features of flower-shows. What could be a prettier object in a nobleman's garden than a model cottage for his head gardener, or a dozen model cottages for his dozen labourers? We suggest, here, by the way, that designs for lodges, drinking-fountains, garden-seats, and so on, should occasionally vary the list of objects. The project of growing fruit upon glass walls might be tested by offers of premiums, and sums might be apportioned for the trial of experiments likely to result in any increase in the production of fruit or vegetables, such as the *cordon* system. These institutions might be made more useful than they are.

There have been several important competitions in the course of the year. The public interest in the competition designs for the National Gallery extended into the early part of the spring; the competition for the New Law Courts, in London, belongs exclusively to it. We have also had competitions for the London Orphan Asylum; for Manchester Town-hall; for the Middle-class School, Bedfordshire; and there have been others for the laying out of several estates,—Sefton Park among them. The protection of the headland at Hartlepool has been thrown open to the profession; the ferry landing-stages and steps of the Wallasey and Liverpool ferries have also been submitted to competition; and suggestions and plans for the disposal and removal of snow have been sought by the offer of premiums. Among the miscellaneous works for which competitive designs were invited were the parish church of Ryde; the Corn Exchange, Luton; the Plait-hall, Luton; the Town-hall, Grantham; Dorchester Church; new offices for the Board of Works, Poplar; offices and vestry, West Ham; the clock tower, Leices-

ter; the Orphan Asylum, Worcester; the cemetery chapels and lodge, Biggleswade; the Memorial of the Countess of Ellesmere; the new chapel for the County Asylum, Derby; and some other churches and chapels. Besides these a very large number of new works have been executed from designs that were not selected from public competition. Thus, we note Coventry is to have two more churches, albeit, it has already "three tall spires; Taunton is to have a college school; Armley, Leeds, is compassing a new church, as are Cassop-cum-Quarrington and Coxhoe, near Durham; Marsden, near Huddersfield; Workop, near Nottingham; New England, near Peterborough; and Ramsden, near Basingstoke, among other places. Rochester is to have a cattle market. Schools, too, have been building in quiet little villages and busy manufacturing towns,—at Barfreston, in Kent, famous for its delightful little Norman church, and bustling Birmingham, to wit. Doncaster, Wouldham in Kent, can also boast progress in new schools. And the work of restoration of ancient churches has by no means been standing still. With regard to the character, management, and results of some of the competitions of the passing year, there has been the usual amount of dissatisfaction. Those that are thrown open to the profession with the promise that professional advice will be sought to assist in the selection of the prize designs; those which are limited to a certain number of architects, with the understanding that the author of the selected design shall carry it out; those in which equal sums are offered to a limited number of competitors from whose designs one will be selected for execution,—all give a certain amount of vexation; but those thrown open to the architectural public with no promise or intention of taking any professional advice in the selection of the premiated designs give still more. With the first-mentioned class there is, however, but little real cause of complaint. Provided that it is a national work, perhaps there is not a better plan than to permit any one to enter the lists who chooses to do so. It is open to all to measure their own strength, and refrain from competing, if it be not of an order that justifies the so doing. The certainty of fairness and acumen in the selection divests competitors of any grievance. Those who do not win may be assured that those who have done so have either complied more strictly with the instructions or are more skillful in their art. The second class is not so satisfactory as the third. An invitation to a limited competition is a special call upon an architect to leave his ninety-and-nine sheep to look after this one. It appears therefore only reasonable that a fixed sum should be offered to such competitor as some recompense for the trouble that must be the cause of neglect to other work. These classes have only the disadvantage that an outsider, be he ever so talented or acquainted with the description of building with which the competition deals, has no chance of affording what might be a really better design than the chosen competitors could furnish. It is, however, on the score of the third class that we continue to receive note after note, chorus after chorus, of dissatisfaction. The tenor of most of the communications addressed to us on this score runs in this way:—Nothing can be too bad to say of it. To comply with its terms is to be deluded and disappointed. When there is no professional advice sought, there is no accurate knowledge of the question present at the councils that are to judge it, and it becomes little more than a mere matter of personal favour who is to have the premiums. This is, of course, most strikingly the case in the matter of country competitions. Is it a Tappington Butts competition? Then a Tappington Butts man will get the prize. If there be more than one architect in Tappington Butts, then he who has the

largest number of friends in the body offering the premium will get it. Are there more prizes than one? Then the "local man," as he is familiarly called, will get the best of them. And so on through every phase of the question. Sometimes, moreover, justly; the local man knowing best what is wanted.

There has been but little said of late about baths and washhouses, but that little has been eminently satisfactory. St. Pancras has laid out some 10,000l. on a new building, with every appliance of the most modern description. This establishment will be opened in a week or two, and promises great advantages to that extensive parish. The Marylebone baths and washhouses have not only paid their own expenses, but yield an income of a thousand pounds per annum to the parish. Here is a profitable field for philanthropic speculators, not to say for those who have an eye for profit solely.

The places that have set themselves to the task of re-arrangement upon a sanitary basis, as far as constructional works are concerned, are Winchester, Kilmminster, Little Hampton, Chatham, Much Wotton, Leytonstone, and Bedford. Waterworks have also been executed in several places. The startling facts ascertained in the course of the Governmental inquiry into the effects upon the public health of efficient sewerage and water supplies, will, doubtless, cause a great acceleration to these movements for the next few years. Now, that it is shown that cholera, consumption, diarrhoea, measles, small-pox, and typhus fever, are disarmed by these measures, and rendered much less dangerous invaders of our homes, we may expect a general movement in their favour. Few bodies of men will dare to incur the responsibility of refusal to take steps so important for the well being of the communities they represent.

In the metropolis the progress that has been made consists more in the continuation and accomplishment of works commenced in former years than in new undertakings. The new quarter rising on the site of St. Dunstons; the increased level of the 13,000 ft. of the network of scaffolding encircling the national memorial of Albert the Great; the open lengths of the Thames Embankment on the left bank of the river, and the irruption of men, horses, carts, machinery, and all sorts of building materials and contrivances on the south side; the continuation of underground and above-ground metropolitan railways; the solid extension of the great Babylon east and west, north and south, are all instances in point. We seem to have taken no leaps either in the dark or otherwise, but to have pressed stoutly, steadily, confidently forward. Among items that are, however, new, are three that carry us back to very old times, and set us thinking of a land flowing with milk and honey, of forests of cedars and alung-trees, and constraints laden with gold and precious stones. These are new synagogues. One has been built in the Whitworth-road; another for 700 German Jews in New Broad-street, City; and a competition for a third at the corner of Upper Berkeley-street, Edgware-road, has been decided, and some preliminary steps taken towards its accomplishment. It is to be regretted that this last will yield nothing towards the beautifying of our street architecture. It will be quite out of sight behind the line of houses, where no Queen of Sheba could possibly observe it.

This is but a faint outline of some of the work done in the particular department in 1867. Everybody has a little world of his own full of details, from which he can fill up the picture for himself. One man's path leads to the right and another to the left, and each sees different objects; they are, however, but part of the whole. The general view is fully satisfactory; and gives us fresh courage with which to greet the new year. Continental progress is so swift, and competition so keen, it behoves every one to put his best foot forwards. An enormous work is before us, and of this we will talk in good time.

NEW MUSEUM IN PRUSSIA.—The museum at Sigmaringen, founded by Prince Charles-Antoine, has been inaugurated in presence of the King and Queen of Prussia. It includes pictures by German masters of the fifteenth and sixteenth centuries, and objects of art of all kinds. The *Revue des Beaux-Arts* says it is an imitation of the Musée de Cluny, and is a proof that the travel of foreign princes in France is not altogether useless in the progress of civilization.

PHYSICAL ENGINEERING, FROM CHEOPS TO SAID PACHA.

THE *Notum Organum* commences with a reference to the position of man as "the minister and interpreter of Nature." That ministry has had a wonderful expansion since, and in no slight degree in consequence of the labours of Bacon; but amid all the advance of the past century there are two occupations which may claim, in a special manner, to be those of the assistant of nature. They are those of the physician and of the engineer.

In the case of the physician, it is best known to those who have had the most frequent need to consult the most eminent members of the profession how much, how almost entirely, they depend on the *vis medicatrix nature*. Certain known specifics are afforded by the pharmacopoeia; certain disorders have their crises and their courses, which experience, aided by the knowledge of the individual constitution, may with much accuracy predict. Beyond this, it is chiefly the youngest and most sanguine members of the profession who are most confident in the efficacy of prescriptions, while the number of ingredients which still at times go to make up a single medicament is in itself a proof how far the man of art is feeling in the dark after, if not the nature of the disease, at least the mode of cure.

Side by side with these regular practitioners, who, while they more or less tacitly confess the empirical and conjectural state of the art, in spite of the constant illumination sought from dissection, and the instructive whispers of the stethoscope, is a smaller, more confident fraternity, who believe that they have laid at least the foundations of a real science of therapeutics. Accused of treating symptoms only, they reply that each symptom is the mute appeal of nature for a specific remedy, and that the law of healing is *similia similibus curantur*. A rigid regimen, and a belief, founded they say on experience, in the effective power of infinitesimal doses of pure, carefully-prepared, medicaments, form the chief tenets of this new heresy, which, at the present moment, seems often to be held by those, when in tolerable health, who in graver cases fly to the established mode of treatment.

But however mailed may be the advances of the knowledge of the veins and arteries, the nerves, muscles, and sinews, and the whole vital mechanism of the human frame, between the time when Hermer gave such accurate descriptions of wounds and the date of the practice of Nela and of Pigeot; or that of the acquaintance possessed with the secrets of organic chemistry, if we compare the knowledge of Bichat with that of "Poon, physician of the gods," the humble student of mechanics has distanced his older brother. Daniel is more ahead of Daedalus than Jester is in advance of Esculapius. Nature seems to have yielded not only her secrets but her powers to the modern mechanic, and the tangle of a train weighing a hundred tons, propelled with the steadiness of a mule, but at the speed of a swallow, would have appeared to the builders of the Pyramids to hold to the supernatural. The chief energy of the inventive mechanic has been turned, for the last five or ten years, chiefly to the improvement of machinery for the destruction of human life; but at the same time how much has been done in the improvement of machine tools, that department of practical mechanics which endows engines that consume coal and vomit steam almost with the vitality of reproductive species.

While mechanical engineering, notwithstanding the present excellence of much that it produces, may be considered as only at the commencement of its brilliant triumph over brute and manual labour, that other branch of the science of the engineer which more directly consists in the imitation of nature, and in the control and adaptation to human service of her great wasted forces, may be thought to have effected nobler monuments in the past than in the present era. The field of the labour of the engineer has, indeed, been widely extended by the demands of modern civilization. The masonry and earthworks which during the last thirty-three years have, in our own country alone, been constructed for railway substructure, would, if they could be brought within the compass of a bird's-eye-view, appear of formidable magnitude. If we look at the railways of the Continent a similar remark is applicable. Nor are railways the only work of the past century.—canals, roads, harbours, docks, all attest the care and the skill of the engineer, although any single work

or system of works of our time sinks into insignificance when compared with the mighty labours effected at the bidding of some of the ancient kings of Egypt. Egypt is the home of engineering. There the forces of nature, displayed in a mode which, so far as our geographical knowledge extends, is unique, produce effects of portentous and unrivalled magnitude. There, in past times, have been executed the most stupendous works ever designed by man; and there, at this present moment, is being carried out an engineering work which may justly rank among the wonders of the world.

Since we called the attention of our readers to the line of route to India, and to that great and little-understood undertaking which was designed as the counterpart to the piercing of the Alps, further information has reached this country as to the state of the Suez Canal, and as to the work yet remaining to be executed in order to the completion of that singular enterprise. Not only does this information confirm, in every particular, the truth of the views we ventured to express, but the mind of the reporter seems to have been impressed with a conviction very similar to that under which we wrote. The works in progress, we are told, are stupendous, but the enterprise is not one which would have been entered on by men of business. A brief summary of what is actually going on cannot fail to interest our readers.

Entering from the Mediterranean under the protection of a long sea-wall or jetty, which threatens to be a source of no slight trouble from the constant displacement and accumulation of sand, the Suez Canal, after passing through the narrow strip of land on which Port Said is situated, runs for some twenty miles through the large shallow lagoon or salt-water lake, named Lake Menzaleh, into which the sea enters freely by several inlets, and the depth of which varies from 1 ft. to 10 ft. Eleven miles of solid cutting succeed, through ground from 15 ft. to 30 ft. above the sea-level. A second small lake,—Lake Ballah,—is then crossed, and a further distance of eleven miles intervening between this point and the third lake,—Timshah,—contains cuttings of from 30 ft. to 85 ft. in depth. A distance of three miles across Lake Timshah brings us to a third heavy cutting of eight miles in length, varying from 80 ft. to 120 ft. in depth. The canal then passes through the Bitter Lake, where only from 6 ft. to 9 ft. dredging is estimated as necessary; and the last cutting, which leads to Suez, is for a distance of 12½ miles, of from 30 ft. to 55 ft. in depth. Thus, out of a total length of 90 miles, 42½ miles are through cuttings of from 41 ft. to 85 ft. the section of the canal itself being 26 ft. in depth, while the width at the surface-level, rendered necessary by the loose character of the soil, and by the abandonment of the original design of pitching or walling the sides, is of the enormous dimension of 112 yards. In forming even the roughest estimate of the prodigious bulk of excavation requisite for the completion of this scheme, it is necessary to bear in mind the great difference in the labour necessary for merely shovelling away loose sand and in that for executing earthwork such as occurs in our own experience. But in the heaviest cuttings this advantage vanishes. In the eleven-mile excavation between lakes Ballah and Timshah occur both clayey and agglomerated sands. The general slope of the cutting is one and a half to one, giving a width at top in some places of 519 ft., the deepest point being 87 ft., near which, for a quarter of a mile in length, the sand is cut perpendicularly for 80 ft. in height. It is evident, therefore, that in the heaviest portions of the work excavation means excavation. About a third of this prodigious quantity of earthwork is now executed.

Any English engineer would consider a line of canal, the construction of which involved a constant or an average excavation of the depth of 26 ft., to be unusually heavy in point of earthwork. The water section of the Suez Canal has, as before stated, this vertical dimension, and, as the width at the water-level is 336 ft., every mile of canal cut through a flat level country *à fleur d'eau*, may be estimated as equalling in its cubical contents of excavation ten miles of railway. If to this displacement of earthwork necessary for the formation of the canal itself over the terrestrial portion of its route, we add the contents of the 40½ miles of cutting at from 15 ft. to 85 ft. above the surface-level of the water-line, we shall be far within the mark if we double the above quantity, so that the excavation for that portion of the Suez

Canal which has not to be dredged so much below the bottom of the lagoons, is equal to that requisite for 1,200 miles of railway. To this have to be added 50 miles of dredging, the long sea-walls or jetties at Port Said, and that important and valuable work, the fresh-water conduit. It is clear that the aggregate estimate can be no trifle.

There is one point in the conduct of this gigantic undertaking which reflects the highest credit on the skilful French engineers who direct the works, and on the indomitable courage and energy of M. de Lesseps. Our readers may remember that, soon after the actual commencement of the works was announced in this part of Europe, it became matter of suspicion, or indeed of evidence, that the Egyptian Viceroy was imitating his great predecessor Neco's not only in the object, and in the magnitude, of his attempt, but also in the mode of its execution. In other words, the canal was being executed by forced, if not by altogether unpaid, labour. Diplomatic representations were made on the subject at Constantinople, and the result was that the compulsory labour was prohibited. With that prohibition, many of us thought, the doom of the undertaking was pronounced. Not so thought M. de Lesseps. His able staff seized on the occasion to replace the naked human strength of the Arab by the untiring toil of the steam engine. Machines altogether new to science were designed, were constructed in the factories of France, sent out piecemeal to Egypt, and set to do navigators' work in the deserts of water and of sand intervening between the Mediterranean and the Red Sea. Powerful dredging-machines were constructed for deepening the harbour. Steam barges were built for carrying out to sea the silt and sand raised by the dredging machines, and for discharging it through trap-doors. A contrivance called a *coulvris*, being an iron trench of large area some 70 yards long, is applied to catch the contents, which the buckets of the dredging-machines raise to a height of 40 ft. above the water level, and to conduct them into the discharging barges by sea, or over the banks of the canal by land; the flow of the wet sand down the *coulvris* being aided by a stream of water pumped up by the engine, and discharged on the buckets as they empty into the iron trough.

The framework supporting the *coulvris* rests on an iron turntable, fixed on an iron barge, so that the direction of the great discharging troughs can be as readily changed in azimuth, as their vertical angle can be altered by appropriate tackle. Where the bank of the canal exceeds the height of 20 ft. above the water level, a second invention comes into play, a sort of translation into steam of the horse-run familiar to the English "navvy" for running the contents of deep cuttings into "spoil." A railway is laid by the side of the canal, on which is propelled a strong iron frame, supporting an incline reaching from near the water edge to some 50 ft. in elevation above it. The barges used in this portion of the work contain movable compartments, into which the sand is run, and these compartments, suspended by chains from gear on the incline like the cages of a mine, are wound up to the top by the engine, and then tipped over the bank. The whole of this machinery is so arranged as to require the least possible amount of manual labour. Each elevator and each dredging-machine is estimated to raise 1,500 cubic metres daily—a duty which, if performed by human labour, would take the efforts of above 500 men. How many Arabs would go to one "navvy" is a sum in reduction depending on many contingencies.

As the work advances from the borders of the lakes, and the cuttings become deeper, the use of the "elevators" is discontinued, and the contents of the excavation are either conveyed in barges to the nearest lake, or run out to spilling by temporary railways, as in a civilized country. Locomotives are employed to draw the trains of sand, but the use of manual labour to fill the wagons has not been superseded; and here the Arab learns the meaning of the term "piece-work," and the use of the shovel and the barrow. The absence of any unnecessary clothing, and the firm hold which the naked feet take of the planks, are great advantages to the wild tribes, whom the vigorous will of M. De Lesseps is thus actively "civilizing."

The engineer must look with pride at this noble effort of his art in a country where the ancient works of man were of a magnitude elsewhere unknown, and where the mighty operations of nature yet distance his utmost efforts. The dimensions which Herodotus gives of Lake

Moeris, a vast reservoir, which the kings of the twelfth dynasty of Egypt, 4,400 years ago, constructed, in order to economise the precious supply which the Ethiopian rivers discharge, on the arrival of the summer solstices, to swell the perennial stream which the great equatorial lakes pour into the Nile, approach the fabulous. The Great Pyramid, built by the second king of the fourth dynasty, who reigned, according to the most reliable chronology, that of Brugsch, a thousand years earlier than Ameses II., the constructor of Lake Moeris, contains nearly three and a half million cubic yards of masonry. Such are the results of human labour in this marvellous country. But Nature asserts her pre-eminence. The whole of Lower Egypt has been formed by the Nile. The delta, formed of mud brought from the mountains of Abyssinia, is still annually driving back the Mediterranean. The untiring, undaunted resolution of our honoured countryman, Sir Samuel Baker, has cleared up that which was the greatest mystery in the engineering of Nature. He has, of his own knowledge, confirmed the statements of Claudius Ptolemy, that the Nile issued from two great inland seas, and the researches of Bruce as to the rush of the water brought by the heavy tropical rains to the mountains drained by the Atbara, along a deep channel, which is dry in summer, but filled with a torrent 30 ft. in depth in a single night. But he has done more than confirm and explain ancient tradition and later discovery: he has unlocked the whole secret of the system of the Nile, and has shown how a constant stream of sufficient volume to reach the sea, in spite of the immense loss which it sustains in its course from evaporation, is supplied by the feeders of the Albert and the Victoria Lakes, and how the sudden but regular afflux of the Atbara, following and overflowing the channel of the Nile, brings the annual blessing of the inundation to Egypt.

The movement of our troops, wisely accompanied by men charged with the duties of scientific observation, to this interesting region, promises to give us yet fuller details of its wonders. Already it is proposed to "tap" the inundation at its source, to divert part of the great torrent of the Atbara, to fertilise further districts of the desert, and to win new Egypt from the barren sands. The simple plan of obtaining water by driving an iron pipe into the earth is to be tried whenever our troops need a supply. With water, in the tropical climates, comes instant vegetation; and, with the growth of trees, comes change of climate. It is quite within the limits of possibility that, between the artesian wells of Algeria, and the irrigation possible, and in a measure even commenced, in the neighbourhood of the Nile system of perennial and of solstitial flow, the face of nature in Northern Africa may be more changed within the experience of a single generation than has been the case since the dawn of history. However that may be, the name of M. de Lesseps must ever be connected with one of the grandest efforts of modern engineering; an effort remarkable in design, and still more wonderful in the progress which it has made towards execution, even in the country which contains the most stupendous works of antiquity. Nor, convinced as we remain of the non-commercial character of the undertaking, would we hear without regret and vexation of the abandonment of the noble works of the Suez Canal.

We have omitted to mention one of the most novel and striking features in the engineering of the Desert. The demons who were non-plussed by the Scotch wizard, when he ordered them to make ropes of sand, appear to have obeyed on the shore of the Mediterranean a mightier enchanter, who has not only bidden them to give cohesion to sand, but shown them the way to execute his commands. By means of gigantic pug-mills, or machines similar to those used for mixing mortar, the sand of the desert is mixed with a proper quantity of lime, and then cast into great blocks of concrete. Thus the engineer not only emulates nature in the formation of water-courses, but rivals geological action in the creation of rocks.

ARCHÆOLOGIC ITEMS FROM ROME.

The diggings in Trastevere, undertaken by private speculators last winter, that led to the discovery of ruins identified as a quarter of the "Vigiles," have been already reported of in our pages; and we are glad to find they have been continued, after some interruption during the political troubles, with further results of interest. It is known that, in the time of Republican Rome, a special magistracy and civic trimvirate existed, charged to protect the city against fire, and send assistants, who were stationed at the gates, whenever a conflagration broke out, for the fireman's task. But this police gave place to a better organized one under Augustus, who instituted the so-called "Vigiles" as a fire brigade, divided into seven cohorts, each 700 strong, originally formed of *liberti*, perhaps emancipated expressly for this service, and subsequently recruited from a higher class, as in the time of Antoninus Caracalla free citizens used to be enrolled among their ranks, under the command of tribunes, centurions, and a Prefectus Vigilium, whose office was important. Their ordinary duty was the patrolling of streets throughout the night; and their chiefs had jurisdiction over cases of simple theft; of the offence of receiving stolen goods; over house-porters and fugitive slaves, which latter they were bound to bring back, if possible, to the legal masters. Under the Greek empire this organization was still maintained, but instead of the ancient designation, *vigilantes* was the name given to the same corps. The Regionaries mention their barrack-quarters, one for each cohort; and within modern date have been discovered remains of several: one under the Savorelli Palace, near the Corso; one on the Colian, near the Villa Mattei; another on the Aventine Hill—the Colian ruins the most remarkable, for there, as reported by Ennio Visconti, were found four towers at the angles of a fortified area, with walls 4 ft. thick, and a temple with octagonal cells and circular portico with porphyry peristyle—all now vanished from that site!

The spot chosen for the Trasteverine works is near a pile of Mediæval brick building, probably belonging to some baronial castle. Soon were reached walls in a good style of antique brick-work, inclosing a quadrangular area, that seems to have been a central open court; and, at the depth of about 20 ft., more or less, a pavement, in black and white mosaic, representing large figures of tritons and marine monsters floating on the sea, whose waves are rudely indicated. At one side, far from the centre, the portal of a pentagonal wall, in the concrete known as *opus signinum* (from the town of Signia, now Segni), no water, but heaps of marble and terra-cotta debris being found in its cavity. The walls around this quadrangle have a dado 1½ metre in height, of stucco, painted red, in many parts covered with rudely-sketched proper names and other inscribed words with which soldiers amused their leisure, the most curious and frequently-repeated being in reference to tallow-candle illuminations, here called "*sebastaria*" (a new word to enrich our knowledge of the Latin of Imperial Rome), got up in honour of the decennial and biennial *vota* for reigning emperors or the creation of new Cæsars. Most interesting amongst these graffiti is one recording such a spectacle, where the name of Antoninus (or Heliogabalus) has been erased, at least intended to be so, in order to comply with the senatorial decree for the effacing of all memorials of that infamous prince after his murder, the occasion for the military *felte* here noticed being the appointment of the Emperor's cousin, Alexander, to the rank of Cæsar, A.D. 221. Other dates indicated in these graffiti correspond to years from A.D. 227 to 239. During the last spring was discovered a portal, opening off outside of the open court, with arched doorway, two Corinthian pilasters, and triangular pediment, the cornice and mouldings, as well as all other details, in terra cotta, altogether a most interesting and graceful specimen of architecture in such material. This doorway leads into a chamber, or (as conjectured) a *locarium*, the interior of which is still filled with soil and debris; but the inner wall and arch of that ingress, now fully brought to light, display paintings in Pompeian style, and not without beauty, figures of men, birds, dragons, enclosed within red borders; the most spirited, two naked warriors, holding spears; the most graceful, a Genius, with large wings, on the keystone. The latest discovery, within the last few weeks, is another set of wall-paintings, in

ARCHITECTURAL UNION COMPANY.—At the annual general meeting, recently held, a dividend at the rate of 5 per cent., free of income-tax, was declared, leaving (in addition to 32l. belonging to the auxiliary donation fund) a balance in hand of 25l. 18s. The payments included a donation to the Architectural Museum of 25l.

similar style, in a chamber reached by another doorway, opening from the same court,—this being without architectural details,—where we cannot yet explore far, nor examine the decoration from a proper point of view, owing to the soil that still obstructs progress; but the floating figures, with the several red borderings, now visible on these walls, give the idea of a pleasing treatment, alike Pompeian as are the others. At another side of the court we enter a narrow chamber between parallel walls, roofless, that seems the boundary of the buildings at the south-west. Masons' stamps, signs of the usual antique character, found among these ruins, indicate dates of the reign of Hadrian; and the singular elegance of decorative details suggests periods under the Antonine emperors. Since last May the excavations have been taken from the hands of the private proprietors and carried on by Government, a notification of which intent appeared in the official paper (28th May, 1867), announcing also the purchase of the ground and the decreed demolition of several paltry houses that stood above the area, and some of which, we see, have been thrown down since we last visited this spot. The most noticeable features distinguishing the antiquities here found is the richness of taste manifest in the adornment of buildings destined for nothing nobler than a barrack for firemen, leading us to conclude favourably for the predominance of artistic feeling in Rome at the period to which they are referable.

MALTA.*

Five questions are now agitated at Malta, and have been the subject of discussion in the public press of the island,—namely, educational reform; a civil instead of a military governor; a legislative assembly freely elected by the people; municipal institutions; and improved dwellings and sanitary measures.

Having for many years devoted a considerable amount of attention to these subjects, Dr. Casolani publishes the results of his reflections, with the view of drawing public attention in this country to the subject of promoting the welfare and prosperity of the island.

Of the fifth and last of the proposed measures we may give some idea, as these come more especially within our province.

The present sanitary establishment in the island consists of a board of health, a quarantine physician, and police. These Dr. Casolani proposes shall cease, and the duties of the establishment be performed by—1st, a standing sanitary committee, to consist of a medical man, a civil engineer, and a lawyer; 2nd, of a deputy sanitary commissioner for each of the seven districts of the island, who shall be directly responsible to the sanitary committee; 3rd, of a board of health, consisting of the committee, assisted by a military medical officer, a naval medical officer, and two lay gentlemen conversant with sanitary matters [the preliminary work of the board of health shall be that of devising a plan for a Sanitary and Building Legislative Act, by which authority will be vested in the committee for the performance of their various duties]; 4th, of inspectors of nuisances, an inspector of police in each district, under the orders of the deputy sanitary commissioner, to assist him and render all necessary aid in the inspection of nuisances and in the enforcement of all sanitary measures.

The public work department, as a branch of the collector of land revenue department, shall cease, and a separate department be created, with a civil engineer at its head, to be called the superintendent of public works, who will also act gratuitously as one of the managing members in the sanitary committee.

The works that will be required for some time at Malta for sanitary and other objects will be such as only an English engineer could execute, as the natives as yet have had no experience in designing works of sewerage, water supply, laying out of new towns, and improved buildings, or providing graving-docks and warehouses with mechanical appliances, &c.; and the convenience, comfort, and health of the people demand that such works should be no longer postponed.

The extension of the great harbour; the annexation of the French creek to her Majesty's dockyard; the prospective extension of the

naval establishments, which will necessitate the appropriation by the Admiralty of buildings and dwellings now occupied by the civil population; the overcrowding of the fortified towns; the enforcement of Building and Sanitary Acts, with a view to improve the condition of buildings according to modern requirements, especially the dwellings of the working classes and poor;—all these considerations, taken in a military, naval, and civil point of view, would require the action of Government, it is suggested, to provide or encourage the formation of a new town, well removed from the fortifications, and built under the most stringent regulations as to sanitary arrangements.

The fortified towns, Valetta and Floriana, with the three Cottonera cities, when originally planned were not intended to contain the very dense population they now hold. The houses, particularly in Valetta, during the existence of the Order of St. John were spacious, with ample quadrangles, consisted in many cases of one groundfloor, did not generally exceed the height of one story, and were thus healthily inhabited. They are now so changed and paperised that often they are left without any court-yard at all, and are divided and laid out in ten or more unhealthy and separate tenements, each having an independent entrance. Often each house is turned into a so-called "carreja" (lodging), or tenement house, in which twenty or more rooms are separately let to as many families, with but one privy in the cellar for the common use. The cellars, too, are converted into human habitations, sometimes into filthy stables.

The fatal influences and evils arising from this overcrowding, which must necessarily increase every year on account of the towns being enclosed within fortified walls, thus rendering impossible any extension of building area, are sufficient to neutralise whatever in other respects may be attempted for the improvement of health.

What Dr. Casolani proposes is to obtain a tract of land well removed from the fortifications and naval establishments, and there to build a town, having easy access by an American tramway to all parts of the mercantile establishments along the harbour and to Valetta. The most desirable site for this purpose, he thinks, is the land extending from near the new extension of the Great Harbour to the gentle slopes surrounding the beautiful plain of the Marsa. Such a town, he remarks, should be ultimately complete in itself, having its own model drainage (without contaminating the sea) and utilizing the sewage in the surrounding country, water-works (supplying water at high service), gas-works, and places for worship. Public baths, wash-houses, race-courses, playing-grounds, and such like gymnastic institutions, might also be provided. The plain he would convert into a park.

A Building and Sanitary Act should be previously passed by the Government Council, which should be so enforced that the buildings might be erected upon the most approved modern system, with stringent specifications to ensure proper sanitary arrangements and appliances.

The only means, in Dr. Casolani's opinion, to improve in a sanitary point of view the present dwellings in Valetta, where building space is so valuable, is by altering the plans now existing, and building large blocks in "flats" not only for the working classes, but also for those in a superior position of society. Two such dwelling-houses have been lately built in Valetta upon his plans and under his direction,—one in Strada Mezzodi, consisting of four flats, with a house adjoining (built in the style of the Belgravian houses); and the other in Strada Mercanti, called "Camerata," a large block of building,* consisting of 103 separate and independent apartments (with twelve more apartments not yet completed), and twenty-one store-rooms. They are both arranged with attention to sanitary principles, and have already, it seems, given most satisfactory sanitary results.

The formation of a commercial dock is one of the suggested improvements.

MUNICIPAL GIFT OF EARL SOMERS.—The castle grounds, so beautiful in themselves, so full of historic interest, and so desirable from their position, are, by the liberality of Earl Somers, to become the property of the town of Reigate.

THE COURTS OF LAW COMPETITION.

OUR readers have been kept fully informed on this subject. They knew before Mr. Hunt replied to Mr. Beresford Hope's questions in the House of Commons, as to the appointment of an architect, that the Treasury received a communication from the judges, stating that they had been unable to arrive at a decision that any one design was the best; and had recommended the appointment of two gentlemen for the joint preparation of a final plan. The reply of the Treasury was, that that recommendation was not such an award as they had expected that the judges would have made, and they referred the matter back to them, in the hope that they might be able to agree in selecting some one architect to recommend to the Treasury. On the 28th of November, Mr. Hunt went on to say, a further report was received from the committee, stating that they adhered to their original conclusion, and that under these circumstances the Treasury proposed to do what the law prescribed, namely, to seek the advice of the commissioners.

On the 10th of December the Treasury did accordingly forward the report from the judges to the commissioners, who met to consider it on the 13th inst., and directed the following reply to be returned by their secretary:—

"I am directed to acknowledge the receipt of your letter of the 10th instant, transmitting to me the copy of a communication from the chairman of the Committee of Judges of Designs, in which the judges state their regret that they could not agree to make such an award as was contemplated in the Treasury minute and the instructions to the architects.

You do not acquit the Commission with what object (except that they may be informed of what has occurred in the matter), the Commission is made to them; but their attention has been called to the reply given on the 29th November last, by their lordships' financial secretary, to a question in the House of Commons, in which Mr. Hunt stated that in this matter the Treasury proposed to do what the Act of Parliament laid down, and to seek the advice of the Commission." The Commission accordingly conclude that the letter from the Judges of Designs is sent to them in order that they may advise the Treasury upon it.

The Commission desire me to observe that in strictness the Courts of Justice (Building) Act, 1866, section 4, only requires the advice of the Commission as to "the plan upon which the buildings shall be erected, and the necessary arrangements for the proper or convenient accommodation of all the courts and offices to be provided for therein and for proper access thereto." The selection of the architect rests with her Majesty's Government. And the arrangements under which the concurrence of the Commission with the Treasury, in this and other preliminary steps for preparing the plan, was entered, are based on the Treasury minute of the 23rd December, 1865, adopted by the Commission on the 15th January, 1866.

In advising, therefore, the Treasury, at the present juncture, the Commission are not acting under their statutory powers.

I am, however, to state that it appears to them most desirable that the selection of the architect should be made in accordance with the terms of the memorandum which forms sec. 56 of the instructions to the competing architects, signed by Lord Cranworth on the 17th April, 1866, and that the action of the Attorney-General, by whom all questions which may arise on the interpretation of that memorandum are to be determined, should be taken. Whether the decision of the seven judges should be recognized as final, Messrs. Barry & Street, the two equally successful competitors, so that they may be jointly employed according to, if prepared to accept such employment, and to share the architect's commission on the conditions already settled.

Here the matter now rests. The Instructions to Competing Architects, referred to, commence thus:—

A payment of £500. to be made to each competitor, except the successful one, who is to be employed as the architect of the building.

The architect employed shall receive 5 per cent. commission on the amount of the contract or contracts, and any excess the amount of which shall have been distinctly and previously authorized by the Treasury."

These instructions evidently contemplate the selection of one of the competitors as the architect to be employed; but, as it seems to us, they say nothing which should prevent the selected competitor from associating with himself by arrangement another of the competitors, and there would probably be no real difficulty in making the recommendation of the Judges of Designs perfectly in accordance with the memorandum. Under the circumstances, this is the arrangement we hope will be carried out. Candidly, we shall not be contented with Mr. Street's elevations, nor will the public be. We should prefer to that Mr. Barry's design carried out in its integrity. But the actual design, in consequence of the conjunction, must necessarily be a new one, and if the abilities of the two gentlemen named be brought to bear upon it, with all the light that time and discussion have given, we shall have little fear as to the result. A second competition is out of the question: such a step would destroy confidence in all future Government competitions.

It may be worth mentioning that Mr. W. J.

* Suggestions with regard to the General Administration and Internal Affairs of Malta. By Charles Casolani, M.D. London: Lane, 1867.

* This building, which is constructed of solid stone, is the first instance in which the stone has been hewn, and the mouldings turned entirely by machinery, in Malta.

Gardiner, the surveyor appointed by the Treasury to test the estimates of the several competing architects, has added to each of them from 200,000l. to 600,000l., with the exception of Mr. Waterhouse's, to which he has made but a slight addition, 1,421,430l. instead of 1,419,842l. Mr. Barry's, sent in at 1,277,571l., he puts at 1,610,966l., including subways: Mr. Street's, called 1,330,510l., at 1,523,273l., subways not included; and Mr. Scott's, sent in at 1,277,326l., he brings to 1,726,494l., including subways, but not the glass roof over Bell-yard, or statues. The insufficient evidence on which the commissioners fixed the probable cost of the necessary buildings is strikingly shown by the fact that in the case of half the designs the cost is estimated at nearly a million of money more than the sum named, 750,000l.

THE PLAY-SCENE IN "HAMLET."

This is the engraving produced by the Council of the Art-Union of London, for the subscribers of the current year; and the latter may be congratulated on the opportunity of becoming possessed, by the outlay of a guinea, of a work which no publisher could sell for less than double that amount. Virtually, in fact, they get the print for half that sum, the balance being handed to them to lay out in pictures and other prizes.

The original picture by Daniel Maclise, R.A., is always a great point of attraction at South Kensington; and, for dramatic conception and powerful treatment, it is amongst the finest works of the British school. The picture is one that will repay long and close study, as, besides the broad and prominent features which at once catch the eye,—the intense earnestness with which Hamlet watches the effect of the play on his uncle, the convulsive clutching of the fingers of the latter, and the angry and suspicious glances of the soldiery, amongst whom there has doubtless been much speculation on the sudden death of the old king,—there are many minor points which come out by degrees, and show how carefully the artist has aimed at making all the canvas conducive to an illustration of the main purpose. Note the figures of Justice and Mercy on either side of the proscenium, while the tapestry is seen to represent on one side the Offerings of Cain and Abel, and the Death of Abel; and on the other, the Temptation, and the Expulsion from Paradise.

The picture has been powerfully translated into black and white by the burin of Mr. Sharpe, with a fine bold sweeping line worthy of the old English masters in this manner, combined with graceful and delicate finish. It may be worth observing how very little people in general know about the time required to produce such a work as this. The mixed style, or chalk method, as it is technically called, requires a much shorter period for the production of a plate, and, with mezzotint, is now almost exclusively adopted by the publishers of engravings.

The plate now in question was begun in September, 1860, and finished in December, 1865. The printing has been proceeding ever since the latter date, for a great part of the time by night as well as day, the work being constantly carried on by relays of workmen at the press—only about twenty-six impressions being produced in twenty-four hours. It is stated that the issue of copies to the subscribers will begin in February next.

The compact little almanac of the Art-Union contains information on the several art-institutions of the metropolis, and meetings of scientific and literary associations—not to be found in a combined form in any other work—in addition to other artistic memoranda and the usual matter given in almanacs.

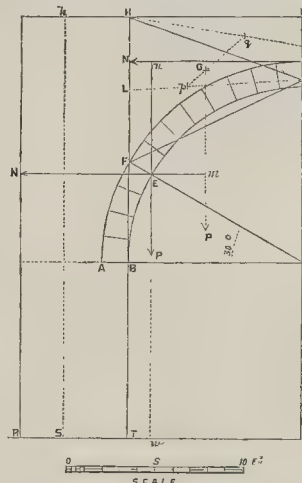
BATH ABBEY RESTORATION.—A public meeting has been held in the council-chamber at Guildhall, Bath, for the purpose of receiving a report from the committee who are superintending the restoration of the abbey. The attendance was not large, but the meeting was a satisfactory one. The report urged the desirability of further subscriptions for the completion of the ceiling decoration, which would require 2,200l. more to finish it as it ought to be. Resolutions in accordance with the tenor of the report, and pledging the meeting to renewed exertions, were passed, and the committee re-appointed.

STABILITY OF ARCHES.

The analytical methods by which the thrust of an arch is calculated, and the necessary strength to be given to the supporting pier, involve a considerable amount of algebraical formulæ, by which those who are able to apply them have the power of calculating the thrust of any given arch to the greatest nicety. To the practical builder, however, these very accurate calculations are not essential, and he is quite satisfied with some easy rule-of-thumb by which he can obtain something approaching the true result.

The following is an approximate method of measuring by scale the thrust of any given arch, and of finding the necessary thickness of pier to enable the structure to stand without rupture.

The section of the half arch must be drawn (as in the figure) with the thickness proposed to be



given to the pier or abutment, and the height of the surcharge. I here suppose that the arch, pier, and surcharge are built of the same material, and have the same specific gravity. The tendency of the arch, when the pier is too weak and the surcharge too heavy, is to fracture by the crown sinking and the joint opening at C, so that the pressure of the opposite half acts at D: this causes the reins to spread out, and the joint EF to open at F; so that the whole arch breaks up into four pieces; the other joints being kept from opening by the adhesion of the mortar. In the semicircular arch, which I take as the simplest example, the joint EF, one-third of the distance from B to C (so that EO makes an angle of 30° with OB) is found to be the weakest, or that at which the thrust from the other half-arch has the greatest effect.

When the arch is about to break, the thrust of the other half-arch acts horizontally at D, and its moment about E is equal to the moment of the mass HFECI (acting at its centre of gravity, G) about the same point, E. If we call N the thrust at D, $E_n(y)$ is its vertical distance from E; then $N \cdot y$ is its moment about E. Also, if P is the weight of HFECI acting at G, $E_m(x)$ is the horizontal distance from E of a vertical from G; and the moment of P about E is $P \cdot x$. Then, just before fracture,—

$$N \cdot y = P \cdot x, \text{ or } N = \frac{P \cdot x}{y}$$

Hence we can calculate the value of N; and, by the principles of mechanics, we may now suppose N and P to act at E, in directions parallel to their original ones. The weight of HFECI can be very nearly measured by taking $CK = \frac{1}{2} CD$, and drawing FK; then the weight of the trapezium HFKI is sufficiently near that of the figure HFECI for all practical purposes. To find its centre of gravity, draw HK, dividing it into two triangles, HFK and KHI: bisect HF in L, and take $Lp = \frac{1}{2} LK$; then p is the centre of gravity of HFK. Similarly q is the centre of gravity of KHI. Join pq, and divide pq so that $pG : qG :: KI : FH$ (by Eucl. bk. 6, prop. 10). Then G is the centre of gravity of the trapezium HFKI. The weight (P) of the

trapezium is the sum of the weights of the two triangles, namely,—

$$\frac{1}{2} HF \times HI + \frac{1}{2} KI \times HI.$$

Draw the perpendicular, G_n , and the horizontal line E_m (x). The horizontal line D_n being the direction in which N acts, draw the perpendicular, E_n (y): then—

$$N = \frac{P \cdot x}{y}$$

In the figure $OB = 10$ ft., $AB = 1\frac{1}{2}$ ft., $DI = 2\frac{1}{2}$ ft., $BT = 10$ ft., $HF = 8$ ft. 2 in., $HI = 10$ ft., $IK = 3$ ft. 6 in., $E_m = x = 3$ ft., $E_n = y = 6$ ft. 6 in., $Sw = 4$ ft. 10 in.

Therefore, $P = 8 \times 5 + 3 \times 6 = 58.4$,

$$N = \frac{58.4 \times 3}{6.6} = 27$$

Now, consider P and N, having the above values, as acting at E parallel to their original directions. The force tending to overthrow the pier is $N \times Ew$. In the figure $Ew = 15$ ft.; so that, the force to be resisted is 27×15 , or 405. To find the resisting forces, first let TS be the thickness of the pier (3 ft. 6 in.); then the forces are P at E multiplied by Sw , and the weight of SH multiplied by $\frac{1}{2} ST$; that is

$$58.4 \times 4.10 + 24 \times 3.6 \times 1.9 = 429.$$

This being slightly in excess of the moment of N, the structure will be just in a condition of equilibrium, and any slight additional weight laid on the arch would cause it to thrust out the pier.

Hence it appears that in a permanent structure where stability is required, the pier must be much more than 3 ft. 6 in. Now, take $RT = 6$ ft. as the thickness of the pier; $Rw = 7$ ft. 4 in. The moment of N remains the same, as the height of the pier is unaltered. The sum of the moments about R of the resisting forces is

$$58.4 \times 7.4 + 24 \times 6 \times 3 = 860.$$

This is rather more than double the overturning force, and therefore the pier would be amply thick enough to insure permanent stability to the structure. By this method the stability of any pier supporting an arch can be calculated without the use of algebraical formulæ.

The problem of finding the exact thickness that must be given to the pier, whose height is known, can be easily solved by means of a quadratic equation.

Taking the dimensions in the figure, and calling t the thickness of the pier, $Sw = t + 1.4$, if ST is the thickness of pier when the structure is just in equilibrium; then the equation for equilibrium is—

$$58.4 \left(t + 1.4 \right) + 24t \cdot \frac{t}{2} = 405$$

$$\text{or, } 36t^2 + 175t - 996 = 0$$

$$\text{whence, } t = 3.36 \text{ ft., very nearly } 3\frac{1}{2} \text{ ft.}$$

To insure permanent stability, we must multiply 405 by 2 the coefficient of stability, and then the equation is—

$$36t^2 + 175t - 2211 = 0$$

$$\text{whence, } t = 5.82 \text{ ft., or nearly } 6 \text{ ft.}$$

The same methods can be applied to Gothic arches, only the joint FE will vary according to the pitch of the arch, as shown in my paper on that subject in the *Builder*, March 31, 1866; in the equilateral arch the angle EOB being 16°. Also in Gothic arches it will be necessary to take the point K considerably below C.

E. WYNDHAM TARN.

THE DEATH OF THE TOWN SURVEYOR OF NEWCASTLE.

MR. BRYSON, the town surveyor of Newcastle-upon-Tyne, has expired from the effects of the injuries sustained in the attempt, of which every one has heard, to get rid of a quantity of blasting powder, or nitro-glycerine, which had been improperly stored in the town.

This has been a sadly mismanaged business altogether. The mere exposure of such a substance even on an open moor was by no means a safe way of getting rid of it, as any unfortunate who might have happened to walk across the moor would have found to his cost. Sinking it out at sea with weights attached would have been better; but surely chemists could have pointed out some way of safely destroying it.

Very different opinions appear to be entertained as to the manageableness of nitro-glycerine. The *Chemist* writes that methylated spirit renders it quite inexplosive till required for use, when water separates it as good as ever, and that wood naphtha also renders it harmless in a similar way; but in frosty weather there is danger of its crystallizing even then, when it becomes explosive as before. Mr. J. L. Bell, a chemical manufacturer, was a witness on the inquest, and said that nitro-glycerine, particularly if impure, is liable to spontaneous decomposition at ordinary temperatures. The gases given off, if confined to the vessel containing the nitro-glycerine, exercise pressure on the remaining liquid, which is then liable to explosion under the least shock or slightest movement. Again, if this substance is brought from a cool place and exposed to a temperature of from 68 degrees to 75 degrees Fahrenheit—all these being very common temperatures—decomposition takes place, pressure ensues, and explosion may be the consequence.

The thirty canisters stored in the town, he said, if they contained two gallons each, would hold 960 lb. Had this been pure glycerine it would have been equal to 14 tons of gunpowder! and it was stored where percussion, motion, or a moderate temperature might have caused explosion. Comparing the effect of such a quantity of pure nitro-glycerine with the effects stated to be obtained in the pamphlet issued by the Nobel Company, of Hamburg, by whom the compound in question appears to have been manufactured, it would have been sufficient to have blown down 115,000 tons of solid rock. Mr. Webb, the chief agent of this company, alleges that nitro-glycerine is not so dangerous as gunpowder, which seems to be rather a stretch of trade tactics. He says he carried 10 lb. weight of it on one occasion to France in his pocket. This must have been a pretty large pocket-parcel. Accidents in his quarries, he said, had diminished in number since he began to use nitro-glycerine, and it was constantly used now in slate quarries. It was the way in which it was handled, Mr. Webb says, that led to all the mischief in Newcastle. In all seven persons have been killed in this affair; the sheriff himself, who had the management of it, amongst the number. It is said he was acquainted with chemistry.

The jury returned the following verdict:—

"That death has been caused by the explosion of nitro-glycerine accidentally; and the jury are unanimously of opinion that it is not a safe mode of storing nitro-glycerine has been grossly violated in this case."

The jury would not allow any of the nitro-glycerine canisters to be brought into the room, and a clergyman who had a piece of slag with him was ordered to take it out, as it was supposed to be nitro-glycerine.

ON ART, ESPECIALLY SCULPTURE.

UNDER this title Professor Westmacott is delivering an interesting course of lectures, under the Cantor bequest, at the Society of Arts. In the course of the second lecture he gave a rapid review of the different schools of sculpture from the most ancient period. The monuments of Egypt probably mounted up to not less than 2,000 years before the Christian era. The sculptures brought from Nineveh and its neighbourhood, exhibited a comparative perfection of workmanship that showed long practice; yet we knew that the wonderful city from whose ruins they were exhumed, was utterly destroyed above 600 years before Christ. This comprehended a period of nearly 2,500 years, and many of the sculptures must have been executed long before this event. At about 450 years before Christ, sculpture, hitherto treated without reference to any art-excellence, began to be practised on a new basis. It was then not only used to illustrate the religious myths and heroic deeds of the Greeks, in the rude style of the earlier time, but the principle was introduced that these noble subjects should have their expression in the most perfect forms. Then began an entirely new phase of art, most important in its history, which made beauty a condition of its practice. The school which ranked highest in this noble achievement was that under Phidias and his contemporaries, when the most sublime subjects were represented under the most majestic and dignified forms. To this succeeded the school of Praxiteles, who, departing from the more severe and pure treatment of the previous artists, made

beauty itself the object and end of art. This, though the subjects were still religious, introduced a sensuous style, in works of exquisite and attractive execution. It was a downward step in art, because it made its appeal to the eye and sense alone, and not to the purer and more noble sentiments. After this came the school of Lysippos, which still further deteriorated from the high standard of the greatest masters. He was the favourite sculptor of Alexander the Great, and it was under that ambitious, self-glorifying monarch that portrait-sculpture was first introduced. Here individual character and details were studied, instead of the larger general type of form seen in the most perfect works of nature; and, although productions of great merit were supplied by the sculptors of the period, and for some short time after the death of Alexander, the most perfect style of art ceased to be the object of study. The time during which sculpture, in its finest form, flourished, was comprehended in the comparatively short period of 200 or 250 years. The lecturer then traced what he called its downward course to later times—to its existence among the Romans, where, owing to the peculiar character of the nation, what was termed fine art, as it had been practised in Greece, excited little or no sympathy.

The third lecture (December 20th) included a review of the Mediæval and more modern schools to the close of the eighteenth century.

THE ROYAL HIBERNIAN ACADEMY AND STATE AID.

A MEETING of this society has been held (Sir Thos. Deane in the chair) to consider its position and the best means of promoting its interests. On the motion of Mr. Mulvany, a resolution was passed complaining of the retention of their report from Parliament by the Department of Science and Art, and stating further "that in assuming to be the 'official superiors' of the Academy, the Department is not sustained by any known or implied relations between it and the Academy, nor by any bye-law."

A second resolution was passed to the effect that in the interest of art the Royal Hibernian Academy is as fully entitled to State aid as the royal academies of England and Scotland.

Mr. J. H. Foley, R.A., in speaking to this resolution, said,—I do so in the full conviction that the aid hitherto granted by the Government to the Royal Hibernian Academy, namely, 300*l.* a year, is wholly insufficient for the successful working of the institution, and I cannot but contrast the support it thus receives with the support accorded to the Royal Academy of London, of which I have the honour of being also a member. The latter-mentioned institution has been designated a self-supporting institution, but I beg leave to differ from those who deem it such. From its infancy the Royal Academy has been provided by the Throne or the Government with a home, and I cannot but consider the value of that home at some thousands a year. The gift of Burlington House and portion of adjoining land may be fairly estimated as a gift of 80,000*l.*, which sum, if funded, would produce an annual income of 2,400*l.*; and I am strongly of opinion, considering the circumstances of this country, that the support given by the Government to the Royal Hibernian Academy should be even greater in proportion than that given to the Royal Academy of London.

A deputation was appointed to see the Chief Secretary for Ireland on the subject.

FROM MELBOURNE.

A DEPUTATION from the provisional committee of the proposed Museum of Industry and Art, waited recently upon the hon. the treasurer for the purpose of being put in funds for initiating the project. It was explained by the deputation that a very large and valuable collection of specimens of raw material was already stored within the Exhibition buildings, and it was most desirable in order to keep faith with those who had presented them, that steps should at once be taken to make the collections accessible for inspection. To do this, money would be required to provide suitable cases, as also the necessary attendants, before the Museum could be open to the public. Mr. Verdon expressed himself favourable, but could not at present do more

than keep the scheme afloat. He hoped, however, that in the next session of Parliament a Bill would be introduced which would embrace the objects contemplated.

The Gipps Land Hospital, at Sale, was opened on 20th August last. It originated with a small society for the relief of casual cases of sickness or accidental injury among indigent strangers, who were then frequently coming into Gipps Land in search of employment on public works or at the mines. Funds were collected, plans invited, and eventually that of Mr. Anderson, a local architect, was adopted. The site is a reserve of five acres upon the plains, on the limit of the township of Sale, and immediately adjoining a reserve, of similar extent, for a benevolent asylum, and another laid out as a botanic garden, which last the borough council are now improving. The external appearance of the building (which is of brick) is picturesque, as shown in a very fair engraving in the *Australian News*. The front door leads to an octagonal hall, having on the right a consulting-room, and on the left the dispensary. The hall will be used as a waiting-room for out-patients. Passing through folding doors into the passage beyond, on either hand are long wards, for male and female patients respectively; and behind these are closets and bath-rooms. Up-stairs is the operating-room, well lighted from above, several small wards, and the apartments of the matron and steward. The nurses' rooms all open into the same wards to which they are attached. The same provision is made on this floor as on the lower one for baths, &c. The plan is one that admits of additions being made to the building from time to time should they be required.

MURAL DECORATIONS.

PAINTINGS AT WALLINGTON, NORTHUMPTLAND.

AT a recent meeting of the Royal Institute of Architects, Mr. W. B. Scott laid before the members examples of the paintings with which he has recently decorated the mansion of Sir Charles Trevelyan, at Wallington, as before now described in our pages, and read a paper descriptive of the undertaking. We avail ourselves of a portion of it, and of a few of the illustrations accompanying it.

The house was built about 130 years ago, at a time when a fashion prevailed of dispensing with lobby, hall, or ante-room, the principal entrance opening directly from the lawn or drive into the central and principal room of the house. At Wallington the central room of the front is the drawing-room, and the principal entrance still remains there, now only used occasionally. The plan of the house, which is very large, was a quadrangular mass of building the inner wall (to the quadrangle) being pierced with windows lighting a corridor on the ground-floor all round three sides, a similar corridor above also all round three sides, the fourth side giving light to the great staircase. The entrance being as already described, the great staircase was altogether apart from it,—could, indeed, only be reached through the principal rooms of the house. Besides, the quadrangle enclosed by the high blank walls, was a damp inaccessible court. To change the plan and convert this court into a saloon was intrusted to the late Mr. John Dobson, of Newcastle, who attained his object by taking the entire inner wall on three sides down, and in its place making two arcades, the lower one of solid stone piers and arches, the upper supporting a ceiling of the form called, by an Italian phrase, *a schifo*. Besides being covered on four sides at the wall line, it is divided by the beams into square coffered panels, in the centre of each of which are large hemispherical glass lights, specially cast in one piece by Messrs. Swinburne. These being very thick and heavy have obviated the constant trouble, in a wet and windy climate, caused by pot glazing of any description involving sashes and putty. They are globular, like watch-glasses, slightly obscured in the making, and insure all the year round an equable shadowless light as long as day lasts, showing the decorations and pictures in an unexceptionable manner. Here for once, Mr. W. B. Scott thinks, the difficult problem of lighting picture galleries has been solved,—whether applicable at a lower height and other circumstances he cannot presume to say. The fourth wall, that protecting and partly supporting the great staircase (the south side) Mr. Dobson treated in a way to preserve the unity of the apartment. The lower part necessarily re-

maining intact, he faced it with solid stone pilasters and arches, and built up the arcade on the side opposite (the north side) to correspond. Thus the saloon had, on the ground floor, two sides, each showing four panels or recesses, inclosed by stone pilasters and arches, admirably adapted for painting, and out of this grew the scheme of decoration now being referred to—namely, eighteen illustrations from the old ballad of "Chevy Chase," fitted for the angles and spandrels of the upper series of arches. The section shows their position.

The house being a Border mansion, the decoration was treated with reference to Border history. The eight panels were fitted with a series of pictures, the subjects of which began with the Roman Wall, which ancient fortified barrier passes not far off, and ends with the Industry of the Tyne—four ancient and four modern incidents in history:—

1. The Building of the Roman Wall.
 2. King Eglfrid offering the Bishopric of Hexham to Cuthbert, Hermit on Farne Island.
 3. A Descent of the Danes on the Coast.
 4. Death of the Venerable Bede.
- And on the opposite side, the later subjects,—
5. The Spur in the Dish,—the Sign to the Moostrooper that the Larder was empty.
 6. Bernard Gilpin taking down the Gage of Battle in Rothbury Church.
 7. Grace Darling and her Father saving the Shipwrecked Crew.

8. "Iron and Coal,"—the Industry of the Tyne. The stone pilasters dividing these pictures, and the solid piers corresponding to them on the two arcaded sides, are partially decorated. The stone is of a very light-coloured close texture, very agreeable in tone, and the experiment of painting foliage in ordinary oil paint without any preparation or "grounding" whatever has been completely successful. Such grounding would, of course, hide and lose the surface of the stone, which it is so desirable to retain in its natural state; and there is no difficulty in doing so. There is, indeed, a little difficulty in getting the paint, laid on with an artist's small sable brush, to overcome the grit and show a uniform surface; but the difficulty is only one involving a little more time, and it may be safely affirmed such painting is unchangeable, and, as to its duration, will assist in preserving the stone itself. In the spandrels above surmounting these pedestals, the surface being plaster and the decoration to be done by degrees by various hands, the painting was executed on prepared linen cloth, which was cut exactly to fit the shape of the spandrel, and applied by a mixture of glue and paste, the plaster being previously well saturated with oil and paint.

The subject, as we have said, is the old Border ballad of Chevy Chase, and is divided into four parts, each part to occupy a side of the apartment. It is the history of a day and a night, from sunrise to sunrise, the angle at which the last picture joins the first happily coinciding with the period of the morning and the aspect of the sky in both. The period of twenty-four hours affords all varieties of aspect,—morning, noon, evening, moonlight, and dawn.

In No. 1 we have the Departure, seen from the Battlements; in No. 2, Earl Percy parting from his Wife; No. 3, the Retainers trotting away; and so forth. Then comes the Hunting, one of the illustrations of which, the Battue, we give. In No. 10, tidings are brought of the approach of the Scots, and the battle begins. The two compartments showing the advance of the English Bowmen and the Scottish Spear-men closing in we reproduce (Nos. 11 and 12). After other incidents of the battle come those of the next morning, ending with Percy's Body found by his Wife, and the Return with the Dead to Alnwick.

At the close of the paper,—

Mr. Seddon said,—The decoration of architecture by painters of eminence, such as Mr. W. Scott, was unfortunately a rare occurrence in these days. Members would therefore gratefully hail this series, in which the subject was most poetically conceived, and the difficulty of adapting the designs to the forms of the spandrels was very happily overcome.

Professor Donaldson.—All must be aware that the Border regions are particularly rich in the minstrelsy of those parts which describe the forays and attacks both of Scottish and English passing each other's borders, and the meetings of large bands of brave warriors nourishing the deepest hatred to each other, and the desire to avenge previous unsuccessful incursions. Therefore the mixing up of such illustrations of history

is peculiarly interesting in buildings in that part of the country. I recollect that, when I had the honour of visiting Alnwick Castle with the Duke of Northumberland, in company with the Cavaliere Casina, Mr. Salvin, and the late Professor Cookerell, we were debating together on this subject of pictorial decoration, and his grace subsequently directed a series of paintings to be executed for the decoration of the walls of the castle; and the result has been a pictorial illustration of a succession of very remarkable historical incidents. It occurs to me that the mural paintings as we find them in Italy are particularly well suited to this style of decoration, and copies of some of those great pictures have been produced in a very admirable manner in Stafford House. It shows how painting allies itself to architecture, and gives a deep interest to all the styles described. It is the more happy when it records the history of the country in which such buildings are situated. There is one question which arises in my mind as to the mode in which this work has been carried out. At Mr. Hope's house in Flossdilly, which I built, we had canvas glued on to the plaster of the wall, of a very rough texture indeed,—so rough, in fact, that you could see the grain through the ornamentation. This ornamentation was painted on a ground of gold, of light diaper pattern. The effect of the texture of the canvas and the gold is an extremely rich surface. It was mentioned in the paper that the texture of rough canvas would not look well, but in this case it does; and the same thing is carried out very much in France, and in other places in England it has been adopted. There is much practical experience yet to be learnt in the mural decoration of buildings: first, in the mode in which it is to be carried out, and next in the selection of historical and interesting incidents for illustration, as has been done on the walls of Sir Walter Trevelyan's house.

Sir Charles Trevelyan, in the course of an address, stated that the three sister arts of architecture, sculpture, and painting, all contributed to the decoration of the room; and, although on a small scale and in a humble way, they stood there in the relation in which they ought to stand to each other. In the centre was a group by Woolner, representing a Christian mother teaching her child to pray, as the highest type of modern civilization. The pictures by Scott commenced with the Building of the Roman wall, and ended with the High Level Bridge at New-castle. The wild flowers of Northumberland had been painted on the plasters by many an affectionate and friendly hand, and the whole were connected by the stirring and affecting incidents of the hunting of Chevy Chase round the spandrels of the arches.

Mr. G. E. Street said, the architect owes an immense debt of gratitude to the painter who will undertake to paint anything to decorate a wall. If there is one difficulty more than another which stares us in the face it is that of persuading a painter to look upon such work as this as anything but a picture to be hung on a wall, and not to assist in effect the architecture of the place which is best seen when adorned in this way. We therefore owe immense thanks to Mr. Scott for what he has done. If this experiment answers, and if the effect of the light is such as enables you to see these oil paintings without glare and as satisfactorily as distemper on the face of the wall, it will solve one of the great difficulties which one has now to encounter in getting an artist like Mr. Scott to do work in out-of-the-way places. Very few painters like to leave London to do their work. If Mr. Scott can execute this work here; if it is not damaged by damp; if it is to be well seen, and the effect of the colour is flat enough to be seen, it will be an enormous advantage to have the chance of seeing some of these buildings decorated in a way which, without such assistance as Mr. Scott has given, we are hopeless of seeing.

Mr. Burgess.—I agree in the opinion that it is of importance to get painters of eminence to decorate walls, but I must say I think these are treated too much like oil pictures. I think they would have been better done in distemper or fresco, and in much brighter colours. It also appears to me that a more uniform tone is required. If we are to have the assistance of artists like Mr. Scott decorating the walls of houses or churches, I would express a hope that we shall have less of the Venetian school and more of the Tuscan than we have had hitherto.

Mr. M. Digby Wyatt.—One word on the point just alluded to with respect to uniformity of colour in any series of pictorial subjects, com-

bined with the different architectonic parts of any apartment decorated throughout in polychromy. I think the last speaker should have made the following distinction,—the necessity, or the contrary; for any such uniformity is, I believe, dependent on the relative importance and extent of the surfaces decorated respectively pictorially, or in conventional colour only: provided in any apartment you cause the leading portion of all the surfaces to be decorated in strong colours, repeating themselves with simple regularity, the eye will be satisfied whether such dominant portions assume the form of pictures or of architectural parts only. If you have obtained, any how, your symmetry in the major, you may dispense with it in the minor. Hence it is obvious that in cases where the main polychromatic effect is dependent upon the colouring of a series of paintings (as, for instance, in the "Stanza" of the Vatican, or the Scuola di San Rocco, at Venice). There, I agree, you must have uniformity in the scale of convention of any such series; but in cases where the pictures are secondary, and the architecture primary (as, for instance, in the Galerie d'Apollon, of the Louvre, or in the Loggie of the Vatican), the painter may be left to vary his style of *chiaroscuro* colour and handling at his own good pleasure. Thus it becomes the duty of the decorative artist to study all the conditions of the building he has to decorate. Where he sees its leading architectural parts are thoroughly good he should keep his work down, where they appear unsatisfactory he must put out all his strength to win the eye for his own department. If the architectural parts are good, but monotonous, he must run into and break them up; if, on the other hand, they are but "*disiecta membra*," he must tie them together and harmonize them with his decoration. I believe these to be the correct principles on which decorators should act in such matters: it is that which was adopted by Raffaele, Giotto, Luini, and Pinturicchio, who were perhaps the most harmonious mural painters whose works remain to us. With regard to applying canvases to wall and ceiling surfaces, I would warn artists who have it to do not to employ glue or paste. The best mode of attachment is to paint the surfaces to which you have to make the canvases adhere well with white-lead and oil, getting a good body on it, and while still tolerably green put on a thick coat of white-lead with a little gold size, which makes it set very hard; then paint the back of the canvases with white-lead with a little gold size, and rub it well down, so as to cause it to adhere evenly: the fibrous texture of the canvases causes the fresh white-lead to adhere well to the canvases, and the green white-lead adheres well to the white-lead applied to the wall or ceiling surface shortly before pressing the canvases up in its place. The sticking medium being mixed with oil, damp has little effect upon it. If glue or paste be used the canvases will expand and contract according to the condition of the atmosphere, the paste or glue being affected hygroscopically as well as the fibre of the canvases, and in time will detach itself. When Mr. Alfred Stephens was so good as to paint for me a reproduction of Raffaele's ceiling of the Camera di Segnatura, for the Italian Court of the Crystal Palace, and Mr. Smallfield one of Perugino's ceiling of the Saladi Cambio, at Perugia, both were done upon separate pieces of canvases, and put up in the way I have described. At the present time neither has become detached in the slightest degree. This being a practical matter, I take the present opportunity of mentioning it. I would also call the attention of architects and artists who desire to use oil paint in this way, to a very excellent material prepared by M. Binaut, of the Rue de Clery, at Paris. He makes canvasses larger than 20 ft. by 20 ft. in a single piece, on which the whole of a ceiling can be painted in the studio for subsequent application elsewhere. He sells it ready prepared for the painter's use, grounded in any graduated tints which may be required. It is a very handy material, and is light and of a nice surface. One word as to the peculiarity of the texture of canvases used for decorative purposes. The reason only rough canvases has so good an effect for mural painting in oil, is because it is in fact the only means by which the usual glitter of oil painting can be overcome, excepting, of course, by such an alteration of the vehicle by the admixture of turpentine, wax, or gum damms, as scarcely leaves the picture what is, usually called an oil painting. If canvases, fine in texture, evenly grounded with a non-observant ground, smoothly primed down, be painted with colours

MURAL DECORATIONS AT SIR WALTER TREVELYAN'S, WALLINGTON.



Section through Corridor.



No. 7. The Battle.—The Archers posted for Shelling.



No. 11. The English Boatsmen advance.—A Percy! A Percy!



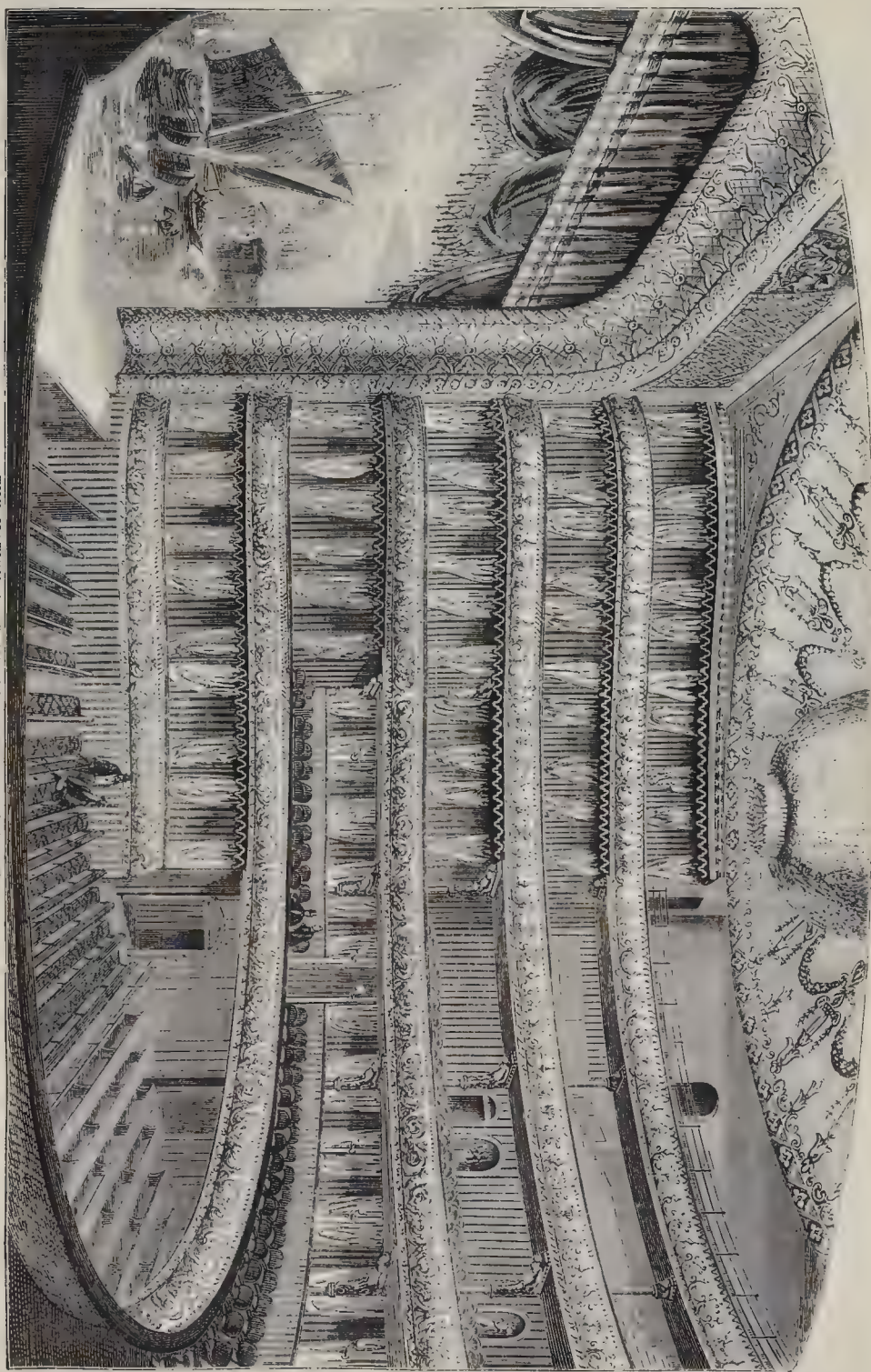
No. 12. The Scottish Sparrow closing in.—A Douglas! A Douglas!

ground in oil, and with nut or linseed oil as a medium, the surface of the picture will be so flat, that when it reflects light it will reflect it as from a luminous sheet. With canvas in large granulation painted even with the same vehicle, light will be reflected from every minute elevation of the canvas in tiny scintillae or pencils, but the corresponding depressions will be all in deep colour—i.e., colour either in shade or in shadow. That is why oil paint applied upon a coarse canvas produces a better effect for mural decoration than it does when applied to a perfectly flat surface of fine canvas. The old Venetian paintings were usually executed upon canvas, the texture of which is quite obliterated

by the heavy grounding, and much varnish has been used in the finishing; the consequence is that they glitter most disagreeably. The preparation used habitually by French and German historical painters, produces a dead or "mat" effect, partly by the nature of the preparation, usually a bastard-encaustic, and partly by the coarse granulation of the canvas upon which it is applied.

Mr. W. B. Scott said, I fancy we shall never take to fresco again in this country, unless it be on very carefully prepared interior walls, and after an apprenticeship on the part of the painter it might be tried with success. But I look upon it that the silica process has superseded it, and,

apart from that, the introduction of oil pictures; canvas pictures, planted on walls, are almost the only chance of getting interior decorations well carried out. The danger and difficulty of getting the walls painted without having the works done in the studio, and applied to the walls, are so great that we are rather chary of it. The only difficulty, as it appears to me, in using canvas pictures, is in the matter of lighting. If they have no shine, the whole advantage of the canvas picture and oil painting is obtained. Oil painting suits the climate of England better than any other kind of painting; and if it has no shine it appears to me the best adapted to this description of decoration.



THE NATIONAL STANDARD THEATRE, SHOREDITCH.

THE NATIONAL STANDARD THEATRE, SHOREDITCH.

THE National Standard Theatre was burnt down in October of last year, and for some time the site remained unoccupied. In July, 1867, however, the first stone of a new theatre was laid; and last week the building was opened to the public. It is large and lofty, and we now give a view of the interior, produced under some difficulties. The ground upon which the old Standard stood has been considerably enlarged for the new theatre by the purchase of adjoining property. The site was originally that of the old Curtain Theatre, one of the most ancient playhouses in the metropolis. This theatre is mentioned as early as 1578, in a sermon at St. Paul's Cross. Ben Jonson exhibited his abilities here both as an actor and an author. Upon this ground Mr. Douglas has erected his new theatre. The main building is 167 ft. in length and 80 ft. wide. The height of the interior, from the pillars to the top of the dome, is 84 ft. Within this space four tiers of boxes and a gallery are constructed, each one receding from the other, the lowest circle being 64 ft. in width, the highest one 66 ft. There are no columns visible in the front of the house. The first tier is a balcony of cushioned arm-chairs, covered with crimson velvet. Behind is a circle of comfortable little private boxes, fitted and lighted in a convenient manner. The shape of the interior of the building is a horse-shoe. The theatre is to be lighted by a massive crystal sunlight, by Messrs. Davies & Sons. All the staircases are of stone. The gallery staircase and the two at the side of the proscenium are carried the whole height of the building. From the main entrance in Shoreditch a double flight of stone steps conducts to a spacious lobby, where they break off to communicate in separate flights with the several tiers. This lobby is surmounted by a dome, rising 40 ft. The box saloon is large. An iron bridge spans this room, forming the main entrance to the third tier of boxes. Above the saloon, and running nearly the whole length of the front building, is a spacious room, which will make a concert or billiard room. There are ninety private boxes in the theatre. The decorations are mostly of *papier mâché*, coloured and gilt. The stage at the proscenium is 44 ft. wide, and from the footlights to the back wall it is 70 ft., and to the front of the first horse-shoe 66 ft. To the barrel-loft the height is 94 ft.; hence the greater part of the stage working will be in the flies, the scenery consisting chiefly of cloths. The set-drop has been painted by Mr. William Telbin. It is partly shown in the view. The curtain is composed of crimson silk velvet, arranged in folds and embellished with golden fringing.

We may take another opportunity to speak of the merits or demerits of this new place of public resort when we have seen it filled with persons.

THE IMPROVEMENT OF WORKHOUSE INFIRMARIES.

At a meeting of the Health Committee of the Social Science Association on the 18th, an address was delivered by Mr. Ernest Hart, "On a national scheme for the better Organization and Management of Workhouse Infirmary." Mr. Edwin Chadwick, C.B., presided. The speaker said the number of workhouses throughout the country, excluding those in the metropolis, was about 600, and within these there were about 40,000 acutely sick people; and these were not confined to a few houses, but were scattered over the whole number. Now at present there was no medical authority at the Poor-law Board to technically deal with these persons. There was a medical officer at the Poor-law Board so called, really a district inspector with a double title; but the real work was done by certain district inspectors, who, in fact, possessed no technical knowledge upon the subject upon which they were called to report. Each inspector had about fifty workhouses on an average, and his duty consisted in inspecting the houses about twice a year. Giving a summary of the heads of his general scheme, he would say that it should first include the adoption of a series of general principles in reference to the infirmary portion of the workhouse; that the space for sick should be regulated at 850 cubic feet; and that these wards should be kept entirely distinct from those devoted to the able-bodied paupers. He further

suggested that the medical officers should have a life appointment, and should be more adequately remunerated, and that their dismissal should be subject to the approval of the Poor-law Board. There ought also always to be trained nurses, and he should like to see it laid down that visitors, under proper regulations, should not be liable to exclusion. A provision should be made for the opening of these houses, under proper regulations and at proper times, to visitors. The two great changes in the Poor-law Board and its staff which he would enforce were first the appointment of a limited staff of technically educated inspectors; and, secondly, the establishment of a hospital or medical department at the Poor-law Board.

An interesting discussion ensued, in which the chairman, Mr. Hugh Williams, Dr. Stallard, and others, took part.

On the motion of Mr. Godwin, seconded by Mr. B. Baker, it was resolved, that in the opinion of the department the scheme was such as would in its broad features tend to improve the management of the country workhouse infirmaries, and that it be referred to the council to lay it before the Poor-law Board, and request their best consideration for the same.

THE O'CONNELL NATIONAL MONUMENT.

The sketch-model for this work, by Mr. Foley, R.A., has just been exhibited in Dublin, where its unique beauty at once secured for it the unanimous approval of the committee and the public. The design comprises a base, supporting four winged victories of Patriotism, Fidelity, Courage, and Eloquence, as typical of the qualities of mind exhibited in the labours of O'Connell; a pedestal, enriched by groups of figures of all classes, assembled to hear Erin's proclamation of their newly-acquired liberties; and a statue of O'Connell surmounting the whole. The cost of the finished work, which will be executed in bronze and granite, and above 40 ft. in height, is anticipated to exceed 10,000l.

THE LIVERPOOL FREE PUBLIC LIBRARIES.

The 15th report, for 1866-7, of the committee on the Liverpool Public Free Library, Museum, and Gallery of Arts, has been presented to the town council and printed. It shows that the number of books issued in the reference libraries for the past year, has been 578,774; and in the lending libraries, 420,282; in all 999,056, or in round numbers, a million of volumes of healthy literature have been distributed amongst the working and middle classes of Liverpool during the past year! We believe this issue is unprecedented in any library in any country, and it must hold an important position in relation to the question of general education now so much talked of. So with the Manchester libraries, which, however, only issued 600,000 volumes during the same period. The Liverpool report states that the erection of the Gallery of Arts is now in a fair way of being proceeded with; that the property required for the site has been scheduled under an Act passed during the last session; and that the borough architect is preparing plans for the intended building. The main feature of the year, besides the astounding issue of books, had been the acquisition of the magnificent collection of historical art treasures given to the town by Mr. Joseph Mayer, F.S.A.

LOCAL MUSEUMS IN INDIA.

The demand for local museums of industry and fine arts which is now so active throughout Europe has extended to India. The Governor-General, as we said some time ago, has appointed a commission to report on the conservation of the ancient architecture of India, and the best means of obtaining casts of the finest examples. The Lieutenant-Governor of the North-West Provinces has also organized a committee of action for his district, and has laid down the principle that a museum should be established at the head-quarters of each revenue division, and that the chief museum for the North-Western Provinces should be at the seat of Government. Collections of diagrams and drawings illustrating frescoes and works on decorative art have been ordered to be sent from England.

The main objects of local museums are defined to be:—1. The improvement of manufactures; and, 2. The preservation of modern art. An official memorandum states that, "in order to prevent natives from thinking that European designs were desirable as copies for ornamentation, it would be necessary to procure many modes of illustration from different parts of India and the East generally," and that it is not in the modern art manufacture of India that the means can be found to give new life to the native designer. It is in the architecture of the country that purer and more original ideas can be found.

SCHOOLS OF ART.

The Reading School.—The distribution of prizes has taken place in the town-hall. The audience was small. The report said:—

"The committee of the Reading Government School of Art, in presenting their seventh annual report, have much pleasure in being able to record the prosperity of the school, which, from its foundation till now, has continued steadily to increase. The examination on this year was held on the 12th, 13th, and 14th of March, when 73 pupils attended. Of these 37 were successful—10 taking prizes, the remainder cards of merit. Fifty-eight works were sent to South Kensington for national competition, six of which were selected. One national medal was awarded, and 10 third-grade prizes. The total number of pupils who have attended has been 107, showing an increase of 11 over the previous year."

Mr. Havell said that there were only 80 medallions circulated throughout the country, and therefore they had a fair share in receiving one; and the local prizes were supplemental to the prizes given by Government, and were purchased by the committee from the prize fund. He had always considered that the instruction in elementary schools was of great importance. Previous to 1865, the management of the grants given by Government was entrusted to the art-master, who received a slight pecuniary advantage. In 1865, the number of pupils under instruction at Reading and the branch school at Henley, was 838; but during that year a new minute was issued, and the management was taken out of the hands of the art-master and placed in the hands of managers of schools. He questioned at the time whether the course was a wise one, and the result had shown that it was not. One manager objected because a subscriber did not approve of the new-fangled notion, and another could not afford it. To meet this latter objection he (Mr. Havell) gave instruction for nothing, and then they said that they could not purchase the materials, and he supplied the materials for nothing,—and then they accepted. The number of pupils now was 152, against 538 in 1865. Mr. Lefevre distributed the prizes.

The Southampton School.—In pursuance of resolutions adopted by the borough council, in which they accepted an offer made by the committee of the School of Art, to transfer that school to the council, that it might be carried on as a branch of the Hartley Institution, the Hartley council have had under their consideration certain regulations for the management of the school, and for the specification of the duties of the master, which they recommended the borough council to adopt. The Hartley council have received from Mr. W. J. Baker, the present master of the school, a statement of his concurrence in these rules, and of his willingness to hold the office of master in conformity with them.

The Stourbridge School.—The annual meeting of this institution has been held in the school-hall. There was a tolerably good attendance. The Hon. C. G. Lyttelton presided. The report stated that there was again an increase in the number of those attending the school, and for the last ten years an increase had been steadily maintained. In the study of colour there was a marked improvement, and, as the effect of colour was gradually being more considered in works in glass, it was hoped the result would be that to the superiority of manufacture for which English glassmakers had always been famed would be added a reputation for colour, in which, hitherto, Continental glassmakers had surpassed them. Of the students examined, twenty-six had passed satisfactorily in the second or higher grade; six passed, and their papers were marked "excellent;" six received prizes; and two received full certificates of having passed in every subject in the second grade. Fifteen out of the thirty works submitted for national competition were passed as satisfactorily executed, and awarded prizes. The income of the school had been sufficient to meet the

expenditure. It was hoped the Government would give assistance in regard to securing the building in perpetuity for the use of the school, provided a sum of 400*l.* could be subscribed. A report was also read from the master of the school (Mr. Bowen) touching the progress of the students during the year, and other matters connected with the interests of the school.

The Bradford School.—The annual public meeting and distribution of prizes in connexion with this school took place in the High School, Hall-field-road. The admission was by ticket, and the number of persons present was rather larger than the room could comfortably accommodate. The walls were hung with the art-productions of the pupils. Alderman Godwin, the chairman of the Committee of the School of Art, presided. The chairman said, that in all respects, the school seemed to be in a healthy condition, and had in its own principle of vitality which seemed to ensure success. One passage in the report made reference to technical education. The annual report stated that during the past year the progress of the school, though not very rapid, has been satisfactory. There are now 89 students on the books—75 evening class and 14 ladies' class—against 78 in 1866, 61 evening class and 17 ladies' class. Mr. Forster, M.P., addressed the meeting, chiefly on the subject of technical education.

The Lincoln School.—The distribution of prizes to students in connexion with the Art Treasures Exhibition which has been open during the past month in Lincoln, took place in the School of Art, in which the exhibition had been held. There was a numerous attendance. The mayor occupied the chair. The report of the school committee announced the steady success of the school. The position it attained in the first year of its existence was such as to astonish all connected with such institutions, but this success had been improved upon every year, the last competition being very satisfactory.

ANNUAL MEETING OF THE INSTITUTION OF CIVIL ENGINEERS.

In the report read at the meeting held on the 17th of December, Mr. Fowler in the chair, it was stated that many circumstances beyond the control of the council had prevented a satisfactory conclusion being arrived at as to the plans that ought to be adopted for providing additional accommodation for carrying on the business of the Institution.

The establishment of a class of students, to be attached to the Institution, but not to form part of the corporation, in lieu of the old class of graduates, was touched upon; and the mode of admission to and the privileges to be enjoyed by this new class, as set forth in the by-laws adopted at a general meeting of members in June last, were detailed. Although not specifically mentioned in the rules, it was contemplated to organize supplemental meetings for the reading and discussion of papers by the students, and possibly, also, for the delivery to them of lectures upon special subjects.

During the past session 48 members and 79 associates had been elected, while the deceases, resignations, and emigrations, together amounted to 33; leaving an effective increase of 94, or at the rate of 7·02 per cent. on the present number of members of all classes. There were on the books on the 30th of November last, 18 honorary members, 689 members, and 826 associates, making a total of 1,433, exclusive of students.

"With respect to the sources of income, and the way that income has been disbursed a brief summary of the statement of receipts and expenditures for the year ending the 30th November, 1867, showed that the subscriptions and fees (exclusive of the Building Fund fees) had amounted to 4,139*l.* 6*s.* 6*d.*, the interest on investments on the general account to 24*l.* 5*s.* 6*d.*, and the miscellaneous receipts to 118*l.* 1*s.* 11*d.*, making together 5,642*l.* 19*s.* 6*d.*; while the Building Fund fees and dividends had realised 844*l.* 1*s.* 7*d.*, and the Trust Funds 273*l.* 1*s.* 3*d.*, bringing up the gross receipts to 6,761*l.* 16*s.* 6*d.*. In the same period the disbursements, including the payments on account of the arrears of the minutes of proceedings, had been 4,520*l.* 8*s.* 8*d.*, and for premiums under trust 163*l.* 10*s.* 3*d.*; while there had been invested on different accounts a sum of 1,638*l.* 1*s.* 3*d.* in the purchase of Reduced Three per Cent. Annuities. The cash balances exceeded by 107*l.* 10*s.* 11*d.* the sums in hand at the same date last year, making up the difference between the two sides of the account, as presented in the foregoing analysis."

The following gentlemen were elected to fill the several offices on the council for the ensuing year:—Charles Hutton Gregory, president; Joseph Cubitt, Thomas Elliot Harrison, Thomas

Hawksley, and Charles Vignoles, vice-presidents; James Abernethy, William Henry Barlow, John Frederic Bateman, Joseph William Bazalgette, Nathaniel Beardmore, Frederick Joseph Bramwell, James Brunlees, George Willoughby Hemans, John Murray, and George Robert Stephenson, members; and John Horatio Lloyd and Captain Henry Whatley Tyler, associates.

THE EXPLORATIONS AT JERUSALEM.

CAMBRIDGE ARCHITECTURAL SOCIETY.

At the third meeting of the Cambridge Architectural Society for the Michaelmas term, the chairman called on the Rev. T. G. Bonney for his communication on "The recent excavations made by the Palestine Exploration Society at Jerusalem."

Mr. Bonney, after a few words of introduction, said the authors who had written upon the position of the ancient Temple enclosure at Jerusalem might be divided into two classes;—those who considered it to occupy a square of about 606 ft. in the south-west angle of the present Haram; and those who supposed it, with the fortress Antonia, to extend over the whole of the Haram. One of the most prominent defenders of the former theory was Mr. Fergusson, who, in addition, had started the notion that the Dome of the Rock was the church which Constantine had by him imagined to have built over the Holy Sepulchre. For this there was not a tittle of evidence. The excavations made at the south-east angle had proved that undisturbed masonry of the age of Herod the Great could be traced down to the rock, about 55 ft. below the present level of the ground. They had also traced the wall of Ophel from its junction with the Haram wall, to a distance of about 300 ft. south-south-west, and had found a passage running for about the same distance under the Haram area. They had also traced the same masonry down to the rock at the south-west angle to a depth of 95 ft., and had discovered that a deep ravine, some 40 ft. wide, skirted the Haram wall on the west. This was formerly spanned by the arch known as Robinson's Bridge; and further excavations in the Tyropoeon valley had discovered traces of a colonnade which had apparently formed part of an approach to it. The question, therefore, of the extent of the temple area was now settled in favour of those who had supported the second theory.

Mr. Williams said, as to the discoveries made by Lieutenant Warren about the Temple area, he confessed that he did not attach so much importance to them as others had done, because he never could feel the force of the arguments by which it had been attempted to place the Temple area in the south-west angle of the present Haram enclosure. From the fact that Mr. Fergusson, Mr. Thripp, and Mr. Lewin had all adopted this theory, he saw that there must be strong arguments in favour of it; but he had never been able to accept them, because it seemed so clear to him that such a situation was directly opposed to the testimony of Josephus, who certainly represented the Temple as occupying the summit of the hill; whereas this modern theory would hang it on the hill side, which would be an impossible position for a fortress—such as we know the Temple was—commanded as it would have been by the raised platform on which the Dome of the Rock now stood. It had, indeed, been proposed by some authors to place the fortress Antonia on that raised platform; but that again was directly opposed to the testimony of Josephus, who placed the Antonia at the north-west, not the north-east, angle of the Temple area.

The chief satisfaction which he derived from these discoveries was this, that they served to vindicate Josephus from the charge of exaggeration, so often unjustly brought against him. His description of the view from the top of the walls at the extremity of Herod's cloister, along the south of the Temple area, had been ridiculed as absurd, but was now found by these recent excavations to be nothing more than sober truth. Mr. Williams acknowledged that he had been obliged to modify his views of the southern limit of the Temple area. All that met the eye in the substructures along the south wall, in the vaults at the south-west angle, in the double and triple gateways, belonged clearly to a late Roman period, and he had accordingly assigned to them the date of Justinian, who had built a church of St. Mary on the present site of the Mosket-Alsa, and in connexion with it a large hospital for the sick and a hospice for pilgrims. He was now convinced that the Haram enclosure was identical with

that of Herod's Temple; unless indeed the recent discovery of a fosse cut in the rock a little to the north of the raised platform, not yet fully described, should require us to modify our views still farther. Mr. Williams, in speaking of the Church of the Holy Sepulchre, adduced some further proofs of the identity of its site with that on which Constantine had erected the Martyr of the Resurrection, which was a question altogether distinct from the authenticity of the site itself. He then described the discovery of the northern and southern apses of the rotunda of the church, which he believed to be such *ex ædificiis* as are described by Eusebius, in the cloister that surrounded the open court to the west of the Basilica, in the centre of which court the Sepulchre itself stood. These two apsidal recesses had been strangely omitted in Captain Warren's plan of the church, published by the Ordnance Office, although they had been inserted in earlier plans, as *ca.* in that of Mr. Scoles, published by Professor Willis, in the second edition of Mr. Williams's "Holy City." These two apses he had again identified last year, and had made a discovery in the southern one which he considered to be of great interest and importance, as identifying the actual site with the ancient one. He exhibited a drawing of an ancient tessellated pavement, which he had found on the floor of this apse, and which he believed to belong to the original court of Constantine's Church, as he could assign no later date to its execution. He had submitted it to a friend of his in the South Kensington Museum, who had obtained the opinion of men learned in such matters there and at the British Museum, and the result of these inquiries was, that it might very well be a pavement of the Constantinian era, executed by local workmen. In conclusion, he thought that, as the theory of the cave under the Dome of the Rock being the true Holy Sepulchre had been entirely exploded by recent discoveries, and the identity of the Saracenic Mosque with Constantine's Church of the Holy Sepulchre had been disproved, all would be glad to acquiesce in the old conclusion that the present Church of the Sepulchre stands in the same position in which Constantine originally placed it.

METROPOLITAN BOARD OF WORKS.

THE report of this Board for 1866-7 has been issued. The subjects of which it treats have already been mostly noticed in our columns as they came before the Board at their various meetings. The main drainage of the metropolis of course occupies a considerable share of the report. There are also reports of the Thames Embankment and other metropolitan improvements, utilization of the sewage, the gas question, removal of Middle-row, Holborn; open spaces, parks, &c.

The results of the sewage-utilization experiments by the company to whom the concession of the northern sewage was granted are considered to be most satisfactory. The crops raised from land manured with the sewage have exceeded the most sanguine expectations. The principal crop grown, as our readers know, is Italian rye grass; and it is stated that, on one place which was sown in August, 1866, and which has received about 4,000 tons of sewage per acre, the crops were as follow:—Eight tons per acre early in April, ten tons in the middle of May, and about twelve tons in the week ending the 22nd of June. On other pieces the crops were even heavier. It also appears that great success has attended the growth of mangolds, potatoes, flax, lucerne, cabbage, celery, and strawberries. The most promising experiment, however, was the wheat crop, on which the sewage was poured four times during the early growth of the crops.

The removal of Middle-row, Holborn, was estimated to cost 61,152*l.*, but it has been effected below that amount. The claims up to 31st March last were 52,006*l.*, whilst the settlements amounted to 43,398*l.*

The widening of Park-lane will be done by setting back the Park boundary fence, at a cost of between 3,000*l.* and 4,000*l.*

As to the gas supply, the report adverts at great length to the exertions in Parliament to obtain for the public a cheap and pure supply of gas; but they had not been successful.

The total receipts of the Board in 1866-67 were 3,148,112*l.* 7*s.* 3*d.*, and the total payments 3,090,045*l.* 1*s.*

After mentioning other topics of minor im-

portance, the report concludes:—"Foremost amongst the improvements effected by the Board must ever be considered the main-drainage system, the beneficial results of which are evidenced by the improvement in the general health of the metropolis, and especially in that of the low-lying districts." It calls attention to the improved condition of the Thames, the formation of new broad thoroughfares, the embankment of the river, and the formation of parks for the people; and mentions that means are urgently required for making other improvements which are greatly needed, and suggests that these means should be raised by a tax levied on the owners of property.

A PROPOSED CANAL.

AN Act is to be applied for in the ensuing session of Parliament, by some of the landowners and others interested, for powers to construct a canal from the River Thames at Wandsworth along the valley of the River Wandle to Wimbledon. The embankment of the Thames has so reduced the wharfage space along the river above Blackfriars Bridge that extra accommodation is said to be eagerly sought after.

The Wandle valley is teeming with paper mills and other manufactories, which at present are without the facility of either railway or canal accommodation. The probable cost of the proposed undertaking, as estimated by the engineer, Mr. Hamilton Fulton, amounts to the sum of 120,000*l*. The proposed undertaking comprises also a roadway, tramway, and sewer. The tramway would give, at small cost, a connexion between the Brighton and South-Western Railway systems and the proposed canal. The Wimbledon and Merton drainage is greatly defective as regards the outfall, and it is believed the construction of the proposed sewer would afford efficiently the desired facility to these low-lying districts, and also to the houses and factories bordering on the River Wandle. It is intended to purchase a certain depth of land along the site of the proposed road, and after the road is constructed to sell off the land at an enhanced price in building plots.

CIVIL ENGINEERS IN INDIA.

SIR,—I inclose an extract from a recent Government of India Gazette, which makes public property of matter that was circulated by itself throughout the Public Works Department a short time ago.

That you may see at a glance what is the actual difference in the scale of pay, I append to the extract a list of those grades in which a difference subsists.

In the Covenanted Civil Service of India, entered by competition and open to all, no attempt is made to arrange salaries, or, rather, to lower them down to the level of native candidates. If a native can enter, he gets the same pay as his European *compères*. It is not at all surprising that the difficulty felt by Government did not "occur" to the commissioners. They would never guess that civil engineers sent out from England were underpaid because native candidates were usually wanting in strength of character. The commissioners are men of practical Indian experience, and know what a farce it is inviting native young men on the present system to join the upper engineer service.

If you will consult the classified list of the Public Works Department, you will see there are only two or three native engineers in the whole of it, though they have had the higher branch of service open to them for the past ten years or more.

In Madras, not very long ago, the authorities declared they had no institution capable of affording the advanced education necessary to enable natives to enter the Public Works Department as assistant engineers. They might have added, with truth, that there were no youths of sufficient social standing likely to come forward. The natives of Madras are not nearly so wealthy, nor, in many respects, so civilized, as those of Bengal.

In Bombay there is only one native executive engineer; and, as there all the cleverest natives can make large fortunes in trade, candidates are not likely to come forward very freely.

The natives who come to Indian colleges are not, as a rule, of the best families. These at heart despise British institutions; but poor Brahmins, sons of clerks, and inferior employes in Government offices, and those who feel that, to get a living, they must conform to European modes, repair to them. Further, the educational institutions are not widely spread, and draw their students from the large Presidency and other towns. If they knew they were to be employed as engineers in their own neighbourhoods, perhaps good men would be eager to go into the service; but none but those induced to do so by sheer stress of circumstances, will care to be liable to be moved from Burmah to Hyderabad or Central India, or even to distant places in their native province.

Further, there are physical peculiarities in natives of India which cannot be ignored. Generally speaking, those highly intelligent young men the Government allude to as able to pass the highest theoretical tests are of exceedingly delicate make. It is not so much strength of character as strength of body that they want. On the other hand, the natives of swarthy build, and of whose warlike prowess we so often hear, have little or no headpiece at all. For some reason or other sedentary occupations, particularly those which call for great and sustained intellectual labour, are in India very weakening to the European constitution, especially to a robust constitution. And so it will be found that those classes of natives who have set themselves aside for sedentary pursuits are not strong enough to do much out-of-door engineering work, or the effort is such a tax upon them as to prevent success.

This evil of weakness is not so apparent in the natives who are employed as subordinates. They are tolerably active, and decently intelligent as well; but their qualities are not of the highest order, and their social standing is similar to that of such parties in England.

Natives of good family, who combine ordinary talent with personal energy, and who would turn out promising engineers, are very rare. If such go into the public service, they choose the revenue or judicial branches, which are much thought of, well paid, and which, it must be said, present numerous opportunities of illicit aggrandizement, which cannot be said of the Public Works Department, with its numerous checks.

If at the beginning of this century the Company's civil servants took bribes and presents freely till their pay was raised, and no less an authority than Sir Thomas Munro gave it as his deliberate opinion that they would always do so if their salaries were below a fair rate (see Gleig's "Life of Munro"), it is improbable that native Government agents would now be found proof against the temptations which are enormous in the courts and cutcherries.

Natives, in addition to observing no opportunities of augmenting their salaries by left-handed means, see the repute in which the Public Works Department is held. Most people make a laughing-stock of it. Even the engineers in it occasionally join, so absurd is the mass of routine they have to maintain. Besides, they notice that, as the Government say, the pay is just the same as other staff employ which calls for nothing like the same theoretical knowledge. It is also a department all through paid one-half as well as the civil service, and only entered by staff corps officers who have insufficient influence to secure a more dignified and comfortable situation.

The fabric has hitherto, in fact, only been kept together by the East India Company's military engineers, who took great pride in Indian public works, and lost sight of material advantage in the engrossing details of their duty. It even escaped them to notice how easily officers from the infantry were put into many of their good appointments. But as a body they were poorly paid and slowly promoted. The Indian engineers are now left to gradual extinction; vacancies are not filled up, and Royal Engineers who care to come out can claim withdrawal at the end of seven years. As at the end of seven years an officer can hardly expect to be more than executive engineer (fourth grade), he will be only 10*l*. a month the richer in salary than when he first came out; and, having had a disagreeable time of it in a rough, uncivilized country, will be glad to be quit of it and of the Public Works Department for the remainder of his period of service.

Nothing can render India popular but high pay and liberal furlough rules. The maxim hitherto has been the lowest possible pay and to

allow no one to leave the country unless he is sick.

During the last few years the price of provisions has advanced from 50 to 150 per cent. This is probably due to the heavy cash expenditure upon railways and cotton, and corresponding neglect of irrigation and agriculture. Salaries keep to their old level notwithstanding the depreciated currency.

A visit to Europe is, on the score of health alone, desirable after five or at most seven years' residence. The Government do all they can to hinder leave being taken even after ten years. They know their service is underpaid, and, perhaps, fear lest many should quit in disgust upon revisiting their native country too early.

Higher pay could be readily afforded if Government were to employ fewer engineers and give them larger powers. As it is, a highly scientific officer cannot buy a set of tools or plant, costing say one-third of his own pay, without referring to some superior, and pointing out minutely the necessity for the article. If whitewashing a room costs 5*s*., when it has been estimated at 3*s*. 6*d*., he has to afford lengthy explanations—that the walls were smoked and had to be sized, or that he used glue instead of rice water, or the like—in a letter that takes an hour to write may be. And, after all, he is informed that this wasteful expenditure cannot be allowed in future.

Again, nothing is commoner than for a superintending engineer to order an executive engineer, 4th grade, to prepare plans and estimates for difficult and costly works really beyond his powers and experience. He wastes a deal of time and thought over them, sends in the best sort of project he can, after reminder and reminder from the superintendent engineer that he is waiting for what, under a proper system, he, as a well-paid experienced officer, should have drawn up himself. The project is found, of course, deficient in many points, scored over with pencil-marks, and returned, with caustic reflections on the young executive's want of skill.

The waste of engineering ability in India, through the distrust there is of everybody as to fitness, and we might almost say integrity, is only second to the money wasted in badly-performed work and the keeping up of a complicated system of accounts suitable only to barack construction and to a highly civilized country.

You will do the profession great service by bringing forward such considerations as those I have lightly touched upon, but I am afraid nothing short of a Parliamentary inquiry will put things on a decidedly better footing. At present it is almost a mockery on the part of the authorities styling an engineer a "professional man," since he is not trusted or treated as such.

A FORMER CORRESPONDENT.

In the supplement to the official Gazette of India, dated October 12, 1867, appear the following remarks on the recommendations of the Commissioners on the famine of 1866, in Bengal and Orissa:—

III. Irrigation generally.

A reconsideration of the system under which civil engineers are got out from England for service in India, is recommended in paragraph 55, page 168. The commission was evidently not aware of the very full consideration this subject has already received from the Government of India, nor of the difficulties with which it is beset.

The commission notice that, even after the changes made in 1866, there is still a difference between the salaries of civil and military engineers in the lower grades, and recommend a higher standard of examination and higher rates of pay for the successful candidates for employment as civil engineers.

It does not seem to have occurred to the committee that the difficulty of arranging the matter of salaries arises out of the difference between European candidates and natives in the department, and those who are natives of India, and to whom this line of employment is equally open. The latter will often pass easily the highest test in theoretical examinations, and yet prove useless as engineers from want of practical energy and strength of character. With the former, these last are so seldom found entirely wanting, that the examination tests alone are almost sufficient to ensure the requisite qualifications. It has always been impossible to make a distinction between Europeans and natives in the tests to be laid down for admission into the service as civil engineers. This being so, the scale of qualifications and pay cannot be fixed, as all the candidates are sure to be Europeans. There are no means of testing practical energy and strength of character, except by putting the person to actual work or business. Thus, in order to eliminate a number of unqualified native young men, without driving away such as are qualified, it is necessary to admit civil engineers, who enter on theoretical examinations only, at a low scale of pay, and to let them advance by promotion as soon as they are found to possess the other necessary qualifications. The only alternative is to insist on some length of approved professional experience as civil engineers, and to admit the candidates so qualified in higher grades of assistant engineer. This is done to some extent.

With Royal Engineer and Staff Corps officers there are no such difficulties. Their college and military service, before they enter the Public Works Department, suffice to

make known to some degree their capacity for business and their character, so that they can be admitted at once at a rate of pay that could not be offered to a native candidate of untested powers in these respects; while, at the same time, other departments of the staff and civil employ, which do not require such severe theoretical tests, are open to Staff Corps officers at pay as good as that of the Public Works Department. These are the reasons why the pay of military engineers cannot be lower, nor that of civil engineers higher, in the lower grades of the service. The discrepancy is, however, greater apparently than actually, because the number in the lowest grade where the difference is greatest, is small.

ENGINEERS.	Maximum Monthly Salary.			Difference.
	Military Officers.	Civil Officers.	Rupees.	
Chief, 3rd class	1,550	1,750	100	
Superintending,	1,500	1,600	200	
1st grade	1,650	1,400	250	
2nd grade				
2nd class, 1st grade	1,550	1,200	350	
Superintending, 2nd class, 2nd grade	1,350	1,000	350	
Executive, 1st grade	1,250	900	350	
2nd grade	900	750	150	
3rd grade	750	600	150	
4th grade	600	500	100	
Assistant, 1st grade	500	400	100	
2nd grade	450	300	150	
3rd grade	350	200	150	

precautions against those fires which can never be wholly guarded against will not be carried so far in the reconstructed house as to rob it of this, which was perhaps the most remarkable and, to a lover of music, delightful property of the old one. Let the surrounding corridors, the backs, and even the floors and ceilings, of the boxes, and the very floor of the pit, be as fire-proof in their construction as we know how to make them. Above all, let very numerous, spacious, and thoroughly safe fire-proof staircases be provided; but let the inner shell of the auditorium, &c. the ceiling and the box fronts, be constructed as they were before, or the loss by the fire will be, to the musical public, virtually irreparable, however splendid or however convenient the house may ultimately prove to be when rebuilt.

T. R. S.

NOTE FROM YORK.

A CORRESPONDENT writes,—"The old George Inn, Coney-street, is now being pulled down. This inn was formerly the place in which was held a Guild of St. George (about the year 1500), which was, I believe, for commercial purposes. It was afterwards the town house of the Duke of Buckingham, of the time of King Charles II. A very beautiful room in this old inn, called the "Apollo," and in which Francis Drake, the antiquary, who wrote the "History and Antiquities of York," used sometimes to take his sojourn, had the arms of King Charles II. and the Duke of Buckingham, in painted glass of the period. This room is engraved in the Abbotsford edition of the "Waverley Novels," in which the Duke of Buckingham is mentioned. The Duke of Buckingham had a house in Skeldergate, in the city of York, where he practised chemistry; on the site of this house is now a street, called after him, Buckingham-street. His estate at Helmsley, to which Pope alludes, was sold:—

"And thou, proud Helmsley, Buckingham's delight,
Sold to a scrivener and a city knight."

This scrivener was Duncombe, banker to King James II., who, when James applied for his money to him from St. Germain's, replied, he might come and get it. The beautiful Gothic doorway of this old building, with the "Pelican in her Piety," and other carvings, engraved by Halfpenny in his "Remains of Old York," is valued by Mr. Gatch, a gentleman living in the neighbourhood of the city.

THE CONDITION OF ARCHITECTURAL SCULPTURE.

I FIND in the *Builder* of December 21st a communication, signed "R. F. H.," referring to a letter of mine published in your number dated December 14th.

I beg to quote one paragraph from it: with the tenets promulgated in the latter part of that letter, it will be seen, in the position I have taken up, I have nothing whatever to do. I will quote the writer *verbatim*:—

"I have just read in the current number of the *Builder* the letter headed 'The Condition of Architectural Sculpture,' and signed 'John Roddis, carver.' It is admirable so far as it goes; but Mr. Roddis has altogether overlooked the most material bar to excellency in workmanship in England, which is trade-unionism, *alias* trade-unionism. Did the proprietors of houses being built, did building committees, did architects ordain that one scale of wages should be paid in building trades to skilled and unskilled workmen alike? No; but the men did. Suppose an architect or his clerk of the works engaged a few first-rate hands and paid them whatever remuneration they chose to ask: what would ensue? Rattening!"

These italics are not mine. In answer to this, I beg to state that such a thing as an equalised scale of remuneration has never been recognized among us; and further, I may add, that no society has ever been formed by architectural sculptors to attain so undesirable an end, for the simple reason that we do not allow that nature has organised a certain standard of talent which cannot and must not be exceeded. In the letter referred to by "R. F. H.," I stated that there were "architectural sculptors to be obtained for 8d. per hour, and others who could not be obtained for three times that amount." This in itself should have been sufficient to show that they rate their value simply by ability, and not by number; and I think I may venture to say the same of every other branch of art-workmen. "R. F. H.," asks, "Suppose an architect or his clerk of works engaged a few first-rate hands, and paid them whatever remuneration they

chose to ask, what would ensue? Rattening!" That I deny. He should have blotted out that word, and written *excellency*, while writing upon architectural sculpture. That is the very thing we crave,—time for study. A remuneration that will pay, not for physical labour alone, but for a little thinking also. Your correspondent has mixed up the mechanical trades with those essentially artistic. How far those trades benefit themselves by banding together like so many vast human machines, striking down all the talent nature may have distributed among them into one mediocre level, is a problem time is fast solving for them. I feel what I consider to be the errors of such a system as keenly as "R. F. H.," and I am under the impression that I have endeavoured to show that what we mainly complain of is this system of *levelling* having been imposed upon us by the architects: rating all men alike, giving art-work a quoted price in the market, like so many yards of concrete, or so many tons of pig-iron. I reiterate here what I have said before, that English art-workmanship has been tried in Paris and found wanting, and I hold that this system is mainly to blame for it. The *Builder* of last week, reports Mr. Gambier Parry to have said at the Gloucester School of Art, "In all our highest manufactures, in which art appears, the French have outdone us completely." These are the words of a gentleman not only of very high standing in art matters, but of one personally engaged upon the English commission in Paris; and therefore carry a weight of truth with them which should engage the most serious consideration of every English art-producer. I will not trespass further upon your space, but in conclusion beg to thank "R. F. H." for affording me an opportunity to clear away an error respecting the *union* system and architectural sculpture.

JOHN RODDIS.

STRIKES v. TRADE UNIONS.

SIR,—I read with much interest the reports and letter, which appeared in the last three issues of the *Builder*, on the above important question. As most of the writers on it are either opponents or eulogists of unions, I will press every point in their favour, and try to make them beautifully white, whilst the others state that everything connected with them is of the darkest hue. As the *Builder* is an impartial medium of communication between employers and employed, I hope you will grant a small space for a workman's view of this at present national and important matter. I may not be entirely dissent from some of the leading doctrines of the unionists, such as the limitation of apprentices, and I have up to the present held aloof from unionism, believing that a neutral force of workmen should exist sufficiently strong to curb the irrational acts of unionists and employers. It seems to me that anti-union writers are always trying to make the world believe that employers are the most honest and just people in existence, and taking their stand-point from that premise, they claim that the masters alone shall regulate and fix the remuneration of labour; and that the workmen, in order to understand the question, shall take any price which the employer in his wisdom may think fit to offer. I differ entirely from the conclusions arrived at by these writers, and from a lengthened observation and a practical experience in various parts of England, I have found that the masters' love of honour and justice is not of that character which would warrant the workmen in submissively trusting to it.

The writers in the *Quarterlies*, "British Almanac and Companion," and other publications of that description, are aware that, as a rule, the working men but rarely see or read their articles. It, then, must be evident that they write for a class altogether different from that most interested in the approval or disapproval of the sentiments they promulgate; and they thus have a total immunity from the criticism of the working classes. For instance, Mr. Plummer states, "there is not that antagonism between masters and men on the Continent which exists in this country." And there is an entire immunity from strikes and their consequences to the capitalist; but, if I recollect aright, strikes do sometimes take place in these Elysiums of the capitalist. And a workman ought to have known that the public journals of this country have given fearful accounts of strikes which have taken place during this year in Belgium and France. And even in Berlin there is now an agitation for the same objects, one of which is to reduce the hours of labour. It is well known from the history of trades unions in this country that they have gone through many phases to arrive at their present state; and that an important community does not exist on the Continent, is the prelude to a thorough organisation, which in due time will embrace the greater portion of working men in these countries. Having dealt with the last question first, I will proceed with that of antagonism and kindly feeling, and show the reason for the difference in this and other countries.

At a period not very far back in the history of our country, masters and men were more nearly related in social position. The master was not above being seen chatting with a group of his workmen. His business was to a large extent known to them, and his interest formed a part of their duties to him. It is related by our elders that the employer was once not above smoking a pipe or taking a social glass with his men. The ambition and love of affluence and position which characterise the present age had not then held upon the mind which they have now attained.

But, now, a twopenny builder, or any other like employer, must stand upon his dignity, and in the estimation

SOUND IN HER MAJESTY'S THEATRE.

I VENTURE to ask space for a few lines relative to a subject to which the appropriation of the building lately destroyed by fire to musical performances of the highest class lends an exceptionally great importance, but which has escaped notice in the correspondence published relative to the building, so far as I have seen it.

In almost all the "obituaries," as one may call them, of Her Majesty's Theatre, which have recently appeared, some such statement as this occurs,—"The acoustic qualities of this building were unequalled in Europe." This, no doubt, was strictly true. Music, both orchestral and instrumental, sounded more brilliant in tone and was more uniformly well heard in that house than elsewhere; and artists are understood to have used their voices and instruments there, notwithstanding its vast size, with greater ease and comfort than elsewhere. But to this statement has been added, in more than one quarter, that these qualities were the result of accident rather than design; so that it is to be feared the building, when rebuilt, may not possess them. This representation I venture to call in question.

The mere fact of a building designed for musical performances proving suited to them, goes far towards proving that the success was due to design; and I venture to address you in the hope that, whenever this Opera House comes to be rebuilt, perfect suitability to musical performances may not be overlooked as one of the essential requirements of the structure; for I maintain that, by using the same means which Novoselski used seventy years ago, the same results may be again attained.

The acoustic qualities of Her Majesty's Theatre were due partly to the forms and proportions adopted, partly, perhaps, to the existence of certain cavities, and very largely to the material employed.

Without going into any analysis here of the mode in which the shape of the building was adapted for the successful transmission of sound (some such analysis will be found in the volume on Acoustics in Wenley's elementary series), it may be sufficient to say, that as the forms and dimensions are capable of being reproduced in a new house exactly, whatever was due to them may, of course, be in that way recovered. I am, however, of opinion that considerable variation, if desired, might be introduced in parts of the house, without at all lessening its perfection as an auditorium.

But it is the fact that all the interior faces of the building—those against which the vibrating mass of air impinged—were of resonant material, i.e. of dry wood in as long lengths as possible and fixed at as few points as possible, that the very remarkable acoustic qualities of the old house were mainly due. Nor is there, so far as I am aware, any possibility of securing this advantage with incombustible materials.

If it were at all feasible so to construct a theatre that nothing in it could by any possibility burn, it might be a question whether the attempt ought not to be made, regardless of the risk of having a "dummy" quality of sound as one result but things being as they are, I trust that

of his class he would lower himself by now and then meeting his men in social reunion. If the employer now condescends to speak to a workman, it is something between a grunt and a growl, to know how long it is before the piece of work he is engaged upon will be done. And in the large firm everything is done through the foreman or manager. The master, to all intents and purposes, is a stranger to his workmen. He knows but little, and cares less, about them. As soon as they have done his bidding, or a slack time comes, they are turned away at an hour's notice and without a moment's consideration of their services; and the belief is general that they are less cared for by the employer than are his horses and machinery.

One thing is certain, that the employing class of this country are striving for position; that is, if they now occupy a semi-detached villa, and drive a brougham, they are discontented because they cannot remove to a mansion and set up a carriage and pair. I am not one of those who condemn that ambition when kept within proper and legitimate bounds; but I do say that when the end alone is considered, and the means to fairly and honestly attain it thrown aside, it is not to be expected that those through whom they expect to attain it will have much respect or kindly feeling towards them; and there is but little doubt that it is the selfishness of this class, and the treatment which the workmen have received from them, that have been one of the principal causes of the formation and success of trade unions. I intended to touch upon several other points in this question; but I find I have already trespassed too far, and must leave piecemeal and the present duties of trade in every department till another opportunity. Writers who take up this question to have any influence with the working classes, must treat it in a broad and impartial manner, or the workmen will turn with contempt from their statements, and the breach which now exists between the two will be still further widened.

JACK PLANE.

DISFIGUREMENT OF THE TRAVELLERS' CLUB HOUSE, FALL MALL.

I SHALL feel obliged if you will allow me to call the attention of members of the Travellers' Club, many of whom claim the character of men of taste, to the recent disfigurement of their club-house. This has just been effected by the removal of the ornamental stone balustrades from the balconies of the garden front towards Carlton-terrace, and their replacement by common bulging iron railings, of a design which I can only describe as Baker-street vernacular.

The effect of this unfortunate change is that the iron balconies not only attract attention to their own inelegance, but most seriously and injuriously affect the architectural character of the whole building.

The stone balustrades were designed in conformity with the rest of the front, of which they formed an essential portion. By their removal the elevation is not only mutilated of an important member, but the iron-work, by allowing more of the principal windows to be seen from below than the architect intended, materially injures their proportion. Moreover, the balconies themselves, being designed to support a stone balustrade, appear altogether inconsistent now that they have only to carry a nondescript erection of light iron bars.

The only advantage that can have been obtained by this ill-advised alteration is the gain in a rarely-used balcony of a few inches of space, leaving the difference in thickness between the old stone balustrade and the new iron railing. The price paid for this doubtful gain is the destruction of the charms of symmetry, finish, and beauty of proportion, which have always caused the garden front of the Travellers' to be considered one of the best works of Sir Charles Barry.

On hearing a rumour of what was intended, I tried by communication with the secretary, before the iron railing was put up, to avert the threatened mischief. Having been unsuccessful, it only remains for me to appeal through you to the members of the club and the public. Fortunately, the remedy is simple; it will be very easy to remove the iron railing and revert the original balustrade. In order that no objections of expense may arise, I can only say that, if I had known this to be done, I should be happy to make them a present of the cost of the restoration, rather than see their beautiful front permanently defaced.

EDWARD M. BARRY.

PIPES EXPOSED TO FROST.

SIR,—I noticed a letter suggesting the insertion of a tube of India-rubber in water-pipes to keep them from bursting, but I think by the constant pressure of the water the India-rubber would get too hard to expand. Now, it has occurred to me since reading the letter, that if in some positions the lead-pipe were covered with an India-rubber tubing, it would assist to keep the pipe warm, and at the same time supposing the pipe did burst, it would prevent the water from flooding the house.

J. B.

BELLS AND BELL RINGING.

THE music produced by the ringing of a good peal of bells, at proper times, and in moderation, is truly pleasing to the ear. And at this particular season many persons will be reminded of the words of Charles Lamb, who says, "Of all sound of all bells—(bells, the most highest ordering upon heaven)—none so solemn and so sweet as the peal which rings out the old year. I never hear without a gathering up of my mind to a concentration of all the images that have been diffused over the past twelvemonth; all I have done or suffered, performed or neglected, in that regretted time."

Now, the following arrangement, which has been adopted for many years at some of our churches, will show how to—

"Ring out the old year, and ring in the new,"

in an appropriate manner:—

On New Year's Eve a muffled peal is rung from 11.30 till 11.55, to mark the departure of the old year. At 12 o'clock its knell is sounded by twelve strokes on the tenor bell. After which, the muffled bars are removed, and in the clappers of the bells, the new year is ushered in by a merry open peal.

THOMAS WALSLEY.

ELEVATION OF TOWNS ABOVE THE LEVEL OF THE SEA.

PERMIT me through the medium of your columns to suggest that a chart, showing the heights of our chief towns above the sea-level, would be a desirable publication, not only to satisfy curiosity, but also as a reference upon many occasions, especially in connection with sanitary questions.

Popular opinions upon this subject are often very erroneous, and which nouns is a more remarkable example than the belief, all but universal, that the city of Salisbury is built in a very low situation compared with other cities. Having ventured to question the ground for that belief, I have obtained an answer inducing me to advance an opinion directly contrary, namely, that the site of Salisbury is really higher than the sites of the majority of cities and larger towns in England.

I found this opinion upon the authority of the Ordnance Survey, wherein it is shown that the Close, itself slightly lower than the city, is 150 feet above the level of the sea.

The knowledge of actual levellings enables me to claim this elevation as being very much, even 110 ft. higher than London and Westminster, and the general metropolitan level; 60 ft. above Telford; and 70 ft. above Paddington. Without actual levellings, general observations justify me in pretty confident statements that Salisbury is higher than that of all the twenty-six cathedral cities, with two or three exceptions; also, that the whole of Salisbury is higher than the whole or greater portion of all towns of more than 10,000 people, in the South of England, with perhaps, two or three exceptions; and that it is higher than any, much higher than most, of the larger towns in the eastern counties.

Of course, in forming the chart, only actual levellings, or most accurate barometric observations, could be relied on; and as the surface in many towns varies much, I would suggest that the mean of several heights be given, or, if one height only, that should be of the market-place, rather than of the churchyard, because churches are often built in the highest parts.

A. B. MIDDLETON.

THE SENTINEL AND THE CLOCK.

SIR,—MR. WALSLEY alludes to the anecdote of the sentinel at Windsor Castle, and the recasting of St. Paul's bell. I therefore venture to refer him to the *Memorials of Westminster*, 1849, p. 199, where he will find some additional particulars, which I gleaned from a letter-book, and I remember even now from a newspaper after a weary search.

MACKENZIE E. C. WALCOTT.

"STRAW PLAIT DISTRESS."

SIR,—Having made a humble effort on the above subject by the kind permission of the *Builder*, on the 9th Nov. ultimo, I was not surprised to see my statements confirmed. The *Home of the Distressed* is a most additional particular, which I gleaned from a letter-book, and I remember even now from a newspaper after a weary search. I have heard, in the interim, from very worthy neighbouring authority, that "many of the women are gone to Manchester, and other large towns, to learn the weaving business, in order to save themselves from starvation." I am glad, however, does not seem to have remedied the distress above spoken of, and humbly appears to me even doubly regrettable, as the women are quite sufficiently "stocked" already; and their own was as little encroaching on others as could well be imagined. How thankful they must prove to their countrywomen from the humblest "middle class" to the court. If they would take up their cases, in unmerited decline. Oh, that I had "means to order 1,000 straw plait bonnets,"—of course ones, and to be "given away in charity," as a hint of relief and hope to their distressed. Christmas of 1867.

A CAMBRIDGE MAN.

Native of the Quarter.

ST. JAMES'S TOWER, TAUNTON.

THE vestry have had a meeting to receive and accept tenders, &c., for the taking down and rebuilding of the tower, in accordance with the order of vestry given on the 14th of December last. Three tenders were received, one from Mr. Davis, Langport, 3,668l.; Mr. Davis, Taunton, 3,610l.; and Mr. Woolfrey, Taunton, 2,988l. Mr. G. Webber proposed, and the Rev. W. T. Redfern seconded, that Mr. Woolfrey's tender be accepted. The chairman then a lengthy discussion took place, on a proposition of Mr. Small's, that Mr. Spiller's former tender of 2,860l. be received. This was objected to by the churchwardens, on the ground that he had not tendered on the present occasion, consequently it would be unfair to those who had. Mr. Colker then proposed that the subject be deferred until Easter, to enable the parish to put in churchwardens in whom they had confidence. The chairman objected, on the ground that the expense ordered by vestry must be paid during the current year; when Mr. Colker replied that he would not recommend the tender, and produced and read various letters and certificates from practical men, showing that his drawings were incorrect. The question fell to the ground in consequence of no proposal being made to accept any tender. Mr. Small then proposed as an amendment to Mr. Webber's motion that Mr. H. Davis's tender be accepted, which was seconded and 1st, and the chairman declared the resolution to be carried. The tender was accepted, carried. Upon a motion that a three-penny rate be made,

extending over a period of twelve years, to defray expenses already incurred, and the rebuilding the tower, a stormy discussion ensued, but the motion was eventually declared carried. A proposition was then made, to the effect that the tower should be taken down and entirely rebuilt from the ground, at an extra expense of 1637l., which was agreed to.

THE BUILDING LINE IN THE EUSTON-ROAD.

FOR several years past there has been a contest carried on between the parochial authorities of St. Pancras and Mr. Bauman and other builders as to the line of frontage and elevation of houses erected on the forecourts of the houses in the Euston-road, between Hampstead-road and Osnaburgh-street; and the matter, having at length been referred to the determination of the Metropolitan Board of Works, that Board has decided to adopt the plan of Mr. Vulliamy, superintending architect, showing an improved line of frontage, by which any buildings to be erected on the northern side, between the points indicated, are to be kept to an extreme general line of from 16 ft. to 11 ft. back from the outer edge of the curb to the foot pavement, and on the southern side of the road the foot pavement is to be in line with the line of the foot pavement, to be in line with the line of the foot pavement, a formal application will still be required to be made to the Metropolitan Board of Works for each building, in order to secure a uniform arrangement, and to obtain an opportunity for reconciling the interests of the various owners.

THREE MEN KILLED BY FOUL AIR IN A WELL.

THE local press throughout the country ought really to din into the ears of the ignorant everywhere the simple means whereby wells may be cleared of foul air, as well as the greatness of the danger of descending into any well till simple tests be applied in order to show whether the air be foul or not. Wherever a candle will not freely continue to burn, human life cannot continue to subsist. If a candle goes out, therefore, either immediately or after a while, when lowered into a well, something ought to be done to get rid of the foul air before any one descends. The most effectual as well as simple way of clearing the well of foul air is to throw down the draught tubing of a garden or other hand-pump, lengthened, if need be, to the occasion, till its open end nearly touch the water without dipping into it. By the working of the pump the foul air can then be pumped out just as if it were water; and it will flow away as water would do; for foul air, or carbonic acid gas, is so heavy, as a gas, that although it is invisible, it may even be poured into a vessel, and out of that vessel into another, just as water can. The man who recklessly plunges into the foul air of a well, therefore, may be said to be going into a fluid over head and ears which will drown him, though he can neither feel nor see it. One of the innumerable cases of drowning by foul air which are over and over again taking place, has just occurred in Farley-street, Birmingham, where, as usual, one poor ignorant fellow followed another to his fate with the kind intention of saving life, till three of them were all doubly drowned in foul air and in water together. In this case, even the precaution of a rope tied round the body was not used except in one of the instances, and it is believed the one who was so tied removed the rope to put it round one of the dead bodies, but became a dead body himself before he could do it. The first man had actually descended while no one was at hand to help at all.

AMUSEMENTS.

Haymarket Theatre.—There are two excellent scenes in the new burlesque here, "A Per-version of the Brigand," one a pass in the mountains with the sun slipping their legs and gradually descending—the other an Italian ball-room with double flights of steps in the centre at the back leading to the upper floor. These do considerable credit to Mr. O'Connor the painter of them. The piece, wanting in plot (as most burlesques are now-a-days), is smartly written by Mr. Gilbert A. Beckett. Mr. Compton, Mr. Kendal, and Miss Ione Barke have the principal parts. A new drama, "A Wife well Won," will be played here on Monday.

St. George's Opera House, Langham Place.—The new comic opera, by Mr. A. Sullivan and Mr. Burnand, *The Contrabandista*, includes some very agreeable music, is lively in plot, and altogether amusing; a neat corps de ballet, and sufficient chorus, completing the ensemble. *Puss in Petticoats*, and Offenbach's *Chin-Chow-Hi*, fill up the evening very agreeably. Nevertheless,

and we now speak with only one desire, the success of the undertaking, if Mr. Reed would have it take the position it should, and we have every reason to believe it would take, he must obtain assistants who can act and sing. At present the company has too amateurish an aspect to command a great success. There is another hint we would give him. The draught from the Regent-street entrance must be prevented. At present, even in the stalls, it is intolerable. At many of our theatres this nuisance is unbearable, and keeps many persons away.

The Polytechnic Institution.—The new lecture which Professor Pepper has prepared for the holiday season, "Faraday's Discoveries and their Results," includes matter more erudite than is usually administered here—matter, too, of very great interest. There are few people who, when they have heard there was a fault in the submarine cable, and it was about so many miles from shore, have not asked how it was possible to determine this latter point. The description in this lecture of "Wheatstone Bridge," as it is called, answers the question. Some amusing optical deceptions in the moving of tables and raising of Tobin are also shown; but to set these forth as any answer to the so-called Spiritual Manifestations of the day is a great mistake. They do not touch the matter at all, and would simply give the "Spiritualists" an easy victory. Electricity is receiving considerable attention just now at the Polytechnic, and the directors contemplate setting up a machine that will give a shock capable of killing off a man.

CHURCH-BUILDING NEWS.

Salby.—The church of St. James, at Salby, has been consecrated by the Archbishop of York. The building is being finished by the executors of the late Mr. James Andrus, in whose lifetime it had been commenced, and who had agreed to be at the sole expense connected with the work. The tower is still in process of construction, and some external ornamentation to be carried out. The building has been constructed from designs by Messrs. Newstead & Low, of York and London, and consists of a nave, with aisles, chancel, with organ-chamber on the south side and vestry on north, and tower with spire at the west end. The total length of the church is 122 ft., the width 50 ft., and the tower and spire will rise to a height of 165 ft. The lower part of the tower is for use as a baptistery. The style is of the Early Geometrical period. It is built upon a plinth of Sheffield blue stone, and the external walls are fenced with Bradford sets with Ancaster stone dressings. The aisles are divided from the nave by five bays, the arches of which rest on single polished red Isle of Mal granite columns, each shaft being one piece, and having carved capitals in Ancaster stone. A variety of stones is used in the building internally, as well as externally. The chancel arch is carried on clustered banded shafts of red Devonshire marble, with carved capitals and stone bases. An eastern and two rose windows light up the chancel. The east window is filled with stained glass, which has been executed by Messrs. Heaton, Butler, & Bayne, of London, and contains the following subjects in the five lights:—The Call of St. James, the Raising of Jairus's Daughter, the Transfiguration (centre light), the Agony in the Garden, and the Martyrdom of St. James. The east wall, on either side of the reredos, is ornamented with a moulded and cusped arcade, supported on Italian Bardilla and Spanish Naxos marble columns. A sedilia has been introduced. The roofs are open and of stained timber, and the beams rest on carved corbels. Maw's encaustic tiles, in many different patterns, have been used to pave the church. The reredos is constructed mainly of polished Derbyshire alabaster, enriched with carving. It is divided into three panels, by coupled and single polished green serpentine shafts, with moulded arches, and surmounted with a moulded and carved cornice, with a cresting inlaid with bosses of polished Derbyshire spar of various colours. The lectern takes the conventional eagle form, but has been modelled for the architects from studies made by them at the Zoological Gardens. The organ has been built by Messrs. W. Hill & Son, London. The fittings are entirely free.

Newington.—The Bishop of London has consecrated the new church of St. Matthew, in the New Kent-road, near Newington-bath. The edifice, which, exteriorly and interiorly, is of a light character, has been built within seven

months, Mr. Henry Jarvis, a local architect, and Messrs. Myers, the contractors, having been engaged in its erection. Mr. Robert Stephen Faulconer, of Waltham, and Mr. Whitehead have given large sums, the former about 5,000l. and the latter 1,000l. towards the cost.

Norwich.—St. Andrew's Church has been undergoing some further restorations. The present work has been to scrape and clean the stone-work; to restore the mutilated columns, the bases of which require to be nearly rebuilt; to banish the old square pews, and to substitute open benches. The scrapings of the columns brought out the warm colour of the stone which had been hidden beneath coats of whitewashing, and the walls have been tinted with a corresponding colour. The side passages are so arranged as to show freely and in full prominence the bases of the columns, without interfering with the arrangement of the benches. The material of which the old pews consisted has been employed in the new benches, the ends of which, towards the centre aisle, consist of deeply-recessed panels, made of the old oak, surmounted with tracery. The architect was Mr. William Smith, of London; and the contractor, Mr. Burrell, of this city.

Bury St. Edmunds.—St. Mary's Church has had the pews replaced by open benches, and the organ enlarged and rebuilt, and placed in the north aisle of the chancel. During these and other alterations, the edifice has never been entirely closed.

West Bromwich.—The new school church, which has just been erected in the Wednesbury-road, in All Saints' district, West Bromwich, has been formally opened. The foundation-stone of St. Andrew's Church was laid in June last, by Mrs. T. Jenson. The building is in the Domestic Gothic style. Mr. Somers Clarke was the architect. At the east end are the altar and super-altar. The church is built to hold 400 people, and when not in use as a church will be appropriated off into schools.

Firle.—The parish church of West Firle has been re-opened after extensive restoration and repairs. A little longer delay, and the whole church would have fallen down. With the approbation of the landowner of the parish, as well as of the vestry, the services of an architect were obtained.—Mr. Gordon M. Hills; and under his direction the works were undertaken; Mr. Davey, aided by Messrs. Parsons, of Lewes, being the contractors; and Mr. H. Weller, of Firle, acted as clerk of the works. The west walls of the two aisles were rebuilt, the roofs of the two aisles replaced on walls raised to the original height, the main roof of the nave strengthened, and the plaster ceiling replaced with a wooden lining. The modern windows in the clerestory were taken out, and six windows of the ancient form inserted, and a window in the east wall of the nave, which has been blocked up, re-opened. The arcade on the south side of the nave was underpinned and placed on a sound foundation. The gallery, which blocked up three arches, was removed, accommodation for the school children and inmates of Firle union house, who used to occupy it, being found in the body of the church. Outside, new buttresses have been built to support the fabric. In addition to these repairs, which were undertaken solely at the expense of the landowner, Viscount Gage, aided by a rate; the vicar, assisted by his friends, undertook the renewal of that part of the building especially set apart for the due and orderly celebration of the services of the church. The chancel and sacristy have been paved, and a reredos erected, of tiles furnished by Messrs. Maw, from designs by their agents Messrs. Tompason & Sons, of London.

Dilwyn (Herefordshire).—The parish church has been restored and re-opened. Mr. G. G. Haddon, of Hereford, was the architect employed, and Messrs. Lewis & Day, also of Hereford, were the contractors. The cost of the restorations is about 1,300l., including the Powell Memorial east window, by Messrs. Heaton, Butler, & Bayne. The reredos is in the work of Mr. Forsyth, of Worcester, and is in marble, Caen, and Painswick stone. The east window consists of three lights. The centre contains the "Crucifixion" with the sun and moon darkened over the cross, and St. John and the two Marys grouped around its foot. The north light has the "Nativity." On either side are the shepherds and the Magi, the whole surrounded by the star of Bethlehem. In the south light the "Ascension" is represented. The head of the window is filled with the sacramental emblems—wheat and grapes—and the paten and chalice.

Books Received.

Abyssinia and its People; or, Life in the Land of Prester John. Edited by JOHN CAMDEN HOTTEN, Fellow of the Ethnological Society, &c.; with a new Map and eight coloured illustrations, by MM. VIGNAUD & BARREAU. London: Hotten, Piccadilly. 1868.

THE most useful knowledge we can have at this moment in regard to Abyssinia is not so much what the most recent traveller through the country has to say, but what all Abyssinian travellers have said of it, including the most recent; and this is precisely what Mr. Hotten gives in a considerable [portion of his very interesting volume. Considering the stereotyped and almost unchanging habits and character of Eastern peoples, much of what old travellers have told us of this people holds good to the present day; and indeed not a little of what was said in former times, but doubted by some readers, more modern visitors to the country have only confirmed. A book giving us the pith of all that has been said of our semi-savage foe—if we can call the Abyssinian people our foe—is therefore the most acceptable gift that could be presented to the public on this subject in this gift season.

The volume is divided into five parts;—on the country as seen by early and recent travellers; Consul Plowden's excellent description of the people and their country; the story of the British captives; suggestions for an expedition, with routes; and a bibliography of all the known works relating to Abyssinia.

VARIORUM.

ADDRESS to the members of the Historic Society of Lancashire and Cheshire. By Joseph Mayer, F.S.A., &c. Liverpool: printed by Thomas Bradell, Cook-street. Any remarks by Mr. Joseph Mayer on archaeological or antiquarian subjects merit attentive consideration, and they are sure to receive it. The first subject treated of in this paper is the kitchen-midden folk of pre-historic times. The era when this race of men existed appears to be to a certain extent identified by the remains of the caperulizera, a bird which feeds on pine buds. The pine era of Denmark preceded its oak era, and that its beech era. If there was a pine era in this island at the same time, here is a proximate fixture of the geological era when the kitchen-midden people flourished. The era was a very ancient one, perhaps ten thousand years since, or even much more, and when the climate was much colder than it now is, but by no means so ancient as the era of the glacial drift, in which traces of still more ancient man have been found. Many of the kitchen middens accordingly occur along the present coasts, but not all of them: some are miles inland. Mr. Mayer considers the question of migration; as to which all we shall say is that we have never seen any allusion made to the facilities afforded to extremely ancient migrations, at an era even subsequent to the glacial, but when the climate was colder, by the freezing of the ocean surface farther south than now. Thus, for example, there certainly was a time, after the glacial era had waned, when Britain and the Continent were united every winter by a frozen sea. The wandering Esquimaux, and the Lapps, are probably remnants of ancient races whose fields of migration have only been narrowed by the milder climate of the present, and in the juxta-arctic region, which had not retreated so far to the north as now. Thus, amongst the Esquimaux and the Lapps, we probably have the likeliest stage of mankind to that of the aborigines of this island—the earliest Britons and Picts, but especially to the glacial drift races. An account of the Lapps and Esquimaux, written by the light of these views, and of the glacial drift, flint implement, and kitchen-midden phenomena, might shed a reflex light of great interest on the probable state, habits, and customs of our extreme ancestors. Mr. Mayer next treats of the time of Hadrian's wall across the island, which he is of opinion was built to resist—not the comparatively few northern savages alone, but an alliance of these with the far more dangerous pirates of the North Sea. But irrespective of the fact that the plague of these rovers, as Mr. Mayer admits, was not heard of for nearly a century later, would not the alliance of the pirates with the savages have only

rendered the building of a wall across the island less probable, and of less avail than if it were intended to exclude the savages exclusively? "The lost letters of the English tongue" forms the last subject treated of by Mr. Mayer. It is rather a startling one, but perfectly correct as he shows. Thus there are thirteen distinct vowel sounds in the English language, and to denote these, we have only the five vowel letters of the Latin alphabet, which our ignorant forefathers were persuaded to adopt from the Romans. On this account we have in a manner lost eight of these vowels as recognised alphabetical characters.—"Rain: How, When, Where, and Why it is Measured." By G. J. Symon, F.M.S. Stanford, Charing-cross. Of late years the subject of rain has increased in interest. For some years a fear seemed to prevail that the rainfall was permanently diminishing; but these fears were succeeded by a new series in which it has been on the increase. The solution of the question whether the rainfall in this country was increasing, decreasing, or stationary, was the primary object of the researches of Mr. Symon, a very competent investigator. He has collected nearly 12,000 records of rainfall, which he has arranged, tabulated, corrected, corresponded about, travelled and searched for, besides organizing a system throughout the British Isles for observations on its distribution, entailing a vast amount of labour and no little expense. To a small extent, as to expense, his labours have been recognized and aided by the British Association. The records collected extend from the year 1677 to 1867; and one of the chief results appears in a tabular and diagrammatic form, which shows that about the middle of last century, for a series of years there was far less rainfall than there has ever since been; and that the greatest amount of rainfall during all these years was in the middle of the present century. The diminution between 1820 and 1850 was by no means so great as that of nearly the whole of the previous century. The wettest year of the whole series was in 1852, and the falling off after 1854 has ceased. The general result, as Mr. Symon remarks, "appears to indicate great steadiness in the supply if any considerable number of years are taken together, the principal exception being in the middle of the eighteenth century, when the observations indicate a remarkable and prolonged drought."—Cassell's "Illustrated Catalogue for 1868," folio size, contains illustrations from thirty-five works, the chief of them by Gustave Doré. It makes a book worth preservation.

Miscellaneous.

MANCHESTER CERTIFIED INDUSTRIAL SCHOOLS. The annual meeting of this institution has been held at Ardwick-green. The report stated that the committee had been placed in a position of difficulty from want of dormitory accommodation, and they had thereby been induced to appeal to the public for a sum of money to build additional dormitories and workshops. The appeal was liberally responded to. The spare ground at the back of the schools was examined, and plans for additional buildings to give the necessary accommodation prepared. The building had been commenced. It was thought desirable to purchase an additional piece of ground to enlarge the playground, and this, with the cost of heating apparatus and fittings, would involve an expenditure of 300l. or 400l., which had yet to be raised. A donation of 300l. had been given by the Manchester Corporation towards the building fund.

PURIFICATION OF THE THAMES.—The conservators of the Thames are able to report that they have given the requisite thirteen months' notice for the removal of all sewers above Staines which emptied themselves into the river, or into any tributary stream within three miles of the river; and at a later period in the current year they gave like notices with regard to drains below that town. They have also served notice upon the proprietors of paper-mills requiring the discontinuance of the flow of sewage or other offensive matter from their mills. For the purpose of further preserving from impurity the waters of the Thames above the point of the water supply, the conservators employ a steam-tug to pass up and down the river, with a view to the removal of all dead animals and other polluting substances, and all the look-keepers have instructions to remove all such nuisances.

FATAL FALL OF A CHURCH.—An accident has occurred at St. Paul's, Astley Bridge, near Bolton, by which one man has been killed and two others severely injured. The edifice was being widened, and, for the purpose of carrying out the extension, the workmen had sprung some arches, and it was noticed that one of these was fast giving way. The breach became so great that one of the needles or uprights supporting the key-stone of the arch slipped from under, and a tremendous crash followed. The roof of the church and the greater part of the building fell in. Three of the men were caught by the falling walls, and several others narrowly escaped.

A CORK GASOMETER.—The Cork Gas Consumers' Company have completed their new gasometer, which is said to be the largest in Ireland. It is a plate-iron cylinder, 154 ft. in diameter, by 25 ft. deep, and has involved many thousand cubic yards of excavation, and an amount of masonry and other work, which for the past nine months has kept about 120 tradesmen and labourers of the city at daily work. Mr. Anderson, the engineer of the company, furnished the plans for the work, and it was carried out under the personal direction of the manager, Mr. Still. The entire staff of the works, about 200 in number, dined in it the other day.

GREAT FIRE AT NEWCASTLE.—The dreadful explosion of blasting powder has been followed by another misfortune in the loss of property worth from 40,000l. to 60,000l. by fire from an unknown cause. There is no evidence, however, that Fenianism has had anything to do with either calamity. The buildings in which the fire occurred form a block of the most valuable and finest stone buildings in the town. Of recent years nearly the entire range of buildings along the Quayside, at Newcastle, has been rebuilt, the old rickety erections, chiefly of brick, being supplanted by massive ones of stone. The improvements extended to Queen-street, King-street, and Akenside-hill, all in the immediate rear of that part of the Quayside next to the Guildhall. The fire broke out in a ship store, and destroyed a large portion of the block of buildings in which it took place. Unfortunately, the water supply was deficient in force.

FRENCH HOSPITAL.—A dinner was given on Saturday evening in aid of a London hospital open to all foreigners speaking the French language, when the chair was taken by M. Devaux. A French dispensary, established in 1861, has rendered gratuitous medical aid to more than 7,000 sick and indigent persons; and last year it was determined to found a hospital, in order to complete the work commenced in the dispensary, and to offer to those speaking the French tongue the succour which the Germans have for many years provided for persons of that nation. The French Government promised an annual grant, and the appeal to the French in London was so generously responded to that the committee felt justified in beginning operations at once, by hiring a commodious house at the corner of Lisle-street and Leicester-place, in the centre of the French quarter, where patients are attended by two French physicians. It appeared from the statement of M. Rimmel, the hon. secretary, that the hospital and dispensary are under the same roof.

THE PROPOSED NEW TOWN-HALL FOR WOLVERHAMPTON.—The approval of the resolution of the local public works committee, sanctioning the plans of Mr. Bates for a sessions-house, town-hall, magistrates' court, and public offices, and directing him to complete the working drawings, and deciding that the committee should advertise for tenders, have been formally voted in the town council. The estimate of Mr. Bates that his plans could be carried out for 17,000l. was, it is said, guaranteed by Messrs. Warburton, builders and contractors, at Manchester, and was accompanied by tenders from tradesmen in their respective branches of the trade—the latter amounting in the aggregate to several hundreds of pounds less than the estimate of Messrs. Warburton; and since the plans had been amended, on the suggestions of various officers of the corporation, Mr. Bates had written, assuring the committee that they could be carried out for the amount stated. It had been stated that the council were going to spend 30,000l. on the buildings. A 1d. rate will produce sufficient to pay off the outlay and interest in thirty years.

SUBSTITUTION OF ARBITRATION FOR STRIKES.—A lecture has been delivered in St. James's Hall, by Mr. A. J. Mundella, president of the Nottingham Chamber of Commerce, and chairman of the Council of Conciliation, on the substitution of arbitration for strikes in cases where differences arise between employers and their workmen. The meeting for the delivery of the lecture was convened under the auspices of the Reform League, and the chair was occupied by Mr. Samuel Morley. Mr. Mundella, we believe, has risen from a humble position to be the managing partner of a firm employing from 3,000 to 5,000 workmen.

EDUCATIONAL CONFERENCE.—A conference of the friends of national education (supported by local rates under local administration), to discuss the principles and provisions of the Education Bill introduced into the House of Commons last session, will be held in the town-hall Manchester, on Wednesday and Thursday, the 15th and 16th of January next. The time has arrived for a settlement of the question on such a basis as shall as little as possible disturb the existing machinery, but yet shall give scope for extension and development where needed, and shall provide instruction for the whole of the children of the poorer classes of the population.

"THE SEVEN CHURCHES OF ASIA."—An exceedingly interesting series of photographs, showing the remains of the seven churches of Asia, of the Revelation of St. John (Smyrna, Ephesus, Laodicea, Philadelphia, Sardis, Thyrtis, Pergamos), and the adjacent sites of interest; Monument of Sesostris, Niobe of Mount Syllus, Magnesia of the Meander, Aphrodisias, Hierapolis, are now on view in the rooms of the Arundel Society, 24, Old Bond-street. They are the first photographs of these places produced, and were made by A. Svoboda, artist of the R.A. of Venice. Amongst the most interesting are those of Laodicea, including views of the Great Theatre, the Stadium, with the pyramidal petrified aqueduct, by the effects of the waters of the Lycus; the incrusting waterfalls, Hierapolis; and the Plutonium. At the foot of this temple is the water exhaling the deadly vapour mentioned by Strabo. Apart from the great interest of the sites, the photographs are very charming specimens of the art.

TENDERS

For alterations and additions at No. 69, St. John's-street, Smithfield, for Mr. E. Turnbull, Mr. L. H. Isaac, architect:—

Axford	£575 0 0
Walker	475 0 0
Devereux & Son	404 0 0
Prince	402 0 0

For the drainage of the town of Havell, Suffolk. Mr. B. Fitch, engineer:—

Tinsley & Turner	£1,065 9 0
Harris	857 0 0
Moxon	850 0 0
Dewitt	930 0 0
Mason & Son	914 0 0
Fukner & Cowley	840 0 0
Bloomfield	840 0 0
Garwood	795 0 0
Potter	780 0 0
Hall	759 0 0
Fell (accepted)	738 9 0

For rebuilding back premises of 24, St. Mary Axe. Mr. H. H. Collins, architect:—

Sanders	£254 0 0
Newman & Mann	446 0 0
Coben	375 0 0
Sale	330 0 0

For two houses and shops at Harrow-on-the-Hill, for Mr. Wm. Winkley, Mr. W. H. Woodman, architect. Quantities supplied by Mr. T. F. Green:—

Avery	£2,285 0 0
Woodbridge	1,920 0 0
Upchurch & Hanks	1,912 0 0
Taylor	1,810 0 0
Lander	1,800 0 0
King & Sons	1,880 0 0
Baker	1,852 0 0
Gibson Bros.	1,847 0 0
Shurman	1,783 0 0
Salter	1,844 0 0

For finishing the roads at Plough Lane Estate, for Conservative Land Society. Mr. James Wylson, surveyor:—

Bentham	£1,390 0 0
Reddin	840 0 0
Hiscox	782 0 0
Goodair	759 0 0
Hamerton	730 0 0
Rough	895 10 6
Hubbard	640 0 0
Hiscox & Williams	695 0 0
Bloomfield	540 0 0
Neal	525 0 0
Brewer & Stedley	457 0 0
Burgess	450 0 0
Pizzey	425 0 0
Porter (accepted)	420 0 0



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